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India's Shale Gas Boom: Dream or Reality?

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As India prepares for the release of its long anticipated shale gas policy, pressure continues to mount on New Delhi. An increase in coal imports over the past 12 months has demonstrated the stress on current energy supply and the negative impacts it has on India's public health and environment. Veerappa Moily, India's Minister for Petroleum and Natural Gas, stated in March that the government's shale gas policy would be released in early April, yet such a policy, which Moily stated in an interview with Reuters in March would be a "game changer" for India, is still to materialize. Many analysts continue to point to the importance of improving the country's energy security. Indeed, shale gas production could offer a reprieve for energy-starved India as well as a much needed boost to its economy.

Shale gas is often described as a game changer in energy politics, prompting Daniel Yergin and Robert Ineson to define it as "the biggest energy innovation of the decade." India is a fast developing country and energy is pivotal to maintain its steady economic growth, stability, and development. Being the third-largest energy consumer in the world, according to a 2011 Enerdata report, and a natural gas net importer since 2004, it is easy to see why the South Asian nation is placing high hopes on its own "shale gas revolution." But is it a realistic prospect that India could relive the American experience of a shale gas boom?

Energy demand in India has been constantly increasing and is expected to rise by 7-8% annually in the coming decade. Indeed, many in India are still waiting for their first electricity connection. Hence, energy security is at the forefront of the Indian government's agenda, and unconventional resources like shale oil and shale gas have the potential to improve its situation. The U.S. experience with shale gas not only resulted in more advanced knowledge of the extraction process, but it also has allowed a decrease in production costs and drilling time, making it both more feasible and competitive. Moreover, for a country like India, where coal still occupies a predominant role in the energy mix (42.3 percent of total energy consumption in 2009), it can represent a promising alternative, both in terms of costs and environmental impact thanks to its potentially lower emissions.

In Search of Indian Shale

In 2002, Reliance Industries, a leading Indian energy company, discovered 14 trillion cubic feet (tcf) of natural gas in a reservoir in the Krishna-Godavari basin in shale formations, generating high expectations for future production. From that moment onward, the exploration and assessment of India's shale gas resources became an imperative.

Current research has identified six main basins that could be successfully exploited once the Indian government reveals its national shale oil and gas policy: Cambay (Gujarat), Assam-Arakan (North-East), Gondwana (Central India), Krishna Godawari onshore (East coast), Cauvery onshore, and Indo-Gangetic basins. Although the release of a comprehensive national shale oil and gas policy has been postponed, in 2010 the government signed a Memorandum of Understanding (MoU) with the U.S. in order to cooperate in developing Indian shale gas resources. Exploration and assessment of the potential of shale gas are part of the objectives of the MoU and, in line with the agreement, in 2012 the U.S. Geological Survey assessed the resources in a number of basins (the Cambay, Cauvery, and Krishna-Godavari basins), estimating the total of recoverable resources to be 6.1 tcf. This figure contrasts with the estimates suggested by the U.S. Energy Information Administration in 2011 of 63 tcf.

The Unknowns and Challenges

Contradictory estimates of the size of India's resources highlight the need for further exploration and assessment, and represents only one of the many unknowns of the Indian shale gas scenario. Environmental concerns continue to shroud shale gas production worldwide. Such

concerns contributed to the postponement of the first shale asset auction in India to 2013, in order to allow for further environmental analysis to be carried out. Indeed, India cannot escape the global debate on the possible risks posed to water aquifers, ecosystems, and public health, as well as the issue of flowback water disposal. Water, in particular, will represent a major challenge for Indian shale development. The large amount of water required in the process of hydraulic fracturing, or "fracking," is a considerable obstacle in a water stressed country such as India, which continues to suffer from chronic shortages.

Other problems persist and will inevitably add to the debate. Land acquisition (and the relocation of displaced people) will be problematic. Violent protests over land acquisition are common in India in general, and West Bengal in particular where the Oil and Natural Gas Corporation has recently completed its first shale gas test well. Further to this, India's population density will make recovering resources difficult.

What is more, the energy infrastructure of the country requires extensive development. The pipeline network, which is concentrated in the north west of the country, and LNG terminals need improvement or further construction. Additionally, the regulatory and pricing framework in India is very complex and represents another issue of concern for investors. Price regimes, in particular, need to be reformulated and deregulated, with the elimination, at least in part, of the heavy subsidies provided by the government, which lead to substantial differences compared to market prices.

Lastly, it has to be noted that Indian companies have less experience and know-how compared to many other countries engaged in shale gas exploration and production, such as the U.S., Australia, or even China. It is therefore not surprising that in the search for such know-how Indian companies like Reliance Industries, Gail, and Bahrat Petro Resources have begun acquiring stakes in shale gas assets in the U.S. and Australia.

Bridging India's Energy Shortfall

Experts agree that India needs a "bridge fuel" and shale gas could be just that. However, infrastructure takes time to develop and viable commercial shale gas production is still a long way off. Worryingly, the current bridge fuel being used is coal, which produces twice as many emissions as natural gas.

In May this year, the U.S. Department of Energy announced that it would grant conditional authorization to export domestically produced LNG to countries without a Free Trade Agreement, such as India. In the short term, U.S. energy may be the game changer and bridge fuel for India, yet it may also have the undesirable effect of decreasing pressure on New Delhi to develop its own domestic program.

The challenges posed by the current energy infrastructure, gaps in the regulatory framework, and public environmental concerns, together with the uncertainties over the amount of effectively recoverable gas, will represent real obstacles for New Delhi. However, if they can be mitigated or overcome, shale gas could certainly have a positive impact on India´s energy security.

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