

Special Report: 8 Megatrends Driving the Oil & Gas Industry

Resource nationalism surges full speed ahead and metamorphoses along the way; global subsidies come back to bite governments where it hurts; mergers and acquisitions redefine the industry; the hunger for new exploration frontiers sees no boundaries; the (gas) future becomes increasingly liquefied—and seaborne; the natural gas boom set the petrochemical industry up for high times; the US ‘pivot’ to Asia creates resources war theaters out of Africa and Asia, but a new era of US-Chinese energy cooperation is ushered in simultaneously.

A New Wave of Resource Nationalism

While investors should continue to be concerned about the renationalization of energy resources in Latin America following a wave of resource nationalism initiatives in Argentina, Bolivia, Ecuador and Venezuela, we expect more interest in the coming years pursuing new oil and gas opportunities in Brazil, Colombia and Peru—three venues that have independent licensing agencies.

The knee-jerk response of governments when the oil and gas discoveries start coming in is to suddenly change the rules of the game by re-engineering natural resource legislation in order to grab a larger chunk of the profits, and by so doing scaring investors away. This is expected to happen to some extent—gradually over the next two years—in places where major discoveries promise great potential, like Kenya, Uganda and Mozambique, for starters.

While we do not expect outright expropriation of foreign oil and gas assets like in some Latin American venues, we do expect some legislative changes in East African venues this year and next. Most major and junior oil and gas players on this scene are expecting this—and will accept it, as long as it doesn’t go too far. However, at least for the juniors, intensified attempts by the government to get them to foot the bill for the necessary infrastructure may make continued investment out of their reach. Overall, we do not expect foreign investment to be shaken by African legislative changes in the near future.

However, the mining industry in African venues like Democratic Republic of Congo, Mali and Ivory Coast is more volatile, and foreign investors can expect some game-changing “resource nationalism” legislation this year and next. Late last year, the DRC government sprang designs for a new mining code on foreign investors that would increase the state’s stake in new projects from 5% to 35%.

But there is also another form of resource nationalism: the growing trend towards major acquisitions by national oil and gas companies worldwide. This is rendering “national” oil companies “international”.

China, hungry for Western hydraulic fracturing and horizontal drilling technology and know-how has been on a buying spree for nearly a decade. The past 8 years has seen Chinese state-owned oil companies spend over \$200 billion on foreign acquisitions and JVs. Most recently, China's CNOOC acquired Canadian Nexen's US assets in the Gulf of Mexico.

The Undoing of Global Energy Subsidies; The Undoing of Governments

In 2011, the world spent \$523 billion in government fossil fuels subsidies—30% more than the previous year. This is a policy that does the economies of energy importers few favors. Last year saw a wave of subsidy cuts and price rises—along with a great deal of socio-economic-turned-political unrest. This year and next should see more subsidy cuts as countries struggle to maintain the cost of this and hedge their bets that their rulers can survive a bit of energy austerity. It will work better in some countries than in others. This year and next will be a sort of litmus test for a number of governments from Europe to Africa to the Middle East, as policy-makers test the will of publics who are fed up with high fuel prices and austerity measures.

We are particularly concerned about Jordan, where high fuel prices have led to an intensification of protests that for the first time are critical of the monarchy itself. And Jordan is planning additional energy-related austerity measures as well. Jordan is in a tough position on a couple of fronts: 1) it is energy-starved and relies on imports for over 90% of its needs; 2) it's playing a dangerous game by hoping for free Qatari gas in return for helping to train Syrian rebels and Salafi jihadists on its territory to overthrow the Assad regime. These same forces could very likely turn on Jordan once the dust settles in Syria and together with the (for now) benign Muslim Brotherhood that serves as political opposition in Amman, this is a recipe for instability.

In Bulgaria, this year has already seen high energy prices bring down a government and still the protests have not abated. The biggest grievance is the perceived corruption of the privatization of state energy companies and the near-monopoly on electricity distribution held by foreign companies.

Corporate Greening: Companies Will Increasingly Pursue Clean Energy to Cut Costs

High energy prices will trigger an even more earnest rethink of how clean energy and energy efficiency can improve the bottom line throughout this year and the coming decade. According to the Alliance Commission on National Energy Efficiency Policy, US businesses could save \$169 billion annually in energy bills by 2030 with enough effort at energy efficiency.

And it's not only cost-cutting that has the corporate eye in terms of clean energy—corporations across sectors are concerned about energy security and the volatility of conventional energy prices.

Increasingly, there are also regulations and brand integrity to consider, and investors are taking note with a trendy new eye towards companies making concrete moves to improve energy efficiency and pursue clean energy technology. Renewable energy may not be a significant aspect of the corporate budget today, but this year and next should see a gradual rise in the percentage of corporate energy budgets spent on renewables.

What we should see a particularly significant increase in is companies generating their own energy.

But corporate concerns about oil price volatility are likely to see not only a shift to renewables, but a shift to natural gas, which is cheaper and cleaner. If natural gas prices remain significantly cheaper than oil over the coming several years, we should see more companies announce a switch to natural gas for transportation needs.

Wal-Mart is the fifth-largest user of clean energy in the US, according to the Environmental Protection Agency (EPA)—enough to power some 65,000 homes, and clean energy represents only 4% of Wal-Mart's total energy use. There are plenty of companies using a larger percentage of clean energy, but they aren't as big. McDonald's, Lockheed Martin and Microsoft use about 30% clean energy. There are also a handful of companies that use 100% clean energy, like Intel, Staples and Kohl's Department Stores.

For Wal-Mart, it hasn't all been about cutting energy bill costs: reducing carbon emissions has been a lofty goal as well. In 2009, Wal-Mart pledged to reduce greenhouse gas emissions 20% by 2012 at its stores and distribution centers. The company reached that goal in 2011, with a 20.02% drop in emissions below its 2005 baseline. Of course, emissions have actually risen because the company has expanded around the world, but proportionally, the goal was achieved. Incidentally, revenues have increased 50% since that same time period.

Increased Attention on New Frontiers

Neither major nor junior explorers can resist the offerings of Africa, from major oil discoveries in Kenya--which are taking the first steps towards commercial viability—to world-class gas discoveries in Tanzania and Mozambique.

But it won't end here, small and intermediate companies are pushing the envelope further, banking on Kenya's finds extending into Ethiopia.

We also expect some renewed interest in Eritrea in the coming years, and its Red Sea territory could have some of the biggest finds yet, though exploration hasn't even begun and the government has only recently sought to capitalize on this potential.

War-torn Somalia is also set to become a new exploration venue. Even Somaliland, which is not even recognized internationally, is becoming an exploration venue despite the obvious challenges of exploring in a non-existent country.

The Natural Gas Future Will Become Increasingly Liquefied

Liquefaction of natural gas is the process of super-cooling natural gas to minus 260 degrees Fahrenheit (minus 162 degrees Celsius) at which point it becomes much safer and easier to transport. After it has been shipped to its destination, regasification plants at importing or receiving terminals return the fuel to a gaseous state.

A lot of money is being dumped into LNG technology right now, and this is where the trends are:

- LNG demand is set to double over the next decade to 408 million tons a year
- Major markets for LNG are opening up and some of them can't be reached by overland pipelines
- The Asian market is particularly hot for LNG and they are paying top dollar
- Prices and rising global demand make it worth it to ship LNG by seaborne tankers
- The US may become a major LNG exporter, and customers are already lining up
- Russia is now in the global LNG market and it's determined to become a major player in this field
- Britain's natural gas imports from outside the North Sea will surpass domestic production by 2015 and add more than \$11 billion to import costs as domestic supplies dwindle and Norway struggles to fill the gap (Qatar is only sending it leftovers right now—the bulk goes to higher paying Asian customers)
- The natural gas industry will continue to shift away from overland pipeline deliveries to seaborne tankers to supply distant markets.

- Floating LNG production, storage and offloading concepts are revolutionary because they have the ability to station a vessel directly over distant fields, removing the need for offshore pipelines and adding the advantage of mobility—these floating facilities can be moved to a new location once existing fields are depleted.

We would keep a particular eye on Russia's LNG ambitions over the next couple of years. Russia is already the world's largest producer of gas and it's now looking to add LNG to its global status. And it is making headway. In 2009, Russia opened its first LNG terminal on Sakhalin Island and since then it has taken steps to ensure it will play a significant role in this market.

What Moscow is hoping is that LNG will become its next geopolitical bargaining tool—much as gas has allowed it to keep a stranglehold on Europe. We're not convinced that Russia has the capacity to make this happen to this extent, but the next few years will see some very determined steps in this direction. The next step will be plans for a floating LNG facility to service Israel's second-largest offshore gas field.

The real game-changer will be if the US moves to export its LNG with its 70 MTPA capacity. In the meantime, companies in Canada are winning permits to export LNG. A Shell-led consortium in February became the latest permit holder for an LNG export facility in British Columbia. Shell joins the permit-holding ranks that already include Apache Corp., which has an interest in Kitimat along with Chevron, where the first LNG shipment is scheduled for 2015. The third license went to privately-owned BC LNG Export Cooperative.

Mergers & Acquisitions: Majors Joins Forces, Juniors Explore with Goal of Buyout

The oil and gas industry is the most merger intensive sector out there right now—we're talking about more than 4 M&A transactions worldwide very day throughout the course of last year, for a total of \$402 billion, which is up almost 20% from 2011. In 2012, a total of 92 transactions exceeded \$1 billion in value. This year and next should see a continuation and acceleration of this trend.

According to Ernst & Young, "The increase in the number of larger deals globally was a function of more capital becoming available to the right class of buyer, together with increased pressure from asset and company owners to crystallise returns."

As super majors suffer from declining oil production from conventional sources, discovering and tapping into unconventional resources becomes more urgent for the bottom line. The most likely

development in the next few years will be an increasing number of inter-major cooperation agreements. Supermajor cooperation will allow companies to share risks and share the capital costs of expensive unconventional exploration and drilling.

The next several years should also see a number of very successful junior explorers bought out particularly in North America (those who have done well in Bakken and Eagle Ford) and in Africa. The ranks of the juniors have been swelling over the past few years and they have shown an increasing resilience to perceived risks of exploring in new frontiers.

The ultimate goal of most junior companies is buy-out. Juniors on the African scene, where governments are pressuring companies to pick up speed and foot the bill for infrastructure may be looking to get out of the game as quickly as possible due to cash constraints.

Juniors sticking to the conventional plays may be more likely to find a quicker pay-off because of lower risks and higher returns on investment. Unconventional plays are becoming more of a game for intermediate-size companies who have more capital to exploit these resources.

Also look to the Middle East, and particularly Iraq, for more M&A activity this year and next. For 2012, most major M&A transactions in the Middle East took place in Iraqi Kurdistan.

Low Natural Gas Prices to Spur Petrochemical and Fertilizer Industries

More than most other sectors, the shale gas boom will benefit manufacturers of petrochemicals and fertilizers which rely on various energy inputs for almost all of their production. RBC Capital Markets and the Economist Intelligence Unit predict that low natural gas prices will result in a massive boom for these North American industries.

ExxonMobil Corp.—the largest US producer of natural gas—understands this. It's working on a multi-billion-dollar upgrade to expand its Baytown complex to boost capacity for turning natural gas into petrochemical building blocks. To Exxon, this makes sense even if natural gas prices rise.

Exxon has made a major bet on the shale gas boom, and we expect more of this in 2013 and 2014. In 2009, Exxon bought XTO Energy for \$41 billion.

Washington's 'Pivot' to Asia Sets Up Shale Gas to Drive Foreign Policy

This pivot on the back of oil and gas had already begun in 2009, when Washington instructed its embassies in Beijing, New Delhi and Canberra to provide an assessment of the shale gas potential of each of these host countries. This is how US foreign policy is and will continue to be shaped for the coming decade. The shale gas advantage the US has vis-à-vis China can be summed up in terms of unconventional technology—hydraulic fracturing and horizontal drilling. Hydraulic fracturing involves blasting shale rock with water, sand and chemicals to release gas, while horizontal drilling allows us to recover greater volumes of gas. China is now scrambling to acquire the same technological expertise by investing in foreign companies who possess this know-how and technology.

The natural gas boom in the US will also reshape its relations with China if manufacturing in the US experiences the predicted boom heralded by plentiful domestic shale gas supplies. We could soon see an era in which certain goods can be manufactured more cheaply in the US than in Asia. Prices for energy and raw materials, as well as a decline in labor costs could shift the focal point of manufacturing from Asia to the US in the coming decade.

At the same time that there will be growing energy cooperation between the US and China, there will be an increased tug-of-war over both Asian and African energy resources, as both sides attempt to shift their footholds. For the US, the primary staging ground for this is Africa, where it is way behind in the resource grab. The French intervention in Mali is the staging ground for a much wider strategic move by US AFRICOM to play catch-up here. The US is setting up drone bases in Niger right now, Mali's corrupt and poverty-stricken neighbor, and incidentally the site of key French uranium mines. The Democratic Republic of Congo (DRC) is already a hornets' nest of agents from neighboring countries, China, Britain, France and the US, and the stage is now being set for a shift in the balance of power and control over oil and mineral resources.

Another staging ground will be Myanmar, where China (for now) holds the cards as the biggest foreign investor in the country and the underwriter of several major oil and gas pipeline projects, as well as interest in Myanmar's offshore natural gas fields.

Myanmar is a gateway to the Indian Ocean for China and home to massive oil and gas wealth that is an important element of America's Asia policy and China's energy policy. Over 80% of China's oil (10 million bpd) must traverse the Straits of Malacca between Indonesia and Malaysia, vulnerable to both piracy and geopolitics. China's planned pipelines from Myanmar will allow it an alternative route that could supply up to 20% of its oil and gas needs.

The US response to Myanmar's repackaged junta was to lift economic sanctions and let the

investment pour in. This, of course, is directly related to the fact that the US does not wish to see China gain more of a foothold in this strategic location than it already has. (Like in Africa, the US has been slow off the starting blocks, allowing China to gain major control over natural resources, unmoved as it is by human rights issues).