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The "Tight Oil Revolution" and its Consequences for the European Union: A "Wake-up Call" for its Neglected Energy Security

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Abstract: This article focuses on the consequences for Europe of the "tight oil revolution" and the projected "risk aversion" strategy of the United States in the Middle East following its recent energy independence. No longer able to free-ride on the back of US military control in the region, the EU is ill prepared for any potential supply crisis and must rely on an inefficient, incoherent and all too market-oriented energy security. The article concludes that the EU should use the newly created geopolitical constellation as a wake-up call to, in the medium term, design a grand strategy for energy security within its foreign policy to better provide favorable investment climates in producer states, and, in the long term, to transform itself into a low-carbon society.

Keywords: Oil, European Union, energy security

Stichworte: Erdöl, Europäische Union, Energiesicherheit

Access to and availability of affordable oil is a key factor in the smooth functioning of any industrialized society of the world economy, particularly in oil-dependent nations like the United States and its Western allies, as well as Asian nations. Since the end of World War II, the US has exerted its military influence in the Middle East to prevent a hostile power from gaining control of the Persian Gulf, with the inevitable skyrocketing of oil prices that would follow. As the closest allies to the US, the heavily oil-dependent European states could always count on free-riding on the US' geopolitical¹ engagement in this region. But in the wake of a general withdrawal from its traditional role as a world policeman and the effects of its "tight oil revolution", the US recently made its first moves to relax its strategic engagement in the Middle East and will revert to a policy of "risk aversion" in the event of a crisis in the Middle East. On the basis of this assumption, the article will argue that this US foreign policy shift is a concern for the Europeans, and that the EU has pursued an incomprehensive and incoherent energy security strategy, too market-driven to cope with future challenges. These challenges will be posed by potential supply outages due to a disruption crisis and the projected substantial reductions of deliveries from its traditional main suppliers. The article will further reject the option of making the current

EU energy security policy more robust by militarizing it in the context of the EU Common Security and Defense Policy. While it does not recommend engaging in any kind of realist energy strategy, this paper will conclude that the EU should use this newly created geopolitical constellation as a wake-up call to design a grand energy strategy in the medium term which makes use of the EU's political and economic power to provide a business-climate-fostering investment and trading contracts with EU oil companies in producer states. In the long term, the EU must shed its oil import dependency by transforming into a low-carbon society. The article will begin by describing the geopolitical effects of the tight oil revolution.

1. The tight oil revolution² and the consequences for the United States

The emergence of this unexpected oil glut by the United States is the result of political, economic and technological factors.³ Two exploration techniques, known for decades – hydraulic fracturing and horizontal drilling – were combined to make the

- 2 Tight oil, or "Light tight oil" is conventional oil trapped in fine rock pores or cracks where it cannot escape without stimulation. In contrast "Shale oil" is synthetic oil from kerogene extracted and mined from oil shales, transformed with high energy input.
- 3 For background on the shale and tight oil revolution see Peters and Zittel, 2014, forthcoming.

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1 For a discussion of the concept of "geopolitics" see Peters and Westphal, 2013, pp. 93-96.

extraction of oil and gas in shale formations previously trapped in tight reservoirs both technically possible and economically viable. With both techniques, a well is drilled and stimulated by creating fractures, thereby providing access to the oil or gas in the pores and cracks of the rock formation. The rock is then stimulated by injecting water with a blend of chemical additives and sand into the wells. This process enables the gas or oil to be freed from the rock and pressurized so as to flow above ground. Horizontal drilling specifically increases production by hitting targets that cannot be reached by vertical drilling. With this recent combination of hydraulic fracturing and horizontal drilling, the US' oil and gas reserves will augment dramatically: according to the US Energy Information Agency (EIA), the US will be able to extract a total of up to 58 billion barrels of shale/tight oil.⁴

However, in 2012, very few select publications on "energy supply" even mentioned this revolution.⁵ An explosion of awareness about the tight oil revolution came with the publication of the *International Energy Agency's* "World Energy Outlook" in November 2012, which authoritatively stated that the US will become the largest global oil producer, overtaking Saudi Arabia as an oil exporter by the mid-2020s.⁶ Half of this shift from importer to oil exporter will be caused, however, by a drastic decline in domestic oil demand, "arising from more stringent fuel efficiency standards in transport".⁷ While still too early to tell how sustainable the tight oil revolution will be, discussions over the extent to which the shale gas and tight oil revolution is a "game changer"⁸ in the geopolitics of energy are already taking place.

In the Gulf, the current United States government "has sought to protect the flow of oil with a full panoply of air, sea and land forces," taking up at least 15 percent of the US defense budget.⁹ In addition, the US has had to stabilize the region with arms supplies and foster close relations with Saudi Arabia, their ally within OPEC, so as to maintain some control over oil price volatility. During the Cold War "(i)t seemed to make strategy sense"¹⁰ that US allies were allowed to have a 'free ride' on the US Middle East strategy. With the end of the Cold War and the emergence of the global oil market also all further oil-dependent economies were enabled to profit from access to affordable Middle Eastern oil, which the United States guaranteed by freeing up Iraq's vast oil reserves following the 2003 war.¹¹

But with the projected energy independence of the US, which renders it immune to any supply crisis in this region and possibly less vulnerable than its European allies in terms of price volatility, "the rationale for the US' commitment of military force to the region is changing fast...".¹² This new constellation is expected to lead to what some commentators have identified as a risk aversion by the US, meaning a reluctance to solve a

supply crisis militarily.¹³ To a certain extent, this is the message that has been understood by EU institutions, as shown by the 2014 report of the European Union Institute for Security Studies¹⁴ (EUISS) when it concludes:

Increasing energy security is impacting on the strategic outlook of the US, although this does not necessarily make the US less concerned with high prices and price fluctuations in oil market. The US may, however, have more flexibility in its political engagement with energy suppliers, not least in the Middle East.¹⁵

Thus, the European allies, all oil-dependent, must still worry that they might need to manage a supply crisis in the Middle East on their own. Three scenarios are usually offered to explain the vulnerability of oil markets to disruptions in the Gulf region: (1) the consolidation of a large fraction of Persian Gulf reserves under a single power; (2) the danger of domestic instability not only in Saudi Arabia, but also in Iran, the United Arab Emirates or – as we can see unfolding these days, in Iraq; and (3) the blockage of the Strait of Hormuz, potentially a very serious incident, as nearly 90% of oil and gas exports from the Middle East pass through this choke point.¹⁶ The question naturally arises as to the extent to which the European nations would be affected by such a crisis and what sort of energy security policy would render them capable of controlling such a crisis.

2. The European Union's reasons for concern

In 2010, the European Union produced only 14.8% of its domestic oil consumption, meaning that the EU needed to import a staggering 85.2% of crude oil.¹⁷ This figure is reason for alarm; the European Commissioner for Energy, Guenther Oettinger, warned that a "strong, comprehensive strategy at the European level is necessary to secure the EU's future energy needs".¹⁸ The EU Council President, van Rompuy, seems concerned as well, calling the EU's high-dependence on foreign energy supplies Europe's "Achilles heel".¹⁹ That being said, there does not appear to be an identifiable strategy at the moment, let alone a "comprehensive" one. Although a plethora of EU documents discuss the necessity of a "diversification strategy" (it remains unclear about the kind of crisis scenario to which the EU would be responding), these documents fail to spell out in any detail how to diversify among oil suppliers.²⁰ A study commissioned by the Greens in the European Parliament projects that by 2020 the EU will be dependent on oil imports for 90% of its supplies, and, regarding the inadequacies of the current EU energy strategies, concludes that "the gravity of the situation does not appear to have hit home."²¹

13 See in particular Walt, who recommends the US government to revert to a strategy of "off-shore balancing", 2013. See also as Bremmer and Hersch (2013) put it: "But it's natural that as America becomes less reliant on the Middle East for energy, Washington's willingness to accept risks and burdens there will diminish, or at least become harder to justify in a fiscally constrained era", p. 2.

14 The European Union Institute for Security Studies (EUISS) is "the Union's agency dealing with the analysis of foreign, security and defence policy issues." Webpage EUISS.

15 Dreyer and Stang, 2014, p. 6. See also the statement on p. 33.

16 Gholz and Press, 2010, p. 455.

17 Eurostat 2011 [nrg_100a].

18 Oettinger 2013.

19 Van Rompuy, 2013, p. 2.

20 As one of many examples see European Commission, 2013.

21 The Greens in the European Parliament, 2013, p. 56.

4 EIA, 2013.

5 For example Yergin, 2011.

6 WEO, 2012, p. 1.

7 Birol, 2013.

8 De Ridder and de Jong, 2013.

9 Posen, 2013, p. 2.

10 See Hadar, 2008, p. 2.

11 To a certain extent, the United Kingdom must be singled out since it contributed considerably to both Gulf Wars.

12 Koike, 2013, p. 1.

2.1 No stepping in the shoes of the United States

In view of the United States' more general withdrawal from its role as a world policeman, discussions have intensified on whether or not Washington's European allies are capable to replace US military leadership.²² However, strong indicators show that Europe neither intends to fill this gap, nor seems ready to make resources available to render it capable of projecting power outside of Europe without logistical support from the US. While the last 14 years have seen the EU set up the institutional provisions necessary for effective crisis management, a new phase of gridlock by the EU Common Security and Defense policy (CSDP) commenced recently. As a reason for this stalemate commentators identify the peculiar process of CSDP's development in which EU member states – with the intention to avoid conflict – rather invested in developing the EU's security capabilities instead of first deciding on their strategic priorities and on how to use these capabilities.²³ It is this "capability-strategy mismatch"²⁴ which is responsible for the EU member states' reluctance to engage in any military conflict and their abstention from ever using the much-accredited "battle groups" in any military conflict.

Even the European Union's three main players – Germany, Great Britain and France – disagree on the course of the EU's security policy. Germany is still in the process of ridding its security policy of its "approach of restraint". The British public is obviously tired of its politicians following the lead of the US, as shown by Parliament's refusal to allow military intervention in Libya. At present, France is the most proactive European nation, attempting to assume global responsibility in crisis management, and is therefore the US' firmest ally. But there is no doubt that France would not be militarily powerful enough to control a Middle East crisis on its own. In general, the EU is showing no substantial signs that it is ready or capable to fill the void the US may leave behind.

2.2 All roads lead back to the Middle East

While it is unwise and unrealistic for the European Union to turn to a militarized strategy to secure its oil supply, the question arises as to how the EU plans to deal with the projected increase of its import dependency on the Middle East (more narrowly defined as the Arabic Gulf states region in this context). At the moment, with approximately 14% of EU total imports, the Arabic Gulf states' share of oil is not very high.²⁵ This percentage can be expected to grow in the mid- to long-term future for numerous reasons. Firstly, the anticipated progressive decrease of supplies from two main sources to the EU, Russia and Norway, will likely need to be compensated – at least in part – by oil imports from the Middle East. In 2013, Russia's share was 31.72% and Norway's 10.92 %, together around 42%.²⁶ Both Russia and Norway will be unable to sustain the quantity of exports to the EU. While

Russia pursues a "Go East" strategy by claiming it will raise its share of oil supply to Asia from 3% in 2005 to 30% by 2020,²⁷ Norway's oil production has been in decline since 2000. Secondly, in holding a 48% share of the world's proved oil reserves, the Middle East will be by far the biggest supplier of oil in the long term and by the mid-2020s "countries in the Middle East [will] provide most of the increase in the global supply."²⁸

2.3 Disagreement on new contributions to the global energy market

While there is agreement among energy experts that the Middle East will be an important source of the West's energy needs in the long run, there is significant disagreement among key institutes on the significance of new and anticipated contributions to the global energy market.²⁹ The 2014 report of the European Union Institute for Security Studies (EUISS) – in line with the IEA's analysis – is optimistic, claiming that "new fields continue to be discovered and new technologies developed in every corner of the globe, a trend that is expected to continue".³⁰ The report mentions Latin America (with Venezuela, Brazil and Ecuador accounting for almost 20% of reserves), an increase in reserves in the former Soviet Union, tar sands in Canada, the new potential of "offshore deep water reserves", the development of light tight oil in the US, and new offshore and onshore potential in Africa as significant contributions to the global energy markets.³¹ The report of the Oxford Energy Institute is more pessimistic. It cautions against the high expectations of the tight oil revolution and reminds the reader that in respect to the remaining non-OPEC supply we have been disappointed: "[C]ountries that formerly held great promise, such as Brazil, Kazakhstan, Azerbaijan, and even Canada, have all failed to live up to their initial expectations...".³² But even if in the long run the tight oil revolution turns out to be another disappointment, at the moment with its substantial continuous production growth it contributes to freeing up oil for the international market, since "exporters to the USA – namely Venezuela, Mexico, Nigeria, among others – will increasingly look East to find buyers for their crude."³³

2.4 Medium-term impact of the shale gas revolution: LNG exports to Europe

It is the revolution in shale *gas* which parallels the tight oil revolution that is expected to help Europe mitigate its oil dependency. Shale gas, after being transformed into "liquefied natural gas" (LNG) at special terminals, can be exported by vessels and used, for example, to replace oil in transport for public transportation fleets, long-haul road transportation, and cars. Unfortunately, a huge transport

27 Lifan, 2012, p. 15.

28 WEO 2013 Report, p. 4. See also BP, 2012, p. 7.

29 A discussion on future global supply goes beyond the scope of this discussion. For an analysis on the optimistic side see Maugeri, 2012 and the International Energy Agency's annual report of the World Energy Outlook. For a discussion with a more pessimistic outlook see Energy Watch Group, 2013.

30 Dreyer and Stang, 2014, p. 19.

31 Ibid, p.19- 20.

32 Fattouh and Sen, 2013, p. 6.

33 Ibid, p. 10.

22 See for example Cohen and Scheinmann (2013) who argue that the Europeans will also in the foreseeable future be incapable to fill the void in US military leadership.

23 Schroeder, 2009, p. 487.

24 Haine, 2011, p. 585.

25 See European Commission, Market Observatory for Energy, 2013, p. 1.

26 Ibid.

infrastructure must be developed in cities in order to pump this gas into vehicles.³⁴ So far, European Union governments show no indication they are willing to build up this infrastructure. It remains an open question whether or not the US gas industry will receive permission to build LNG terminals for export. That being said, the conclusion of the Transatlantic Trade and Investment Partnership (TTIP), a trade agreement currently being negotiated between the US and the EU to facilitate the buying and selling of goods and services, is expected to eventually lift these obstacles to enable importing LNG into Europe.

2.5 Energy: Still national prerogative

Until the end of the last decade, the European Union energy policy had been driven predominantly by national policies. Efforts in harmonizing this energy policy showed their first tangible result in the Lisbon Treaty, when energy was turned into a policy of "shared competence", in which both the EU and the EU member states are allowed to legislate. Still, the treaty endorses the principle of the choice of the energy "mix" and the energy security strategy as a domain of "sovereign national prerogative".³⁵ But while the EU is making efforts to harmonize the energy policy of its 28 member states, the EU's individual nation-states do not rely on the EU policy-making institutions for national energy security. Individual member states concluded preferential bilateral deals in Russia, but also in the Middle East, Central Asia and Africa.³⁶ By acting unilaterally, EU member states renounce on using the political leverage of the Commission and Council when handling matters of energy security – in particular in negotiating with producer states.

3. European Union energy security strategy

It appears that since the beginning of this decade the EU's global energy policies finally "have gathered impressive momentum".³⁷ The current EU energy security strategy is based on the idea that "markets are the best way of ensuring safe and affordable energy supplies"³⁸ and that "realizing its long-standing objective of a fully integrated and competitive internal market" will help "to pool the risks of import dependency".³⁹ Here, it is evident that EU energy policy has been shaped by the EU's "overall liberal paradigm"⁴⁰ and its strong belief in the forces of the market. However, the EU does not entirely rely on the market and pursues an external policy by engaging in dialogue, cooperation, partnerships, and aid programs with its main suppliers like Russia, OPEC, Norway and the Gulf Cooperation Council (GCC) as well as its "strategic energy partnerships" with individual countries like Iraq and Azerbaijan, or whole regions like Africa.⁴¹

34 Dooho, 2013.

35 Dreyer and Stang, 2014, p. 51.

36 Youngs, 2009, p. 4.

37 Youngs, 2013, p. 1. Richard Youngs includes the EU's climate policies in his observation.

38 Commission, 2003, p. 5 quoted in Padgett, 2011, p. 1066.

39 Padgett, 2011, p. 1065.

40 Goldthau, 2014, p. 12.

41 Barysch, 2013, p. 2.

So far, the highlight in formulating EU energy security policy has been the 2011 European Commission's so-called "Communication"⁴², which introduced a new information system on bilateral energy treaties and a new provision allowing the European Commission to negotiate new energy treaties on behalf of its member states.⁴³ 2011 also brought a serious push by EU member states to make energy security a serious component of the EU's foreign policy. They requested the High Representative of the Union for Foreign Affairs and Security Policy to take into account the "energy security dimension" in her sphere of action".⁴⁴

3.1 Challenge: Link to good governance and internal market

The cornerstones of the European Union's approach to energy security are "interdependence, market integration within and beyond Europe, and a convergence of governance standards"⁴⁵, meaning that producer states have to commit to the norms of good governance and "minimum legal standards".⁴⁶ It is obvious and unavoidable, though, that the EU's "market governance model"⁴⁷ – as it is labeled by energy expert Richard Youngs – constitutes a serious challenge to a viable energy security strategy. There are severe limits of the "reach of EU internal market norms" and as an example Youngs points to the Gulf,⁴⁸ a region which is suffering from a lack of democracy, enduring conflicts and terrorism. Here, individual EU member states have pursued energy cooperation based on a more geological approach by offering "security cooperation and arms sales".⁴⁹ Thus, it seems obvious that the "norms and rules"-driven approach of the EU prevents the provision of a political climate in which the producer states would be conducive to investments of EU energy companies.

3.2 Challenge to the market-based liberal model: Competition from China

Moreover, the liberal, "market governance model" faces serious competition from China. With its ever-growing economic and political clout and unparalleled demand for energy resources, China has been pursuing an aggressive acquisition strategy, mainly in Latin America and Africa, but also in the Middle East (for example, in Iraq, where Chinese oil companies have won many of the bidding rounds for large fields). EU companies have, in many cases, found themselves unable to outbid their Eastern competitors; their ambitions are frustrated by the ability of Chinese companies to circumvent stringent good governance norms (including environmental impact assessments, etc.) imposed on European firms. Thus, the challenge posed by

42 Communication, 2011.

43 Youngs, 2013, p. 12.

44 Dreyer and Stang, 2014, p. 11.

45 Youngs, 2010, p. 110.

46 Padgett explains the differences in the EU's cooperation with neighboring consumer, transit and producer countries, distinguishing between those belonging to the "pan-European community" and those countries beyond the European region. Padgett, 2011, p. 1066.

47 Youngs, 2010, p. 115.

48 Ibid.

49 Ibid.

China to EU energy security is its limitation to the ability of EU companies to acquire new energy resources.⁵⁰

3.3 Medium-term strategy: Provision of good investment climate

In real terms, commercial energy companies contribute significantly to European energy security by supplying the European market with oil.⁵¹ With this dependency on oil companies, it would be logical to support these in acquiring investment and trading contracts with producer states and to provide some "diplomatic support".⁵² With 80% of oil reserves in the hands of producer states' national governments, and "around half the international crude oil trade still tak[ing] place bilaterally through medium- and long-term contract",⁵³ European oil companies may need diplomatic support by an EU governmental body prepared to represent 500 million customers and 28 member states. But Claude Mandil, former Executive Director of the International Energy Agency, in the 2014 EU ISS Report explicitly discourages the EU from a more interventionist policy in relation to the oil companies:

As energy is sold to consumers by companies, it is up to them to be responsible for their purchases and investments; it is not the role of member states or the EU to negotiate 'big contracts' for purchasing gas or oil...⁵⁴

The EU may be well advised to consider "non-liberal" responses⁵⁵ by shedding its insistence that producer states follow its "market governance model", and by using its political and economic power to access new markets. But, as opposed to its market-driven modus operandi, the EU should adhere to its good governance approach, since this approach is an integral part of the EU's external relations, and such standards of good governance should not be compromised for the acquisition of a commodity, such as energy. Moreover, oil companies might appreciate this kind of support when doing business with producer states. Most importantly, the EU should make efforts to fulfill its 2011 request to integrate energy security within its long-term foreign policy goals, and give the High Representative of the Union for Foreign Affairs and Security Policy priority over the European Commissioner for Energy in energy-related matters.⁵⁶

3.4 Long-term strategy

Similar to such a foreign policy approach regarding its energy security, the EU could also pursue a strategy to reduce its oil

dependency dramatically. As an initiative to reduce global warming, the EU has developed a plan to cut carbon emissions in transport by 60% and to set up a "competitive low-carbon economy" by 2050. This project of phasing out most of the EU's use of hydrocarbons will be realized by eliminating all conventionally fueled cars in cities and by ensuring that 40% of fuels in aviation be sustainable and low-carbon. This transition to a low-carbon society, which would reduce the EU's oil import dependency to a minimum, is being described as the "'third industrial revolution', requiring a massive transformation of the energy sector from production, transport, and distribution to use and storage."⁵⁷

4. Conclusion

With new foreign policy parameters triggered by the US tight oil revolution, the European Union is thrown back on its own capability to handle a potential supply disruption crisis originating in the Gulf region. Moreover, two of the EU's main suppliers, Russia and Norway, will decrease their deliveries in the medium term. Since a military strategy is not an option for the EU, it should use this geopolitical wake-up call to upgrade its energy security strategy, deemphasizing its market-driven and liberal approach and making it an integral part of its common EU foreign policy. With the largest part of the world's oil reserves in the hands of the producer states' governments, and keeping in mind the assertive acquisition strategies by Chinese national oil companies, EU energy companies may require diplomatic support to create a favorable business climate in producer states.

In any case, if the EU intends to avert the risk of a political crisis in the Middle East affecting its energy security, it would be well advised to invest significantly in its efforts to establish a low-carbon economy by 2050. While costly, such an approach would be the most efficient in ridding the EU of its "Achilles heel" in the form of its critical oil import dependency.

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- 57 Andoura and d'Oultremont, 2012.

50 See also Dreyer and Stang, 2014, p. 18. See also Oystein Noreng's observation in this context: "Through long-term comprehensive deals with preferential treatment, China secures a first call for oil from many sources. China therefore is less exposed to a physical supply risk...". See Noreng, 2013, p. 170.

51 Stoddard, 2012, p. 358. Stoddard observes correctly that the "relationship between private and public actors in European energy policy" is "under-researched" (p. 342). For the United States' relationship with its oil companies, Bridge and Le Billon (2013) mention that the question has been raised "whether the investment strategies of US-based international oil companies still serve national energy security interests". p. 45.

52 Ibid. See also Goldthau (2010) who explains the notion of "energy diplomacy" by looking into Russian and Chinese energy policy as case studies.

53 Goldthau, 2014, p. 15.

54 Mandil in Dreyer and Stang, 2014, p. 80, emphasis added.

55 Term adopted from Goldthau, 2014, p. 11.

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