

Short term trends in the gas industry

For the third consecutive year, growth in gas demand is slowing down. The year of 2014 is marked by lower activity in the global gas industry at all stages in the chain. This can be explained by increased competition between energies (coal, renewables), the economic slowdown and the mild weather conditions which have put a brake on expansion of the gas demand (Europe, Asia) and led to high stock levels. These developments have pushed market prices downwards and modified inter-regional balancing flows.

An analysis of the first results reported by Cedigaz reveals some trends that indicate 2014 as a very mixed year for natural gas.

Gas growth had already revealed its limits in 2012 before seeing a clear slowdown in 2013, which appears to be confirmed for 2014. According to the provisional Cedigaz figures, the global gas supply could see modest growth in the order of 0.6 to 1% in 2014 (+0.8% on average). These results are in contrast with sustained average growth in the order of 2.8%/yr recorded in the 2000s (including the decline in 2009, offset by an upturn in demand during the economic recovery of 2010).

The American market is still dynamic, but the growth in Asian demand is slowing down and gas demand in Europe could see its darkest year yet (-10%).

The international gas trade, which represents 30% of the global supply, is falling sharply due to the downturn in imports in Europe, this region being the main area for gas pipeline trade.

In terms of production, the United States is the main driving force for global growth due to the shale gas effect. As a result, the American market's dependence on outside sources (Canada, other) continues to decrease. The US is moving towards total self-sufficiency, projected for 2020.

These recent developments have caused a certain easing of international gas prices (Asia, Europe). However, the markets remain subject to risks and great uncertainty in the short term.

In addition, these signs of more balanced markets must not obscure the constraints on the supply and the gas shortages encountered by many emerging markets, producers and even sometimes exporters. This reflects two phenomena:

- the fast growth of gas in the energy mix. Demand for gas is stimulated by a program of subsidies that regulates domestic prices at relatively low levels;
- the lack of upstream investment in a weak regulatory environment, since domestic prices do not reflect production costs.

Significant investments required to renew the reserves

Proven global reserves of natural gas increased very slightly in 2013, by 0.5%, after remaining relatively stable in 2012. They are estimated at 200,576 billion cubic meters (Gm³) on 1st January 2014, representing a lifetime of 59 years at current consumption levels. Note that Cedigaz includes in its proven reserves 4,760 Gm³ of shale gas (mainly located in North America) and 2,800 Gm³ of coalbed methane gas. The increase in reserves recorded in North America in 2013 (+6.8%), due to unconventional gas, and in Russia, has offset the declines observed in other regions.

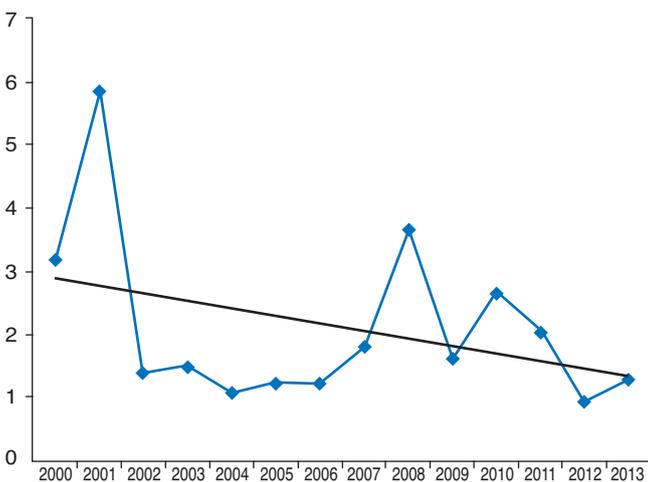
Proven gas reserves remain highly concentrated in two regions, which also show economic and geopolitical instability: the Middle East (40%) and the Commonwealth of

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Independent States, CIS (33%). The OPEC countries hold 47% of global reserves, but only represent 19% of production. At national level, just three countries hold over half of the total volume: Russia (25%), Iran (17%) and Qatar (12%).

According to Cedigaz, proven reserves of natural gas in the world (including unconventional gas) have increased by 15% (+25.8 Gm³) over the last 10 years, while production has increased by 25%. New discoveries and reassessments of existing fields, particularly in the CIS (Russia, Turkmenistan) have made it possible to replace production at a level of 175% on average over the period. But this replacement rate is showing a downward trend, underlining a lack of investment in E&P in the emerging countries (Africa, Latin America, Middle East and South East Asia) (Fig. 1).

Fig. 1 – Trend in natural gas reserve replacement ratio (RRR)



Source: Cedigaz

Modest increase in global natural gas production

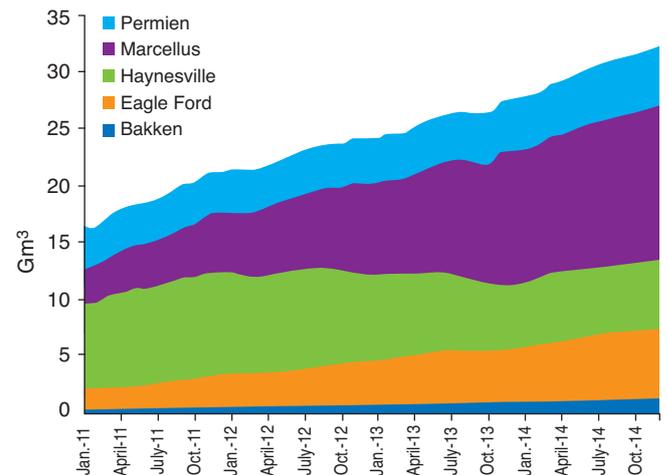
Cedigaz anticipates a modest increase in global gas production in 2014, in the order of 0.8% on average.

In 2014, global gas production was mainly driven by the United States, where the shale gas revolution continues. North America therefore confirms its leadership in production, totalling 27% of global volume.

In 2014, American production should see a very significant rise, in the order of 5%. Shale gas production offsets the decline in conventional production (Gulf of Mexico). In addition, shale gas production is moving from dry gas deposits to gas deposits that are less costly to work and very productive (Marcellus) and often profitable via the use of associated liquids (Eagle Ford).

Due to the rise in production of the Marcellus field, Pennsylvania has become the second biggest shale gas producer after Texas. The Marcellus field represents about a third of the country's shale gas production, followed by Barnett (18%) and Haynesville (17%) (Fig. 2).

Fig. 2 – Gas production trends in the United States from five key shale deposits



Source: US Energy Information Administration (EIA)

In 2013, shale gas became the main source of natural gas production in the United States. Gross production represented a volume of 337 Gm³ in 2013, i.e. around 40% of national production. By comparison, this share was only 15% in 2009.

Gas production in the world's second major production area, the CIS, is showing a marked decline due to Russia, despite the ramping up of production in Turkmenistan (exports to China). Production in this region has fluctuated in recent years, being dependent on both internal and external demand (from Europe in particular) and subject to economic and geopolitical uncertainty.

Russian gas production, which fell by 5% from January to October by comparison with 2013, declined in almost every month of the year. This development is partly explained by the Ukrainian conflict which led to the cutting of supplies from Russia to Ukraine in June. In addition, import requirements have fallen sharply in Europe, which has also sought greater diversification of its sources of supply. In Russia, Gazprom continues to lose market share to oil companies (Rosneft) and independents (Novatek).

Asia-Oceania shows good performance since production is still stimulated by China and Australia. It has also been boosted by the commissioning in May of the PNG LNG plant in Papua New Guinea, which is now operating at full capacity.

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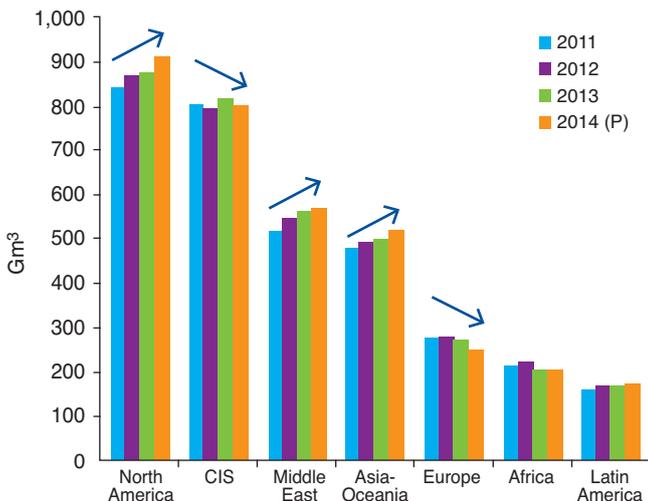
In parallel with the drop in demand, European production should fall by over 9% in 2014. All the main producing countries are recording negative results, including Norway which saw its production fall by 1.5% in the first ten months of the year.

In Latin America, production has increased slightly. Bolivia continues to increase its production to meet the growing needs of neighbouring countries such as Brazil and Argentina. But production continues to decline in mature areas (Argentina, Trinidad and Tobago). In addition, some major gas projects have been delayed (Venezuela).

The Middle East, which was by far the most dynamic producing area during the last decade, is still showing a positive trend. However, the pace of growth has slowed in the past three years. Production is tending to switch from associated gas fields, easy to operate, to complex and more costly projects (\$4-\$10/MBtu) involving non-associated gas fields, offshore and often rich in sour gas. Major gas projects have been delayed and postponed in several countries (United Arab Emirates, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, etc.).

In Africa, production fell sharply in Egypt. This country is faced with a worrying shortage of gas, due to a lack of investment in an unstable economic and political context. Egyptian exports of LNG have become marginal and the country has even been forced to turn to LNG imports, due to start in March 2015.

Fig. 3 – 2014 outlook for marketed gas production by region



Source: Cedigaz

Production in the Middle East region and North African countries is not increasing sufficiently to meet internal demand. The subsidies to natural gas (\$54 billion in 2011), which keep domestic prices low, have depressed the

upstream investments of international companies. In this region, gas has made a growing breakthrough in the power generation sector and has helped to direct a bigger share of oil production to export. But consumption is limited by the lack of gas availability. Implementation of major short-term upstream projects is needed for these countries to meet their soaring demand, and in some cases their export commitments. In the face of pressure to reduce subsidies, which can also exacerbate the condition of public finances (Egypt), many countries have started to implement reforms by increasing domestic prices (Egypt, Kuwait, Oman, etc.) (Fig. 3).

Global gas consumption remains sluggish in 2014

Growth in gas consumption slumped sharply in 2013 (+1.5%). The 2014 outlook is still gloomy for natural gas, since global gas consumption should remain relatively stable. However this global trend hides some regional disparities.

The Asian gas market is still the main contributor to the increase in global demand and its annual consumption is projected to rise by 4% in 2014. But this growth has been limited by a rebirth of coal which remains by far the most profitable energy for basic power generation.

In China, consumption increased by 7% in the first ten months of the year, a level considerably lower than the average recorded in the last five years (+16%/yr). The National Development and Reform Commission (NDRC) has revised its short and medium term demand outlook downwards. The economic slowdown and the reforms on domestic price rises will impact the gas consumption of the power and industrial sectors. The authorities are now projecting consumption of 360 Gm³ in 2020 (compared with the initial target of 400 Gm³), a level that is still overestimated according to some industrialists. The energy policy (power sector) now appears to be directed towards developing high-efficiency coal-fired power plants rather than a mass move from coal to gas.

In Europe, gas consumption continues the decline started in 2011. The fall of over 10% recorded in most of the year of 2014 appears even more marked than in previous years. European consumption continues to suffer as a result of sluggish economic growth and competition from coal and renewables. The impact of mild winter temperatures is added to these classic factors.

In North America, gas consumption has been stimulated by high winter demand and industrial growth. In the United States, consumption should increase significantly

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by over 3% in 2014. However, gas has continued to lose ground to coal in the power generation sector.

In the CIS, consumption is flagging in an unfavourable economic and geopolitical context. Consumption has dropped sharply in Ukraine (-15% in January-September 2014) against the background of the conflict with Russia. The Ukrainian authorities have approved a series of measures aimed at reducing gas consumption by 2017, mainly based on energy saving. Gas consumption in Russia is still weak and no recovery is anticipated in 2015. With the approach of winter 2014-2015, Gazprom's stock volumes reached high levels of over 70 Gm³. Due to low internal and external demand, Russia is faced with a gas surplus. In 2013, the volume produced by Gazprom is estimated to have represented approximately 80% of production capacity.

In many countries in the rest of the world, gas production is no longer sufficient to meet internal needs. The example of Iran is interesting. International sanctions have impacted the development of major projects (South Pars) in recent years. Although it has the world's second biggest gas reserves, the country's gas deficit is estimated at 40 Gm³/yr and can rise to 150 Mm³/d in winter.

The international trade via LNG carrier is limited by low global gas demand

Two years ago, the unrestrained growth of LNG trade, the most dynamic component of the gas sector, came to a halt. In the context of low global gas demand, LNG trade increased very slightly during the first three quarters of 2014 and could show a slight rise for the whole of the year.

In terms of supply, North Africa and to a lesser extent the Middle East have seen their exports fall. In Egypt, the Damietta plant has been closed since December 2012 for an unspecified period. The gas shortage in the country also led to a declaration of force majeure at the Idku LNG plant, which exported a very limited number of shipments in 2014.

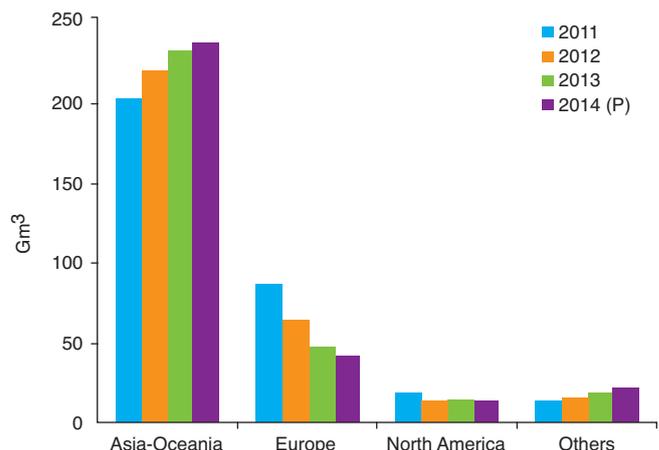
In Europe, net imports of LNG have been in freefall for the past four years. In 2014, the decline in imported volumes is likely to be particularly significant in South Western Europe (Spain). In the past three years, the LNG share of the European supply has fallen from 15% to around 8% at present. However, and by contrast with recent years, Qatar has redirected some of its LNG exports from the Pacific basin to the United Kingdom, due to a lower demand in Asia.

Growth of the LNG demand in the Asian market has slowed for several reasons:

- mild winter and spring temperatures and a cooler than usual summer;
- the economic downturn;
- the restarting of nuclear power plants in South Korea;
- competition with coal in both industrialized and emerging countries.

These developments, combined with a relatively plentiful LNG supply in the Pacific basin, have led to a continuing collapse of spot prices in Asia. Under these conditions, the balancing decisions taken have favoured diversion of shipments to the European market, which played a balancing role as a market of last resort, while the Pacific basin was left with surplus supplies (Fig. 4).

Fig. 4 – Trends in LNG demand



Source: Cedergaz

Significant downturn in international trade via gas pipeline

International trade via gas pipeline is likely to fall significantly, by around 4%, in 2014. The main trends observed are as follows:

- within the CIS, the fall in exports from Russia to Ukraine following the interruption of deliveries for almost six months (June-December);
- the very marked fall of exports from Russia to Europe (-7%), from Algeria to Italy (-40%), and to a lesser extent from Norway to the EU (-4%);
- a reduction of around 6% in net imports by the United States from Canada, following the boom in production. The downward impact of shale gas on United States imports has been visible since 2007.

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Gas prices are on a downward trend

The current differences between regional gas prices highlight the specific factors underlying price levels and their formation.

In the United States, the Henry Hub gas price is up in 2014. In its latest projections, the EIA anticipates an increase in the average Henry Hub price from \$3.7/MBtu in 2013 to \$4.4/MBtu in 2014. Harsh winters have increased the pressure on prices.

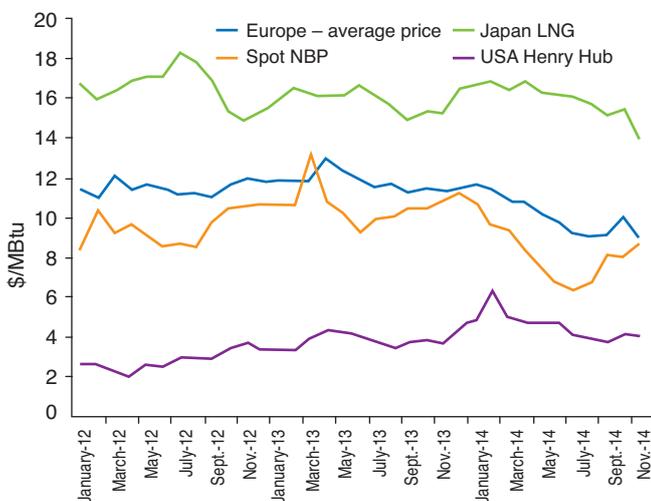
In Japan, the LNG price, equivalent to \$16/MBtu in 2013, is likely to be slightly down over the year of 2014, being determined by direct reference to the oil market.

Due to the Asian market conditions mentioned above, spot prices for North East Asia collapsed in 2014. After reaching peaks of around \$19-20/MBtu during the winter of 2013-2014, they fell sharply and even went below the level of \$10/MBtu at the beginning of December 2014, the lowest level recorded since the Fukushima accident in March 2011.

The NBP spot price in Europe fell sharply in 2014, mainly due to the unusually mild winter temperatures which pushed demand down and allowed stocks to be maintained at high levels. At the end of November 2014, European stock levels represented some 90% of storage capacities, 19% higher than a year ago.

In 2014, the average gas price in Europe fell sharply under the combined effect of the falls in the Brent price and the spot price. It is likely to stand at around \$10/MBtu in 2014 (\$11.8/MBtu in 2013). The spot index share is still increasing and now represents approximately 60% of the average price (70% in North West Europe) (Fig. 5).

Fig. 5 – International natural gas price trends



Source: Cedigaz, Reuters, EIA, World Bank

Market outlook in 2015

Factors that are not only structural but also temporary (weather conditions) led to a lower gas demand than forecast in 2014, and to high levels of stocks pushing market prices downwards.

Global growth in gas demand in the short term is likely to remain down by comparison with the dynamic seen in the past fifteen years. Demand will stay impacted by strong competition from coal (Asia, continental Europe) and economic growth that is still sluggish in a certain number of countries. In addition, renewable energies will remain major competitors with gas.

In terms of supply, the planned commissioning of major Australian LNG projects is also likely to ease the LNG market. Current projections therefore predict very moderate levels of average prices in Europe and Asia in 2015, which could even fall in the event of a low oil price scenario (\$70/bbl).

However these prospects remain surrounded by much uncertainty, due to the risks that may still revive tensions in the markets and on prices, particularly in the winter peak period. The risks of a geopolitical nature disrupting supply security will still remain very present (Middle East/North Africa region, Russia-Ukraine gas conflict). As in 2013, the constraints on the gas supply characterizing many countries exporting LNG are also factors of tension, especially since delays are likely in the implementation of LNG projects.

Conclusion

Recent trends in the gas markets highlight the structural challenges faced by the gas industry. Constraints on both supply and demand could limit gas growth in the short and long term.

In terms of demand, opportunities should however open up in Europe for gas-fired power generation from 2018-2020 due to the limitation on operation of coal-fired power plants and the closure of nuclear power plants in some countries. In the emerging markets, the orientation of energy policies and implementation of appropriate environmental regulations will be key factors in the successful expansion of natural gas.

In terms of supply, costly investments must be made to meet future demand, limit tensions in international markets and favour supply security and diversification. However in 2014, only LNG export projects in the United States have made real progress. While the Sabine Pass project, with a capacity of 18 Mt/yr, is under construction,

a look at ...

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three other projects were launched in 2014, *i.e.* Cameron (13.5 Mt/yr), Freeport (8.8 Mt/yr) and Cove Point (5.3 Mt/yr). In most non-OECD countries, the establishment of a regulatory and tax incentive framework is necessary to encourage private investment and allow the development of new reserves. Contractual and commercial changes

will also be required to allow the different stakeholders in the chain to secure their portfolio and to protect themselves against the risks of price fluctuation.

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