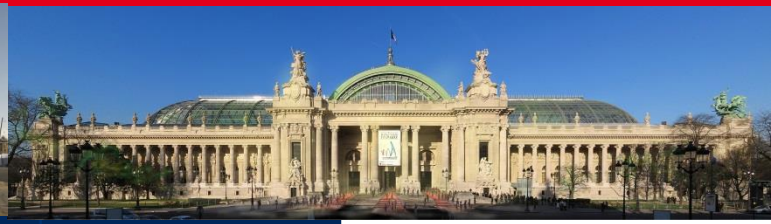
26th World Gas Conference

1 – 5 June 2015, Paris, France



Task Force 2 – Gas Advocacy

The competing relationship between coal and natural gas

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IGU
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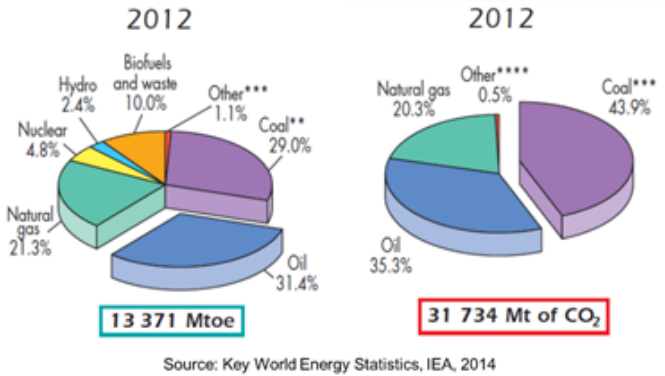
Task Force 2 (TF2) 2012-2015 work plan

- Gas Advocacy (TF2) is a special project of IGU French Triennium and will continue to be a priority in the American Triennium (2015-2018)
- The Global Voice of Gas and Outreach initiatives are being developed by the IGU to strengthen perceptions about the importance of natural gas in the world energy mix.
- TF2: two meetings per year with participation of companies from France, Italy, India, Iran, Malaysia, Brazil, Russia, Serbia, The Netherlands, USA, United Kingdom, Canada.
- Overall perception is that gas has not been able to strengthen its position despite intrinsic advantages
- TF2 focused on the following issues:
  - Demystifying shale gas risks
  - The role of natural gas in reducing greenhouse gas emissions
  - Gas and the electricity sector: the importance of capacity payment mechanisms
  - The increasing role of natural gas in the transport sector
  - The competing relationship between coal and natural gas

The facts: gas is better, but coal increases its share

- Natural gas emits 358 g/kWh of CO2 in CCGT, when hard coal-fired power emits 850 g/kWh and a lignite-fired power even 1.200 g/kWh of CO2 .
- Natural gas in power generation produces two to three times less NOx and much less SO2 than coal per unit of energy content.
- Natural gas contributes to decrease pollution from particulates (99,99% less of particulate compared to coal), which is estimated to cause 200,000 deaths per year in Europe .
- In the period 2008-2012 total subsidies for renewable energy equalled €157 billion. European countries accounted for €40.8 billion.
- Some European countries, despite the EU CO2 reduction directives, are building coal-fired generation plants instead of less emitting gas-fired plants.



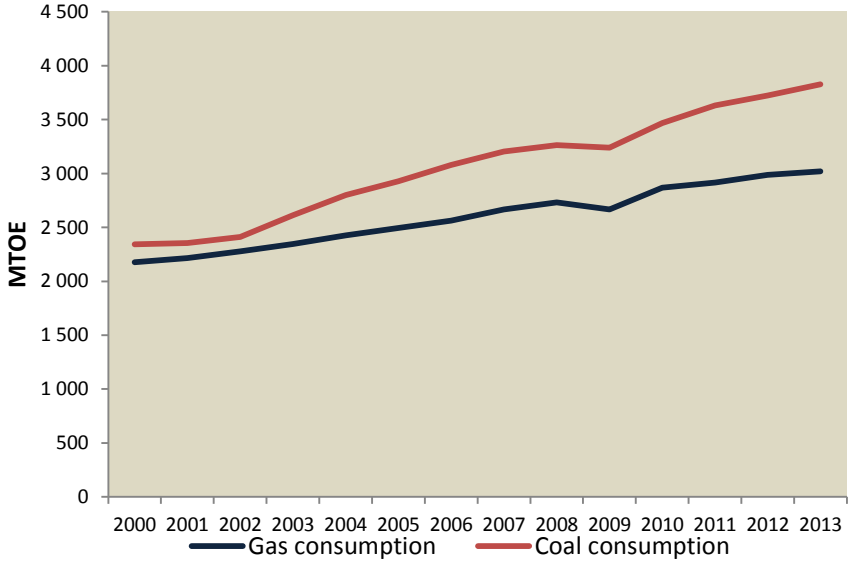
Source: Key World Energy Statistics, IEA, 2014

Source: “Subsidies and costs of EU energy - An interim report”, Ecofys 2014 , IEA Statistics 2014

An intriguing question: is this the golden age of coal?

- In 2013 gas consumption increased by 1.4% worldwide but declined -1.1% in the European Union.
- Coal consumption rose 3% worldwide and 1.4% in OECD countries
- In the Europe power sector, coal-fired generation rose by 12% while gas-fired generation recorded a decline of 24% year on year basis (2013)
- In the US cheaper gas contributed to switch from coal-fired to gas-fired power generation

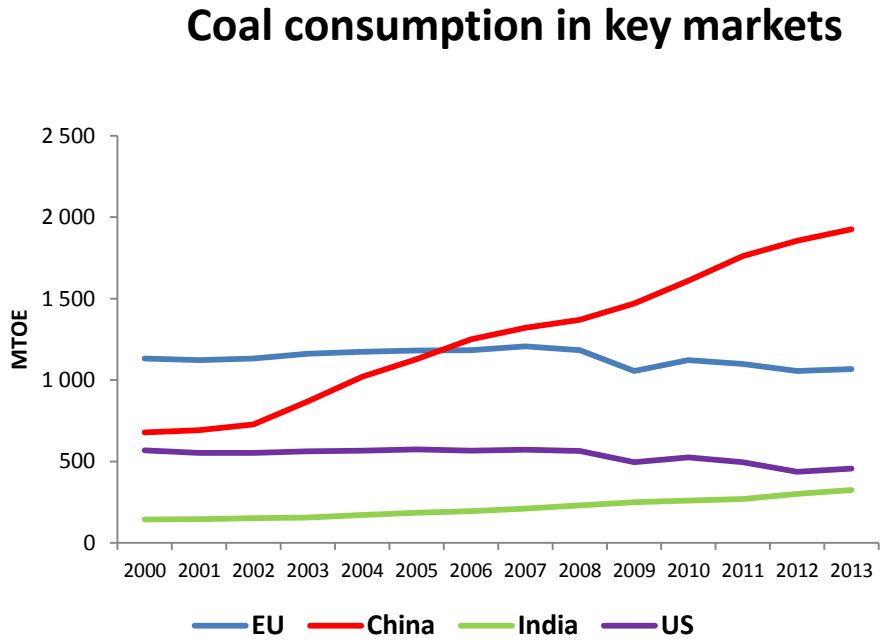
World natural gas vs coal consumption



Source: BP Statistical Review of Energy 2014

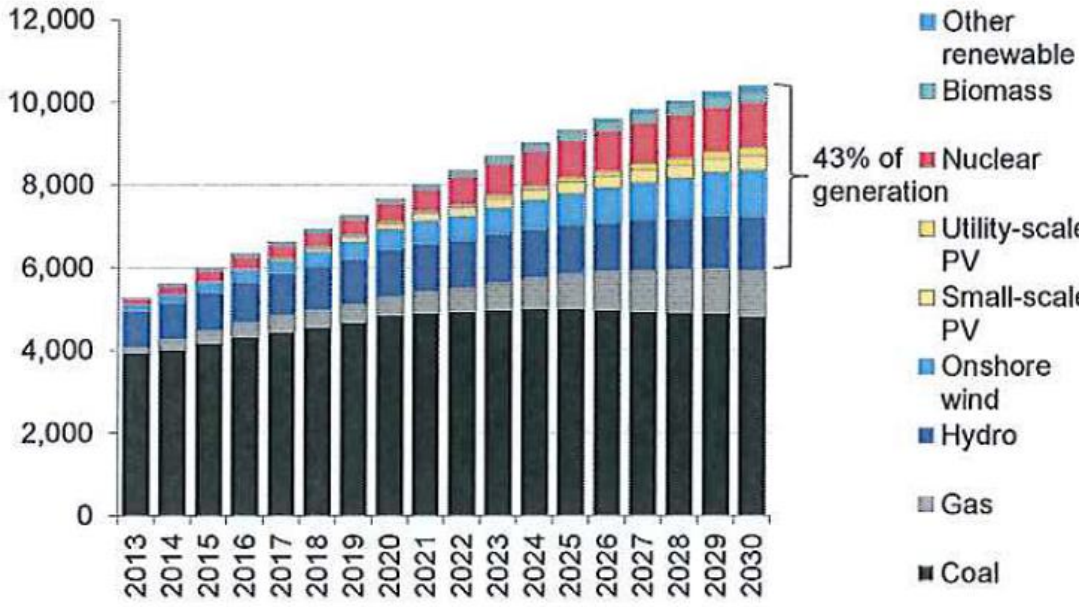
A paradox is emerging in some energy markets

- A new “golden age” of coal - in China, India, but also in some European countries, such as Scandinavian, UK, Germany and Spain
- The abundance in shale gas has shifted the paradox in the US – coal is no longer the preferred source for power - for how long?
- U.S. to progressively switch from coal-fired to gas-fired power generation.
- Europe is experiencing the opposite: coal-fired generation rose by 12% while gas-fired generation recorded a decline of 24% on year basis



Source: BP Statistical Review of Energy 2014

China power generation forecast (TWh) – the health toll



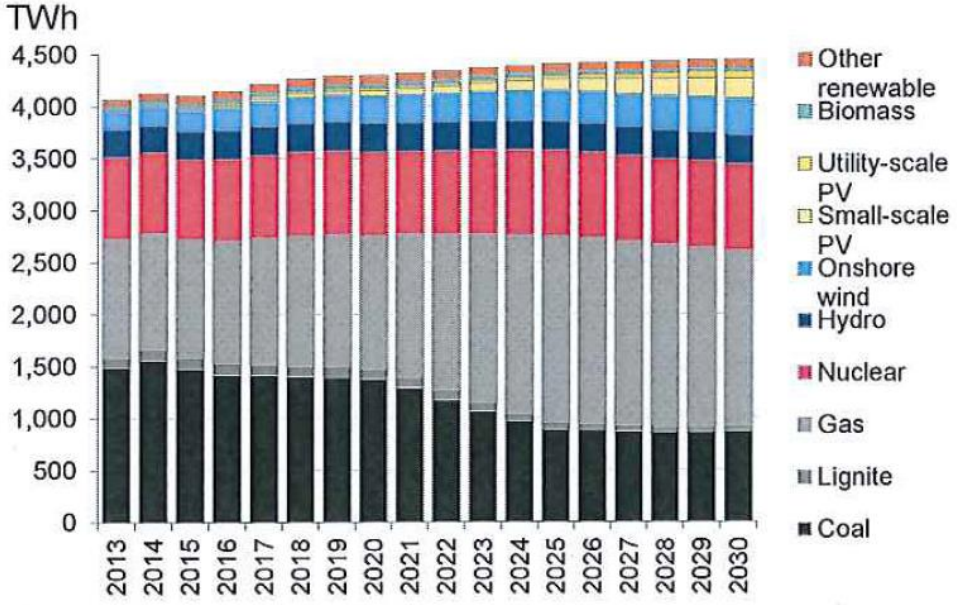
Source: Bloomberg New Energy Finance, , Petronas SR Unit

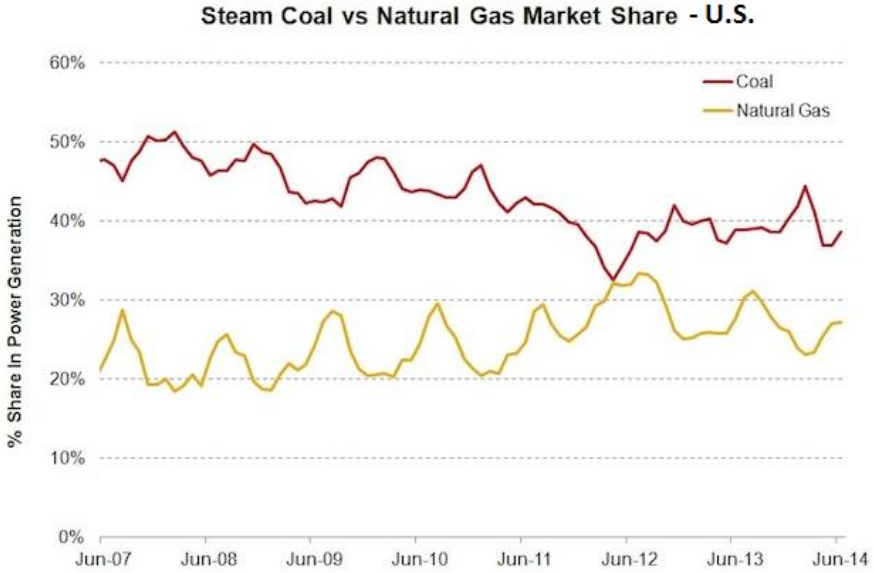
- Guoshun Zhuang, Center for Atmospheric Chemistry Studies,
- Chinese Academy for Environmental Planning, in China

- Beijing & Shanghai have the highest rate of smog.
- Academics* says that Beijing and Shanghai are covered in smog for about 60% and 50% in the year. A 2010 study concludes that **350,000 out of 500,000 people die prematurely** because of air pollution.
- A 2012 study from Tsinghua University estimates that there are 670,000 smog-related deaths a year.

US electricity generation forecast (TWh)

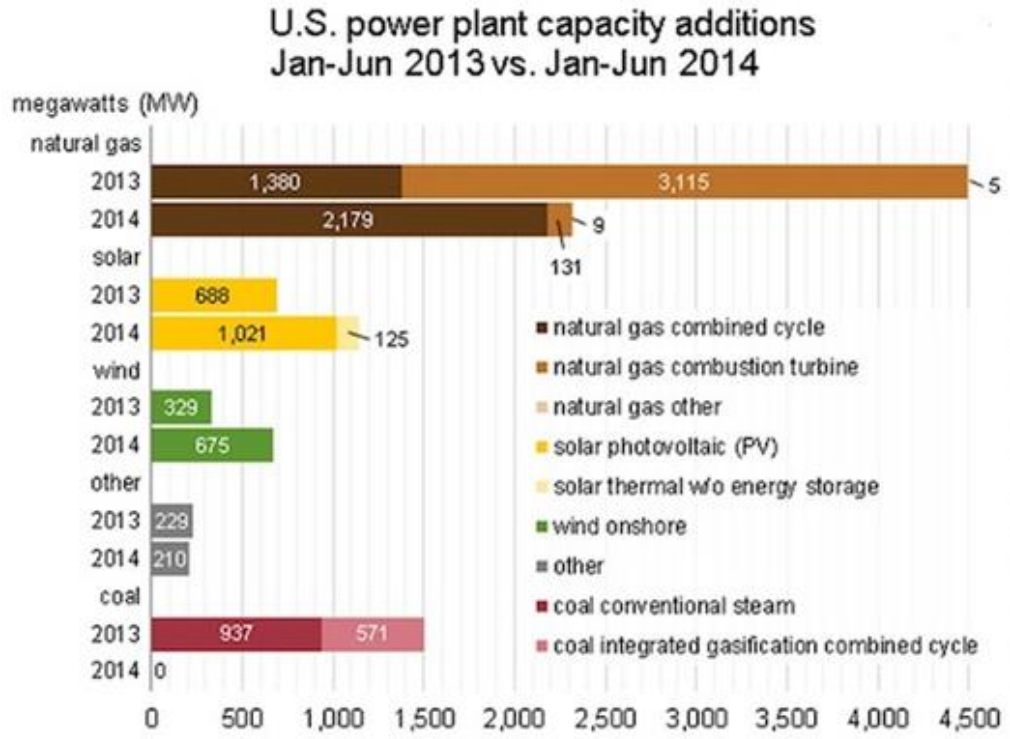
US: a stark contrast from China





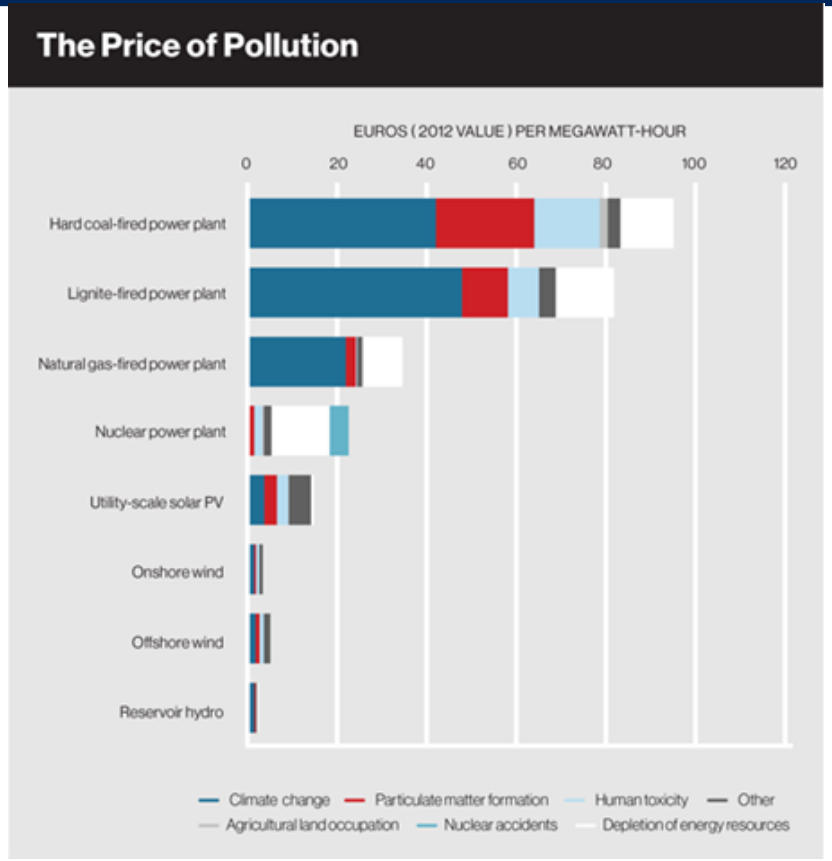
Source: Bloomberg New Energy Finance, US Energy Information Administration

US short term power generation mix



Source: U.S. Energy Information Administration

Undesirable consequences of air pollution



Source: “Subsidies and costs of EU energy - An interim report” by order of European Commission, Ecofys 2014

Proposals to re-establish the equilibrium gas/coal/renewables

- ***Enhance the role of natural gas in sustaining energy efficiency***
  - ***Natural gas applications can contribute to energy efficiency through:***
    - ***distributed co-generation systems***
    - ***high efficiency technologies in different market sectors***
  - ***A technological neutral approach should be utilized when comparing natural gas efficient technologies with other energy sources***
- ***More stringent air quality standards***
  - ***In the past ten years the general air quality problems moved to the backburner as decarbonisation objectives took the limelight.***
  - ***In countries where there is a decarbonisation target, it should not be missed the opportunity to impose constraints on the emission of air pollutants (arsenic, SOx, NOx, chrome…) as the US Environmental Protection Agency already did.***

Proposals to re-establish the equilibrium gas/coal/renewables

- ***Involve the shipping sector in the decarbonisation goals***
  - ***Where emission schemes are already in place all sectors of the economy should contribute to decarbonisation goals***
  - ***CO_2 and air quality standards should be part of a global approach; the opportunity to involve a global sector as maritime shipping should not be missed***

- ***A technological neutral approach to sustainable mobility***
  - ***Natural gas is a mature technology already available that could provide immediate environmental benefits***
  - ***Initiatives related to sustainable urban mobility should include natural gas technologies: CNG. GNV, LNG***

Proposals to re-establish the equilibrium gas/coal/renewables

- ***A reflection on shale gas***
  - ***Shale gas on an international scale could provide:***
    - ***security of supply***
    - ***cheaper energy prices***
  - ***Each region of the world should be able to find its own way to the development of shale gas. It is important to provide information and rules to allow for safe shale gas development***
- ***Interregional trading of CO_2 emission allowance***
  - ***The reinforcement of interregional trading of CO_2 could:***
    - ***reduce the costs of decarbonisation operations***
    - ***increase natural gas consumption in other parts of the world***
  - ***CO_2 is a global problem and emission allowance should be traded on a global level***

Proposals to re-establish the equilibrium gas/coal/renewables

- ***A support for CCS technology***
  - ***CCS could provide***
    - ***the reduction of CO2 emissions***
    - ***the possibility to choose a balanced energy mix with a strong partnership between RES and natural gas***
  - ***A technologically neutral approach should be adopted to CCS***
  - ***Support shouldn't be reserved only to coal appliances but also for natural gas***
    - ***Currently only one among 5 projects in the European CCS network is not related to coal***

IGU's proposal to enhance the role of natural gas

- Allow for gas capacity payment mechanisms to underpin flexible power generation capacity (e.g. gas capacity payment mechanisms) where there are strong subsidies policies to renewables exist
- Implement regulation to encourage the use of natural gas to sustain energy efficiency
- Mandate stronger air quality standards
- Re- assess incentives and subsidies to renewable energy sources
- Undertake a global reflection on unconventional gas and trading barriers to natural gas commercialization
- Develop mechanisms for interregional trading of CO2 emission allowances
- Enforce more stringent regulation on emissions standards in the power sector
- Support for CCS technology for natural gas and not only for coal