

## NOTE DE LECTURE

# After the US shale gas revolution by Thierry Bros -2012

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## Basics and Technicals

Thierry BROS gives an in-depth unbiased analysis of today's gas markets. Gas is more concentrated than oil; 3 countries only are holding 54% of the gas proven reserves: Russia (24%), Iran (16%) and Qatar (14%). The total world gas production was 3193 bcm (billion cubic meter) in 2010 and Gazprom, in which 50% is owned by State, is the major worldwide gas producer.

US represent 22% of the worldwide consumption and is the world largest importer (312 bcm). UK and China even big producers are both recent net importers. The total gas imports grow faster than the worldwide production. It represents 31% of the total consumption.

Gas is more costly to transport than oil and so pipe links the Long Term producers to the consumers.

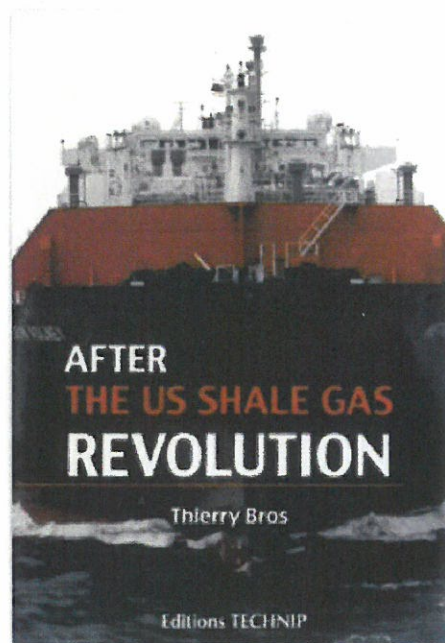
There are 3 main uses for gas: Residential which is influenced by temperature, Industrial which is very price sensitive and Power generation.

New uses appear for gas as a transportation fuel. With the limitation of sulphur in marine fuels, Heavy Fuel Oil will be banned and LNG is much cheaper than gasoil. Even for earth transportation, gas could be competitive against gasoil with in addition environmental advantages.

The author insists on the importance of storage. Worldwide storage capacity is 333 bcm (roughly 10% demand). US is becoming self sufficient and its storage capacity will be used for trading purposes. European Union (EU) is the most dependant of the 3 regions and needs storage for seasonal balancing.

## Markets, Prices & Costs

Two main price mechanisms exist: market prices and oil-induction. Reference price in US is the Henry Hub (HH). US prices are



linked to the physical balance of supply and demand. UK follows in 1986, and the establishment of the NBP (National Balancing Point) appeared in 1996. NBP prices are higher as UK, so far, has not managed to unlock its shale reserves.

In Europe, the principal competing fuel in the domestic sector was Heating Fuel. The idea was to push consumers away from oil products into gas; therefore the gas price was linked to the price of petroleum products with a small discount.

The author estimates the cost of US shale gas production to be above the actual HH price i.e. 4 \$/MBtu.

Continental Europe buyers were happy to resign full oil-indexed Long Term contracts, up to 30 years, with Gazprom. Much lower US prices and UK pieces are now putting pressure on those buyers to renegotiate those Long Term contracts to include spot indexation. Now, gas is sold under both oil-indexation Long Term

(58%) and on spot basis.

As Europe moves to mainly spot indexation and if US is becoming a major LNG exporter (with no oil-index LNG contracts), worldwide gas markets could integrate. Until the gas shale revolution, policy was concentrated on prices, security of supply and clean energy. The question of dependency was not put forward. The shale gas revolution offers a lot of net importing countries the opportunity to completely review this dependency issue.

The more affluent a society become, the more willing it is to pay for clean energy. Since these changes were the results of consumer choices, at first, no regulation was needed (ex: displacement of coal in favor of gas). Probably, as income rises, developing countries will be increasingly concerned with air pollution and will demand cleaner fuels.

## Where is the Future Supply Growth?

Shale gas was a driving force in helping the US to overtake Russia as the world's largest gas producer in 2009. But without any new uses or export facilities, the US "gas island" is facing oversupply.

Nevertheless, reserves estimates are uncertain. In 2012, US DOE (Department Of Energy) reviews the figure from 24 tcm (tera cubic meter) to 14 tcm, but production still rises.

China holds the largest unconventional gas reserves. The DOE estimates them to 1.5 times the US ones. China continues to adapt its legislative framework to make shale gas production a priority of the 12<sup>th</sup> five year development.

In Europe, Poland decided to favor extraction of unconventional gas to reduce the country's dependency on Russia. The cost of the unconventional gas production could be around 9\$/MBtu in Poland, i.e.



below current oil indexation (13\$/MBtu). Offshore fracking technologies could mitigate the decline rate of conventional fields in the UK (United Kingdom). Europe shale production could be the only answer to the ill functioning EU gas market where 4 foreign NOCs (National Oil Company) control 50% of the supply. Australia could overtake Qatar in LNG thanks to unconventional gas.

### Where is the Future Demand Growth?

China with 3% worldwide consumption and India with less than 2% are the most promising. The figure in China will be 20% in 2020.

Japan demand will remain flat thanks to

energy efficiency.

New demand for gas in North America is linked to generation of more electricity, the use as transportation fuel and to more petrochemicals but at the expense of Europe. In Europe, gas demand would stay in between the records seen in 2010/2011.

China needs to secure extra gas and at the same landed price, it will prefer US LNG. US, to balance supply and demand, and to avoid too low prices could develop its gas demand domestically and export LNG. With this virtuous circle, the US will benefit from higher Capex, higher employment and higher taxes that reflects costs of production. Additionally, US could, by exporting gas to Asia reduce its trade imbalance, but this would

negatively impact Russia and Australia.

The Shale Gas Revolution changed the foreign depending paradigm and is offering an alternative. Only Western Europe (excluding Poland) has, so far, chosen to avoid that technology and to keep its dependency on gas importer.

A European gas market will never be fully functioning without enough domestic production.

For the first time, in human history, a part of society, which is refusing technology changes pushes for the full group (Europe) to prefer status quo.

**Jean-Marie Botte**  
Comité de Rédaction

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