



Emergence of Unconventional Hydrocarbon Development in the United States: Global Implications on Oil & Gas Markets

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The dynamic landscape for the quest for energy will continue as long as the human race exists and needs energy to grow and develop its economy. The demand for energy will continue to remain at the forefront of the U.S. economy even as China emerges as the world's largest economy and consumer of energy. In 2008, the prevailing U.S. energy concern was how to latch on to the global LNG market as an inevitable and promising energy source. Thus, the U.S. was perceived as a prime destination for several LNG projects. In 2014, however, the new U.S. energy landscape includes unconventional hydrocarbons, which have been projected to position the U.S. as an energy self-sufficient nation, *ceteris paribus*, by 2020 in terms of natural gas and petroleum consumption.

The evolving energy landscape also shows that world energy needs are rising, especially in the emerging economies and more specifically for the transportation sector. It would seem that for the foreseeable future, the transportation sector worldwide may still have to depend primarily on hydrocarbons. Fortunately, within the context of transportation energy requirements and perhaps contrary to the hypothesis that the world is running out of petroleum resources, the world seems to be running into oil as evident in the emerging potential for unconventional hydrocarbon development and conventional hydrocarbon discoveries all over the world map.

Thus, it would seem that the peak oil argument of an imminent end to the oil era may not be as a result of exhaustion but perhaps, economics. Indeed, the easy-to-find hydrocarbon resources are perhaps on the decline following the emergence of the new energy landscape.

However, technology, economics, and public policy work together to make the not-easy-to-find hydrocarbons desirably accessible. This is fundamental to a sustainable new energy supply and consumption reconfiguration the world is undergoing at the moment. The primary targets worldwide and especially in the Americas for minerals is unconventional resources found in the source rocks, ultra-tight sandstones and carbonates. These have unconventional fluids – heavy oil, bitumen, and oil and gas rich shale – that will probably fuel the world's energy needs in the right proportion.

Factors that helped the U.S. develop its unconventional hydrocarbon resources, namely economics (MONEY), technology (MACHINE), public policy (MAN) and the endowed land (MINERALS), however, may not easily diffuse to other areas without critical research efforts. Nevertheless, the growing energy demand in emerging economies and rising world oil prices could escalate the economics component, whereas advances in directional drilling, especially steerable down-hole motors and improved hydraulic fracturing techniques, would drive the component of technology. The quest for energy independence, attractive policy incentives, and private investment flow towards unconventional development illustrate how effective public policy incentives matter in order to sustain the changing energy landscape.

The immediate implication of rising U.S. unconventional production has been the ensuing low natural gas prices in the U.S. as a result of glut in the gas market. Consequently, natural gas has become very competitive against other fuels, and net coal exports from the U.S.

have increased with an inevitable downward pressure on coal prices. The U.S. has suddenly become a less attractive destination for LNG exports; as a result, alternative markets have become inexorable for all the LNG projects eyeing the U.S. destinations. Huge unconventional hydrocarbon extraction with the plausible downward pressure of natural gas and oil prices will pose great challenges for proponents of renewable fuels under tight public budget constraints.

Regarding the role of the emerging economies, the growing primary energy demand in China and Asia-Pacific is working in favor of this shifting energy landscape. According to IEA World Energy Outlook 2013, while European Union's share of global export market for energy-intensive goods is declining, that of China, India and Middle East is rising. This translates to huge energy supply investment, with nearly two-thirds flowing from China into Africa and Latin America. The major component of this investment is in fossil fuel extraction, transport, and oil refining. This goes to meet growth in energy demand, the larger share, however, is required to offset declining production from existing oil and gas fields.

For China and Asia-Pacific, a very large LNG market share is foreseeable as prime target destinations for LNG exports. This will lead to further pricing pressure as a result of plausible downward oil price trends competing with LNG projects. However, with the abundance of unconventional resources in China and Asia-Pacific, it is most likely that an Asian oil and gas market may eventually emerge once it can overcome its developmental challenges. These challenges include: lack of technology; lack of resources and infrastructure; and environmental and social issues.

In conclusion, the world is endowed with as much if not more unconventional resources as conventional

resources and the key challenge is how the oil and gas industry can safely extract these resources with minimal damage to the environment. The surge in unconventional output in North America has global implications in terms of oil and gas price outlook and technology transfer as evident in the diffusion of deep water technology from the U.S. Gulf of Mexico to other deep water regions. This surge in the U.S. will make oil more available to promising new emerging markets for oil imports, such as China, Japan, India, and South Korea, just to mention a few.

Looking at hydrocarbon resource rich countries, like Nigeria, it is perceived that the growth in unconventional resources can ultimately transform the economy from rent-seeking, rent-sharing, and hard-currency driven economy to a value-added prone economy. The impact on Nigeria is already evident with the drastic decline in its oil exports to the U.S. because of U.S. unconventional hydrocarbon development. Consequently, Nigeria is currently exploring non-U.S. destinations and varied options towards its resource usage.

Is there a need for the world to panic in terms of the possibility of significant price volatility as the emerging trend in unconventional development spreads worldwide? Perhaps, hydrocarbon price volatility is inescapable if unconventional development occurs in China and Russia, sooner than expected; if resource rent driven economies reverse to a broader value chain enhancement with dedicated internal use of its resources as a necessity for its economic development; if new technology makes developing unconventional hydrocarbons more cost effective and efficient; and if the U.S. cannot maintain the private investment flow that is required to maintain shale gas and oil development capacity.

TIME certainly WILL TELL!!!