

Oil situation in 2014 and trends

The decision by the OPEC producing countries on 27 November 2014 not to intervene in the market heralds a new world order for oil. Saudi Arabia has refused to be practically the only State to moderate its production to support prices. Therefore, against a background of oil surpluses and in the absence of a market watchdog to regulate the supply, the price has to adjust, which explains the 44% fall in Brent between June (\$111/bbl) and December (\$63/bbl). In 2015, subject to certain assumptions, an equilibrium price of \$60 to \$80/bbl could be envisaged. This price range should have the effect of mitigating the growth of American tight oil production, though in proportions that remain uncertain. It will also result in reduced investments in the oil sector, raising medium term risks for the supply.

The fall in prices in 2014

In terms of monthly averages, in the first six months of 2014 the Brent price varied between \$107 and \$112/bbl, or levels close to the annual averages recorded since 2011 (\$111 to \$108/bbl). It was occasionally affected by geopolitical tensions, for example in February when Russia put its troops on standby along its Ukraine border, and in June with the northern Iraq conflicts. But the lack of any impact on production avoided pressure on prices. There was even some good news with the resumption of Libyan production in August, a resumption which is of course still fragile due to the highly unstable domestic situation.

From July onwards, the market entered a period of rapid collapse in oil prices, which fell from a monthly average of \$112/bbl in June to less than \$100 (\$97) in September, reaching \$80 in November and less than \$70 at the beginning of December (Fig. 1).

This change is the result of a combination of several factors over a very short time, giving rise to a runaway situation. Apart from the geopolitical context — unstable but not affecting production — the following should be mentioned:

- the growing influence of the tight oil effect on the international market, as evidenced by the convergence of WTI and Brent prices. The difference between them fell from \$16/17 in 2011 and 2012 to \$11 in 2013 and \$6 in 2014 (\$3 in November);

Fig. 1 – Annual and monthly Brent and WTI price – 2011-2014



Source: Reuters

- economic concerns confirmed by downward revisions of global growth between January (3.7% forecast by the IMF), July (3.4%) and October (3.3%). This led to an adjustment of projections of global oil consumption for 2014. From 1.4 million barrels per day (Mbb/d) in June, the International Energy Agency (IEA) revised the figure to 0.9 Mbb/d in September, then 0.7 Mbb/d in October. This drastic correction, combined with the inflow of American production, amplified the notion of a future oil surplus on the market. It should be emphasized that the economic context also caused a heavy fall in the European financial markets in August and September, accentuating the pressure on oil;

Oil situation in 2014 and trends

- the strong growth of the dollar from June, which led to downward pressure on oil prices due to a negative correlation associated with the oil/dollar combination. Recent trends in the dollar and oil could also be the result of simultaneously occurring factors: the rise in rates expected in the US and fears on growth in Europe and emerging markets;
- the “coup de grâce” was delivered with the 27 November decision by OPEC, or rather the oil monarchies (Kuwait, Qatar, Saudi Arabia, United Arab Emirates) not to intervene on the market. This choice accentuated the collapse in oil prices since, failing regulation of the supply by OPEC, market forces will now ensure equilibrium.

The reasons for the OPEC decision, dictated by Saudi Arabia

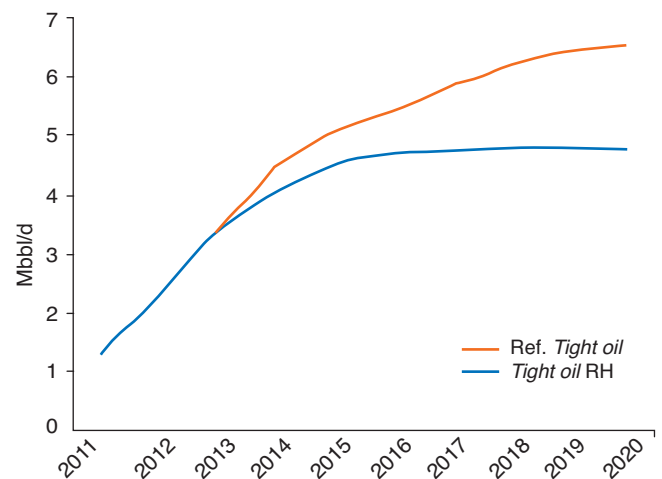
Some OPEC countries such as Algeria, Iran, Iraq, Libya and Venezuela, favoured an agreement to limit production, but most of them were not in a position to do so. For instance, Libyan production (0.2 to 0.8 Mbb/d in 2014) remains well below its potential (1.5 Mbb/d) since the internal disturbances in 2011. Iran is subject to an embargo which has reduced its outlets by around 1 Mbb/d since July 2012. Iraq has major plans to develop its production, which according to the IEA could reach 4.6 Mbb/d in 2020 and 6.7 Mbb/d in 2030, compared with 3.1 Mbb/d in 2013. Venezuela is in a strained financial situation, and in addition its production has been falling for the past 10 years.

Based on the (uncertain) forecasts for December, the supply/demand balance shows that the downward adjustment would have had to be 2 Mbb/d in the first half of 2015 and 1 Mbb/d in the second half. These are significant volumes in comparison with oil production of 9.5 Mbb/d in 2014 for Saudi Arabia, or 30% of total production. The country did not want to bear the burden alone, without support within the organization and still less from outside, either from Russia or the US. Outside the OPEC meeting, the Saudi Oil Minister Ali Al-Naimi clearly referred to this idea: « *Why should Saudi Arabia cut? The US is a big producer too now. Should they cut?* »

In addition to a lack of support, there is certainly a deeper reason underlying this radical choice, and that reason is the ultra-rapid expansion of American tight oils. Price support by OPEC would have had the effect of favouring their growth, which would have forced the organization to make further production cuts on a yearly basis. Saudi Arabia was therefore faced with a dilemma: price support with gradual erosion of its production, or stability of its production but a collapse in prices.

This second option is perhaps the most rational for Saudi Arabia in the face of tight oil expansion. Production of these unconventional oils has risen by 1 Mbb/d every year since 2011, which is approximately the same as the annual rise in global demand. US Department of Energy scenarios do not anticipate growth to be as significant in future years, but the DOE appears to be very cautious in its baseline projections, which regularly underestimate actual growth. Saudi Arabia did not wish to take the risk of a hypothetical natural slowdown in tight oil, announced by some but belied by the facts. In December, tight oil production is already 5 Mbb/d, in line with the DOE’s highest scenario (Fig. 2).

Fig. 2 – American production of tight oil (Baseline scenario and high scenario –HS-) 2011/2020



Source: US Energy Information Administration (US EIA)

Other explanatory factors include the geopolitical challenges that may partly justify Saudi Arabia’s position. The fall in prices will evidently weaken not only its Shiite, Iraqi and Iranian neighbours, but also Russia which supports the regime in power in Syria... These considerations perhaps played a part in its decision, although the growing importance of tight oil alone would be sufficient justification. As for the theory of a concerted strategy between Saudi Arabia and the United States, mentioned by some observers, this seems somewhat implausible. American producers will suffer greatly as a result of this situation.

Possible repercussions for the oil market

If OPEC had decided to rebalance the market by adjusting supply, an equilibrium price of \$90-100/bbl would be conceivable (in the absence of a geopolitical crisis) as we stated at the beginning of 2014 (see Panorama 2014 “Oil situation in 2013 and trends”).

Oil situation in 2014 and trends

This is not the case and the market must now determine a price that will make it possible to absorb the surplus, weighing up three parameters: the demand for oil, existing production and upstream investments to influence future production. The impacts are extremely hard to determine, but it is at least possible to outline three possible consequences:

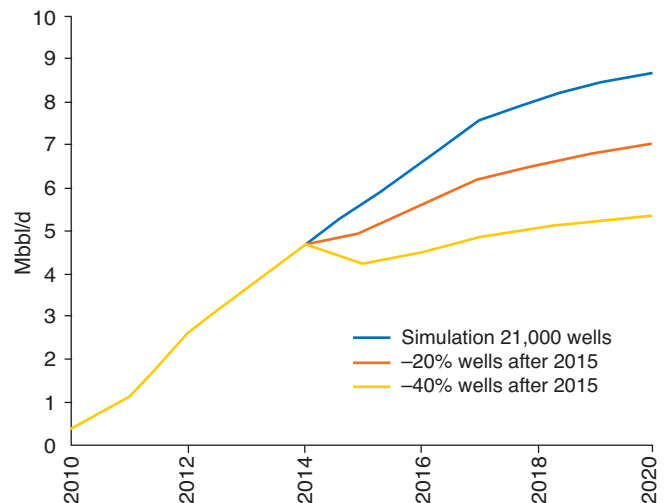
- for demand: publications concerning the price/demand link (price elasticity) give quite divergent results and are therefore somewhat unreliable. As an initial approximation, it is however possible to use the relationship proposed by the IMF in a 2011 memo (Oil Scarcity, growth, and global imbalances). An increase of 10% in the price of oil has a negative impact of approximately -0.2% on global demand (short term elasticity 0.019). Applying the reverse correlation, a 20% fall in the price of oil (to \$80) would give rise to an increase of 0.4% in demand, or 0.4 Mbb/d (2015 demand: 93.3 Mbb/d according to the IEA in December). At \$60 (approximately -40%), the rise would be 0.8% or 0.7 Mbb/d;
- for current production: to shut down production units, the oil price would have to be lower than the operating costs for a sufficiently long period to impact the financial equilibrium of the producers. At the oil price levels seen at the beginning of December 2014, we are a long way from reaching that situation, meaning that the impact on production will be minimal based on the current information;
- for investment: the fall in prices will lead operators to reduce their investment expenditure, due to the reduction in their margins and the expected lower profitability of future projects. At the end of September, when the barrel price was approximately \$90, the IFPEN study on investments in Exploration-Production already forecast a clear slowdown in investment growth, with a particular decline for the "majors". The (slight) rise in investment forecast in the same report for independents and NOCs is however no longer the case. Now the cards have been reshuffled, the independents are adjusting their investments. The effects on production will not be immediate except in one case, that of tight oil, which requires very regular investments to maintain production, due to its production profile which decreases very rapidly over time. For other types of oil, some projects will be called into question depending on price forecasts and the financial capacities of companies. The most costly units, heavy oils in Canada or ultra-deep offshore, are likely to be the worst affected.

Globally, the current fall in prices has two significant impacts: an increase in demand¹ in non-negligible proportions assessed at between 0.6 and 0.9 Mbb/d, to be compared with a supply surplus of between 1 and 2 Mbb/d in 2015; a fall in investments and therefore a downturn in production in the medium term, with a more or less significant effect on tight oil depending on the actual price level observed.

What impact for tight oils and heavy oils?

Most analysts in the oil sector, like the IHS² consultant for example, quote tight oil production costs of between \$40 and \$80/bbl, emphasizing the fact that 80% of production would be below \$70/bbl. On this basis, at current price levels, a fall in the order of 20% of investments is therefore credible in 2015. Some American operators consider that bigger falls can be envisaged due to the shrinkage of the oil companies' margins, and therefore their borrowing capacity. In the United States, the month of November was already marked by a sharp decline in well permit applications, down by 40% according to Reuters.

Fig. 3 – American production of tight oil according to contrasting drilling assumptions (-20% and -40%)



Source: IFPEN, base US EIA

Assuming a fall in investment of 20% to 40%, tight oil production in 2015 would stand at 4.9 Mbb/d and 4.2 Mbb/d respectively, to be compared with production of 5.6 Mbb/d forecast in the baseline scenario. For 20%, the impact would therefore be fairly modest with

(1) The rise in demand related to the price effect is likely to be wiped out by an economic downturn

(2) Tight oil test: US Production Growth Remains Resilient Amid Lower Crude Oil Prices – 20 November 2014

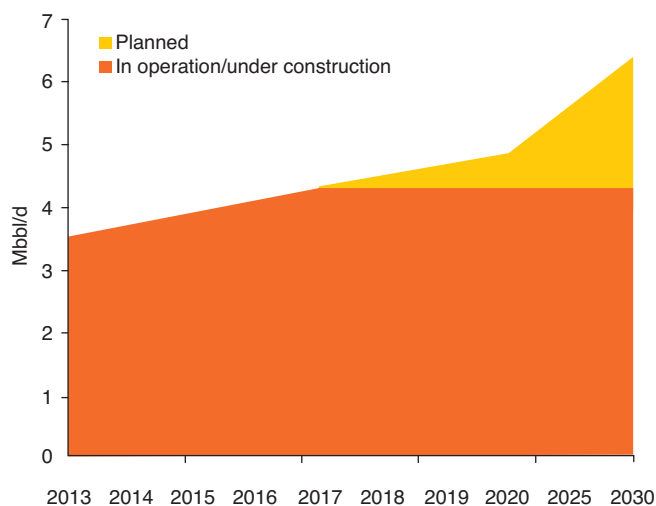
Oil situation in 2014 and trends

a difference of only 0.7 Mbb/d. For 40%, the decline would be greater at 1.4 Mbb/d, which would lead to a dip in production in 2015 (Fig. 3).

This simulation is clearly surrounded by several uncertainties. The baseline scenario assumes stability in terms of drilling between 2014 and 2015, which is not excessively optimistic. Similarly, the level of recovery over the lifetime of a well is estimated at the 2013 average or 170,000 barrels. This is a prudent ratio since it has constantly increased since 2009 (57,000 barrels), thanks to technological improvements. In overall terms this means that even if investments fall, production might not be affected to the extent simulated here.

The assessment of heavy oils is easier. In its latest projections dated 2014, the Canadian Association of Petroleum Producers (CAPP) does not anticipate production start-up on any new projects between now and 2017. The effects of the fall in oil prices on production will therefore not be immediate as for tight oil. On the other hand, it is likely that some project revisions will be announced during the course of 2015. The potential projects envisaged at present concern an additional total of 2 Mbb/d between now and 2030 (Fig. 4).

Fig. 4 – Canadian production 2013/2030



Source: CAPP

What equilibrium price in 2015?

On the basis of the market data available in December, a price range between \$60 to \$80/bbl is a credible scenario for 2015 on average. These are the price levels at which it is possible to reduce possible surpluses on the market by strengthening demand and by reducing the supply of tight oil.

Equilibrium is reached for a price of \$50 to \$60/bbl in the first half-year and \$70 to \$80/bbl in the second. It is interesting to note that the correction of prices observed between June and December 2014 is consistent with this estimation. It is therefore not speculation that is the cause but the perception of the supply/demand balance of the oil market.

In an equivalent context, significant adjustments must not however be excluded, as and when the effects of low prices on the development of American tight oil production become better known, in either direction: recovery of prices if drilling operations are heavily impacted, or on the other hand a decline if technical progress continues, especially in the case of improved targeting of formations for drilling and if efforts to increase the average productivity of the wells continue to bear fruit (Tab. 1).

Table 1
2015 supply/demand balance per quarter, with and without price effect

S/D balance in Mbb/d	1T15	2T15	3T15	4T15
Demand D	92.5	92.5	94.0	94.4
Non OPEC supply	57.3	57.7	57.9	58.4
OPEC NGL	6.6	6.7	6.7	6.7
OPEC oil	30.3	30.3	30.3	30.3
Supply S	94.2	94.7	94.9	95.4
Differentials S/D	1.7	2.2	0.9	1
Stocks	0	0	0	0
Surplus	1.7	2.2	0.9	1
Price effect	\$60/bbl	\$60/bbl	\$80/bbl	\$80/bbl
On demand	0.7	0.7	0.4	0.4
On tight oil	-1.4	-1.4	-0.7	-0.7
Balance S/D	-0.4	-0.1	-0.2	-0.1

Source: IFFPEN base IEA OMR, December 2014

Oil situation in 2014 and trends

But the context itself can change and develop. It is particularly important to recall the following factors of uncertainty:

- OPEC and especially Saudi Arabia, under pressure from its partners, could revise their position to favour price recovery. History shows us that in 1986, 1998 and 2008, OPEC ended up by adjusting its production;
- the effective level of global economic growth, still marked by concerns for Europe, Japan and some emerging countries, is likely to take a downturn. The oil effect on growth should be moderated by positive effects for importing countries but very negative effects for exporting countries (see inset below). There are even significant risks of destabilization for some producing countries that are very financially dependent on oil;
- the geopolitical context could have an upward or downward impact on production in certain countries, like Libya, Iraq or Iran (embargo lifted in July?). The Russia/Ukraine conflict could have an impact on the Russian oil supply (investment effect) or on the contrary, in the event of resolution, give a positive economic signal to the European continent.

- The dollar exchange rate could continue to rise due to the expected increase in American interest rates. The downward impact on oil should however remain marginal.

There are therefore many uncertainties, but the idea of an oil price of less than \$80/bbl is now a credible scenario, taking into account an economic context that is sluggish and even alarming for some emerging countries. Excluding changes in the economic context this scenario is likely to be sustained, subject to several conditions. The first concerns continuation of OPEC's new strategy of defending its market share at the expense of price. The second is related to the possibility of responding to a future increase in global oil demand at these price levels. This entails stability in the OPEC countries in order to ensure the necessary investment and tight control of production costs at global level. One of the challenges will lie in the continuing growth of tight oil production, even at less than \$70-80/bbl.

*Guy Maisonnier – guy.maisonnier@ifpen.fr
Final draft submitted on 15 December 2014*

Addendum – 20 January 2015

The price estimates presented in February at the Panorama conference (\$50-70/bbl for Brent in 2015) are below \$10/bbl to what was envisaged in this note. This is mainly due to the downward revision in January of global economic growth in 2015, and an increase in oil demand lower than expected.

Oil situation in 2014 and trends

Impact of the fall in oil prices on ...

If the fall in oil is confirmed, several impacts can be expected, in particular on:

- the oil industry *via* the decline in margins of oil producing companies, leading to tighter cost control;
- oil equipment and service providers, through the slowdown of investment;
- the selling price of oil products, such as diesel or petrol in France. By falling from \$112/bbl in June to \$80/bbl in November 2014, oil has lost \$32/bbl or \$20 ct/L (1 barrel = 159 L). The fall in the euro (8%) has mitigated the decline expressed in that currency: €11 ct/L. This is the level of decline observed on oil product prices, apart from market effects;
- the gas sector with regional differences: lower profitability for United State shale gas when produced jointly with oil products; lower long term prices for Asian LNG (approximately \$9 to 12 MBtu at \$60 to \$80/bbl compared with \$16 MBtu at \$110), which will have a negative effect on export projects (Australia, US whose LNG competitiveness will be less attractive). In Europe, pressure on spot prices will be lower due to the decrease in indexed prices (approximately \$6 to \$10/MBtu at \$60 to \$80/bbl compared with \$13/MBtu at \$110/bbl).
- the margins of energy-intensive sectors such as petrochemicals and transport, which will improve;
- economic growth per country, with of course positive impacts for importing countries and negative for exporting countries, and a practically neutral global balance. This last is explained in greater detail below.

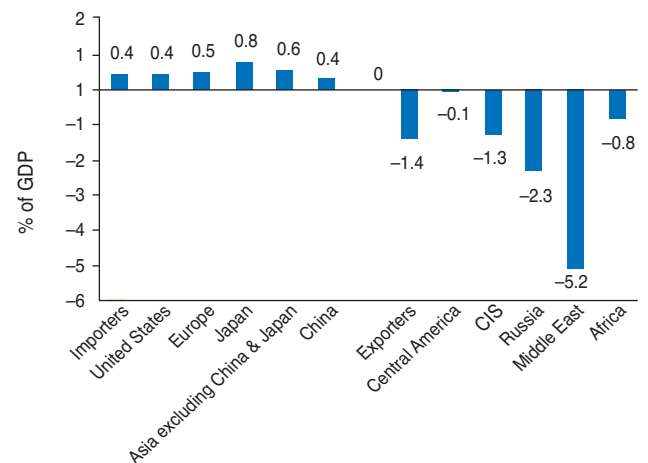
... Global economic growth

The impact of falling oil prices on a country's economy must take account of positive effects for consumers (apart from any tax adjustments) and negative effects for the oil-producing sector. The indicator to be taken into account is therefore the balance *via* net imports or exports.

This calculation, based on oil trading, shows that a decline in the oil price from \$100 to \$80/bbl is equivalent to a transfer of \$250 billion from the exporting areas to the importing areas. For importing countries, this represents an average additional growth in GDP of 0.4%, the expected value for the United States or Europe, rising to 0.6% for China and 0.8% for Japan.

For exporting countries, it represents an average retraction of GDP of 1.4%, with particularly marked effects for the Middle East (-5.2%) and Russia (-2.3%). In value terms the amounts are \$145 billion less for the Middle East and \$55 billion for Russia.

Fig. 5 – Effect of a fall from \$100 to \$80/bbl on growth by area



Source: IFPEN