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The Energy Revolution's Impacts on the Arab World

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Profound changes are occurring throughout the global energy system, including an increase in the production of hydrocarbons in the Americas and a shift in demand in which oil is giving way to gas and, to a lesser extent, coal. How are these changes affecting the Middle East and North Africa (MENA) region, and what might the MENA countries do to meet the challenges posed by this “energy revolution?”

RECOMMENDATIONS

In order to attract more private capital investment, restrain domestic energy consumption, reduce development costs for hydrocarbon related projects, enhance the value of locally produced fossil fuels, and decrease dependence on their oil and gas sectors, Middle East and North African gas and oil producing countries should:

- Open up national oil companies to more domestic and foreign equity investment
- Increase domestic energy efficiency
- Improve the business environment, especially in the oil and gas sectors
- Further develop domestic and offshore downstream hydrocarbon processing
- Diversify their economies, with an emphasis on energy intensive processing and services

Introduction

“Energy independence” has become an American battle cry and a veritable panacea for much that ails the United States, especially in regard to its foreign policy. It has been touted as the ideal means to counter challenges posed to America, to democracy, and to the global order by authoritarians, ranging from Russia’s Vladimir Putin to Iran’s Ayatollah Khamanei to unnamed “Arab sheiks.” Russia’s annexation of Crimea, for example, has been taken as evidence of the leverage provided Moscow by virtue of Europe’s dependence on Russian gas, with accompanying lamentations that the United States is as yet unable to plug a sufficient amount of the potential supply gap to embolden its European allies. But the underlying message in response to the crisis in the Ukraine and to other threats to U.S. interests is along the lines of, “Just wait, an energy independent, and hence more muscular, America is on the way.”

Whether the United States does achieve energy independence and what its actual impacts might be on America’s standing in the world are of course yet to be determined. But what is already clear is that profound changes are occurring not just in U.S. energy markets, but throughout the global energy system. The energy supply is being rapidly diversified, while demand growth in relation to economic output is dramatically slowing. Oil is no longer the liquid gold that floated it above normal economic relationships, with buyers seeking access

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from the comparatively limited number of suppliers at whatever price they had to pay. Global oil consumption is stagnating while its hydrocarbon competitors, coal and gas, are expanding their market shares within an overall hydrocarbon market increasingly challenged by renewables. The production of hydrocarbons is expanding faster in the Americas than in any other global

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region. While slow global economic growth since 2008 adds to downward pressure on demand, even a resumption of more rapid growth will not halt the energy revolution now unfolding.

The Middle East and North Africa (MENA) and, within that region, the Arab world, whose shares of hydrocarbon reserves remain prodigious, with them in the latter alone accounting for more than 50 and 30 percent, respectively, of the world’s oil and gas reserves, are the areas of the globe most threatened by present dramatic changes in energy markets. Indeed, while MENA generally and the Arab world more specifically have suffered from an

oil curse in that their unparalleled and still expanding economic dependence on hydrocarbons has militated against broader, deeper, labor-absorbing growth, it could be that the impending “curse” of the terms of trade turning against oil will be even greater. Already beset by the world’s highest unemployment rate and by the slowest GDP per capita growth rate among emerging regional economies, deficiencies that have in turn contributed greatly to widespread political unrest and violent conflict, the Arab world faces yet a grimmer economic and political future if oil revenues continue to stagnate as they now have for three years.

Turmoil in the world’s hydrocarbon heartland is not good news for anyone, including the United States. Oil has been a fungible commodity for decades and gas increasingly so as a result of the rising share of LNG in the global gas market. Major disruptions to supply from the Arab world would have negative economic consequences even for an energy independent America. Minor disruptions are already becoming commonplace, with some resulting from sabotage of pipelines or seizures of oil fields by insurgents. But violence is just one of the factors that have caused downturns in exports from Syria, Yemen, Egypt, and Libya and the thwarting of hope for

dramatic expansion of production in Iraq. In Iraq it is not just insecurity, but the Baghdad government's profound mismanagement of the oil sector that has driven some of the leading international oil companies, including Exxon, north to the Kurdish region where there is less oil but more security and a more rational business environment.

Even absent instability and violence, Arab capacity to generate revenue from hydrocarbons, and thus pay for the food imports upon which the region is more dependent than any other, is under threat. An ever higher proportion of oil and gas production is being consumed domestically, in large part because Arab economies are the least energy efficient in the world, while both the ability and willingness to raise the capital required to expand production are flagging. Some Arab countries that were net energy exporters until very recently, including Egypt and Yemen, are now net importers, unable even to honor production sharing agreements with the international energy companies that developed their oil and gas fields. Over the next five years Arab producers will need almost \$800 billion in new investments to sustain oil and gas production in their aging fields while adding some new capacity. Whereas formerly Arab oil and gas reserves were the cheapest to bring online, the costs of doing business there have now escalated to the

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point that it is cheaper, to say nothing of being more secure, to use advanced recovery techniques to develop gas and oil reserves in the United States. Arab countries that could most easily expand production, including Kuwait and Qatar, have resisted doing so, in part because of domestic political conflicts and in part because of concerns about indebtedness. As the development of hydrocarbon reserves becomes a business more akin to all other businesses, the costs and risks of doing business will play an ever greater role in the calculations of those choosing where to invest. Already Arab oil and gas is being deemed by some relevant Western countries to be a bad comparative bet.

In sum, a little noticed but potentially important aspect of the contemporary energy revolution is its impact on the region that for some three generations has contributed more to global hydrocarbon trade than any other. More dependent upon revenues from hydrocarbons than any other region, trailing only sub-Saharan Africa

in the world's leading rate of population growth while having an even lower rate of GDP growth per capita than that poor region, and having an abysmal record of diversifying its economy and exports, the Arab world already faces severe threats to the stability and even viability of some of its nation states.

These threats will be exacerbated profoundly by the impacts of the energy revolution. An existential threat in the form of the Arab world's inability to feed its population cannot be dismissed out of hand. And the impacts of disruptions in this strategic choke point between Europe, Asia, and Africa that possesses the largest share of global oil and gas reserves and is already afflicted with the world's leading rates of violent conflict will be substantial. An energy independent United States will not be immune to the consequences. It is therefore essential to assess in broad terms the impacts of the energy revolution on the Arab hydrocarbon industry and their consequences for the political economies of Arab countries and the region as a whole.

The Global Energy Revolution: Supply, Demand, and Price

The two dramatic changes in energy supply are in its types and geographic sources. In regard to the former, within the hydrocarbon family oil is giving way to gas and, to a lesser extent, coal, while hydrocarbons as a whole are losing market

share to other energy sources. The total global primary energy supply provided by oil fell from 53 percent in 1973 to 36 percent in 2012, whereas the share provided by gas rose from 19 percent to 26 percent in the same period. In 2012 hydroelectric output reached almost 7 percent of global energy supply, the highest share on record, while wind energy grew at an annual rate in excess of 18 percent and solar power generation grew by 58 percent. The share of renewable forms of energy increased threefold in the decade from 2002. As regards geographic sources of energy, the Middle East's share of global crude oil production fell from 36 to 32 percent from 1973 to 2012. The truly dramatic shift has been the recent rise of U.S. oil and gas production. The former grew 30 percent between 2011 and 2014 to nearly 13 million barrels per day, while U.S. production of natural gas expanded by 4.7 percent in 2012 alone, compared to global growth of 1.9 percent, making the United States both the fastest growing and largest gas producer. By comparison, Russia, suffering from the chronic mismanagement of its gas industry, saw its share of global gas production fall 2.7 percent, the world's largest decline.

Energy demand tracks changes in supply. Oil is still the world's leading fuel, accounting for one third of global energy consumption in 2012, but it has lost market share now for 14 consecutive years, and its current market share is the lowest since authoritative record keeping commenced in

1965. Global oil consumption grew by less than 1 percent in 2012 and had the weakest global growth rate among fossil fuels for the third consecutive year. Organization for Economic Cooperation and Development (OECD) states' consumption declined for the sixth straight year, by 1.3 percent. The OECD now accounts for just over half of global oil consumption, the smallest share on record. Coal consumption grew by 2.5 percent in 2012, making it the fastest growing fossil fuel. China accounts for more than half of global coal consumption and

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for all of the net consumption growth, with that fuel providing 70 percent of China's total energy consumption. By contrast, the United States recorded the world's largest consumption increase in natural gas.

In addition to the shift away from oil to gas and coal, and from fossil fuels to renewables, demand also reflects growing energy efficiency. World primary energy consumption grew by only 1.8 percent in

2012, well below the 10-year average of 2.6 percent and substantially below the global rate of real GDP growth in that year of 3 percent. Consumption in OECD countries fell in 2012 by 1.2 percent and by 2.8 percent in the United States, the latter being the world's largest decline. While non-OECD consumption grew by 4.2 percent, even that was below the 10-year average of 5.3 percent. The International Energy Agency (IEA) predicts that the slowdown of fuel consumption will continue, regardless of levels of economic growth. Annual fuel consumption grew from 9,000 to 13,000 million tons of oil equivalent (mtoes) from 1990 to 2011. The IEA predicts that this consumption will rise only to somewhat more than 14,000 mtoes in 2020 if policies already adopted remain in place, or, if more stringent policies are applied, to slightly less than 14,000 mtoes. The annual rate of growth of fuel consumption, in other words, will fall from about 5 percent in the 20 years prior to 2011 to less than 1 percent in the coming decade. The

Middle East, despite having comparatively little industry, which globally is the largest consumer of energy of any end use sector, is the least energy efficient emerging region. Its energy intensity, which is the standard measure of the energy efficiency of a nation's economy calculated as units of energy per unit of GDP, is .28, compared to .24 in Africa, .22 in Asia, .18 in North America, and .12 in Europe. Not surprisingly, the

Middle East's share of global energy consumption rose at the world's fastest rate from 1973 to 2012, going from .7 to 4.8 percent of the total. In order to meet its domestic energy needs between now and 2030 the region will need to commit 3 percent of its GDP to energy infrastructure, compared to a global average of 1 percent.

The implication of these trends in energy supply and demand for prices are that those for fossil fuels are likely to stagnate and possibly even fall in real terms for the foreseeable future. In 2013 the average price for the OPEC basket of crudes was \$106, slightly less than the preceding three-year average of \$108. Non-OPEC production increases, led by the United States, Canada, and Brazil, will place additional downward pressure on demand for OPEC oil, with ominous implications for the countries that comprise that consortium. The weighted average fiscal break-even price for OPEC members is \$105 per barrel, suggesting that they will struggle to balance their budgets in the coming years. While the United States was formerly the world's largest oil importer, U.S. demand for oil from MENA is set to fall precipitously over the next two decades, from 1.9 million barrels per day in 2011 to 100,000, or less than 3 percent of total U.S. oil imports, by 2035. While non-OECD consumption will offset the declining U.S. demand for MENA oil, increasing energy efficiencies in emerging economies will steadily reduce their energy

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intensity ratios, thus dampening the rate of demand increase even in Asia and other industrializing regions. The two factors that could militate against price stagnation are supply interruptions, which are occurring with increasing frequency now in MENA and may therefore precipitate higher risk premiums; and inadequate investment in production capacities, with MENA again being the region most susceptible to this problem.

The Global Energy Revolution: Business and Finance

Just as the types and sources of global energy have been undergoing profound and rapid change, so too has the energy business been transformed since the beginning of the shift of power from international oil companies (IOCs) to national oil companies (NOCs) in the early 1970s. For a generation or so after the NOCs' initial assault on IOC dominance

of the global hydrocarbon industry, oil and gas producing countries, led by those in MENA, continued to contract with IOCs. But as those countries developed the capacities of their NOCs and as their leverage increased due to a rapid rise in the demand for fossil fuels, they began to shift from production sharing agreements with IOCs to service contracts with them. In recent years this shift has been followed by the further change of direct contracting with specialized service companies rather than with integrated IOCs. Just as the Fordist model of vertically integrated, limited choice auto production gave way to outsourced, more specialized manufacture, so has the oil industry witnessed the rise of smaller, more nimble, specialized and technologically innovative operations that exist between IOCs and NOCs, offering their services on contract to both. They have thus become alternative partners to NOCs, which have increasingly preferred to deal with them rather than the IOCs. Indeed, now not only the profitability but the very existence of the vertically integrated IOCs may be in doubt. IOCs look more and more like the business dinosaurs of the energy industry as they are increasingly unable to book new reserves because they cannot sign sufficient production sharing agreements. They are also losing their technological edge to more specialized firms, have no national reserves upon which to rely as their NOC competitors do, and do not have sufficient profits upon which to draw to meet the ever increasing financial challenges of upstream development. The earnings of the world-leading IOC Exxon,

for example, have suffered over the past few years as a result of heavy investment but few production gains, with the company now forced to reduce future spending. BP, which under previous leadership sought to move “beyond petroleum,” ultimately abandoned the hope of becoming an integrated energy conglomerate that would include renewables alongside its traditional hydrocarbon focus. BP continues to sell assets in the hopes that it will stabilize losses and somehow manage to extract more profit from reduced operations.

The relevance to MENA of the global shift from IOCs to NOCs, and now to a much more variegated, specialized, and technologically driven global oil and gas industry that is able to produce fossil fuels in previously unknown or unpromising areas, lies in the very normalization of that formerly unique and uniquely profitable industry. Combined with the rapidly escalating costs of upstream activities, the implication is that reserves alone are no longer a sufficient lure to stimulate development. The IOCs, formerly one-stop shops that provided planning, capital, technology, and even markets, are now hobbled. The result is that they are typically unwilling or unable to be the sole partners of producing countries, even if those countries were to want them in that role. The NOCs suffer from similar weaknesses, aggravated in many cases by their governments creaming profits for other uses. The emerging, dynamic, and technologically specialized energy companies are too small

to generate their own investment capital or to bear the magnitude of risk that the IOCs and NOCs have traditionally assumed. As a consequence of these interrelated changes that have transformed the global fossil fuel business, MENA's prodigious reserves are no longer a sufficient incentive in themselves to drive development. Costs and risks are now much more carefully calculated by potential partners. Iraq, for example, whose massive reserves are second in the region only to those of Saudi Arabia, has been unable to raise production to levels achieved under Saddam Hussein and has witnessed the departure not only of Exxon but of smaller firms.

The related problem is securing finance for increasingly expensive upstream development, which the IEA reports as having doubled in cost worldwide in the past decade. In MENA, however, the Arab Petroleum Investments Corporation (APICORP) reports that the cost of energy projects has more than tripled over the same period, due largely to risk premiums and costs associated with the "excessive largeness"

of MENA energy projects. Between now and 2018 APICORP estimates MENA's total capital requirements for energy projects at \$765 billion, an amount it believes will be difficult to raise. The historic sources of capital for upstream projects in MENA have been local equity in the forms of retained earnings and governmental allocations, complemented by loans, principally from international banks and IOCs. These sources are now under strain. The earnings of most MENA NOCs have stagnated for some three years and show few signs of significant increases in the face of stable, if not declining, real prices for their products. Most MENA governments and especially those of the oil-rich GCC countries dramatically increased public allocations in response to the "Arab Spring"—allocations that have since become permanent entitlements. While GCC budgets are generally in balance and sovereign debt relatively low, surplus revenues to meet rapidly escalating costs for upstream development activities are not readily available. As for international banks, since 2008 they have concentrated more on

rebuilding capital reserves than on providing new loans. The available data also suggests that these banks have become more and more wary of loans to MENA in general and to its energy sector in particular. MENA energy investment in 2013 comprised some 10 percent of total global energy investment, but the

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region attracted only 2.2 percent of all loans extended to energy industries worldwide. Loans to all MENA economic sectors from all sources halved from 2010 to 2012 before increasing slightly in 2013, primarily because of new loans from MENA national and regional banks. APICORP reports that only Saudi Arabia, the UAE, and Kuwait have not experienced difficulty in accessing new loans. The obvious solution to the financial crunch facing MENA energy industries is for relevant national companies to raise equity capital through stock issues. This, however, would require more transparency and imply the loss of at least some sovereign control, so it is not an option that has yet been seriously developed. The present proportion of share capital in funding MENA energy investment is less than 1 percent, and there are few prospects that it will be increased soon or dramatically.

The ongoing transformation of the global energy business, combined with increasingly competitive access to finance, are squeezing producers in MENA more than those in other regions. Most MENA governments and the NOCs they control have not adjusted their development or financial strategies sufficiently to cope with these challenges. The region as a whole suffers from elevated political risk, which aggravates costs of doing business already comparatively high because of deficient business environments resulting from governance shortcomings. For several decades MENA oil and gas exporting countries have essentially been immune to global economic competition because of

the lure of their abundant, easily accessible oil and gas. As this industry becomes more “normal,” that lure will no longer suffice. Whether MENA governments, more reliant on their energy revenues than those of any other region, can adjust sufficiently rapidly and thoroughly to meet this challenge is a vital question for them and for the world. The profound time length and ever growing degree of their hydrocarbon dependence, combined with their track records of authoritarian resistance to both political and economic change, suggest that they may fail to meet the challenges posed to them by the energy revolution. ■

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