



The Race for Energy: What Will It Mean for Western Firms?

Published : September 22, 2008 in [Knowledge@Wharton](http://knowledge.wharton.upenn.edu/article.cfm?articleid=2054)

Rising energy demand from China and India has unleashed a worldwide race to secure access to scarce fossil fuel resources, a more difficult proposition with the emergence of national oil companies in the resource-owning countries. While Western companies will likely feel the pain of increasing energy costs, there is a potential upside to global energy scarcity, according to experts from Wharton and The Boston Consulting Group: Renewable and nuclear energy present huge opportunities for investors and entrepreneurs, underscored by concern over a global stalemate surrounding curbs on carbon-dioxide emissions.

The International Energy Agency (IEA), an autonomous body set up within the framework of the Organization for Economic Cooperation and Development, says in its November 2007 World Energy Outlook that "if governments around the world stick with current policies, the world's energy needs would be well over 50% higher in 2030 than today." Global energy demand would grow an average of 1.8% annually, from 11.4 billion tons of oil equivalent (toe) in 2005 to 17.7 billion toe by 2030. Fossil fuels would make up 84% of that increase, the report notes, although oil's share would fall from 35% to 32% while coal's share would jump from 25% to 28%.

Worldwide, the IEA expects an investment need of about \$22 trillion in energy-supply infrastructure. Not surprisingly, its latest report is focused on China and India; these two countries account for 45% of the increase in demand in the "reference scenario" it forecasts. China's energy-supply infrastructure would need investments of \$3.7 trillion until 2030, while India's would need \$1.25 trillion, the IEA says.

The dramatic growth of the Chinese and Indian economies in recent years has caught stakeholders in the global energy industry ill-prepared, according to Hal Sirkin, senior partner and managing director at BCG and head of its global operations practice. "China and India are changing the global balance points in resources," he says, noting that the emerging consumer markets in these two countries are behind the boost in demand.

The forces at work in the emerging scenario are energy security, energy affordability, climate change and sustainability, says Balu Balagopal, senior partner and managing director at BCG. "There is a clear recognition that energy security and independence are top of mind because the demand side of the equation shows quite healthy growth driven by the growth in these emerging economies such as India and China," he notes. "At the same time there is an uptick from a supply standpoint -- traditional oil and gas are coming under some pressure."

Balagopal says that while "alarmists talk of peak oil," it might more appropriately be characterized as the end of cheap oil. Proponents of the peak-oil theory say that global petroleum production will peak sometime between 2025 and 2030, after which total available energy will decline continuously. Balagopal suggests that many new sources of energy are potentially being brought on stream, including frontier energy such as deepwater exploration and oil sands. But all that will take time to come through, he says, and "they are also more expensive."

Securing Access

"In the medium term, the Chinese and Indians will have to import more oil, and that is making them both nervous," says Wharton management professor [Witold Henisz](#). "Interestingly, the battlefield today is in



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Africa." According to various reports, Chinese and Indian companies investing in Angola and Sudan are "not being as concerned [as Western firms] with corruption and other practices," Henisz says. That should give them "a strategic advantage as compared to the Western oil companies."

Rick Peters, senior partner and former leader of BCG's energy practice, points to "a lot of deals and a lot of effort on the part of India and China to lock up the incremental production." Adds Sirkin: China wants to be an investor, "not because it wants to invest, but it has an imperative to get access to resources and that is the best way." As the world's oil majors rush to secure their supplies of hydrocarbon reserves, they are encountering wholly unfamiliar territory. "Increasingly, the balance of power has shifted," Peters says. Until several years ago, "these super majors could go into the resource-holder countries and were welcomed because of their unique expertise." The entry of Chinese and Indian oil companies competing for the same resources has provided the resource owners many more options in securing more favorable terms, he notes.

Resource owners across Latin America, the former Soviet Union and Africa are also trying "to do a lot more on their own," Peters adds. For successful developers, the model is very much shifting to local development, technology transfer, and companies and divisions within countries having a localized face. "That model is the right model. You have to be more and more creative about the win-win opportunities." The resource owners "have become much more aggressive and savvy about relinquishing their rights to those resources and the conditions under which they will relinquish [them]," Balagopal points out.

Henisz predicts that "one or two or three Chinese and Indian or Russian state-owned oil companies will emerge as globally integrated producers of oil that will rival Exxon Mobil, Shell and BP." He says consolidation within the industry is an imperative, and that it will provide "at least perceived security of oil supplies for China and India" and a greater pool of investment resources.

Access by itself can mean little, and "it may be better not having access because you may lose it," says Sirkin, pointing to nationalization of oil companies in Venezuela and elsewhere in the developing world. "Some South American countries changed their royalty systems.... Companies have to work with them or leave."

Wharton management professor [Mauro Guillen](#) cites Gazprom, Russia's state-owned natural gas company, as an example of governments' renegeing on their commitments. "Gazprom is continuously renegotiating deals with foreign companies, and in the long run this is going to come back and hurt it; people are going to get the impression it is not reliable," he says. Gazprom "is way too much an instrument of the Russian government to project its power"; governments should not use their state-owned companies as foreign-policy instruments, he argues. "If anything, it should be the other way around. Governments should help their companies grow."

"Once an international firm commits a large investment, it is difficult for the [local] government to renegotiate terms," Guillen says. "But because the resources are where they are -- you cannot move them -- it creates a very tricky situation where the two parties are always trying to take advantage of the other or gain the upper hand."

Dealing with Local Opposition

The established oil majors and the newer players like the Chinese national oil companies (NOCs) have faced local opposition in some resource-owning countries. Henisz talks of Chinese oil companies encountering protests in Africa. "For the first time, people realized that [these companies] have worse labor practices, invest less in the local community and are more tolerant of corruption." The local communities and local nongovernmental organizations don't view China as an alternative investor, but as "a worse investor and one that requires greater efforts in monitoring and highlighting abuses."

Many of those sentiments can be attributed to the bad taste left by previous experiences with international oil companies. "There is a growing level of dissatisfaction among civil societies in Africa and Latin America with the perceived treatment of local communities by these international oil companies," Henisz says. As a response to the concerns, "Exxon Mobil, Shell and BP have made great efforts to improve their external stakeholder relations."

According to Henisz, the newer entrants have to learn from those experiences. "The Chinese and Indians

have a lot of catching up to do here," he says. They need to think about an oilfield as not just something to take, but about their need to be partners and their need to take a more inclusive and holistic view about what they are doing in a place like Angola or Sudan, and how to manage that process. They are far behind Western companies in those realizations and in the development of those capabilities; that will be a big struggle for them in the medium term."

The companies that will succeed in these environments are those that can manage not just the technological challenges, but also the interface with national governments, the NGOs and civil society in these countries, Henisz says. "The set of external stakeholder relations is going to be an increasing driver of value, because these companies are going to have to go to places where politics are unsettled, where rules change, and they will have to manage political and social coalitions in order to continue to generate value over decades."

Balogopal says the strategies that will help new entrants will be those that bring "new value propositions" to the resource owners and that deploy capabilities in exploration and production to aggressively seek new energy frontiers. The international oil companies aspiring to secure access to the resources in these countries need to recognize "that the landscape has shifted in terms of the value propositions they may have to negotiate with the national resource owners."

If those new value propositions mean that international oil companies have to be present across the spectrum of activities, from exploration through refining and retailing, many of the companies would hesitate to go that far, predicts Peters. Gasoline retailing, for instance, tends to be initially more profitable in developing countries than in developed markets, but the margins start to tighten after about 18 months. "Over a period of time, these margins tend to migrate back to the levels in developed markets," he says. "So in general -- and this is in general -- most of the majors we work with are not so inclined to enter the gasoline retailing market unless they really have to."

Challenges in India and Other Markets

Henisz offers an explanation for why some Western oil majors have been slow to enter the Indian oil and gas industry. "If you go into India, you are up against the national oil companies and the big business conglomerates within India," he says. "There is a pattern in electricity or telecommunications of foreign companies not actually capturing the rents on investments they have made."

For the oil majors, India is unlike Angola, Chad or Sudan, where they have an advantage because of their size and clout, Henisz adds. "If you have to forecast who is going to capture the rents in India, China and Russia, it will be the Indian, Chinese and Russian firms. They are big enough, powerful enough and have the domestic capital base to fund their investments." In what represents a new trend, he says, oil majors are winning projects by forging partnerships with engineering services firms such as Halliburton and Bechtel.

Guillen suggests that while many companies in the United States and Europe "are going to be hurt" by the rise of China and India, the new opportunities will be "tremendous." For instance, U.S. and European companies could supply capital equipment and technology required to build the infrastructure in China and India to support their growing domestic and export industries.

Companies in the developed world could supply China and India a range of products including machine tools, cranes and heavy equipment, Guillen notes. "The energy sector is going to generate so much business for these countries. All you need to do is check the increasing number of flights that are being added between the U.S. and China and India."

The Rise of Renewable Energy

Rising oil prices present other opportunities, according to Guillen. "It is good that the price of oil and gas is not \$20 a barrel and it is a natural resource that we cannot renew." High prices will force consumers to economize, "and this creates a very powerful incentive for technological innovation and for finding alternative sources."

Renewable energy resources are presenting vast new opportunities for investors and entrepreneurs, says [Paul Kleindorfer](#), emeritus professor of operations and information management at Wharton and

professor at INSEAD. "Responsive parliaments" in the European Union and elsewhere are encouraging investors in renewable energy by legislating minimum demand and floor prices, he notes.

In January, the EU specified targets for its member countries to achieve on greenhouse gas emissions. Dubbed "20/20/20 by 2020," they seek to ensure that by 2020, Europe cuts greenhouse gas emissions by 20%, produces 20% of its energy from renewable sources and increases energy efficiency by 20%.

Kleindorfer says EU member states will take that forward in a variety of ways, including providing subsidies, establishing portfolio standards for different economic sectors and guaranteeing investment returns for specific technologies. "If there is an entrepreneur looking at a seven- to 10-year horizon for new energy investment, he has a pretty good idea about what are going to be the floor prices or the sources of revenue as returns on investments," he says. "You are not looking at something as volatile as the price of a barrel of crude. There is a little more concreteness to it on the downside."

Investments in renewable energy sources are economically attractive at current prices, or even at lower levels, says Peters. The downside, he says, is that often "you are faced with enormous [costs] to try to do the development in a way that is as environmentally clean as possible."

Kleindorfer notes that there are "interesting possibilities in nuclear power, all the way from the birth of plants to decommissioning old nuclear power plants at the end of their useful life." The nuclear energy industry is "alive and well" in France, and robust in many Pacific Rim countries including Japan and Taiwan, he says. "The U.S. remains pretty much a cold fish on the nuclear front. But globally, that is not the case." Kleindorfer is also optimistic about the possibilities of a "hydrogen economy" that fuels both industrial uses and personal transportation. "There is plenty of hydrogen in the universe and it doesn't have any CO₂ in it," he says.

International oil companies and others in the developed world will continue to have the edge in technology, skill sets and experience even as developing countries find it increasingly easier to access capital and buy technology. "International oil companies do have a value proposition," says Balagopal. "However, they have to work to communicate that and be accepted and known in a manner that gives them rent." He says those value propositions are about experience, technology and the ability to invest and co-invest with a resource-owning country. "It is no longer the case where it was much more of a passive negotiating partner at the other end," he says. "It's a much more vigorous owner you are dealing with."

Deepwater exploration is one such area, says Henisz. "If you believe that a growing percentage of the reserves to be discovered are going to be 3,000, 5,000 or 10,000 feet underwater, you start seeing quite rapidly an advantage for some of the majors." Peters says while that is true, the state-owned China National Offshore Oil Corporation "is pretty strong" in deepwater drilling technology and Petronas of Malaysia "is becoming a fairly sophisticated NOC."

Grappling with Greenhouse Gas Emissions

Developing countries will account for nearly three-quarters of the increase in global energy use over the next two decades, and the share of coal in that mix will increase significantly, the IEA predicts. "Higher oil and gas prices are making coal more competitive," the IEA says in its energy outlook report, adding that India and China, which already account for 45% of the world's coal use, will account for more than 80% of the increase in its use between now and 2030.

That scenario forces policymakers across the world to address issues that have frustrated agreement on containing carbon dioxide emissions. The United States wants to have "precommitments" from India and China on their emissions targets before it makes its own commitments. That is the key obstacle, says Kleindorfer. He points out that India and China feel that the United States has had its share of consuming fossil fuels and that now it's their turn.

"India and China are saying that they are not interested in something that doesn't recognize their right to grow to achieve a standard of living that is in some ways approximate to that of the U.S.," Kleindorfer says. The United States must "reestablish itself as a player rather than its current position of more of a barrier to the implementation of agreements such as the Kyoto protocol." He suggests it take cues from the EU's "20/20/20 by 2020" policy. In any event, he expects traction on that front only after the U.S.

presidential election in November.

Choosing the right strategies may be difficult with so many moving pieces in the emerging energy scenario, but Henisz cites Royal Dutch Shell as an example of a decisive corporation. In a January letter to all employees, CEO Jeroen van der Veer said, "By 2100, the world's energy system will be radically different from today's." He forecast that solar, wind, hydroelectricity, biofuels and nuclear energy will make up a large share of the energy mix.

Van der Veer laid out two scenarios to reach that state, one called "Scrambles," the other called "Blueprints." The "Scrambles" approach, "like an off-road rally through a mountainous desert, promises excitement and fierce competition. However, the unintended consequence of 'more haste' will often be 'less speed,' and many will crash along the way." He says the alternative "Blueprints" scenario "resembles a cautious ride with some false starts on a road that is still under construction."

Shell "traditionally uses its scenarios to prepare for the future without expressing a preference for one over another," Van der Veer stated as he laid out his choice. "But faced with the need to manage climate risk for our investors and our descendants, we believe the Blueprints outcomes provide the best balance between economy, energy and environment." Says Henisz of that resolve: "They have come to a fork in the road in the global energy sector and they have said they have a stake in the outcome. They are going to lobby and work hard and undertake whatever they can do to push the needle in one direction."

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