

FLARING: A STAIN ON THE AMERICAN ENERGETIC NIGHTSCAPE

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The United States was amongst the Top 5 biggest gas emitters in 2011 along with Russia, Nigeria, Iran and Iraq. One particular activity is targeted: the extraction of shale oil and gas in Bakken, North Dakota. Flaring performances at this site are appalling and the situation is not set to improve in future due to a lack of sufficient investments to tackle the issue.

Flaring is one of the topics identified by Obama’s administration. Are the President’s recent statements on improving action in the fight against climate change going to materialise in North Dakota? It is in the United States’ best interests to do so in order to not be deemed once again and as a “baddy” regarding this major issue for our societies.

8% of gas energy literally “goes up in smoke”

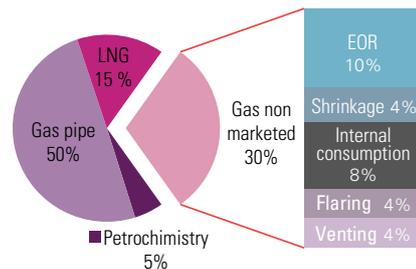
Two long-term issues are threatening the future of energy: climate change and the shortage of fossil fuels. For energy experts, these two centres of gravity are what the long-term solutions that structure their sustainable development strategies continuously revolve around. The energy of the future has to be brought to consumers in a much more efficient and less carbon-intensive way.

A phenomenon that is relatively ignored exists within the depths of climate change and energy efficiency: the flaring of associated gas.

“What happens is that gas is vented at the same time as oil and, due to a lack of infrastructure to exploit it and transform it into energy, oil companies have no choice but to burn it using a flare”, explains Roland Vially, a geologist from IFP Énergies Nouvelles (IFPEN). On average, more than 2/3 of the total volume of flared gas is simply a waste of energy, the remaining 1/3 is lost due to safety or maintenance reasons.

For more than two decades, the total amount of gas that has gone up in smoke is around 150 billion m³. In addition, if we add to that the gas that is directly vented into the atmosphere without being burnt – due to safety reasons or leaks in distribution networks, etc. – the volume of gas wasted is double [ERCB, 2009; Johnson and Coderre, 2011]. In total, the estimated quantity of non-valued primary gas is 8% [see Figure 1].

Figure 1: 8% of natural gas is non-valued



Source: Mirova - IEA - Cedigaz - GGFR - Total - BP.

This direct vent is also responsible for pollution in the atmosphere: particles, sulphur dioxide, VOC¹, greenhouse gases, etc. Reliable statistics on the matter do not exist and there is a great deal of ambiguity over the amounts that are directly released due to a lack of precise data from countries and oil companies. Their contribution to climate change is estimated at more than a billion tons of greenhouse gas per year, which represents 2% of global emissions.

Lack of satisfactory economic return

There are solutions to this ecological incoherence. Associated gas can be “recycled” as a source of energy or matter by:

- Using gas to meet the energy needs of the site (today, ~1 kWh is needed to extract 10 kWh of oil-producing energy),
- Injecting gas to maintain pressure in reservoirs and improve the rate of return of oil-producing reservoirs,

(1) VOC: Volatile Organic Compounds.

- Energy recovery (power plant, LNG, etc.),
- Using gas as a raw material (process of production of hydrogen, fertilisers, etc.).

However, due to a satisfactory technical-economic equation, oil companies have rarely marketed this energetic goldmine. Indeed, associated gas recovery requires expensive infrastructure to transport it to the transformation sites (liquefaction, pipelines, compressors, etc.) and the recovery process (power plants, petrochemistry, etc.). Often, the volume and/or quantity of gas, a secondary product in oil exploitation, is not enough to justify investments into installations to use it on site or transport it.

Reducing flaring depends on the good will of the countries and companies responsible for doing it. When the economic equation of a flare project is not guaranteed by the local environment (existing infrastructures, level of taxes, price of gas on the local market, etc.), there is very little chance of it seeing the light.

“ We need to provoke change, like we did 20 years ago for industrial security: now it is part of every single investment.

François-Régis Mouton, GGFR*

An issue far from being dealt with

The amount of flared gas has nevertheless been decreasing at an annual rate of 2% over the last few years [see Figure 2], under the impulse of pressure from society and regulatory and voluntary initiatives. One example is the Global Gas Flaring Reduction (GGFR) Partnership under the auspices of the World Bank, and the Global Methane Initiative aiming to reunite all stakeholders to lift the brakes on the reduction of flaring. These voluntary initiatives notably target:

- The high cost of capture and use of associated gas;
- The under-development of local natural gas markets and insufficient access to international markets;
- The lack of financing to construct the necessary gas infrastructures;
- Loopholes in the regulatory framework;
- Inefficiency of the gas pricing system (mainly a result of subsidies).

(*) The GGFR partnership, a World Bank-led initiative, facilitates and supports national efforts to use currently flared gas by promoting effective regulatory frameworks and tackling the constraints on gas utilization.

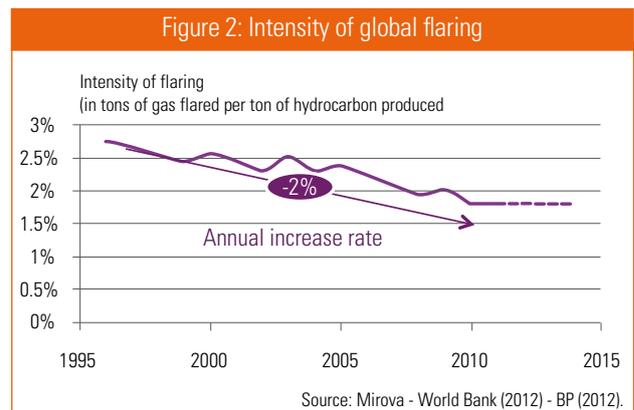
The Member States have set some good examples too, Norway is nearing “zero flaring” with the help of strict legislation on the topic (strong penalties in the event of flaring², obligation to build gas recovery installations before wells become operational).

The intensity of flaring nevertheless reached a plateau in 2011 for the first time [see Figure 2]; and experts cannot see the situation improving in the medium term.

According to the World Bank, the main culprits of the increase in flared gas are Russia, Kazakhstan and the United States. The first two are significant contributors on a global level, respectively 1st and 5th issuer nations of flared gas.

Flaring-related issues are well known in these two countries, where abundant gas reserves, difficult access to sites and threats affecting the price of gas are not conducive to investments in the fight against flaring. Unreliable national and regional statistics and the reigning difficult geopolitical context make this issue more complex.

However, the situation has been improving for several years and objectives for how to use associated gas have been taken on behalf of local operators with a view to achieving them in 2014. The main challenge is the increase in production of gas sites in Eastern Siberia, which are not yet equipped with treatment or recovery installations [KPMG & WWF, 2011].

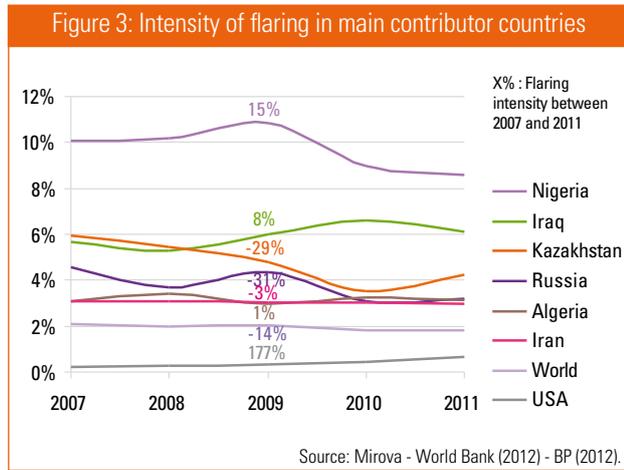


The United States go against the grain in the global downturn

The increase in volume of flared gas in the United States is much more alarming. The United States was in the Top 5 biggest associated gas emitters in 2011 with flared gas volumes that had tripled in five years (World Bank, 2012). This increase is linked to the growth in the production of shale oil. Applications for flaring permits multiplied by six between 2010 and 2012 in Texas [FT, 2012] whilst flared volumes of shale oil at Bakken in North Dakota are exploding. This region is the main culprit of a revival in flaring on American soil.

(2) Around \$2 for each MMBtu flared, which represents half the NBP market spot price for natural gas on the London Stock Exchange at the beginning of 2013.

This increase in volume of flared gas in America is not only due to an increased production of hydrocarbons. Despite being underneath the global average, the intensity of flaring has more than doubled since 2007 [see Figure 3] in the United States, the worst global performer, contrary to the overall downward turn in the intensity of flaring.



The recovery in flaring intensity in America is explained by a fall in gas prices on the local market. The massive production of shale gas in the United States made prices fall by 13 dollars in 2008 to 3.40 dollars per MMBtu at the beginning of 2013. This therefore made it difficult to amortise the construction of capture and transport capacities for associated gas. Only the exploitation of oil that comes out in conjunction with hydrocarbon wells is profitable.

In North Dakota – where 2/3 of the country’s shale oil production capacity is held – more than 29% of the region’s natural gas production was flared in 2011³. According to regulations in force in the State, producers can burn natural gas for one year without paying any taxes or license-fees. An extension can even be applied for given the low price of gas making it difficult to make network connections profitable.

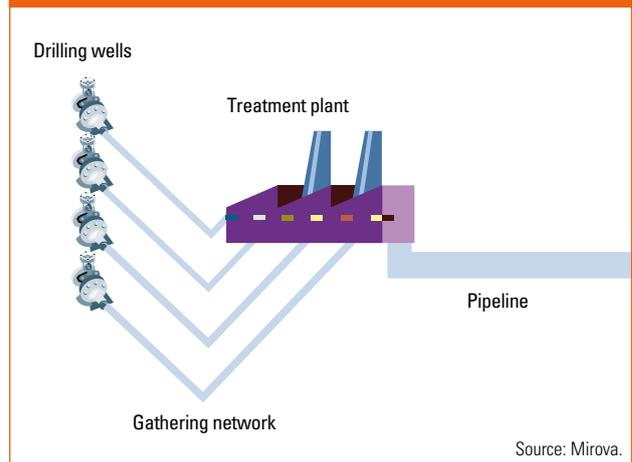
Contrary to other “flaring” countries, the United States and Bakken benefit from a transport infrastructure favourable to the recovery of their associated gas. Northern Border, Alliance and WBI Energy Transmission pipelines cross North Dakota, and currently transport Canadian gas to Midwest markets, such as Chicago. As a result, reducing flaring in Bakken is more likely to happen in terms of access to this transport capacity than in the construction of new pipelines.

These pipelines could still be used quite rapidly by American associated gas. The fall in gas prices on the American market could indeed encourage Canadian gas producers to find other outlets for their fuel. Canada is progressively turning towards the Asian market. For example, at least 3 LNG export terminal projects on the west coast of Canada are well under way.

The problem with flaring in Dakota lies in the lack of gathering pipelines and associated gas treatment networks [see Figure 4]. The production site is more significant for shale oils in that it requires on average 100 times more drilling wells than conventional oil.

(3) Compared to an average of 1% in the United States.

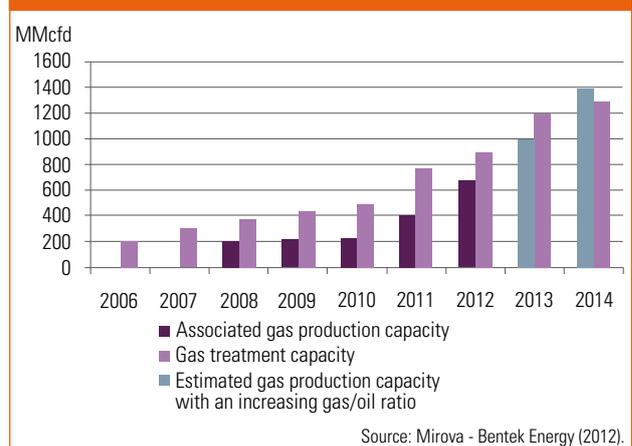
Figure 4: Network of Natural Gas Gathering Pipelines



It is indeed necessary to gather and treat associated gas before sending it to the pipelines. 4 billion dollars have already been granted to the region until 2017 to develop gas treatment plants. Treatment capacity has exceeded production capacity for several years [cf. Figure 5].

Why, therefore, is gas flared? According to RBN Energy LLC (2012), flaring takes place because the wells are not connected to the treatment plants and infrastructure projects have been delayed as it is becoming increasingly difficult to obtain local acceptance. So, the gas/oil ratio is set to increase considerably with the decrease in pressure in wells: associated gas production capacities will overtake treatment capacities before 2014 [cf. Figure 5], which will undoubtedly lead to an increase in volume of flared gas.

Figure 5: Link between producer and treatment capacity in North Dakota



Conclusion

Globally, flaring has been identified as a key challenge in our environmental analysis of the Oil & Gas sector. The downturn in recent years can also be seen in oil company performances. New developments in the intensity of flaring mean that we must monitor the issue even more closely.

More particularly in the United States, the revival of flaring has quite rightly caught the attention of local investors. An

engagement action was carried out: a group of investors asked major active oil companies (Statoil, ExxonMobil and Chevron) and independent American companies in the region to accentuate their efforts in the fight against flaring.

A shareholders resolution was even submitted in January 2013 to Continental Resources, leader in the production of shale oil in the region. It particularly quoted two leading companies in the fight against flaring: Hess, which set an objective of five years to reduce flaring in two foreign countries by 50%, and Whiting Petroleum, with an objective of zero flaring.

"Even with lower natural gas prices, there is no reason that oil developers should be burning off a fuel that their colleagues in the Marcellus region are working to capture. It's simply bad practice, and it is making domestic oil a particularly high-carbon source", concludes Andrew Logan, director of the American oil and gas program at Ceres⁴.

Flaring is one of the areas identified by Obama's administration. Are the President's recent statements on improving action in the fight against climate change going to materialise in North Dakota? The credibility of the American environmental action depends on it.

Bibliography

Bentek Energy (2012) - *The Williston Basin: Greasing the Gears for Growth in North Dakota*

BP (2012) - *Statistical Review of World Energy 2012*

EIA (2012) - *Over one-third of natural gas produced in North Dakota is flared or otherwise not marketed*

ERCB (2009) - *ST60B: Upstream Petroleum Industry Flaring and Venting Report: Industry Performance for Year Ending December 31, 2008* - Calgary, Alberta.

Financial Times (2012) - *Shale gas boom now visible from space*

KPMG, WWF (2011) - *Associated gas utilization in Russia: issues and prospects*

Johnson, M.R., Coderre, A.R (2011) - *An Analysis of Flaring and Venting Activity in the Alberta Upstream Oil and Gas Industry*. - Journal of the Air & Waste Management Association, 61(2) pp.190200

RBN Energy LLC (2012) - *Why will Bakken flaring not fade away?*, Oil & Gas Financial Journal

World Bank (2012) - *Estimated Flared Volumes from Satellite Data, 2007-2011*

(4) Ceres is an advocate for sustainability leadership. Ceres mobilizes a powerful network of investors, companies and public interest groups to accelerate and expand the adoption of sustainable business practices and solutions to build a healthy global economy. More info: www.ceres.org.

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