

# Gulf Oil Review

Feature article

## MENA can learn from EU's shale regulation debate

Europe's debate over whether to exploit its unconventional energy resource offers a lesson on how MENA governments handle an industry loaded with potential but fraught with manageable risks, says Spencer Swartz, vice president of energy and government relations at Fleishman-Hillard in Brussels and former *Wall Street Journal* senior energy correspondent

Although far away from having its own US-style shale-gas boom, Europe is providing a studied example into the laundry list of environmental impediments that Middle East and North African nations face as they begin tapping shale deposits at scale.

Producing shale gas and other more geologically difficult-to-extract unconventional resources is seen as a rising necessity in MENA nations, where growing domestic demand increasingly squeezes the export and revenue potential of conventional oil and natural gas supply.

But in a region long accustomed to conventional oil and gas operations, questions are increasing from Algeria to Jordan to Saudi Arabia, with even small protests in the case of Tunisia, over plans to develop shale gas and shale oil.

In Europe, which has robustly debated the issue over the past few years, overcoming public concern is the bottleneck to shale-gas development. This is despite the fact that this resource, when produced responsibly using high environmental standards and operational practices, can play an important role in improving Europe's diminishing energy-supply security, economic competitiveness and climate-change mitigation goals.

What makes the European debate peculiar is that while the questions are endless and the tenor is loud, there is still no actual commercial shale-gas production in the continent. This is the reverse of the US, where the debate about the environmental and social issues is happening only after its shale boom took off in the past five years.

Over three decades in development and following a non-linear path of grudging successes and failures, the US shale success has become the greatest oil and natural gas supply development, in scale and impact, in many decades.

### Brussels vs the member states

In the past year, more European states, regions and localities have imposed bans on hydraulic fracturing, or fracking – the drilling technique used to crack open shale rock to release the gas or oil – over what are, at a basic level, legitimate concerns about potential impacts. Chief among these is water quality. The bans range from the national level in the Czech Republic to communities in western states of Germany.

In Poland, seen to have the greatest shale-gas resource potential in Europe, it will be developed over time because of wide public and political support to reduce the country's dependence on Russian gas and on coal-fired power generation (just over 90% of Poland's total electricity mix).

But the strident tone of the debate in several other European states like France (an early prohibitionist) has meant that even the most pragmatic ideas, such as exploration pilot programmes to provide a platform for demonstrating how shale gas can be extracted in a safe and environmentally responsible manner, have become taboo.

Shale-gas development in the US over the years has a fairly good environmental and safety track record. But an enduring problem affecting the European debate is that a relatively small number of cases in the US in which processes like wellbore integrity failed and raised concerns about water contamination, have been inaccurately portrayed by opponents as representative of shale gas development as a whole.

Some of the smaller-sized independent energy companies, which spearheaded shale-gas development in the US, have also mismanaged some important public relations issues. Around 2006, when some local communities started demanding information about the chemicals being injected into the ground in their areas, companies typically wouldn't tell them, citing proprietary information.

Although industry views on openness are now changing considerably, that previous lack of transparency irritated a number of communities and gave oxygen to highly organized non-governmental organisations (NGOs) and social campaigners.

More scrutiny of US shale-gas operations followed; and the controversy helped spawn the infamous 2010 "Gasland" movie (based on US shale-drilling experiences), which provided a one-sided and unrepresentative view of shale-gas development.

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In Europe, where these stories from the US are routinely recounted by critics and by traditional and social media, companies have been keen to avoid rudimentary mistakes. Early, open and sustained engagement with communities, as in Germany and Poland, long before starting any shale exploration drilling, is becoming the modus operandi.

Importantly, the European Commission, the source of nearly all environmental regulations that the bloc's 27 member states must follow, is not buying into calls for a Europe-wide ban.

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Indeed, more examination of the issue by EU policymakers has generally led to a greater understanding that shale gas can and is produced in many places in a responsible way; and, further, that many of the risks associated with shale and other unconventional drilling are similar to those long faced in conventional gas drilling, such as the management of gas flaring.

There's also been a greater recognition among many (though not all) EU policymakers that the 14 Directives, or laws, governing shale-gas development in Europe are generally adequate.

Still, in recent weeks, the European Commission has indicated that there are some "gaps" in existing EU legislation governing shale. These gaps are likely to be filled through legislative measures that add to existing criteria and thresholds; a Commission policy proposal is expected in late 2013.

It is each of the 27 EU Member States, according to EU law, that generally controls which energy sources, including shale gas, are developed in their territories. Nations that already have bans could technically keep these in place, irrespective of positive signals sent from EU policymakers in Brussels.

### Shale risks and concerns

The following are among the main environmental concerns that linger on, particularly in some member states; and which also have wider relevance to the MENA shale debate, especially given the region's water scarcity issues:

- **Water safety.** Concerns that poor wellbore integrity (cement jobs that fail to provide full containment of the wellbore, for example) and gas and chemical migration will lead to polluted aquifers; sound supply-chain risk management and regular monitoring of equipment reduce the risks; it is generally the case in the US and Europe that shale reservoirs reside hundreds of metres below aquifers;
- **Amount of water used in fracking.** The Massachusetts Institute of Technology estimates that water intensity of shale-gas development is among the lowest of all fuel sources, including coal development;
- **Safety of chemicals used in hydraulic fracking fluids.** Largely water, sand, and less than 1% chemicals comprise fracking fluids; the chemicals include those used in household cleaning appliances and are needed for things like preventing wellbore corrosion; an even smaller amount per unit of fracking fluid of more pernicious chemicals, like acid, are used at times used to stimulate very deep and hard shale rock;
- **How fracking fluids are managed and treated.** These fluids returning to the surface after injection are known as "flowback" and can amount from 10% to upwards of 30% of original volumes injected down the wellbore. Companies are increasingly treating and recycling flowback to use for future fracturing jobs for environmental and financial reasons;

- **Fracking and low-level seismic tremors.** Tremors sometimes induced from the huge pressure by which fracking fluids are pumped down the wellbore are not unlike those that can be caused by other industrial activity, like coal mining. The UK government earlier this year published a report recommending measures to reduce seismic tremor risks during fracking; and
- **Methane emissions escaping into the atmosphere.** Aware that such releases (for example, from venting) from shale drilling increase climate emissions, the US Environmental Protection Agency mandates that from 2015 operators will have to install equipment to avoid venting and flaring. Some EU policymakers are asking for the same.

As in the US, the European shale debate is also taking on added dimensions, for example, with questions about the cumulative impacts associated with shale-gas exploitation over many years. These concerns typically centre on the surface and sub-surface implications of drilling not just a handful of shale-gas wells over a large area, but potentially thousands of wells over many decades in the life of a shale play spread over thousands of hectares. The integrity of the wellbore over many years and how it is monitored is also a concern.

Developments in pad-drilling, in which many vertical wells can be drilled from a single location and then expanded in the sub-surface via horizontal drilling, are among other mitigation measures helping to reduce cumulative impact risks.

State regulators in New York, one of a number of northeast US states in which the giant Marcellus shale formation sits, are also studying the health effects of shale-gas drilling and fracking. The results, following four years of inquiry, are expected to be released in coming months. New York halted shale development in 2008 and development prospects will only be known once the state's environmental impact study has concluded.

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### Late-mover advantage

A positive flip side to the often heated discussion in Europe is the added incentives it gives industry to take further precautionary measures and to continue improving processes that bolster safety and environmental safeguards.

While water availability and quality issues will be an important consideration in the shale-gas discussion in MENA nations, the region will benefit from being able to adopt, to local conditions, general processes and technologies that are far more advanced today compared to when US operators (with US government backing) began experimenting with new shale-drilling techniques in the 1970s that laid the groundwork for today's boom. (And this was done without tough environmental scrutiny.)

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Drilling and resource efficiency (like recycling and re-using fracking fluids) has also become an operating mantra in the industry. This is not only for environmental reasons, but financial ones as well: reducing the number of drilling days, improving production and reducing the huge resources required for trucking in big volumes of water for fracking – and later trucking out the waste water – and other operational costs save a lot of cash.

Pennsylvania state regulators estimate that about 17% of the water used in fracking operations in the state (where part of the Marcellus shale play sits) was reused up to around October this year, up from about 13% in 2011.

The distinct geological, socioeconomic, legal, political differences and supply chain capabilities between MENA states and European states make forecasts hazardous about how shale development might unfold in the respective regions.

Further, European states, with among the world's highest population density, are not really used to the prospect of onshore oil and gas drilling. The big volumes of oil and gas produced in Europe over the past decades have

come almost entirely from offshore UK, Norway and the Netherlands. Moreover, the thirst among European NGOs and some policymakers to ditch fossil fuels and load up on renewable energy is another factor that animates the environmental discussion about shale gas in Europe.

Conversely, longstanding public legitimacy remains rock solid for conventional (and largely onshore) oil and natural gas production in MENA nations like Algeria. By delivering tax revenues that have for decades bankrolled social programs, including access to petrol that is cheaper than bottled water, hydrocarbons have played a crucial role holding together many MENA governments' social pacts with their people.

But without early and sustained public discussion about the various implications of shale-resource development and robust regulatory measures and enforcement, MENA leaders could find themselves fighting bigger battles down the road with publics that, over the past two years, have demonstrated their willingness to challenge government policy. ◆

## Of note

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#### OPEC: Producers need to 'remain vigilant' amid 'significant downside risks'

World oil producers need to "remain vigilant" amid "uncertainties regarding the prospects for the world's major economies" and enduring weakness in the global financial system, which provide "significant downside risk for oil markets", OPEC said in its new World Oil Outlook (WOO), released last month.

Fluctuations in the oil price in the past year reflected "divergent factors", said the report, including global economic prospects, supply disruptions, refinery outages, downstream bottlenecks and geopolitical concerns.

The oil market of the past year has been well supplied, with no shortages of oil, so OPEC took aim at speculators, saying their investment flows "contribute to a distortion of the price of crude, and detach it from the physical realities of supply and demand". It is essential, the report said, to "keep trying to mitigate price extremes".

Despite growing worries about demand, meanwhile, OPEC pointed to the "key" transportation sector, in which rising numbers of car users, especially in India and China, would provide a "significant source for future demand growth".

It also sought to downplay climate-change mitigation efforts, including the UN conference in Doha this month. "Global environmental efforts [...] should not come at the cost of leaving people in developing countries trapped in energy poverty," it said.

In its price forecast, the WOO said the OPEC basket case would average \$100/b over the medium term, before rising with inflation to reach an average of \$120/b by 2025. By 2035, nominal prices would reach \$155/b.

Yet demand remains a concern. The WOO put consumption growth in 2012 1% below its previous estimates. Only by 2015, it predicts, will the Eurozone have passed through its debt difficulties, allowing economic growth to resume more normal patterns. In the meantime, 2012 oil demand is already 820,000 b/d lower than the WOO expected last year. By 2016, demand will reach 92.9 million b/d, a downward revision of 1 million b/d compared with its forecast last year. About 70% of the medium-term increase in demand will stem from Asia, while OECD demand, which peaked in 2005, will decline each year until 2016.

The call on OPEC's crude to 2016 would remain flat, amid a 4 million b/d rise in non-OPEC supply over the period. But \$270 billion of investment in 116 projects would increase total net OPEC liquids supply by 5 million b/d. By 2013-14, OPEC's crude-oil spare capacity would reach 5 million b/d.

Long-term economic growth to 2035 would average 3.4% a year, the WOO said. Total energy demand would rise by 54% in the intervening years. Oil demand would hit 107.3 million b/d by 2035 – 2 million b/d beneath last year's forecast. Asian demand would on its own reach 90% of that of the OECD by 2035.

For the first time, OPEC also acknowledged the impact of shale oil on supply. Its praise for developments in the US unconventional oil sector – which has already added 1 million b/d to the country's supply – was faint: the WOO noted the "severe decline rates", "environmental concerns, questions over the availability of equipment and skilled labour, rising costs", and so on. Nonetheless, oil supply from shale would rise to 2 million b/d in 2020 and 3 million b/d by 2035, after which output would grow more slowly. The forecasts are beneath those offered by other forecasting agencies.