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The American energy revolution: challenging Europe and the Middle East

Mark Boris Andrijanič

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Abstract The American energy revolution is depressing oil prices and disrupting global energy flows. The surge in shale gas and tight oil production will most probably help American energy imports and exports to come into balance within the next decade. The energy revolution has increased American self-reliance and strengthened US energy security, while record-low energy prices have boosted its competitive edge, especially over Europe. Moreover, diminishing oil imports are providing fertile ground for a revolution in the US's Middle Eastern policy, leading to a more independent and less engaging American role in the region. While the resulting security vacuum is hurting Europe, the increasingly shared regional interests may lead to enhanced cooperation between the US, the EU and China.

Keywords US energy independence | Shale gas | Tight oil | Middle East | Energy markets | EU

M. B. Andrijanič (✉)
Wilfried Martens Centre for European Studies, Rue du Commerce 20, 1000 Brussels, Belgium
e-mail: mba@martenscentre.eu

Introduction

The American energy revolution has radically transformed the US energy landscape in less than a decade. Surging energy production is increasing US energy self-sufficiency, the holy grail of American energy policy for over 40 years. The US economy appears to be the biggest winner in the new energy reality. The surge in US competitiveness presents an almost insurmountable challenge for important parts of European industry. Yet, is the US, in the wake of diminishing reliance on foreign oil, redefining its role in the oil-rich and conflict-ridden Middle East, causing a US foreign policy revolution in the region? And is Europe on the winning or losing side of this new Middle Eastern reality?

In this article I describe the American energy revolution and argue that, despite growing energy self-sufficiency, the US will remain deeply integrated in the global energy markets. The American energy bonanza will thus continue to have a significant, though not revolutionary effect on the global energy landscape. I also argue that, despite the official US rhetoric, the American energy revolution is causing a somewhat revolutionary shift in the US's Middle Eastern policy. The US's diminishing energy imports seem to be contributing to a less engaging role for the country in the region. The lack of determined American leadership to end the conflicts in Syria and Iraq is also resulting in the European refugee crisis. Without decisive action, the EU is likely to stay on the losing side of the American energy revolution on the Middle Eastern and economic front, at least compared to the US.

The second American revolution

The US Energy Information Administration (US EIA) predicts that the US could be energy self-sufficient by the end of the next decade (US EIA 2015a),¹ more than half a century after President Nixon presented his vision of the country's energy independence in November 1973, amidst the devastating Arab oil embargo.² Paradoxically, the vision held by the architect of the rapprochement with China and détente between the US and the Soviet Union will only become reality long after the Soviet Union's collapse and China's rise to global prominence.

Although every successive US president has repeated Nixon's call for energy independence, the solution has not come from the White House and has had little to do with government planners. The American energy revolution started at Barnett Shale, Texas, as the result of a technical innovation driven by the entrepreneurial ingenuity of George Mitchell and Larry Nichols (Yergin 2012). The combination of advanced hydraulic fracturing, also known as fracking, and horizontal drilling unlocked previously inaccessible

¹ The EIA's reference case predicts the balancing of US energy imports and exports in 2028 (US EIA 2015a).

² The biggest energy crisis of modern times was caused by the oil embargo imposed upon Israel's allies during the Yom Kippur War.

natural gas trapped within shale formations, and triggered the shale gas revolution. Making shale gas production commercially viable, this technological breakthrough soon affected tight oil as well, paving the way for its expansion. Since then, these techniques have evolved substantially, decreasing the environmental impact of fracking and improving cost efficiency. As a result, the US witnessed an almost sevenfold increase in shale gas production between 2007 and 2014 (US EIA 2014c). In 2013, shale gas already formed the largest share of US natural gas production (US EIA 2014b). A year later, the US produced over 728 billion cubic metres of natural gas (BP plc 2015a), surpassing Gazprom's total production by more than 60 % (Gazprom 2015).³ Tight oil production, on the other hand, has helped to reverse the trend of declining oil production which had plagued the US from 1985 to 2008 (US EIA 2015c). In 2014, US oil production reached 11.6 million barrels per day (BP plc 2015a), an all-time high. In the same year, the US became the world's biggest oil and natural gas producer, and it is expected to stay ahead of Russia and Saudi Arabia until at least 2035 (BP plc 2015b). The surge in North American energy production is also a consequence of Canada's energy revolution, which is being driven by expanding oil production from oil sands, another unconventional resource.⁴ As a result, Canada is likely to remain the largest supplier of petroleum products to the US, well ahead of Saudi Arabia. Although the recent period of low oil prices has presented the young tight oil industry with the greatest challenge so far, the industry's core appears resilient. The shale gas industry, too, is showing an unparalleled ability to absorb shocks, with US gas production also increasing in 2015 (International Energy Agency 2015). The energy revolution is therefore real and here to stay.

Squeezing the shale, oiling the market

US shale gas and tight oil developments have caused seismic shifts in both the domestic and global energy landscapes. At home, the implications of the shale boom have been revolutionary. The surge in energy production, in combination with only modest growth in energy consumption, has significantly reduced American reliance on energy imports. The US EIA predicts that the US will become a net natural gas exporter by 2017, while net imports of crude oil and petroleum products will fall to 17 % of the total supply by 2040 (US EIA 2015a).

The gradual balancing of energy imports and exports is considerably improving the American security of supply. However, since oil is priced internationally, the US remains exposed to oil price fluctuations despite falling net oil imports. The US also continues to be deeply integrated in the global energy markets because of its increasing energy

³ In 2014, Gazprom's natural gas production reached 443.9 billion cubic metres, accounting for 69 % of total Russian production (Gazprom 2015).

⁴ Oil sands are a mixture of sand, water, clay and bitumen. Bitumen is oil that is too heavy or thick to flow or be pumped without being diluted or heated.

exports. In spite of exploding oil production, the US is unlikely to become a price-taker in an expanding international oil market.

The implications of the US energy revolution for the global energy landscape are significant, though not revolutionary. Less than a decade ago, the US was expected to become one of the world's largest importers of liquefied natural gas (LNG) due to its declining natural gas production. Today, however, the US is on the way to becoming a major LNG exporter. As a result, Qatari and other LNG cargoes are finding their way to Europe and Asia instead.

More importantly, the diminishing US thirst for imported oil is putting considerable downward pressure on global oil prices. Expanding North American oil production has contributed to excess supply, triggering the plunge in oil prices in mid-2014. It is expected, however, that China will continue to drive global oil demand, thus offsetting the effects of falling US oil imports.

Winners and losers

The US economy has felt the most immediate and profound consequences of the American energy revolution. Record-low energy prices have boosted US competitiveness and hence substantially contributed to the economic recovery. The expansion of the natural gas supply alone slashed US natural gas prices by more than half from 2007 to 2013, generating an annual surplus of \$48 billion for US consumers and producers (Hausman and Kellogg 2015). Besides the millions of jobs created by the booming energy industry, many more have been added in the manufacturing, chemical and other energy-intensive industries (IHS 2013). Falling energy prices have helped the US to emerge as the developed world's lowest-cost major manufacturing location (Boston Consulting Group 2014).

Diminishing energy imports have also contributed to lower US trade deficits, with the 2014 petroleum deficit hitting the lowest point since 2004 (US Census Bureau 2015). Moreover, US energy has become cleaner due to the massive switch from coal to cheaper and cleaner natural gas in electricity generation.⁵ As a result, natural gas overtook coal in US electricity generation for the first time in history in April 2015 (US EIA 2015b). The advent of shale gas has therefore made the US economy significantly more competitive, resilient and, arguably, cleaner.⁶

Due to its impact on global oil prices, the North American energy revolution is expected to continue to benefit oil-importing countries as well as the global economy at large. The persistently low oil prices are resulting in an enormous transfer of income

⁵ Natural gas produces around half as much carbon dioxide as coal in energy generation.

⁶ Although the reductions in US emissions from 2009 to 2013 were relatively small, half of them were related to changes in the energy sector's fuel mix favouring natural gas (Feng et al. 2015).

from oil producers to oil consumers, which is predicted to boost global GDP by 0.5 % in 2015 and 2016 (Husain et al. 2015).

As a net energy-importing region and US competitor, Europe is feeling both the positive and negative effects of the North American energy surge. The EU is already benefiting from the decline in Asian natural gas prices, triggered by the 2014 oil slump, as it has made Europe increasingly attractive for LNG exporters. As a result, the EU's natural gas supplies are expected to continue to diversify, with net LNG imports predicted to almost triple by 2035 (BP plc 2015b). Increasingly competitive LNG imports are likely to mount additional pressure on Russian natural gas prices, which have already suffered due to stagnant oil prices. This is good news, especially for Eastern Europe, which relies on costly Russian imports for the majority of its natural gas supply. However, without further integration of the EU energy market, including greater investment in the interconnection infrastructure, the EU will be unable to take full advantage of the new energy reality.

The American energy revolution, on the other hand, continues to have a profoundly negative effect on European competitiveness, which has suffered substantially from the high price of energy compared to that in the US. In 2014, EU industrial gas prices were two to three times higher than comparable US prices (UK Department for Energy & Climate Change 2015a), while prices for industrial electricity were around twice as high (UK Department for Energy & Climate Change 2015b). The decreasing European competitiveness is encumbering an already fragile economic recovery, as Europe's energy-intensive industries continue to move to the US and elsewhere. Imploding indigenous natural gas reserves, in combination with an unwillingness to exploit shale gas, are making the EU increasingly reliant on pricey natural gas imports. Stringent European environmental regulations, too, are adding to the widening gap in energy prices, which is expected to persist.

However, the biggest losers with regard to the North American energy revolution and lower oil prices in general are the major oil-exporting countries, including Russia, Saudi Arabia, Venezuela, Nigeria and Iran. Since these countries rely heavily on revenues from oil exports, most of them are already experiencing severe fiscal crises. The recent situation with Iran shows that new energy dynamics are likely to give the West greater leverage over oil-exporters facing financial difficulties. Russia, however, has so far been unwilling to compromise over Ukraine or Syria, despite a collapsing economy resulting from the plunge in energy prices and Western sanctions. Thanks to its vast reserve funds, Russia will be able to weather the storm of low oil prices for a while. But faced with a fiscal break-even oil price of \$110 per barrel (Société Générale 2015) and the prospect of stagnating oil prices, Russia is unlikely to continue with economic and political isolation for much longer.

Shifting sands in the Middle East

Energy, regarded as a strategic liability for the US since the 1970s, is becoming the country's strategic advantage. With the opportunity to pursue foreign policy free from the past constraints associated with existential oil dependence, the US is set to gain greater independence and leverage in world affairs (Blackwill and O'Sullivan 2014). Nowhere have these constraints been more apparent than in the Middle East, the epicentre of the world's oil production. No country has benefited more from American oil-driven realpolitik than Saudi Arabia, the world's swing producer and powerhouse of the Organization of Petroleum Exporting Countries (OPEC).

Despite the American energy revolution, the Middle East is expected to remain the main driver of world oil production for the foreseeable future. Any major supply disruptions will therefore continue to have a significant effect on oil prices. Diminishing oil imports from the region will reduce American exposure to supply shocks, but the US will remain vulnerable to price shocks, like the rest of the global economy.

Saudi Arabia has been central to US energy interests ever since an American company, the predecessor of Saudi Aramco, struck oil in the Saudi desert in 1938.⁷ In the past few years, however, the alliance between the US and Saudi Arabia has undergone a profound change, becoming increasingly fractured and unequal. Thanks to the American energy revolution, US reliance on Saudi oil is swiftly diminishing, with petroleum imports down by a third from 2003 to 2014 (US EIA 2015e).⁸ As the world's largest arms importer, Saudi Arabia, on the other hand, remains heavily dependent on the US for military equipment.⁹ Although its influence in the region and the world remains significant, the Kingdom no longer seems to have the power to constrain US policymaking, especially towards Iran.

The Iran nuclear deal, reached in 2015 despite ardent opposition from key American regional allies, serves as compelling evidence that the sands are indeed shifting in the US's Middle Eastern policy. The American energy revolution seems to have played an important role in closing the deal in multiple ways. Besides allowing the US greater freedom to pursue the deal, the North American oil surge probably helped the US to convince the international community to impose the comprehensive sanctions on Iran in 2012 in the first place. These sanctions, together with the 2014 oil slump, proved crucial for the success of the negotiations.

As Iran unleashes oil production following the lifting of sanctions, the flood of cheap oil is likely to continue. The gradual return of Iran to the world stage is expected to

⁷ The company was eventually transformed into the Saudi Arabian national energy company, which holds the world's largest oil reserves.

⁸ US petroleum imports from Saudi Arabia stood at 1.17 million barrels per day in 2014, representing 13 % of total US petroleum imports (US EIA 2015d).

⁹ Saudi Arabia surpassed India as the world's largest arms importer in 2014, spending over \$6.4 billion (IHS Jane's 360 2015).

strengthen the Islamic Republic's economic and political role in the region. Iran's rise will most probably accelerate the regional arms race and increase regional tensions, especially between Iran on the one hand, and Saudi Arabia and Israel, the foremost American ally in the region, on the other. Preventing an open confrontation between these regional superpowers will, however, require the delicate balancing of interests and strong US engagement.

However, although stakes in the region have rarely been higher, the prospect of determined US engagement looks more uncertain than ever. The reasons for President Obama's unwillingness to pursue a more assertive role in the Middle East may well go beyond American war fatigue and the recent economic crisis. The declining strategic importance of the region to the US appears to be a worrying geopolitical reality, which has likely influenced the deliberations behind the US's 'Pivot to Asia'. The untimely withdrawal of US troops from Iraq and unwillingness to commit ground troops to bring an end to the so-called Islamic State and the Syrian conflict may be alarming signs of a partial US disengagement from the region. Since the North American oil surge has successfully compensated for the supply disruptions caused by Iranian sanctions and regional conflicts (US EIA 2014a), it seems that the cost of limited engagement in the Middle East has never been lower for the US.¹⁰

For the EU, on the other hand, the price of passivity, both from the US and itself, has never been higher. Millions of migrants and refugees, created by the ongoing regional conflicts, are finding their way to Europe, posing unprecedented challenges for European societies and institutions. In addition, thousands of Europeans are joining Islamic State, raising security concerns across the EU. Without a determined initiative aimed at addressing the root causes of the ongoing exodus, the havoc in the region is likely to continue and so is the endless flow of migrants and refugees to Europe.

Growing reliance on Middle Eastern oil may, however, eventually lead to greater Chinese involvement in regional affairs. Faced with the prospect of slowing growth and growing energy imports, China is particularly vulnerable in the event of oil market disruptions caused by regional instability. Until today, China has largely been a security policy free rider, benefiting from wide-ranging US security arrangements in the region, due to a lack of both capabilities and political will. But as China is likely to surpass the US as the biggest buyer of Saudi oil as early as next year, the stakes will soon become too high for China to continue relying on others.

Shared American, European and Chinese interests in the security and stability of the region therefore represent a unique opportunity for an enhanced partnership between the world's leading powers. Such a partnership would aim to prevent conflicts in this volatile region and safeguard the region's waterways, especially the Strait of Hormuz.¹¹

¹⁰ Unplanned regional oil production outages averaged 2.7 million barrels per day over 2013 and 2014 (US EIA 2014a).

¹¹ The Strait of Hormuz, the world's most important oil transit choke-point, is a narrow waterway connecting the Persian Gulf with the Gulf of Oman and the Arabian Sea, guarded primarily by the US Fifth Fleet.

Similar cooperation has already proven successful in negotiating the Iran nuclear deal and countering piracy in the Gulf of Aden.

Conclusion

The implications of the American energy revolution are manifold and far-reaching. While the US is a clear winner in the new energy reality, the EU appears to be on the losing side, both economically and geopolitically. The advent of shale gas and tight oil has strengthened the security of the American energy supply, while greatly improving the competitiveness of the economy. The gap in energy costs between the US and the EU has rarely been wider, squeezing European manufacturers and energy-intensive industries. The American energy revolution should compel European policymakers to implement urgent measures aimed at curbing energy costs and reducing dependency on imported energy. While efforts to create the European Energy Union must be accelerated, actions encouraging environmentally responsible shale gas exploitation should be considered as well.

The US's increasing energy self-sufficiency, based on balanced energy imports and exports, is unlikely to isolate the US from the global energy markets. As a major producer, consumer, exporter and importer of energy, the US is likely to remain deeply integrated in the global energy market and exposed to oil price fluctuations. The production of vast volumes of oil in North America is expected to continue to have a significant effect on global energy markets, disrupting global energy flows and depressing energy prices. The biggest losers of the new energy reality remain the major oil exporters, especially those heavily dependent on oil revenues.

On the geopolitical front, there are many signs that the American energy revolution is giving rise to a US foreign policy revolution in the Middle East. Although energy is not the only driver of US foreign policy with regard to the region, it has arguably been the most important one, with the possible exception of Israel. The diminishing American reliance on Middle Eastern oil seems to have loosened the alliance with Saudi Arabia, allowing the US to conduct a more autonomous and less engaged foreign policy in the region. The new energy reality has given the US an opportunity to strike a nuclear deal with Iran, as well as to avoid on-the-ground engagement in the war zones of Iraq and Syria. The EU is, on the other hand, paying a heavy price for the security vacuum in the region in the form of the European refugee crisis. With the EU unable and the US unwilling to address the root causes of the crisis, the EU seems to be, besides the region itself, the key loser of the US's policy shift.

On the other hand, the growing Chinese dependence on Middle Eastern oil and increasing EU exposure to regional conflicts are creating the conditions for enhanced regional cooperation between the US, the EU and China, rather than a confrontation between them. For the foreseeable future, however, determined US leadership will remain essential for ensuring stability in the Middle East. Much will therefore depend on

the new US administration and the ability of the EU to prepare itself for increased commitment in the region.

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Mark Boris Andrijani is a Visiting Fellow at the Wilfried Martens Centre for European Studies. His research focuses on European energy security, natural resource governance and energy market reform. He obtained a master's in public policy from the University of Oxford after graduating in law from the University of Ljubljana.