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Middle East and North Africa Unrest: Implications for Oil and Natural Gas Markets

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Summary

Political unrest in the Middle East and North Africa (MENA) has contributed to higher oil prices and added instability to energy markets. Supply disruptions and fears about the possible spread of unrest to major exporters have pushed prices higher. Even if the crisis abates, some risk premium may persist to the degree that market participants fear such an event could occur again.

Higher oil prices can negatively impact the economies of oil importing countries. The cost of oil is the primary determinant of gasoline prices and prices of other petroleum products; increased costs can be a burden on households and many businesses. Rising import costs for oil, natural gas and petroleum-based products can be a drag on economic growth by negatively affecting the trade balance. This may slow the current economic recovery, though it is not expected to derail it.

Many energy policy options to address vulnerability to disruptions and higher prices, such as what is taking place in MENA, are long-term in nature. It takes a long time for the energy sector to make material shifts, be they through renewables, efficiency, or increased domestic oil and gas production. Short-term energy policy options (as opposed to the broader national security and diplomatic issues) are limited. Oil exporters with spare production capacity, particularly Saudi Arabia, may make short-term decisions to try to moderate prices by adjusting production levels, but their ability and willingness to do so are often based on internal decisions. For more information on the political unrest in MENA, see the CRS Issue in Focus page on the Middle East and its associated reports.

Part of the U.S. energy policy debate around recent unrest has focused on whether it is appropriate to release oil from the Strategic Petroleum Reserve (SPR). The government holds the SPR to mitigate the impacts of a "severe energy supply interruption." Proponents of using the SPR point out that there is a disruption to oil production in Libya and the resulting price increase negatively impacts the U.S. economic recovery. Critics question whether this is the appropriate time to release oil from the SPR or whether it should be saved to guard against larger future disruptions, and emphasize that the SPR has not traditionally been viewed as a device to manipulate prices.

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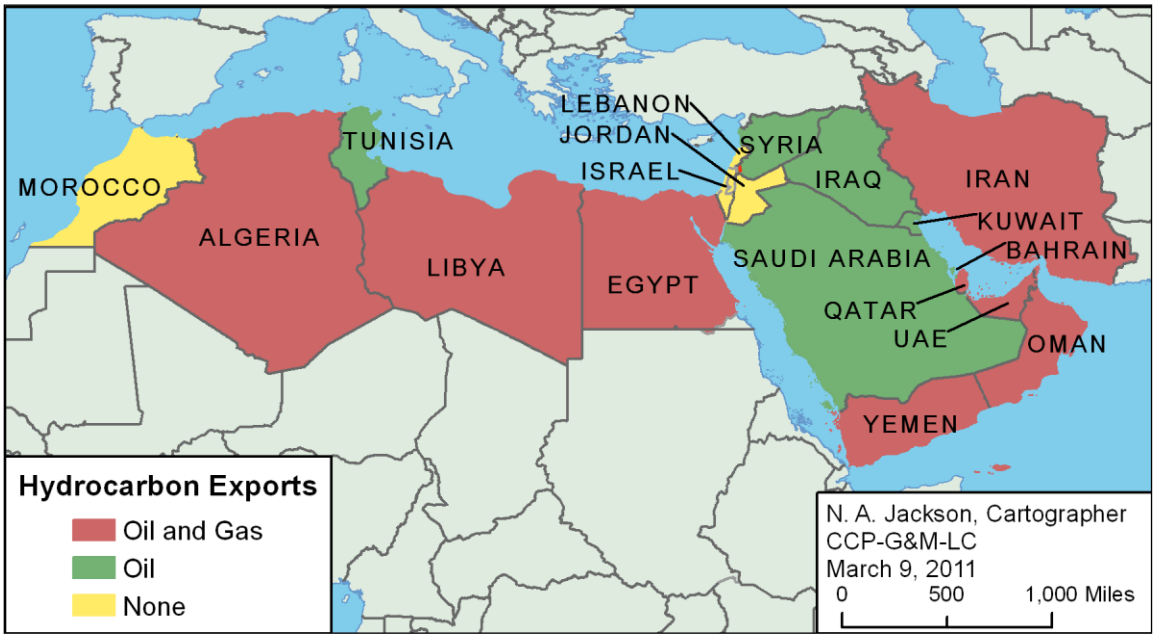
Introduction

Recent unrest in the Middle East and North Africa (MENA) region has affected international energy markets and put upward pressure on oil prices.[1] MENA is home to some of the world's largest oil and natural gas producers and exporters. The region's exporters account for roughly 40% of oil and 20% of natural gas traded internationally. MENA countries also hold some of the largest reserves of oil and natural gas. (See the **Appendix** for energy profiles of the MENA countries.) This paper examines the consequences of the recent unrest on oil and natural gas markets, both in the short term and longer term.

Figure 1. Map of the Middle East and North Africa



Source: Based on U.S. State Department information.

Notes: MENA includes Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, UAE, and Yemen. The unclear border between Egypt and Sudan is due to a border dispute.

Short-Term Pricing Pressures

Energy prices can fluctuate based on current energy supply and demand conditions, expectations about future supply and demand, and financial market conditions. As a major source of the world's oil and natural gas production, MENA is critical to global energy markets. Current unrest there has shut down some energy production and raised uncertainties about future supply from the region. Some regional producers are seeking to reassure global energy markets, amid fears that unrest could spread to major producers or disrupt regional commerce. Oil is traded globally and oil prices are set in a globally integrated market under relatively short-term contracts. Consequently, what happens in any one part of the market—especially as significant a component as MENA—can affect the price of oil everywhere regardless of where the oil is produced or

[1] For detailed reports on political developments in the region, see reports at http://www.crs.gov/Pages/SubIssue.aspx?CLIID=282&ParentID=29.

consumed. Natural gas markets have also been affected, but natural gas is not traded as widely as oil. Outside of North America and the United Kingdom, natural gas is traded mostly under long-term contract, and international market pricing is not as flexible as oil pricing. Consequently the effects of MENA unrest vary more by region, with the greatest impact currently being felt in Europe.

Unrest Contributes to Higher Oil Prices

The Brent crude oil price (a key international reference or benchmark) increased by nearly $20 per barrel from December 17, 2010, when protests started in Tunisia, to $113 per barrel on March 8, 2011, by which point unrest had spread through Egypt, Bahrain, Libya, and elsewhere.[2] Oil prices had already been increasing throughout the fourth quarter of 2010—due largely to the global economic recovery and the resulting increase in oil demand—but threats to oil supply from, and oil transportation through, MENA pushed them up further than might otherwise have been the case. The unrest has contributed to higher prices by causing some supply reductions and giving rise to worries that unrest may spread to the region's larger energy producers.

The MENA region includes some of the world's largest oil exporting countries and most important shipping chokepoints. The region produces 29.1 million barrels per day (Mb/d), a third of global oil supply, and its oil exports equal roughly 40% of the world's oil trade (see **Table 1**). Unrest in Egypt in January and February raised concerns of disruptions to oil and natural gas moving between the Red Sea and the Mediterranean, highlighting transit risks. Turmoil in Libya, a much bigger oil exporter than Egypt, and unrest in the Persian Gulf state of Bahrain increased concern in oil markets. As of March 2, 2011, estimates for how much oil production has been shut down in Libya varied, ranging from 0.8 Mb/d to 1.2 Mb/d.[3] (For context, Libya produced 1.8 Mb/d last year, and the global oil market is roughly 86 Mb/d.) Several U.S. companies are invested in Libya's energy production, including ConocoPhillips, Hess, and Occidental Petroleum; they are minority partners in their joint ventures with the Libyan National Oil Company.

Saudi Arabia and Kuwait have publicly offered to make up any shortfall from the Libyan disruption by using their spare oil production capacity, and industry data show that Saudi Arabia has increased production by about 400,000 barrels per day. But some of the additional Saudi volumes may be of lower quality (heavier and higher in sulfur content) than the Libyan crudes, making them an imperfect substitute for certain refiners.[4] European refineries not equipped to process the lower quality crudes may have to source cargoes from places like Nigeria and Azerbaijan, which have crude closer in quality to the lost Libyan supplies.[5] Other refineries around the world, particularly some of the new refineries in Asia, may be better able to absorb the additional heavy, higher sulfur crude from Saudi Arabia, but at least in the short run there may be a dislocation that may raise prices, particularly for light, low sulfur crude, as global supply is redistributed. The transition may have some leeway as a number of European refiners are

[2] The price for West Texas Intermediate crude, the benchmark most often cited in the United States, has not increased by as much due to a variety of factors, including greater integration between the market for Brent and crudes from MENA. For details about recent developments in the Brent-WTI price spread, see http://www.eia.doe.gov/todayinenergy/detail.cfm?id=290.

[3] Christopher Johnson et al., "Libyan oil production, outage, exports, customers," *Reuters*, March 2, 2011.

[4] International Energy Agency, *Oil Market and Libyan Supply Update*, Paris, 2011, http://www.iea.org/files/final_20110225_libyan_update.pdf.

[5] Sherry Su, "Saudi Arabia Said to Offer Europe Refiners Extra Oil This Month," *Reuters*, March 2, 2011.

undergoing prescheduled maintenance in March, though the situation may tighten as they come back into operation in April.[6]

Table 1. MENA Oil Data

2009 figures in millions of barrels a day (Mb/d) or share of global totals

	Consumption	Production	% of World Production	Production Capacity	Exports	% of Global Oil Trade
Saudi Arabia	2.4	9.8	11.6%	12.8	7.3	13.8%
Iran	1.7	4.2	4.9%	4.3	2.5	4.7%
UAE	0.5	2.8	3.3%	3.1	2.3	4.4%
Iraq	0.6	2.4	2.8%	2.4	1.8	3.3%
Kuwait	0.4	2.5	3.0%	2.8	2.1	4.0%
Algeria	0.3	2.1	2.5%	2.1	1.8	3.4%
Libya	0.3	1.8	2.1%	1.8	1.5	2.9%
Qatar	0.1	1.2	1.4%	1.4	1.1	2.0%
Oman	0.1	0.8	1.0%	0.8	0.7	1.3%
Yemen	0.2	0.3	0.3%	0.3	0.1	0.2%
Syria	0.3	0.4	0.5%	0.4	0.1	0.2%
Other MENA	1.5	0.8	1.0%	0.8	[a]	NA
MENA Total	**8.4**	**29.1**	**34.5%**	**33.0**	**20.7**	**39.1%**
World Total	**84.4**	**84.4**	**100.0%**	**88.5**	**52.9**	**100.0%**

Source: Multiple U.S. Energy Administration databases and the BP Statistical Review of World Energy 2010.

Notes: Italics denotes members of the *Organization of the Petroleum Exporting Countries (OPEC)*. Production includes natural gas liquids.

a. These countries are net importers with about 0.7 Mb/d coming from other countries.

Of greater concern to oil markets is the risk that unrest may spread to other, larger producing countries in the region.[7] Of particular concern would be if unrest spreads to Saudi Arabia. It is the world's second-largest producer behind Russia. In addition to its current output, as of the end of 2010, Saudi Arabia also held about 80% of the world's spare oil production capacity[8]—capacity that is now being used to offset supply disruptions elsewhere. If significant geopolitical unrest emerges in Saudi Arabia, market concern may drive prices considerably higher. If any such unrest somehow disrupts Saudi oil production, it is difficult to predict how high oil prices may rise. The security of the Strait of Hormuz, between Iran and Oman, is also of great concern. A third of the world's oil trade passes through the Strait of Hormuz, and any closing or confining of transit could also substantially raise oil prices.

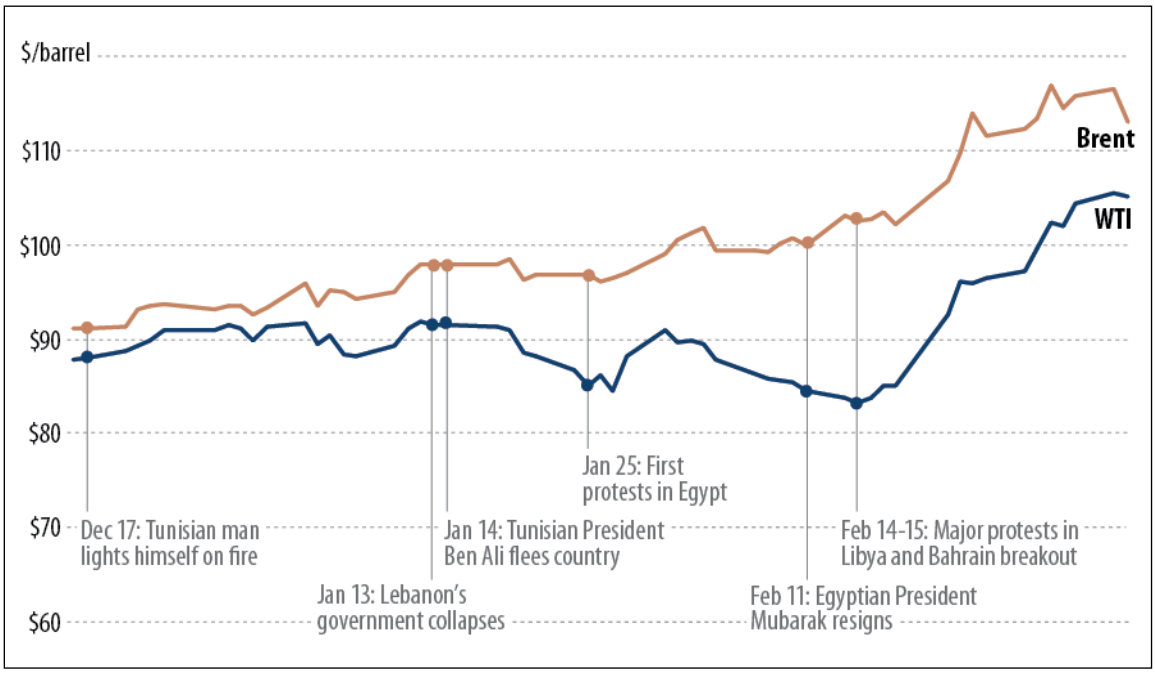
[6] Gabriele Parussini, "IEA: Libya Unrest Starting to Hit Oil Supplies," *New York Times*, March 5, 2011.

[7] Jad Mouawad and Clifford Krauss, "Mideast Politics Again a Factor in Oil Prices; Despite Increased Output from the Saudis, Markets Fear the Spread of Unrest," *International Herald Tribune*, March 1, 2011.

[8] Spare capacity estimate is from the EIA's Short-Term Energy Outlook (http://www.eia.gov/emeu/steo/pub/contents.html). Note, only Members of the Organization of the Petroleum Exporting Countries (OPEC) hold spare production capacity. The cartel aims to adjust supply to manage oil prices, which requires holding some capacity in reserve. Saudi Arabia, Kuwait, and Libya are members. Egypt is not.

Figure 2. Recent Benchmark Oil Prices

Prices from December 16, 2010, through March 8, 2011



Source: U.S. Energy Information Administration - http://www.eia.doe.gov/dnav/pet/pet_pri_spt_s1_d.htm.

Notes: WTI is the main U.S. benchmark for crude oil prices, while Brent is the main European benchmark price. The difference between WTI and Brent prices is attributed to other supply and demand issues besides the MENA unrest. For more details, see footnote 2.

Impacts on the U.S. Oil Market

As of 2010, the United States imported half of the oil it consumed from abroad—9.4 Mb/d, of which 2.3 Mb/d came from MENA. More than 2.0 Mb/d came from three countries: Saudi Arabia, Algeria, and Iraq. Imports from Libya were less than 0.1 Mb/d; most of Libya's oil and other petroleum product shipments go to Europe. Because the oil market is globally integrated, the disruption of Libyan exports to Europe has affected the price of oil worldwide, including all U.S. imports and domestic production.

Economically, higher oil prices have a negative impact on household budgets and national economic growth for countries that are major importers.[9] According to recent testimony from Federal Reserve Chairman Ben Bernanke, while rising oil prices increase inflation and take income out of the pockets of consumers, reducing consumer spending and confidence, the recent increase does not yet appear to be a significant risk for the recovery or inflation.[10] Some analysts

[9] Being a net importer of a particular good is not necessarily negative from an economic point of view. The United States imports many products because they would be more costly to consumers and businesses were they produced domestically. However, imports can become a drag on economic growth when the cost of imported goods rise, and greater import dependence can increase the degree to which a price shock disrupts the economy. Rising oil prices may have contributed to the U.S. recession in 2007-2008, according to James D. Hamilton, a Professor of Economics at the University of California, San Diego ("Causes and Consequences of the Oil Shock of 2007-08," Brookings Papers on Economic Activity, April 27, 2009, http://dss.ucsd.edu/~jhamilto/Hamilton_oil_shock_08.pdf).

[10] U.S. Congress, Senate Committee on Banking, Housing, and Urban Affairs, *The Semiannual Monetary Policy Report*

estimate that a sustained $10 increase in the oil price can reduce U.S. economic growth by roughly two-tenths of a percentage point.[11] However, this may not account for potential secondary effects such as through consumer confidence or other areas. The benchmark U.S. oil price on March 8, 2011, was $105 per barrel,[12] versus an average of $80 per barrel in 2010.[13]

Even under a scenario in which the United States produced as much oil as it consumes, international events would still affect U.S. oil prices as long as international trade were permitted. The drag on economic growth via the trade deficit would be muted in such a scenario. Households and businesses could still face higher (or lower) costs due to international events, but wealth would be redistributed domestically from energy consumers to producers to a greater degree than it is today.

U.S. Natural Gas More Insulated from MENA Turmoil

There is much less risk to the United States from MENA-related disruptions of natural gas supply. The United States imports about 16% of the natural gas it consumes, nearly all via pipeline from Canada. In 2009, MENA liquefied natural gas (LNG)[14] accounted for less than 1% of U.S. consumption. Since the beginning of the unrest, U.S. natural gas prices have actually declined.[15] (See **Figure 3**.)

to the Congress, 112th Cong., 1st sess., March 1, 2011.

[11] Dean Maki, Barclays Capital, as quoted by Motoko Rich et al., "Rising Oil Prices Pose New Threat to U.S. Economy," *The New York Times*, February 24, 2011.

[12] "Energy & Oil Prices," *Bloomberg*, February 28, 2011, http://www.bloomberg.com/energy/.

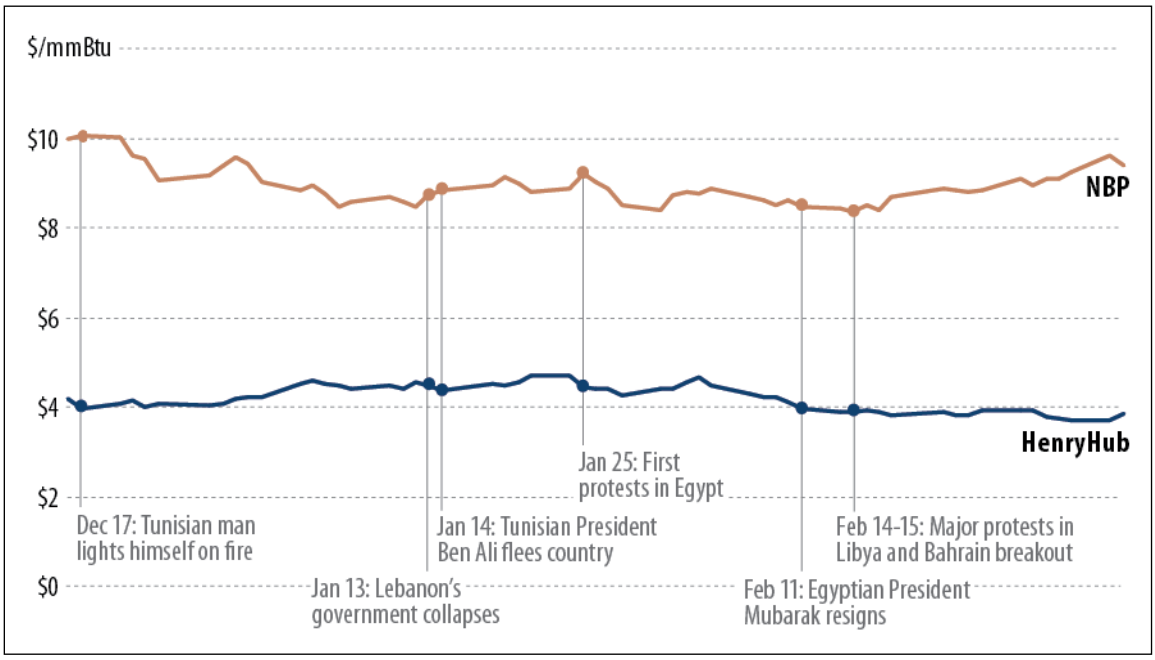
[13] U.S. Energy Information Administration databases (http://www.eia.gov/dnav/pet/pet_pri_spt_s1_a.htm).

[14] LNG is natural gas that is cooled to -260 °F, which decreases it in volumetric size to 1/600th, making it economical to transport by tanker.

[15] Natural gas tends to be priced in dollars per million British thermal unit ($/mmBtu) as in **Figure 3**. The Btu component of the units is to express the energy content as opposed to the volumetric units (billion cubic feet (bcf)) used in **Table 2**. To convert from 1 mmBtu to bcf multiply by 0.00099.

Figure 3. Recent Natural Gas Prices

Prices from December 16, 2010, through March 8, 2011



Data Source: U.S. Energy Information Administration, http://www.eia.doe.gov/dnav/ng/ng_pri_fut_s1_d.htm.

Notes: mmBtu = million British thermal units. NBP, the National Balancing Point, is a key trading point for natural gas in the United Kingdom and a reference price for the rest of Europe. Henry Hub is the equivalent for the United States and is the basis for the NYMEX price. There is no daily benchmark price for Asia, which tends to pay the highest prices for natural gas.

The global natural gas market is much more regionally segmented than the oil market, and events in one part of the world do not necessarily affect prices everywhere. Only about 30% of natural gas is traded internationally, versus 60% for oil. Most natural gas exports from MENA go to Europe or Asia, where supplies are mostly sold under long-term contracts, insulating consumers in the short term from any price fluctuations caused by unrest. **Figure 3** highlights the minimal influence the unrest has had on natural gas markets. Some companies have had to scramble for LNG cargoes to limit their risk of a natural gas supply disruption, but there is ample spare capacity to meet this demand. The northern hemisphere winter is the main consumption season for natural gas, used primarily for heating, and prices will mostly be affected by changes in temperature.

Europe is the region most vulnerable to a natural gas shutdown in MENA, particularly from North African countries. The complete cut off by Libya of its natural gas exports, which almost exclusively go to Italy, has contributed to a 12% increase in European spot prices since major protests began. Russia has increased its pipeline exports to Italy to compensate for the shortfall. However, since a market vendor in Tunisia lit himself on fire in December, European prices are down almost 7%. If supply from Algeria—Europe's third-largest supplier of natural gas behind Russia and Norway—were for some reason reduced or cut off, Europe would be hard-pressed to replace this gas. (See the Algeria synopsis in the **Appendix** for additional information.) Europe's network of natural gas pipelines is designed to move natural gas from east to west, and requires more interconnections to move supplies throughout the region. In contrast, Asian prices have remained almost flat since the unrest started in Libya.

Table 2. MENA Gas Data

2009 figures in billion cubic feet (bcf) per year or % of global totals

	Consumption	Production	% of World Production	Exports	% of World Natural Gas Trade
Qatar	745	3,154	3.0%	2,408	7.7%
Algeria	1,016	2,876	2.7%	1,860	6.0%
Egypt	1,567	2,214	2.1%	647	2.1%
Oman	520	875	0.8%	408	1.3%
Libya	212	562	0.5%	349	1.1%
UAE	2,086	1,725	1.6%	248	0.8%
Iran	4,649	4,632	4.4%	200	0.6%
Yemen	4	18	<0.5%	15	<0.5%
Other MENA	4,359	4,072	3.8%	0	0%
MENA Total	**15,158**	**20,127**	**18.9%**	**6,135**	**19.7%**
World Total	**106,764**	**106,471**	**100.0%**	**31,184**	**100.0%**

Source: U.S. Energy Information Administration, multiple databases.

Notes: Italics denotes member of the *Gas Exporting Countries Forum*, a nascent cartel-like organization. Iran, Oman, and the UAE import natural gas in addition to exporting it.

Long-Term Considerations: Risks May Persist

Oil and natural gas exporting countries in MENA rely heavily on revenues from energy exports to fund government budgets and fuel their economies. And MENA exports will make up a substantial component of world oil and gas trade for the foreseeable future. MENA countries hold approximately 61% of oil reserves and 45% of natural gas reserves. Changes in government policies that affect the development of these resources will have a long-term impact on global markets. MENA is home to 8 of the 12 countries in the Organization of the Petroleum Exporting Countries (OPEC)[16] and 5 of the 11 members of the Gas Exporting Countries Forum (GECF).[17]

If unrest persists in MENA countries, the long-term effects may be incorporated into oil and natural gas market expectations. Energy markets may evaluate the risk associated with exports from MENA differently in the future. The outbreak and persistence of unrest across the region has highlighted geopolitical risks that may not have been fully recognized before the crisis. Even after the current outbreak of unrest subsides, concerns that it could re-emerge may mean that some part of the current risk premium may persist.

Countries that undergo regime change may re-evaluate national energy development, production, and export policies. In the short term, regime change is likely to support relatively higher prices by creating uncertainty. Long-run risks from regime change and energy policy re-evaluation from energy exporting countries can vary on a case-by-case basis. Risks from regime change in

[16] OPEC members include Algeria, Angola, Ecuador, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates (UAE), and Venezuela. Iraq is not currently participating in OPEC's oil production quota agreements.

[17] GECF members include Algeria, Bolivia, Egypt, Equatorial Guinea, Iran, Libya, Nigeria, Qatar, Russia, Trinidad and Tobago, and Venezuela.

countries such as Libya or Iran, historically sources of instability to the oil market, may be different than regime change in Saudi Arabia. On the other hand, market observers may judge that the revenue requirements of many regional producers create strong incentives for energy policy continuity in producing states, regardless of the makeup of their governments.

Even absent regime change, the current crisis may foster changes in MENA energy policy. Some governments have already increased public expenditures in apparent hope that it may dampen unrest, and these expenditures may increase revenue needs over the long term.[18] Increasing energy consumption in some exporting countries also creates complex choices for government and industry. Should increases in government expenditures be sustained, these countries may require greater revenues from oil and natural gas exports. Whether they attempt to do this through higher export volumes than would otherwise be the case (which may contribute to lower prices), or coordinating lower exports than would otherwise be the case to raise prices, is unclear.

Policy Considerations

Policy options involving action or oversight from Members of the 112th Congress fall into three categories: short-term energy policies, long-term energy policies, and addressing the underlying political unrest. The oil market is global; no one country controls it, though the policies of larger producer and consumer nations can have more influence than others. Policy measures aimed at reducing the price of oil or U.S. import dependence tend to focus on increasing oil supply (or the supply of oil alternatives) and reducing demand. But the energy industry has long lead times and is capital intensive, so it takes long periods of time to implement most supply and demand measures. As a result, there are limited short-term policy options, which Congress recognized in its justification for establishing the Strategic Petroleum Reserve (SPR). The SPR created a short-term policy tool that reduces the vulnerability of the United States to the consequences of a severe energy supply interruption. However, debates have continued concerning the appropriateness of using the SPR and what qualifies as "severe."

Much of the discussion around energy policy responses to MENA unrest is focused on oil. U.S. natural gas consumption, as mentioned above, is mainly supplied by domestic resources with some imports largely from Canada. As natural gas is currently not a substitute for oil, particularly in the transportation sector, policies to increase production will have minimal if any effect on U.S. oil consumption. There are proposals to encourage more natural gas use in the transportation sector, but these proposals are long-term in nature. The United States uses very little oil in electricity generation, making the effect of fuel switching to natural gas in that sector minimal. Globally, some U.S. companies have applied for permits to export natural gas, but the limited LNG additions would unlikely change the overall global natural gas picture.

Strategic Petroleum Reserve

The U.S. government holds 726.5 million barrels of crude oil in the SPR—equivalent to 75 days of imports—to respond to supply interruptions.[19] Oil from the SPR could reach markets within 13

[18] Ulf Laessing, "Saudi King Back Home, Orders $37 Billion in Handouts," *Reuters*, February 23, 2011. Also "Oman Ups Minimum Monthly Wages to $520 for Nationals," *Reuters*, February 16, 2011.

[19] The SPR can hold a maximum of 727 million barrels of oil. Currently, the SPR contains 292.5 million barrels of sweet crude and 434 million barrels of sour. There have been calls for the SPR to hold refined products in addition to crude oil as some other members of the IEA have done. This was particularly raised after hurricanes Katrina and Rita shut down U.S. refineries in 2005.

days of the President authorizing its release at a maximum rate of 4.4 Mb/d, though any market impact could be more immediate once the market knows it has been made available. Further, some of the light, sweet barrels available in the SPR are a closer match to shut-in Libyan crude (or the Nigerian, Azeri, etc., crude that may substitute for it) than some of the heavier and/or higher sulfur crude that may come out of Saudi Arabia. An SPR release can be coordinated with other members of the International Energy Agency, which also hold strategic reserves.[20] However, using the SPR at any given point may leave less oil in storage to deal with subsequent disruptions.[21]

The Energy Policy and Conservation Act of 1975 (P.L. 94-163, EPCA), establishing the SPR, authorizes a drawdown upon a finding by the President that there is a "severe energy supply interruption"—an energy supply shortage that is likely to be of significant scope and duration and may cause major adverse impact on national safety or the national economy which results from an interruption in the supply of imported or domestic petroleum.[22] What qualifies as a severe interruption is a matter of debate (see below). EPCA also includes provisions for test sales and exchanges of crude in the SPR.[23]

In its FY2012 Budget Request, the Department of Energy (DOE) called for a sale of approximately 6 million barrels of oil for operational purposes. One of the 62 caverns that hold the reserve, one at the Choctaw Bayou SPR site in Louisiana that had originally been assessed as able to hold 7.5 million barrels, has leached toward the edge of the salt dome it sits under and may now only be able to safely hold 3.2 million barrels.[24] The excess oil is being moved to other locations, but the DOE is concerned about overfilling these other locations and has proposed selling the excess crude rather than risk losing it through leaks.[25] The sale will reduce the crude oil stocks to 74 days of imports.

Congressional views on the use of the SPR vary. Some have supported the sale of 6 million barrels for operational reasons, citing fiscal and environmental concerns about losing the oil.[26]

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[20] Like the United States, the other members of the IEA have agreed to hold strategic stocks and coordinate their use in the event of global supply disruptions. IEA members collectively hold 1.6 billion barrels in strategic stocks. Members are required to hold 90 days' worth of imports, a requirement met through a combination of government held and industry held stocks. The 726.5 million barrels mentioned above is held by the U.S. government.

[21] Refilling the SPR would also temporarily increase demand and put upward pressure on prices. The current average cost for oil in the U.S. SPR is $29.76 per barrel, well below current market prices and well below last year's average market price of $80 per barrel, according to DOE (http://fossil.energy.gov/programs/reserves/spr/spr-facts.html). It is unlikely that the new oil to refill the SPR would be that inexpensive.

[22] Office of Fossil Energy, U.S. Department of Energy, *Strategic Petroleum Reserve - Quick Facts and Frequently Asked Questions*, August 10, 2010, http://fossil.energy.gov/programs/reserves/spr/spr-facts.html.

[23] Crude has been sold from the SPR twice for major emergencies. In 1990/91, 21 million barrels were sold in response to supply disrupted by Iraq's invasion of Kuwait and U.S. Operation Desert Shield/Storm. By late 1990, the invasion had removed 4.6 Mb/d of oil from the market. The only other outright emergency sale was for 11 million barrels in 2005 after Hurricanes Katrina and Rita. More than 1 Mb/d of oil production was shut-in by the storms in September 2005. Oil has also been loaned from the SPR under exchange agreements on 10 occasions, many of them also involving smaller domestic supply disruptions. Apart from the crude sale after Hurricanes Katrina and Rita, 9.8 million barrels were also loaned out under exchange agreements. Separately, Congress also authorized the non-emergency sale of 28.1 million barrels from the SPR in 1996 to raise revenues. For more on the specific sales and exchanges of the SPR, see http://fossil.energy.gov/programs/reserves/spr/spr-drawdown.html#katrina_sale.

[24] Jennifer Dloughy, "Some Oil from Reserve to Be Sold," *Houston Chronicle*, February 16, 2011.

[25] U.S. Congress, Senate Committee on Energy and Natural Resources, *FY 2012 Budget for the Department of Energy*, To receive testimony on the U.S. Department of Energy's budget for fiscal year 2012 by Energy Secretary Chu, 112th Cong., 1st sess., February 16, 2011.

[26] Office of Senator Jack Reed, "Reed & Whitehouse Urge Obama to Swiftly Sell $500 Million of Emergency Oil from

Others have asked the Administration to stand ready to draw down the SPR if the situation in MENA deteriorates any further, posing greater risk to oil supply.[27] And still others are calling for an immediate SPR release to bring down prices.[28] Critics of tapping the reserve have questioned the Administration's motive in selling crude for operational reasons, and suggested that the SPR should be preserved for more severe disruptions, resisting calls that it be used to affect prices. Industry analysts disagree whether selling crude from the SPR will have a significant market impact. On March 8, 2011, officials stated that the Administration is monitoring the situation and that drawing down the SPR is an option under consideration.[29]

Other Policy Options

The SPR was established at least in part because there are few other short-term options to mitigate the effect of severe oil market disruptions. Price controls implemented in the 1970s, also responses to MENA oil supply disruptions, were ultimately rejected as counterproductive to long-term energy goals.[30] When prices were rising rapidly in 2008, Congress considered but did not pass a temporary "gas tax holiday." The proposal, S. 2890 in the 110th Congress, would have amended the Internal Revenue Code of 1986 to reduce the 18.4¢ per gallon federal gas tax and 24.4¢ diesel tax to zero during the summer driving season. It met significant opposition on concerns it would contribute to higher oil import dependence by spurring increased consumption and jeopardize programs funded by the Highway Trust Fund, the recipient of the fuel excise tax.[31]

Apart from the SPR, much of the policy debate stemming from the unrest in MENA and its impacts on oil markets has focused on options that take a long time to implement. Some Members of Congress and others cite the current unrest in MENA and the resulting increase in oil costs in backing proposals ranging from increasing support for domestic oil and gas production, and renewable energy, or mandating greater efficiency. Such proposals may contribute to lower import dependence but only over time, as they take months or years to make material impacts on liquid fuels supply and demand. Further, while such moves would reduce the drag on economic growth when oil prices rise, American consumers could still face higher gasoline prices at the pump due to international disruptions of oil supply, since oil prices are set in a global marketplace. Discussing these numerous options falls beyond the scope of this report.

Also, Congress may seek to use its authorization, appropriations, and oversight powers to monitor and affect the executive branch's efforts to address the underlying political unrest in MENA. For more information on political unrest in MENA, see the CRS Issue in Focus page on the Middle East and its associated reports.

Faltering Cavern," press release, March 1, 2011, http://reed.senate.gov/newsroom/details.cfm?id=331504.

[27] Senator Jeff Bingaman, "World Oil Supplies," remarks in the Senate, *Congressional Record*, daily edition, vol. 157 (March 2, 2011), pp. S1106-1107.

[28] Letter from Representatives Edward J. Markey, Rosa L. DeLauro, and Peter Welch to The Honorable Barack Obama, President, February 24, 2011, http://democrats.naturalresources.house.gov/sites/democrats.resourcescommittee.house.gov/files/2011-02-23_SPR_Letter_to_Pres_Obama.pdf.

[29] "US Says SPR Release 'Option We Are Considering,'" *Platts*, March 7, 2011.

[30] See CRS Report RL31720, *Energy Policy: Conceptual Framework and Continuing Issues*, by Robert Bamberger.

[31] "Idea of Gas-Tax Holiday Runs into a Dead End," *Associated Press*, July 19, 2008.

Appendix. Country Factors

Political profiles of MENA countries are available via the CRS Issue in Focus page on the Middle East.

Algeria

Oil Exports: Algeria is in the top 15 of oil exporters, sending approximately 1.2 Mb/d around the world. Europe is the primary recipient of Algerian oil. Algeria is also a main exporter to Europe of naphtha, which is used to make high octane gasoline and jet fuel, and condensate, a light natural gas liquid.

Natural Gas Exports: Europe, mainly Italy, is Algeria's primary customer for natural gas. Algeria is Europe's third-largest supplier of natural gas, behind Russia and Norway, exporting by both pipeline and LNG. Much of Algeria's natural gas exports come from the Hassi R'Mel field. There are two main export pipelines—the Transmed pipeline going to Italy via Tunisia and the Maghreb-Europe gas pipeline going to Spain via Morocco—and two LNG export terminals, Arzew and Skikda. Arzew was the first LNG facility built in the world in 1964. There are three additional pipelines at various stages of development: the Medgaz pipeline going directly to Spain, the Galsi pipeline going directly to Italy, and the Trans-Sahara pipeline that would bring Nigerian natural gas to Europe via Algeria. Medgaz is scheduled to open in 2011, Galsi in 2012, and there is no date for the Trans-Sahara as it is unlikely to be constructed.

Supplemental Energy Concerns: None.

Bahrain

Oil Exports: Bahrain shares the Abu Safah field with Saudi Arabia and is a minor exporter of oil.

Natural Gas Exports: Bahrain is not an exporter of natural gas.

Supplemental Energy Concerns: Bahrain is linked by a causeway to the Eastern Province of Saudi Arabia, which serves as the production and export hub for most of Saudi Arabia's oil. As such, unrest in Bahrain may concern oil markets as a possible indication of potential risk to supplies from Saudi Arabia. Bahrain also hosts the headquarters of the U.S. Navy's Fifth Fleet, which plays an important role in providing maritime security in and around the Persian Gulf.

Egypt[32]

Oil Exports: Egypt is a minor exporter of oil.

Natural Gas Exports: Egypt is the 12th-largest exporter of natural gas, with cargoes going to the United States, Europe, and Asia. However, its main influence is its regional natural gas exports by pipeline to Israel and to Jordan, Lebanon, and Syria by the Arab Gas Pipeline. In 2009, Egypt supplied all the natural gas consumed in Jordan and Lebanon, half of Israel's consumption, and 13% of Syria's consumption.[33]

Supplemental Energy Concerns: Egypt's control of the Suez Canal and the Suez-Mediterranean (SUMED) oil pipeline raised concern during the recent unrest. If both of these transit options

[32] For additional information on Egypt's impact on oil and natural gas markets, see CRS Report R41632, *Implications of Egypt's Turmoil on Global Oil and Natural Gas Supply*, by Michael Ratner.

[33] *BP Statistical Review of World Energy 2010*, BP, p. 28.

were closed it would likely take a few weeks for the oil and natural gas industry to find alternative routes. There would be additional costs to these alternative routes, and many cargoes would have to factor in the required time and cost of going around South Africa's Cape of Good Hope. There are plans to extend the Arab Gas Pipeline to Turkey in order to send natural gas to Europe.

Iran

Oil Exports: In 2009, Iran exported 2.2 Mb/d, making it the third-largest exporter, behind Saudi Arabia and Russia. Although Iran is a major exporter of oil, it imports refined products and has experienced shortages of some products, including gasoline. Kharg Island is Iran's main oil export terminal, with a loading capacity of 5 Mb/d.

Natural Gas Exports: Although Iran is the second-largest reserve holder of natural gas, it is a net importer. Iran exports small amounts of natural gas to Turkey, but imports from Turkmenistan. Additionally, Iran co-operates the South Pars/North Field, the world's largest natural gas field, with Qatar.

Supplemental Energy Concerns: Iran, along with Oman, is one of the littoral countries of the Strait of Hormuz, through which transits approximately 15.5 Mb/d, or nearly a third, of the world's oil trade. If this passage were threatened or closed, the impact on world oil markets would be tremendous, with prices likely reaching new highs. Iran is also a regional exporter of electricity. Iran's belligerent relationship with Israel adds instability to the marketplace, as an attack by either would have a big impact on oil exports and possibly natural gas exports if it extended beyond Iran's borders.

Iraq

Oil Exports: Iraq is one of the countries that could have tremendous growth in its oil production should the country remain stable. In 2009, Iraq exported almost 1.8 Mb/d, making it the 10th-largest exporter. The Basrah oil terminal has a 1.3 Mb/d capacity and is Iraq's main export terminal. Iraq also exports oil by pipeline to Turkey.

Natural Gas Exports: At present, Iraq does not export natural gas, although it does have substantial reserves.

Supplemental Energy Concerns: Iraq has the potential to be among the leading sources of global oil supply growth. It is home to the world's fourth-largest proven oil reserves, behind Saudi Arabia, Canada, and Iran, but development plans may be threatened by unrest.

Israel

Oil Exports: Israel is not an exporter of oil.

Natural Gas Exports: Israel is not an exporter of natural gas, but recent discoveries could make Israel self-sufficient in natural gas and possibly lead to exports.[34]

Supplemental Energy Concerns: Israel's influence on oil and natural gas markets comes from its strained relationships with some MENA countries, and its hostile relationship with Iran. The possibility of Israel attacking Iran over its nuclear program adds instability to the market.

[34] For additional information on Israel's natural gas industry, see CRS Report R41618, *Israel's Offshore Natural Gas Discoveries Enhance Its Economic and Energy Outlook*, by Michael Ratner.

Jordan

Oil Exports: Jordan is not an exporter of oil.

Natural Gas Exports: Jordan is not an exporter of natural gas.

Supplemental Energy Concerns: Jordan is a transit point on the Arab Gas Pipeline from Egypt, which also supplies natural gas to Lebanon and Syria. Rising energy prices were creating significant fiscal challenges for the Jordanian government prior to the recent unrest. Sustained high prices may complicate government efforts to respond to protestor demands and maintain a healthy fiscal balance.

Kuwait

Oil Exports: In 2009, Kuwait ranked as the 11th-largest exporter of oil. Given its proximity to Saudi Arabia, unrest in Kuwait may have a greater market impact than its relative importance as a producer would suggest.

Natural Gas Exports: Despite having ample natural gas reserves, Kuwait actually imports natural gas. In the future, Kuwait reportedly intends to increase its natural gas production to meet domestic demand.

Supplemental Energy Concerns: Kuwait shares an area referred to as the Partitioned Neutral Zone (PNZ) with Saudi Arabia. The resources of the PNZ are developed in a 50-50 relationship with Saudi Arabia.

Lebanon

Oil Exports: Lebanon is not an exporter of oil.

Natural Gas Exports: Lebanon is not an exporter of natural gas.

Supplemental Energy Concerns: Lebanon is a transit point on the Arab Gas Pipeline from Egypt.

Libya

Oil Exports: Prior to the ongoing crisis, Libya was exporting over 1.2 Mb/d of oil, which is approximately 3% of global exports. In addition to its exports, Libya historically has played an important role in the oil industry, with Muammar al Qadhafi and his supporters leading the nationalization effort of most of most Arab countries' oil industry assets in the early 1970s.

Natural Gas Exports: Libya's exports almost exclusively go to Italy and in 2009 made up almost 13% of that country's natural gas consumption. The Greenstream natural gas pipeline to Italy has ceased flows. Libya also exports a small amount of LNG.

Supplemental Energy Concerns: None.

Morocco

Oil Exports: Morocco is not an exporter of oil.

Natural Gas Exports: Morocco is not an exporter of natural gas.

Supplemental Energy Concerns: The Maghreb Europe Gas pipeline from Algeria to Spain transits Morocco.

Oman

Oil Exports: Oman is in the top 20 of oil exporters, accounting for about 1% of global exports.

Natural Gas Exports: Oman is a net exporter of natural gas, but does import a small amount from Qatar. Most of Oman's LNG goes to Asia.

Supplemental Energy Concerns: Oman, along with Iran, is one of the littoral countries of the Strait of Hormuz, through which transits approximately 15.5 Mb/d, or nearly a third, of the world's oil trade. If this passage were threatened or closed, the impact on world oil markets would be tremendous, with prices likely reaching new highs.

Qatar

Oil Exports: Qatar accounted for 2% of the world's oil exports last year.

Natural Gas Exports: Qatar is the fourth-largest exporter of natural gas, but the world's leading exporter of LNG. This gives Qatar greater flexibility in where it sends its natural gas than countries bound by pipelines. Qatar has two LNG complexes—Qatargas and Ras Laffan. In addition to its liquefaction capacity, Qatar also owns interests in LNG import terminals in Europe and the United States and one of the largest LNG tanker fleets. Qatar also exports natural gas by pipeline to the UAE.

Supplemental Energy Concerns: Qatar hosts of the Gas Exporting Country Forum's headquarters in Doha. It is also home to important U.S. military Central Command facilities that support ongoing operations in MENA, Iraq, and Afghanistan.

Saudi Arabia

Oil Exports: Saudi Arabia is the key oil-producing country in MENA, and by most industry measures the world. Besides being the largest exporter of oil, Saudi Arabia is the holder of most of the world's spare production capacity. Key within Saudi Arabia's petroleum complex are two pieces of infrastructure: Abqaiq Oil Processing Center and the Ras Tanura Oil Exporting Terminal. Both of these are essential parts of Saudi Arabia's ability to export oil. Oil is processed at Abqaiq in preparation for export or refining. Abqaiq has a 7 Mb/d oil processing capacity. Ras Tanura, the main export terminal for Saudi oil, has a 6 Mb/d export capacity. Should either of these facilities be shut down, the impact on oil markets would be significant, with prices likely rising to new highs very quickly. Abqaiq was targeted in a failed attack by terrorists in February 2006.

Natural Gas Exports: Although Saudi Arabia is one of the largest producers of natural gas, it does not export any natural gas. Natural gas is used domestically for industry and electric power generation.

Supplemental Energy Concerns: Saudi Arabia has played a key role in OPEC as the swing producer, increasing or decreasing its production to maintain prices. It has also been a moderate voice within the cartel.

Syria

Oil Exports: Syria is a minor exporter of oil.

Natural Gas Exports: Syria does not export natural gas.

Supplemental Energy Concerns: Syria is a transit country for the Arab Gas Pipeline from Egypt. Additionally, Syria could play a role in potential Iraq natural gas exports.

Tunisia

Oil Exports: Tunisia is a minor exporter of oil.

Natural Gas Exports: Tunisia does not export natural gas.

Supplemental Energy Concerns: Tunisia is a transit country for Algeria's Galsi natural gas pipeline to Italy.

United Arab Emirates (UAE)

Oil Exports: The UAE accounted for 5% of global oil traded in 2009 and had the second-largest spare capacity of OPEC members.

Natural Gas Exports: The UAE is a net importer of natural gas, receiving over 600 bcf of natural gas from Qatar via pipeline.

Supplemental Energy Concerns: The UAE is a global financial hub.

Yemen

Oil Exports: Yemen is a minor exporter of oil.

Natural Gas Exports: Yemen is a minor exporter of natural gas.

Supplemental Energy Concerns: Terrorist activity in Yemen has led to concern over its exports of LNG that was destined for the United States. Yemen is a littoral country for a shipping chokepoint called the Bab el-Mandab, through which transited an estimated 3.2 Mb/d of oil last year cumulatively in both directions. The Bab el-Mandab is the southern entry/exit point to the Red Sea and therefore critical to much of the ship traffic that passes through the Suez Canal.

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