

Unconventionals: The world has and needs tight oil



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Global energy leaders and policymakers face a stark reality: world energy demand is forecast to grow sharply over the coming decades, greatly outpacing estimated production capacity. The danger is that supply will have to ration demand and prices will skyrocket, hobbling the world's economy.

A chief constraint is that OPEC has limited spare capacity to meet this demand, and the overall share of non-OPEC crude is forecast to remain constant. Meanwhile, geopolitical issues, such as conflict in the Middle East, make access to traditional energy sources increasingly difficult.

As world energy leaders convene in Doha for the 20th World Petroleum Congress, we are all acutely aware of the challenges of meeting future energy demand – and averting a potential energy crisis. The US\$140 per barrel oil price we witnessed three years ago was not an aberration – it was a warning.

In the United States, these realities pose significant challenges to our economy and to our energy security. Against this backdrop, and given the promising business prospects unfolding in the unconventional energy sector, key industry players like Hess Corporation are increasingly focused on the growing opportunities in that arena.

In the last three years in particular, there has been rapid growth in US unconventional liquids production, and there are strong indicators that the growth in US supplies of unconventional resources will play an important role in helping to meet future worldwide energy demand.

These new supplies have the potential to displace a growing portion of conventional production because of the competitive advantages which the unconventional projects possess: namely lower supply costs, easier accessibility and faster time to market. And while the United States will undoubtedly be a major supply source, the opportunities are global.

US unconventional development began to accelerate five years ago. Small E&P companies began leasing acreage in the Marcellus shale formation hoping to tap into shale gas to feed the underserved East Coast, and new technologies opened up opportunities in the North Dakota Bakken, where Hess had a legacy position.

Since 2008, the production of shale oil in the Bakken has tripled, and there are projections that oil production from the Bakken alone could be as much as 600,000

barrels per day (b/d) in just a few years. Looking ahead, unconventionals will likely account for up to 40 per cent of US liquids supply by 2015, up from 10 per cent to 15 per cent in 2008, according to Hess estimates.

The outlook for the industry is very bright, for both the unconventional oil and the natural gas base. Without a doubt, this has been a saviour for energy security in the United States. And the business prospects for this industry in the unconventional space are very significant.

But to be a successful player in the unconventional arena will require a different business model and unique capabilities – which is where independent oil and gas companies are particularly advantaged.

Unconventionals: a different business

The resources are much more challenging to produce than their conventional counterparts and require a different and, in particular, low-cost business model. While chances of success for unconventional wells are higher when compared, for example, to deepwater Gulf of Mexico fields, there are generally less hydrocarbons per well, decline rates are greater, and the drilling and completion capital expenditure per well as a percentage of total expenditures is significantly higher.

When one looks at the growth in US unconventional supplies over the last two decades, North America has been an incubator in which the independent oil and gas companies have been setting the pace, accounting for 70 per cent of total production in the 1990s, rising to an 80 per cent share over the last 10 years.

Independents are uniquely advantaged: they have the capabilities required in drilling and completions expertise, lean manufacturing approaches, fast-paced innovation and a low-cost philosophy that make them well suited to take advantage of these opportunities.

Independents are also more flexible, operating successfully as niche players with a corporate agility and a greater focus given that their opportunities may be a more material part of their portfolios. They are smaller, and they are often better networked.

Being able to continuously improve and rapidly innovate is a fundamental key to success. Advances, for example, in horizontal drilling and fracking have made unconventional development possible. Even more are needed, and continuing advances in other technology are needed to address concerns regarding fracturing fluid composition and water usage.



The importance of being lean

In the unconventional arena, we at Hess believe the company is uniquely positioned, and we have made it part of our core strategy to be a global leader. In particular, Hess is focused on leveraging its success in the Bakken in North Dakota across other unconventional projects in the US and abroad by being recognized as the partner of choice.

Last year the company completed two key acquisitions in the Bakken, where it now holds 900,000 net acres in this booming oil and gas play to become the largest acreage holder in North Dakota. It also acquired over 100,000 net acres in the Eagle Ford shale play in South Texas, where it has just begun producing oil. In October of this year, Hess acquired about 185,000 net acres in the Utica Shale, further strengthening its portfolio of unconventional resources in high-quality assets.

Hess' strategy in the Bakken has been to expand and upgrade its acreage, exploit its infrastructure advantage and execute through a lean manufacturing strategy. As Bakken has demonstrated, unconventional projects generally have faster time frames and higher success rates, but nevertheless, because of the fast pace and heavy manpower and resources involved, they require a leaner, lower-cost manufacturing approach to drilling and production.

Hess has been perfecting our capability in applying lean manufacturing principles to our unconventional business, and as a result our operations are becoming increasingly more efficient and profitable.

Toyota set the standard for this approach to manufacturing, but the methodologies and practices are directly applicable to the unconventional energy business, particularly since success is becoming increasingly dependent upon acquiring acreage early and executing swiftly, under conditions where infrastructure and resources are often constrained. In addition, while operating these large-scale drilling and fracturing and completions programme, there is a need for continuous learning and improvement. Finally, given the nature of large-scale drilling and completion programmes there are many gains to be had by standardising approaches.

Hess is employing the fundamental principles of lean manufacturing to get the most from our human and capital resources to achieve faster, more efficient, and lower-risk developments.

Lean manufacturing practices are also being leveraged to our overseas operations, where we are not only replicating our operating success in the Bakken, but are also leveraging our global scale and reputation for being a trusted energy partner. Unlike most other independents, Hess is an experienced global operator, doing business in 23 countries. We also pride ourselves on serving the communities in which we operate, investing heavily in social programmes such as education in Equatorial Guinea.

Those attributes have helped Hess to gain access and form partnerships in unconventional plays overseas. Specifically, we formed a partnership to explore for unconventional oil on 1m acres in the Paris Basin in France, a play that shares many of the Bakken's attributes. We also signed three joint study agreements with Chinese national oil companies to evaluate unconventional oil opportunities in several million acres in China, and have farmed-in to over 6 million acres in the Beetaloo basin of Australia.

Improving stakeholder management

While the prospects for the unconventional business are bright in the US and abroad, there are significant stakeholder challenges in managing the above-ground risk and concerns of the many stakeholders involved, including policy makers, governments, lease holders, and citizens. This is where the industry can do a much better job.

Unconventionals are increasingly "in the news", and highly publicised incidents and misinformation have heightened concern amongst citizens and communities located near unconventional plays.

Meeting the stakeholder challenges requires three imperatives. First, we need to communicate what we do and how we do it to address the safety and environmental concerns. Second, companies need to employ responsible practices – particularly in the areas of well control and casing and cementing practices. Finally, we need a consistent and predictable regulatory framework that also punishes poor performers. Most states do a good job at regulating our practices, but there is room for more standardisation and applying consequences to the violators, rather than the whole industry. The unconventional oil and gas business is not for the faint of heart. However, I remain optimistic that the oil industry will overcome all of these challenges and supply the world with affordable energy for prosperity – just as we have done for well over 100 years. ■