



THE GEOPOLITICS OF ENERGY PROJECT

Global Oil Production is Surging: Implications for Prices, Geopolitics, and the Environment

BOTTOM LINES

- **Oil Production Growth is Global.** Global oil output capacity is likely to grow from 93 million barrels per day today to 110 million barrels per day by 2020—the largest increase in a single decade since the 1980s. The surge in oil production capacity will occur almost everywhere, with the largest increases in Iraq, the United States, Canada, Brazil, and Venezuela.
- **United States Will Experience Unprecedented Output.** Technological advances will increase the production of “unconventional” oil in the United States, which is in the midst of a shale boom. The Bakken/Three Forks formation in North Dakota alone has as much untapped shale/tight oil as a Persian Gulf country.
- **Oil Prices May Collapse.** If oil prices remain at or above \$70 per barrel, investments will sustain the 20 percent increase in oil production capacity by 2020. However, world demand is sluggish due to the lagging economy and focus on energy efficiency. If these trends continue, we could see a significant dip—or even a temporary collapse—of oil prices.
- **Shifting Market Has Geopolitical Consequences.** While the Western Hemisphere could become oil self-sufficient by 2020, Iraq’s oil output will also substantially increase as it stabilizes. China may escalate its competitive and political influence in the Persian Gulf and other oil-producing hotspots, including Canada, Venezuela, and possibly the United States.
- **Oil Boom Must Trigger Environmental Action.** Enforcement of environmental regulation and major investment in emission-reducing technologies must accompany the development of unconventional oil. Without this balance between industry and environmental interests, new oil production projects will be stymied or delayed.

This policy brief is based on the discussion paper “Oil: The Next Revolution” by Leonardo Maugeri, which was published by the Belfer Center in June 2012.

Oil Production Growth is Global. Leonardo Maugeri’s original bottom-up, global field-by-field study of oil investments indicates that by 2020 the world’s oil production capacity could be more than 110 barrels

per day, an increase of almost 20 percent. An analysis of most of the oil exploration and development projects around the world shows that more than 49 million barrels per day of oil in additional production (unadjusted for risk) could come on line by 2020, or more than half the current world production capacity of 93 mbd. After carefully considering the risk

factors for each project and country, and factoring in depletion rates, net additional production capacity is likely to increase by more than 17 mbd by 2020 – growth not seen since the 1980s.

Oil supplies could increase all over the world. The four countries that show the highest potential in terms of effective production capacity growth are – in order – Iraq, the United States, Canada, and Brazil. Much of this increased capacity comes from “unconventional sources” such as U.S. shale/tight oils, Canadian tar sands, Venezuela’s extra-heavy oils, and Brazil’s pre-salt oils. Only four of the current major oil producing countries (more than 1 mbd of production capacity) face a net reduction of their production capacity by 2020: Norway, the United Kingdom, Mexico, and Iran. In Iran and Mexico, the loss of production is primarily due to political factors. All other producers are capable of increasing or preserving their production capacity.

United States Will Experience Unprecedented Output. There are enormous volumes of unconventional oil under development in the United States. Thanks to the technological revolution brought about by the combined use of horizontal drilling and hydraulic fracturing, the United States is currently exploiting huge and virtually untouched shale and tight oil fields, and production – although still in its infancy – is skyrocketing in these North Dakota and Texas fields.

The extraction technologies are not new, but the combination of technologies used to exploit shale and tight oils has evolved. The technology can also be used to reopen and recover more oil from conventional, established oilfields. Taking into consideration limitation in transportation infrastructure and refining capacity, and environmental barriers to development, the United States could still increase oil production by 3.5 million barrels per day and conceivably produce a total of 11.6 mbd of crude oil and natural gas liquids per year by 2020, making it the second largest oil producer in the world, after Saudi Arabia.

Oil Prices May Collapse. Contrary to prevailing wisdom that increasing global demand for oil will

increase prices, the report finds oil production capacity is growing at such an unprecedented level that supply might outpace consumption. When the glut of oil hits the market, it could trigger a collapse in oil prices.

While the age of “cheap oil” may be ending, it is still uncertain what the future level of oil prices might be. Technology may turn today’s expensive oil into tomorrow’s cheap oil. The oil market will remain highly volatile until 2015 and prone to extreme movements in opposite directions, representing a challenge for investors. After 2015, however, most of the oil exploration and development projects analyzed in the report will advance significantly and contribute to a shoring up of the world’s production capacity. This could provoke overproduction and lead to a significant, steady dip of oil prices, unless oil demand were to grow at a sustained yearly rate of at least 1.6 percent through 2020.

Shifting Market Has Geopolitical Consequences. The United States could conceivably produce up to 65 percent of its oil consumption needs domestically, and import the remainder from North American sources and thus dramatically affect the debate around dependence on foreign oil. However the reality will not change much, since there is one global oil market in which all countries are interdependent. A global oil market tempers the meaningfulness of self-sufficiency, and Canada, Venezuela, and Brazil may decide to export their oil and gas production to non-U.S. markets purely for commercial reasons. However, considering the recent political focus on U.S. energy security, even the spirit of oil self-sufficiency could have profound implications for domestic energy policy and foreign policy.

While the unique conditions for the shale boom in the United States cannot be easily replicated in other parts of the world in the short-term, there are unknown and untapped resources around the globe and the results of future exploration development could be surprising. This combined with China’s increasing influence in the Middle East oil realm will continue to alter the geopolitics of energy landscape for many decades.

Oil Boom Must Trigger Environmental Action.

Unprecedented unconventional oil development comes with environmental protection and regulation challenges. Hydraulic fracturing is increasingly perceived as contributing to water and land contamination, causing natural gas infiltration into fresh water aquifers, and even triggering earthquakes. After more than one million hydraulic fracturing operations in the United States since 1947 (hydraulic fracturing is not a new technology) and comparatively few accidents, shale oil and gas recovery activity can be managed with appropriate best practices and adequate enforcement. Industry needs to develop technological solutions to minimize water use, minimize and report chemical use, and carefully monitor production sites. However, if such a collective effort by industry does not materialize, government may respond with more onerous regulation in the near future that could impact U.S. shale oil production.

Current climate policy conversations will certainly be influenced by the unexpected surge in oil production capacity. Policymakers will have to address the potential environmental and climate impacts of a substantial increase in oil supply. Industry should also be prepared to make appropriately large investments in developing technologies that will reduce the environmental footprint of oil production and use.

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ABOUT THE GEOPOLITICS OF ENERGY PROJECT

The Geopolitics of Energy Project explores the intersection of energy, security, and international politics. The project, launched in 2011, aims to improve our understanding of how energy demand and supply shape international politics—and vice versa. It also endeavors to inform policymakers and students about major challenges to global energy security and, where possible, to propose new ways of thinking about and addressing these issues. The project focuses both on conventional and alternative energies, as both will influence and be influenced by geopolitical realities.

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