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The European Centre for Energy and Resource Security (EUCERS) was established in the Department of War Studies at King’s College London in October 2010. The research of EUCERS is focused on promoting an understanding of how our use of energy and resources affects International Relations, since energy security is not just a matter of economics, supply and technological change. In an era of globalization energy security is more than ever dependent on political conditions and strategies. Economic competition over energy resources, raw materials and water intensifies and an increasing number of questions and problems have to be solved using holistic approaches and wider national and international political frameworks.

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IMPRESSION

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EDITORIAL

Professor Dr Friedbert Pflüger, Director EUCERS
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About the Working Papers Series
EUCERS ‘Reflections’ Working Papers Series (WPS) focuses on promoting an understanding of how use of energy and natural resources affects international relations. The Series seeks to contribute to questions including but not limited to economic competition over energy resources, raw materials and water through multidisciplinary approaches which are academically-rigorous and policy-oriented.

The WPS intends to stimulate debate and exchange of research ideas including those in an early stage of development. The WPS intend to provide a space for scholars and practitioners to present their work to a broad readership and connect with established expert community working on issues related to energy and resource security.
Energy and resource security have become an integral part of international relations today. With energy supply and demand playing a determining role in nations’ prosperity and security, environmental sustainability has grown to become an inseparable dimension of the energy security debate. Global energy supply is becoming more diverse yet the demand growth, in particular from the developing world, is substantially changing energy and resource politics. As the extent and complexity of the energy-climate nexus poses a new set of challenges and, at the same time, opportunities, it is important to promote an understanding of how our use of energy and natural resources affect international relations.

I welcome the current inaugural issue of the EUCERS ‘Reflections’ Working Paper Series as the Centre’s contribution to the debate. The issue brings together contributions of four leading scholars in the field.

Professor Alan Riley of the City University London looks into the changing nature of European energy markets. Stressing the cost of implementing energy and climate policies, Riley argues for an alternative pro-market and pro-gas policy approach to cut CO2 emissions while improving European competitiveness.

Dr Tina Hunter of the Aberdeen University demonstrates how technology, geology and climate impact the energy security concept built around Middle Eastern oil. Drawing on the phenomenon of unconventional production, Hunter makes a case for the changing geopolitics of oil explaining the significance of the Arctic as the latest energy security game-changer.

Mr David W. Livingston of the Carnegie Endowment for International Peace in Washington D.C. departs from OPEC’s global oil role to explore regional supply dynamics in the North American market. By focusing on the region’s heavy oil refining capacity, Livingston argues that U.S. policymakers place their ultimate focus on establishing strategic priorities for managing the new and dynamic supplies of oil.

Finally, Dr Karen E. Young of the London School of Economics demonstrates a nuanced relationship between oil markets and foreign policies in the Gulf. Young tracks the expansion of Arab Gulf State aid and demonstrates how the politics of state aid plays a strategic goal and is not strictly tied to the volatility of commodity prices.

I would like to thank our EUCERS colleagues Dr Adnan Vatansever and Dr Slawomir Raszewski for initiating the project. I am sure the EUCERS ‘Reflections’ Working Paper Series will make a valuable contribution to the multidisciplinary debate that intersects academic and policy domains.

Professor Dr Friedbert Pflüger
Executive Director, EUCERS
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Energy Sources for the Danube Region: The Case for Gas

Alan Riley

Abstract

This paper examines the Danube region energy market as a means of raising some significant questions about the direction of the broader European energy market. The paper argues that current energy and climate change policies impose significant costs on all EU states, but particularly transition states. It also argues that an alternative approach would be to promote pro-market, pro-gas policies which would allow much more vigorous cutting of CO2 emissions whilst improving European competitiveness. Such an approach would particularly ease the burden of energy transformation on most of the Danube region. It continues to suffer from low levels of investment during the Cold War period, combined with continuing low levels of per capita income. These two factors make it difficult to afford the Western European inspired energy and climate change policies. A cheaper energy solution could provide a significant economic stimulus to the whole of the EU, but particularly to the Danube region. The paper goes on to argue that a pro-gas, pro-market policy could also be used as a basis of an energy deal with the Russian Federation, which could potentially underpin a political settlement with Ukraine. Such a deal would allow more rapid cuts in CO2 emissions; provide a major boost to European competitiveness and provide a means for economic co-operation that could help heal current political rifts between the EU, Russia and Ukraine.
Introduction

This paper argues that a considerable part of the energy problems of the Danube region, from pricing, lack of infrastructure and supply security stem from two core factors. First, that all the states in the region, save Austria, are transition economies with GDP per capita under $13,000. Second, that these essential financial capacity problems are compounded by the cost of the EU’s energy and climate change policies. Together these two factors make it difficult to deliver sustainable and affordable energy to local consumers and businesses.

High energy prices have caused significant political disturbance across the region. They have brought about the fall of governments or resulted in governments adopting non-market mechanisms, which distort investment incentives to cut prices. The lack of investment in the 40 years preceding 1989 leaves almost all these states with a huge investment catch up operation, which would be a struggle for any middle income state to deliver. These problems are compounded by the size of capital formation required to meet EU renewables obligations when compared with the actual resources available to most of the states of the region.

This paper contends that the solution for these states and more broadly for all of the EU and Energy Community States is an adoption of a pro-gas-pro market policy. The essential argument is that to deliver a competitive and sustainable energy market three elements are required. First, the focus in dealing with climate change has to shift from focusing on renewables per se to instead a single focus of cutting the level of CO2 emissions. This would have the effect of promoting gas and driving out coal and as a result enlarging the size of the European gas market as well as generating much more rapid cuts in CO2 emissions. Second, both the EU and Energy Community states would seek to create a seamless single enlarged gas market. In the Danube Region, this would mean including Serbia into a single European gas market. This would be achieved principally by upgrading the Energy Community, so it was able to fully apply the EU’s energy single market rules. This would have the result of creating more liquid trading hubs and more price competition pushing down prices in the wholesale and retail markets across the region.

The third element would be to encourage more gas into the European market. The growth in the size of the gas market would create greater incentives to enter the market from Qatari and US LNG players, and potentially from Algeria, Norway. It may also drive domestic shale production.

More fundamentally, and whatever the current political conflicts, the holder of the world’s largest proven reserves, Russia is on the EU’s doorstep. The prospect of a much larger European gas market would be of great interest in Moscow. There is the potential of an energy deal between the EU and Russia in which in return for enlarging the size of the EU gas market by adopting a single objective of reducing
CO2 emissions and completing the all European gas market, Russia would significantly increase volumes of gas delivered. In essence Russia would change its business model from a relatively low volume/high price model to one in which it provided high volumes and low prices. Russia would generate much larger revenues from much larger gas volumes, backed by more Western investment to deliver those volumes. The Danube region itself would then be able to meet its CO2 objectives much more easily while also deliver affordable energy to its consumers and businesses.

More broadly cheaper gas prices would also permit the EU to compete with the US in energy intensive sectors. Lower gas prices would also, as in the US, make it more affordable to carry larger amounts of intermittent renewable generation on the grid.¹ There are clearly challenges to deliver such change to the Danube region and the broader EU. However, the greater focus on competitiveness of the Juncker Commission provides an opportunity to argue for a reassessment of the EU’s approach to cutting CO2 emissions. The conflict over Ukraine will ultimately have to be resolved and any conflict will require some form of economic underpinning. A major natural gas deal between the EU and Russia would be one way to deliver such a deal. There would be challenges on the European side over supply security, and on the Russian on reform of the natural gas market to deliver higher volumes. Nevertheless the opportunities for a deal do exist. The second part of this paper provides a sketch of the energy markets in the Danube region; part three sets out the case for gas, part four outlines the shape of a potential energy deal between the EU and Russia, part five offers a conclusion.

**Energy Sketch of the Region**

The dominant common feature of the energy markets of the Danube region (save Austria) is the forty year period of Communist rule. Despite the fact that Communism fell over 20 years ago that forty year period has had a significant effect across the region. The state command economy system distorted market signaling, encouraged over allocation of capital and then locked the region into antique infrastructure solutions.² In addition, the nature of the Communist regimes of the period encouraged the development of national energy markets. There was no regional equivalent of the EEC supporting cross-border interconnectors and a common energy market prior to 1989. Self-contained producers to keep them on the grid. In the US this is not so necessary because the price of gas is so low it allows the grid to take much renewables before it renders gas baseload uneconomic.

national systems remained in place throughout the Communist period and for sometime thereafter limiting the opportunity to build more robust cross-border networks. Equally almost all energy sources were dominated by fossil fuels predominantly coal and gas, and nuclear, with some hydro in states where it was available. The energy sector was controlled by a few state-owned enterprises which tended to monopolise their sector. Power plants on the whole were brought online by these monopolies those that required to be run continuously making it difficult to later bring on renewables at scale onto the system. Most of these power systems are three or four times as energy intensive as the EU average imposing further costs on business and consumers when the communist command economy subsidies were withdrawn.

This historic context is still a living reality for the region. Across a large part of the region, in Slovakia, Bulgaria and Serbia in particular powerful energy companies still dominate their market sectors. High energy intensity is still a problem across the region resulting in higher costs for consumers and businesses, and greater demand than would otherwise be justified for expensive fossil fuels.

Because of this history the region faces significant demands to replace worn out and inefficient thermal coal fired plants, as well demands to rebuild domestic power networks. In addition, in order to enter the EU, states such as Slovakia and Bulgaria had to agree to decommission some of their nuclear power stations. As a consequence, there were therefore considerable additional demands on capital to replace the lost nuclear capacity. Hence, not only done it have the capital demands stemming from EU membership of building smart grids, and bringing on stream renewable generation there is a backlog of infrastructure rebuild and replacement of nuclear power capacity that is also required. For any state these challenges would be formidable. These factors feed into another regional problem, the difficulty for low income consumers with a GDP per capita of between $13,000 for Hungary and $6000 for Serbia to afford to pay for new infrastructure or indeed existing energy bills. It is not surprising that governments even in richer regional states like Hungary have introduced non-market mechanisms to deliver significant price cuts to consumers. Nor is it surprising in states like Bulgaria, where the GDP per capita is only $7000, and with 60% of the population in fuel poverty that...

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3 Comecon although it did undertake such projects as creating a cross-border power system was despite the aim of economic co-operation focused largely around bilateral decisions between different planned economies, each which guarded their own economic sovereign control jealously, William V. Wallace and Roger A. Clarke, Comecon: Trade and the West, London: Pinter, 1986.

4 This was a particular criticism made recently in the World Bank report on the Bulgarian energy sector World Bank, Bulgaria Report, Washington DC, 2013, op cit.

5 For details of the assistance on decommissioning see Council Regulation (Euratom) 1368/2013 on Union Support for the Nuclear Decommissioning Assistance Programmes in Bulgaria and Slovakia, OJ 2013 L346/1, 20th December 2013. This is the latest assistance regulation and provides an account of historic, current and future support out to 2020.

government has collapsed recently over the issue of high fuel prices. The EU has of course provided funds through its programmes to assist across the region to undertake reform in the energy sector. However, the EU authorities expect private capital to be the principal fiscal deliverer of change in the region. Unfortunately, private capital has not been as abundant as most commentators would have hoped, principally because of the financial crisis. This has made reform in the energy sector across the region much more difficult to deliver. Private capital has also been wary due to the imposition of wide ranging low consumer energy tariffs (Slovakia, Serbia, Romania); state imposed cuts in consumer energy prices (Hungary) or the deployment of energy regulators to demand reduction in price or quantity from generators (Bulgaria). The one major development since 2009 has been the development of greater storage facilities and interconnectors across the region. Greater storage facilities have been built across the region notably in Hungary. In addition, all the EU states across the region have been building with EU funding assistance interconnectors between each other and with Poland to the north, the Czech Republic, and Austria to the West. Overtime these developments will bring the region into a single European gas market and strengthen supply security.

There are a number of specific factors worthy of note across the region. Bulgaria clearly as the recent World Bank report on its energy sector revealed has a series of significant problems, from substantial mismanagement of the sector, from non-economic power dispatch; to unaffordable renewable platforms through to conflicts of interest in the sector. Romania, by contrast is the only country in the region which can provide most of its own energy resources, around 80%. However, the Romanian capacity to maintain its supply security is limited by rapid depletion. As early as 2020 Romania will be significantly dependent on external suppliers. At the very least Romania will have to press on hard with offshore and shale development. Hungary is seeking to adopt a sophisticated diversification strategy with different energy partners to build up alternative sources of supply.

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13 The European Commission has published a map setting out the key interconnector work programme here: http://ec.europa.eu/energy/energy/orp/projects/. The latest report on the European Energy Recovery Programme that has sought to fund these interconnectors is entitled On the Implementation of the European Energy Recovery Programme, SWD 457 Final, 18 November 2013.
16 Ibid.
together with major storage capacity and an interconnector network to deal with its supply dependence\textsuperscript{17}. Serbia’s major differentiation is that it is not a EU Member State. This does create additional difficulties for Serbia, notably in its ability to raise capital from foreign investors and for its ability to participate in creating a seamless local energy market in the Danube region. Membership of the Energy Community does reduce the impact of non-membership. However, as argued below, it would assist Serbia significantly if the Energy Community was upgraded so the EU rules and systems in the energy sector were applied in full.

Austria is in a very different position to the other Danube states as it can afford to take the measures to develop its grid, bring on renewables and its consumers with much higher incomes can more easily afford higher energy prices\textsuperscript{18}.

Overall one factor is clear across the region: There is a desperate need for a way of delivering low cost affordable energy which is also cleaner than much of the coal base power that many of the states of the region now depend upon. From the perspective of the Danube states cheaper energy would act as a major economic stimulus across the region; it would also deal with the difficulties of affordability for consumers which besets the region’s energy producers.

One potential option is natural gas. Significant extra supplies of cheap gas would lower fuel bills. Infrastructure costs would be lower as many existing and underused pipelines could be deployed along with recently established interconnectors. In addition, CCGT power stations can be rolled out cheaply and can be rapidly constructed\textsuperscript{19}. Assuming natural gas was priced competitively it would chase coal out of the market resulting in rapid cuts of CO2 emissions. The question that follows in this paper is the extent to which the European and regional gas market can be so stimulated and expanded.

\textbf{The Case for a Pro-Gas-Pro-Market Policy}

At the beginning of the 21\textsuperscript{st} Century the EU and its Member States decided to develop a green agenda, to reduce CO2 emissions, promote renewables and improve energy efficiency\textsuperscript{20}. The aim was not just to be ‘green’. It was thought in the early 2000s that the world faced ‘peak oil’, and endlessly rising energy prices. In such a context if Europe moved speedily ahead with renewables, it would gain competitive advantage in lower energy prices, than fossil fuel dependent countries, be able to cope better when fossil fuel ran out and also gain technological advantage

\textsuperscript{19} There are two major advantages of CCGT power stations. The first is the speed. They can be constructed in approximately 30 months. Which is must faster than for hydro, coal or nuclear. Second there construction and running costs are lower than all but hydro. See for instance, Barbra Carlisle and Paul Webber, Infrastructure: Combined Cycle Gas Turbine Plants, Building, London, 2013.
over fossil fuel states\textsuperscript{21}. In the prosperous early years of the 21st century it was also thought that the transitional costs of the early expensive years of renewable development would be easily affordable. Though looking back now this view appears far from sound, it did appear at the time a reasonable way forward for a Europe dependent on external suppliers and facing rising energy costs. However, even at the time it was questionable whether the newly joined EU Member States who had been formerly members of the Warsaw Pact, which was the experience of most of the Danube states, could cope with the costs of the EU’s climate change agenda. The hope was nevertheless that renewable costs would fall dramatically as the EU climate change objectives encouraged investment. In addition, strong economic growth would renewables deployment more affordable and rising incomes would make it easier for consumers to bear the cost of more expensive energy sources. Unfortunately within a couple of years of joining the European Union the Danube states, EU members faced a substantial economic contraction from the economic crisis. As a result of the structural, fiscal and political difficulties within the Eurozone this crisis has continued. The consequence for energy markets was a collapse in demand\textsuperscript{22}, a shrinking fiscal base, which made it much more difficult to afford new energy infrastructure and renewables deployment. It also made it much more difficult for consumers to cope with any increase in energy prices as incomes fell or flattened. The second major external development which undermined the rationale of the EU’s climate change programme was the shale revolution. One of the underlying arguments for the adoption of the EU’s adoption of its 20/20/20 climate change target\textsuperscript{23} that developing new green technologies would increase EU competitiveness. As peak oil gripped fossil fuel economies like the United States, the EU’s investment in a renewables would be seen as a strategic play which significantly increased EU competitiveness over its rivals. Unfortunately, the shale revolution has undermined this competitiveness rationale. The deployment of hydraulic fracturing and horizontal drilling have opened up the enormous quantities of gas and oil locked in shale rock. As a consequence, the US is now producing as much oil as Saudi Arabia, and it is producing at or slightly above Russian levels of natural gas production\textsuperscript{24}. This technology is now being deployed across the world, from China, to Mexico, Argentina, and even, slowly in

\textsuperscript{22} For a discussion of the scale of the collapse of demand in Europe during the economic crisis see, Anouk Honoré, The Outlook for Natural Gas Demand in Europe, Oxford, OIES, 2014.
\textsuperscript{23} European Commission, Climate Change Objectives, op cit.
\textsuperscript{24} EIA, US Expected to be the Largest Producer of Petroleum and Natural Gas Hydrocarbons in 2013, Washington DC, 2013.
Europe\textsuperscript{25}. The prospect therefore is that the world will gain access to much more gas and oil from many more sources over the next decade. This access to greater fossil fuel resources has resulted in lower natural gas prices in the US, of around $4\text{MMBTU}$. Compared to $8-11$ in Europe and $14-16$ in Asia\textsuperscript{26}. However, natural gas prices outside the US have already been affected by displacement of LNG into European markets, and increasingly by more shale developments worldwide, and US shale being shipped as LNG over the next decade. This will all impact significantly on natural gas price levels.

Equally, US shale oil production has had a significant displacement effect on global oil markets, as US imports levels have collapsed\textsuperscript{27}. Additional shale oil supply is likely from Argentina, Mexico and China in the next decade, adding further to supply. In addition to which as a result of technological development and access to cheap natural gas we will see a switching, particularly of heavy goods vehicles from oil to natural gas further reducing global demand\textsuperscript{28}.

Demand for oil and lower prices for oil will flow from lower levels of economic growth. China is now in the process of shifting to a lower growth path which will itself have a significant impact on energy demand. The impact of medium term lower growth has already led the International Energy Agency to predict lower levels of oil consumption over the next few years and Saudi Arabia this summer to cut production by 400,000 b/d\textsuperscript{29}.

This context of increased supply; fuel switching and a structural fall in Chinese demand undermines the peak oil/higher energy price paradigm of the early 2000s. It is this paradigm that Europe was relying upon to underpin its investment in renewables. Hence, despite the advantages to Europe stemming from lower oil prices, the continent faces a significant threat to its competitiveness. All European energy intensive industries from steel, through petro-chemicals to fertilizer are faced with significant competitive disadvantage compared with the US as a result of higher power costs. Bloomberg for instance reported in July than almost all the planned $70 billion foreign investment going into US energy intensive industries was EU in origin\textsuperscript{30}. Almost no such investment, because of high energy prices is going into domestic European high energy intensive industries.

Even on the core climate change objectives the EU has been outpaced by the US. Cheap shale gas has led to gas forcing coal out of the US energy mix and a wave of decommissioning of...
coal fired power stations. Furthermore, cheap gas has made it easier to bring renewables on to the grid while also being able to cope with a larger degree of energy intermittency which does not undermine the commercial viability of combined cycle gas turbines. As a consequence in 2012, the US had the largest cut in emissions of any region of the world, including the European Union\(^\text{31}\).

Europe now has a significant competitiveness and climate objective problem. Its industries are facing the prospect of the further erosion of European competitiveness. It also faces difficulties in affording its current climate change agenda given the economic crisis; running its current expensive renewables framework in the face of competitiveness concerns from European industry and keeping up with the more dramatic cuts in CO2 emissions by the US.

From the Danube nations’ perspective, the heavy burden of renewables commitments and high energy costs are much more difficult to bear because of low consumer incomes and the energy intensive nature of local industries.

This paper argues that a way forward for the European Union is to adopt a pro-gas, pro-market policy. The overall aim would be to create a much larger gas market in terms of demand, and a much larger gas market in terms of an integrated European gas market including EU and Energy Community states.

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\(^\text{31}\) IEA, Global Carbon-Dioxide Emissions Increase by 1.0Gt in 2011 to Record High, 24 May 2012.

\(^\text{32}\) Making the Green Journey Work (2012) EGAF, 32.
one major initial step. The commercial effect would to promote gas and force an exit of coal from the market and consequently increase the size of the European gas market. The second means of increasing the size of the European gas market would be to deepen and enlarge the European single gas market. This would in part involve press on with existing European policies to create an integrated European gas market. This would require a much more smoothly regulated open market for operators and supply to move gas around the EU. It would also require physically putting in place more interconnectors; the creation of trading hubs and the creation of more LNG gasification facilities.

To expand the European gas market further, non-EU Europe, and particularly those states in the Energy Community would also be integrated into the EU’s gas market. To achieve a seamless European gas market it would be necessary to upgrade the Energy Community so that EU energy rules fully applied, an Energy Court would have to be established to enforce the single market rules and the existing Energy Secretariat in Vienna which oversees the Energy Community would need full surveillance powers on the EU model.

Together by focusing on a CO2 objective and enlarging the depth and size of the European market Europe would be able to draw in much more gas into the continent. It would certainly result in cheaper and faster CO2 cuts in the short to medium term as increasingly expensive coal was replaced by gas. It would also provide the right market signals to encourage existing suppliers such as Algeria and Norway to provide more gas into the market. It may encourage some shale gas development in Europe. It would create a greater incentive for US exporters to develop liquefaction facilities on the eastern Seaboard. A larger and more open market for gas would generate more competition and would be likely to result in the lowering of prices on the European market as more suppliers entered. However, it would be difficult to entirely mimic the impact of the shale gas revolution on the US market unless very significant amounts of gas were available.

Nevertheless for the Danube states a focus on a single CO2 objective and a more integrated gas market would reduce the compliance and energy costs on individual states and consumers across the region. A more integrated market would also provide a more attractive platform for investment in the energy sector across

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33 The CO2 objective could be met via carbon price floor; a revamped ETS or a carbon tax or a mix of these measures. However, whatever measure or mix of measures that were chosen would have focus solely on bearing down on carbon emissions. It would leave to the market the choice of how emissions were reduced. The CO2 objective could also be accompanied by tighter emissions standards for power stations going beyond CO2 emissions which would have the effect of raising the costs of the operation of coal fired power stations.

34 The Contracting Parties in October 2013 agreed to extend the Energy Community for a further 10 years until 2026. In addition, former Polish Prime Minister Buzek is leading a High Level Reflection Group looking at deepening the effectiveness of the Energy Community Regime. One approach to reform is to fully Europeanise the existing Energy Community regime, see Alan Riley, Deploying the Energy Incentive: Reinforcing EU Integration in South-East Europe, CEPS, Brussels, 2013.
the region irrespective of whether the state was within or outwith the EU.

**Russia and a Major Energy Deal**

Creating a larger gas market in Europe, by focusing on a CO2 objective and deepening and widening the single market in gas would have a positive impact on cutting carbon emissions and increase price competition in the market. For the Danube states it would make it easier to deliver affordable energy to consumers while managing their climate obligations. However, as explained above it is unlikely that even with a larger gas market the EU could rely on external or domestic suppliers providing in the near to medium term sufficient quantities of gas to mimic the impact of the shale revolution. If this were possible, then the EU could obtain much more rapid and significant cuts in CO2 emissions as coal was driven out of the energy mix. Furthermore, with a step change down in gas prices the EU would be able to gain some of the competitive advantage of the US from lower gas prices. It is not often appreciated that the US competitive advantage from shale gas does not stem simply from lower natural gas prices but from such low prices combined with the impact of increasing Chinese labour costs\(^\text{35}\). It is these two factors together which underpin the US industrial renaissance. The EU, unfortunately has not been able to benefit from rising Chinese labour costs because it is still subject to relatively high energy prices. One way of transforming the EU’s strategic energy position is to agree a major energy deal with Russia. The essence of any deal would be for Europe to reform its climate change policies so they focus on the objective of simply reducing CO2 emissions and completing the single market in gas. The Russian side of the deal would involve an agreement to open up much more of its immense natural gas resource base, so that Russia is able to significantly increase supply ensuring that Russia will remain EU’s natural and principal natural gas partner. The core of the deal would involve the EU expanding the size of the gas market in return for much higher volumes at lower prices, creating a win-win for both sides. Clearly the current political conflicts over Ukraine many any deal problematic. However, ultimately a political settlement will be arrived at between the West, Ukraine and Russia. Any such political settlement will need an economic underpinning. A deal on natural gas could provide that underpinning. Perhaps surprisingly following the European Commission’s laying of antitrust charges against Gazprom there have been indications from Moscow that a deal on the long running antitrust case may be possible. This would set up the prospect of a double deal on gas, on the antitrust case and on gas supply.

\(^\text{35}\) For a detailed analysis of the impact of shale and rising Chinese labour costs see the Boston Consulting Group’s research series, *Made in America, Again*. The research can be accessed here: https://www.bcgperspectives.com/content/articles/manufacturing_supply_chain_management_made_in_america_again/
On antitrust not only would Gazprom have to enter into a formal agreement with the Commission it would more broadly have to change its own commercial practices. So for instance, recently many Member States have been reverse-flowing gas into Ukraine. A number of Gazprom officials have been criticizing those companies reselling gas to Ukraine. Equally, the Ukrainians allege that Gazprom and Eustream have blocked access to the main Slovak pipeline that could reverse flow gas from Slovakia to Ukraine in significant quantities. Any regulatory deal would have to terminate reselling practices. A clean break with the commercial practices of the past would be necessary for customers and states to be willing to undertake a big gas deal.

Clearly, Russia has the world’s largest proven natural gas reserves, and additionally huge untapped conventional and unconventional gas resources to deliver such a deal. The existence of a much larger gas market on its doorstep could provide the basis for a profound development of the Russian gas market which would seek new investment, drive down costs and introduce a degree of economic liberalization in order to maximize the opportunity of supplying an enlarged European gas market.

It could be argued by the defenders of the current Russian gas export business model that the model has stood the test of time and should be maintained. However, on closer examination it is clear that that model is slowly but surely coming apart at the seams. Traditionally Gazprom sold gas under long term supply contracts to a customer who was the national utility company of a European state. The contract price was linked to oil, gas sold to one state could not be resold and the customer took all or most of its imports just from Gazprom. However, that dominant supplier to dominant customer model has been thoroughly undermined. Already approximately half of the European gas market now sets price in traded hubs where there is gas to gas competition. EU single market rules prohibit restrictions on resale and open up domestic markets to competition. Physical interconnection of the entire European market is on the way expanding the scope for trading hubs and new sources of supply. In addition, new sources of supply, principally LNG, but also new pipeline gas and ultimately domestic shale gas will be entering the market. Furthermore, because of current EU climate change policies and the economic crisis the size of the European gas market is shrinking.

Gazprom faces a future of scrabbling with new competitors for market share in a market where the overall market size decreases. In addition, the oil price linkage, aside from being abandoned by around half the European gas market and facing further attrition is likely to be far less unrecognized scale of Russian conventional and unconventional resource base.

36 IEA, World Energy Outlook, Paris, 2011. The 2011 World Energy Outlook provided a detailed special report on the state of the Russian oil and gas markets. One of the underlying evidential points made by the report was the

valuable in the next few years due to the weakening oil price. Increasing fuel efficiency, more supply, especially from US shale oil resources and softening Chinese demand are all going to force the oil price lower. The oil price link is not going to be the advantage it once was in calculating natural gas prices.

The other major Russian traditionalist argument that can be made against a high volume low price model is that the Russian gas market could not deliver high volumes at low prices. Much of the earmarked fields for the next generation of production is much more difficult to access in more remote areas of Western Siberia and offshore, which will inevitably be much more costly to develop. The response to this traditionalist argument is to argue that the traditionalists are correct if the current quasi-monopoly structure is kept in place with its focus on gigantic projects regardless of cost. However, in a more liberalized and competitive Russian gas market, there will be far greater prioritisation of seeking and out exploiting cheaper sources of gas. Typically enhancing recovery from existing fields; reducing losses from the pipeline network; developing the secondary fields around the existing supergiant fields and developing the shale base near the existing pipeline infrastructure. As the 2011 World Energy Outlook report on the Russian energy sector underlines the Russian natural gas resource base is much larger than generally recognized and there are substantial resources in Western Siberia which remain ignored and untapped. A more liberalized Russian market would make the most of these resources.

A deal with the European Union which encourages the development of a much larger gas market would provide a way of also revitalizing the Russian gas market. Although there would not be reliable long term supply contracts, or an oil price link, Russian energy companies would have access to a large single liquid gas market with a series of trading hubs. This market itself would provide the certainty of demand for investment in Russian gas fields, which could be managed with trading strategies and hedging products.

There are clearly a number of challenges to agreeing such a major EU-Russia gas deal. From a European perspective, the EU’s existing energy and climate change policies appear to be a significant barrier to a major gas deal between the EU and Russia. In October 2014 the Commission and the Member States even committed themselves to further slashing CO2 emissions by 40% from 1990 levels by 2030. The EU also committed itself to an overall increase in power derived from renewables of 27% by 2030. However, as explained above the failures of existing policy are ever clearer. Even while the October deal was being hammered out Germany was building 8 GW of new coal fired capacity; deindustralisation continues and the costs of current

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climate change policies bears down heavily on consumers already suffering due to the failures of the Eurozone economy. The second major European problem are the political difficulties surrounding the existing coal industry. Across the EU but also particularly in the Danube region there is a significant and heavy reliance on coal and lignite for power generation. A major EU-Russian deal on natural gas combined with lower gas prices will progressively force coal out of the power mix. However, while this is an understandable concern, the impact of the Large Combustion Plant Directive will bear down heavily in any event on much of the coal fired plant in the region. The LCPD will require either expensive retrofitting of plants or more likely closure. In particular, plants in the region tend to be over 30 years old and are more likely to be subject to closure than retrofitting or replacement.

The most significant Russian objection is probably that some form of energy liberalization would be required in the domestic gas market. However, this would not mean that the EU third energy package would have to be followed. All that is required is a structure in which effective market pressure is delivered to ramp up production, reduce costs and ensure a low price and deliver profitable high volumes. A Russian form of liberalization could maintain state supervision whilst at the same time delivering the necessary market pressures. Under a Russian form of liberalization the state may well still own or regulate the network, there would be state owned supply companies, but new actors, foreign and Russian would be needed to introduce some competition, technology and capital. The state’s role would be preserved but the market would be affected by greater competition from private and foreign companies competing with state companies. Clearly a significant increase in production levels would also require a major inflow of both domestic and foreign capital. For the foreign capital to be attracted at scale, some form of international investment treaty in the energy sector would be necessary. One approach would be to seek amendment and updating of the Energy Charter Treaty, an alternative approach would be to create an entirely new treaty. An amended Energy Charter Treaty is further discussed below in respect of the Transit Protocol.

With the prospect of supplying a much larger gas market the current pipeline strategy would not be fit for purpose. All existing pipelines would be required, including Nord Stream and Yamal. The Ukrainian pipeline network which if fully refurbished could handle approximately 180bcm would also be required. South Stream could either carry additional Russian

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40 Directive 2001/80/EC of the European Parliament and Council, in addition non-EU Member States who are members of the Energy Community will also be required to comply with the terms of the LCPD.

41 For a comprehensive view of the Ukrainian pipeline network and capacity see Simon Pirani, Ukraine’s Gas Sector, OIES, Oxford, 2007.
gas or take Turkmen gas from across the Caspian. The current Gazprom export monopoly becomes pointless as Gazprom would be selling as much gas as it could possibly produce for export. In addition, having Rosneft, Novatek and new state, private and foreign exporters supplying gas for export would mean EU pipeline rules would not apply. The EU restricts access to Gazprom’s own pipelines on EU territory because of EU rules on third party access. If there are a number of new Russian exporters into Europe, those prohibitory rules would in most cases not be able to be applied.

There is a compelling argument as part of any natural gas deal to also revisit the draft Transit Protocol of the Energy Charter. With far greater gas flows entering the EU, Russia would have a significant interest in creating a non-EU regulatory system to provide non-discriminatory and fair access to pipelines and limit any potential for flow disruption. Ideally a toughened transit protocol with mandatory dispute settlement procedures may be of common interest to the Russian gas industry, EU energy intensive industries and foreign investors in the Russian gas sector.

Much greater gas flows which ultimately end up in the European Union also offer the opportunity to underpin any political settlement with Ukraine by refurbishing and extending the capacity of the Ukrainian pipeline network. This would result in Ukraine obtaining as part of the political settlement the prospect of significantly enhanced revenue flows from transit fees.

There are also other opportunities to extend the size of the European gas market. As Citibank point out in their recent report one of the likely drivers of the global gas market is the prospect of replacing oil with natural gas for transportation, particularly for fleet vehicles. With much larger gas flows into Europe and lower prices Gazprom and other Russian suppliers could work with European industry to develop fleet vehicle LNG and CNG supply routes to provide the basis for European heavy fleet vehicles to switch from gasoline to natural gas.

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42 Sourcing gas for South Stream from across the capacity would bring a number of significant benefits. First, it would diversify the supply source making it easier for South Stream to comply with EU regulations. Second, it would generate for Gazprom and other South Stream partners a reliable source of transit fee income from Turkmenistan. Third, it would balance Turkmenistan’s supply outlets and reduce its dependence on China.

43 The pipelines would no longer be carrying diverted gas supplies between one pipeline but instead additional supplies of gas which would add to competition in the European gas market. This pro-competitive effect which would make exemption easier under EU rules would be reinforced by the presence of additional exporters of Russian gas into the European market absent the export monopoly.

44 Article 7 of the Energy Charter Treaty provides a guarantee of free flow of energy resources across national borders. However, the provision is limited in scope as are the surveillance and enforcement regime in respect of protection of transit flows. The Transit Protocol is an altogether more ambitious document providing both customers and suppliers with extensive protections against supply failure. The failure to agree the Transit Protocol has been largely one of the European Union refusing to treat the EU Member States as individual states for the purposes of the Protocol and insisting instead on the EU being treated as a single entity for the purposes of the Protocol. This insistence has significantly undermined the value of the Protocol from a Russian perspective. Given the context of a major gas deal between the EU and Russia it would be worthwhile revisiting the issues surrounding the Transit Protocol.

45 Citibank, op cit.

46 It is clear that the US for instance is gearing up to deploy cheap natural gas to switch part of their transportation capacity over to natural gas. Steps are already being taken to roll out the beginnings of a refuelling infrastructure for
Clearly there is also a European security issue. Following the supply cut offs in 2006 and 2009 and the current conflict over Ukraine one major issue for Europe is the risk perception in reliance on Russian gas. However, the development of a single European wide gas market, with full liberalization and physical interconnection, compounded as a result of the shale revolution and new conventional offshore discoveries minimizes the risk factors. A much enlarged European market will take a lot more Russian gas, but it will also develop domestic shale resources, import more pipeline gas from Algeria and Norway, as well as LNG, from the US and elsewhere. Ironically, the shale revolution and new offshore discoveries make it easier to take, in an enlarged and connected European market, more Russian gas.

**Conclusion**

The EU, US, Ukraine and the Russian Federation will ultimately have to come to a political settlement on Ukraine. When they do a devastated Ukraine will need economic support. The EU and Russia will also need a means of rebuilding their relationship. A deal on enlarging the natural gas market would provide a means for all parties to heal their relationship, overcome economic weaknesses and generate economic growth.

The EU would be able to gain significant competitive advantage from lowering gas prices. An enlarged competitive gas market would stem the flow of investment of energy intensive European industries into the US. It would also allow the EU to more rapidly and cheaply cut CO2 emissions. The Danube states would see a fall in their energy costs, creating a broad economic stimulus for the region, whilst also being able to meet more easily their climate obligations. In a much larger European gas market Ukraine would gain much larger transit fees, providing revenues which would help rebuild its shattered economy.

The Russian Federation would gain much larger revenues having rebuilt its gas market around a low price, high volume model. This would however take recognition amongst senior Russian energy executives that the existing low volume, high price model is not sustainable: The existing business model is coming apart under pressure from a more integrated European market, and the prospect of a greater diversity of supply sources. At best, Russia could make the new diverse sources more expensive by fighting a rearguard action in Europe’s energy markets. However, that approach merely encourages a shrinking of the size of the European gas market and ultimately reducing Gazprom to the supplier of last resort.

Given the enormous size of the Russian gas resource base, and the potential for its economic development a high volume, low price model would allow the growth of the transportation market into consumer vehicles.
by contrast permit Russian energy

countries to have a major role in
developing the European market. It

would not be just a matter of seeing
the European market as a means to
significantly grow revenues, but also to
drive economic development in Russia
and the EU in new market sectors such
as natural gas vehicles.
Whether these opportunities will be
taken to improve the economies of the

Danube region, the broader EU,
Ukraine and Russia, or whether
conflict overshadows economic
development remains to be seen.
Nevertheless during these dark days it
is worth making the case that there are
opportunities to transform the
markets, economy and lives of people
across the Danube region and beyond.

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Institute, Edinburgh University.
Challenging Klare’s resource scarcity thesis of ‘the race for what’s left’, this paper asserts that innovation and technological development, coupled with geology and climate are creating a new energy paradigm, since petroleum resources previously unable to be accessed are now being accessed and produced. This production of previously inaccessible petroleum, particularly shale oil and gas in the USA, and petroleum located in the Arctic, is challenging the existing energy paradigm where the Middle East is the major producer of petroleum, and the major consumers are developed states such as the US. This paper demonstrates that a new energy security paradigm is being shaped by technological developments and new applications of existing technologies, examining how the innovative application of existing technologies enabled shale oil and gas to be produced. It also analyses how newly developed Floating Liquefied Natural Gas (FLNG) technology for gas extraction in the warm waters in north western Australia may play a pivotal role in the exploitation and production and transportation of Arctic Petroleum, especially in the Russian sector of the Arctic, thereby challenging the traditional energy security paradigm.
Introduction

The modern day energy security paradigm has been premised on the importance of Middle Eastern oil, in part attributable to the decline of US oil production since 1974, and the increased reliance on Middle Eastern oil at a time when the impact of the Organisation of Petroleum Exporting Countries was reaching its zenith. The importance of Middle Eastern oil can be traced back to the aftermath of World War II, where the post-war petroleum order was dominated by an explosion in the demand for petroleum by consumers.\(^1\) It was against this backdrop of unprecedented demand for oil that major oil companies acquired Middle Eastern oil concessions in order to meet the unprecedented demand for oil and its products.\(^2\) A close political relationship was forged between the United States (US) and the newly reinstated Saudi Royal family, demonstrated by Roosevelt meeting with Ibn Saud after the Yalta conference in early 1945.\(^3\) At this meeting, Roosevelt sought to secure favoured access to Saudi petroleum, with Saudi Arabia allegedly offering the US unlimited access to Saudi oil in return for protection of the Saudi Royal family from internal and external attack.\(^4\)

Such has been the enormous importance of Middle Eastern oil that geologist Everett Lee DeGolyer declared that

‘...the centre of gravity of world oil production is shifting from the Gulf-Caribbean area to the Middle East and the Persian Gulf Area is likely to continue to shift until it is firmly established in that area...[one of his colleagues said] the oil in this region is the single greatest prize in history’.\(^5\)

The importance of Middle Eastern oil on international geopolitics was reiterated by the USA, when President Carter declared in his 1980 State of the Union speech that

‘... an attempt by an outside force to gain control of then Persian Gulf Region will be regarded as an assault on the vital interests of the United States of America, and such an assault will be repelled by any means necessary, including military force’\(^6\)

Challenging Klare’s resource scarcity thesis of ‘the race for what’s left’, this paper asserts that innovation and technological development coupled with geology and climate are creating a

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\(^4\) Klare, *Resource Wars.*
\(^5\) Yergin, *The Prize*, p. 375
new energy security paradigm, since petroleum resources previously unable to be accessed are now being accessed and produced. This production of previously inaccessible petroleum, particularly shale oil and gas in the USA and petroleum located in the Arctic, is challenging the existing energy paradigm where the Middle East is the major producer of petroleum, and the major consumers are developed States such as the US. This paper seeks to demonstrate that a new energy security paradigm is being shaped by technological developments and new applications of existing technologies, examining how the innovative application of existing technologies enabled shale oil and gas to be produced. It also analyses how newly developed technology for gas extraction in the warm waters in northwestern Australia may play a pivotal role in the exploitation and production and transportation of Arctic Petroleum, especially in the Russian sector of the Arctic, thereby challenging the traditional energy security paradigm.


The energy security paradigm that has dominated for the last half century has been focused on Middle Eastern oil as US production of oil declined from its peak of almost 3.455 billion barrels of crude oil per annum in 1972, to a low of 1,830 billion barrels per annum in 2008. This decline coincided with increased US military activity in the Middle East especially in Iraq and Afghanistan, and a dominance of petroleum production from the Middle East. During this period of declining production in many of the petroleum consuming states, the concept of ‘Peak Oil’, comprising the peak and decline of the world’s oil and gas due to resource constraints, attracted fierce debate.

Against this backdrop, Klare developed his resource scarcity thesis, arguing that conflict over resources will become an increasingly more distinct feature of international geopolitics. In his resource conflict thesis, Klare argued that the existing energy security paradigm comprised a reliance on Middle Eastern oil and a need to secure access to increasingly petroleum scarce resources, thereby increasing competition amongst States to secure this access. This need to secure access to petroleum, and its role in international conflict is demonstrated by the Saddam Hussein’s to occupy Kuwait and control its oil in 1990-1. The actions of Hussein prompted international intervention since US national security interests were threatened, including a US invasion of Kuwait to force back Iraqi occupying force and secure oil supplies in a move foreshadowed by

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9 Association for the Study of Peak Oil and Gas, About Peak Oil, 2008, http://www.peakoil.net/about-peak-oil
10 Klare, Resource Wars.
11 Ibid.
12 Ibid.
13 Ibid.
Carter in his 1980 State of the Union Speech.\textsuperscript{14}

\textit{The Changing Energy Security Paradigm: Innovation and Shale Petroleum Development}

In 2003 the IMF noted that oil has dominated world energy consumption for many decades, even though oil consumption has declined from fifty per cent of energy consumption in 1975 to forty per cent of energy consumption in 2003.\textsuperscript{15} This oil was predominantly supplied from the Middle Eastern region.\textsuperscript{16} However, the early 2010s saw a dramatic rise in the production of both oil and gas from shale reservoirs (together known as shale petroleum\textsuperscript{17}) in the United States. Shale oil production, often overlooked in discussions relating to the ‘shale gas revolution’ has significantly contributed to the rise of US oil production from its lowest level of 1,830 billion barrels of oil per annum in 2008 to its highest since 1974 of 3,168 billion barrels per annum in 2014.\textsuperscript{18}

In the late 1990s and early 2000s a number of technological innovations that had been developed in the 1970s and 1980s by oil companies in partnership with the US government were combined and used on several shale formations in the USA, with spectacular results. After the decline in oil and gas production from the production peak in 1972, a series of US government policies were introduced to promote the development of new sources of natural gas, including gas from shale, and included incentive pricing, tax credits, and R&D programs. This program led to the development of horizontal drilling and down-hole telemetry in the 1990s\textsuperscript{19}, although at the time the US Energy Information Agency (EIA) noted that the commercial viability of horizontal drilling for the production of oil and gas had not been well determined.\textsuperscript{20}

At the same time the US government program focused on refining and developing the well-established technique of hydraulic fracturing (HF). In partnership with the US Department of Energy (DOE), Mitchell Energy developed ‘massive HF’ for tight gas in sandstone formations, which they then applied with some success in the Barnett shales\textsuperscript{21}. In parallel was the development of ‘slickwater hydraulic fracturing’ (SWHF) during the 1980s and 1990s.

\textsuperscript{14} Carter, State of the Union Address.
\textsuperscript{16} Ibid.
\textsuperscript{17} Petroleum comprises the liquid and gaseous hydrocarbons that occur in a reservoir, and includes oil, condensate and gas (both wet and dry). See Schlumberger’s Oilfield Glossary: Petroleum, http://glossary.oilfield.slb.com/en/Terms/p/petroleum.aspx
\textsuperscript{21} Wang and Krupnick, pp. 11-12.
(and is used today for HF in shale formations) as petroleum companies experimented with the use of high volumes of water and ratios of proppant sand and chemical additives to achieve satisfactory fracture propagation of the target rocks at reasonable cost.  

However, it was not until the early 2000s that these various innovations could be brought together for large-scale extraction of petroleum from shale rocks. The catalyst for the combination of horizontal drilling and SWHF to extract petroleum from shales was the development of 3D seismic surveying, funded by the DOE/EIA seismic technology program.  

3D seismic surveying provided a clear three dimensional model of the subsurface rock structures and properties, thereby enhancing geologist’s ability to identify target reservoirs and assist in determining the best drilling program.  

Combining these innovations, it became possible to locate formations suitable for shale petroleum recovery more easily, utilise horizontal drilling to reach the targeted formations, and then fracture the targeted formations by the use of SWHF. To add to this trio of innovations was the development of microseismic fracture mapping in the early 2000s, enabling fracture propagation from SWHF to be monitored for height, length and orientation, thereby optimising the fracture of the shales and increase petroleum recovery rates. By combining these four differing technological developments and innovations, the US has been able to extract large amounts of oil and gas from shale formations, demonstrated by oil production reaching 3,168 billion barrels in 2014.

**A Redundant Resource Scarcity Thesis?**

The resource scarcity thesis posited by Klare appeared to become increasingly redundant from the late 2000s, as petroleum from US shale reservoirs (both oil and gas) increased markedly. Such increased production led the International Energy Agency (IEA) to declare in its 2012 World Energy Outlook that technical innovation in US shale reservoirs will in all likelihood enable the USA to overtake Saudi Arabia to become largest global oil producer by 2020, with the USA becoming a net oil exporter by 2030.

Continued rise in shale petroleum production in the USA, and the declaration by the EIA in 2012 that the USA will become the largest global oil producer by 2020 and a net oil exporter by 2030, has cast doubts over Klare’s resource thesis as it pertains to petroleum resource scarcity, raising

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22 Ibid. p. 20.
23 Ibid. p. 13.
questions over the need for conflict over petroleum resources that are in apparent abundance. Such recent developments have led Klare to reconsider his resource scarcity thesis, examining whether conflict over petroleum resources will disappear in an era of abundant petroleum, or whether the conflict will merely take new forms, governed by changing geography of supply and demographics.\textsuperscript{28}

Addressing these questions, Klare acknowledges that the shift from petroleum scarcity to abundance since the mid 2000s has altered geopolitics, some of which have already been felt, and others that are not likely to be evident for many years. \textsuperscript{29} In readdressing his resource scarcity thesis, Klare demonstrates that contested maritime borders, particularly in Southeast Asia and the Arctic, will again lead to conflict over resources. In analyzing arctic frontiers, Klare focuses on arctic sea boundaries, and in particular disputes emanating from contested claims by Arctic States.\textsuperscript{30}

\textbf{A New Energy Security Paradigm: Technology and Petroleum Development in the Arctic}

Klare states that the struggle for control over key sources of energy have been the single greatest source of conflict in the past, and likely to remain as states seek to ensure adequate access to energy (security of supply) to satisfy national interests. It is this need to secure supplies of energy that has to date driven the energy security paradigm, and will drive arctic petroleum exploration and production. The importance of the Arctic as an energy resource for the US was reiterated by the decision on 31 March 2015 to reaffirm a 2008 government auction of Arctic drilling rights in the Chukchi Sea, overriding the objections of environmental groups.\textsuperscript{31} A 2015 report by the National Petroleum Council reiterated that the US Arctic contains large petroleum reserves that would enhance the US’s position as a global energy producer for the next thirty years, and meet national energy security needs.\textsuperscript{32}

Challenging Klare’s thesis, it is posited that securing access to resources is not the only component of the energy security paradigm. Whilst a number of States (especially the USA) seek access to resources to fulfill its national interest of security of energy supply, this is not true for the largest of the Arctic State players, Russia. With its modest population compared to land area and abundance of resources (142.5 million people in 2014\textsuperscript{33}), Russia seeks access to consumers of its

\textsuperscript{29} Ibid. p. 23.
\textsuperscript{30} Ibid. p. 37-39.
\textsuperscript{32} National Petroleum Council (NPC), Arctic Potential: Realizing the Promise of U.S. Arctic Oil and Gas Reserves, 2015, p. 10. http://npcarcticpotentialreport.org/pdf/ExSummary_vol-41715.pdf
\textsuperscript{33} Central Intelligence Agency (CIA), \textit{The World Fact Book: Russia}, 2015.
energy, rather than securing energy for domestic use. As at 2013, Russia held 5.5% of the world’s oil, and produced 12.9% of global oil. Russia also held 16.8% of the world’s proved gas reserves, and produced 17.9% of the world’s gas. Russia the second largest oil exporter, exporting 5 million barrels per day, and the largest gas exporter, transporting 200 billion cubic metres of gas daily. As such, whereas other states, particularly the US, seek access to Arctic resources in order to meet national energy security supply needs, Russia continually seeks markets for its vast Arctic reserves of petroleum.

Whereas the innovation associated with shale gas development was largely the result of the integration of existing technologies, the energy security paradigm shift in the arctic will comprise of the application of new technologies to petroleum development, particularly the extraction and processing of gas in remote arctic regions. The giant Shtokman gas and condensate field in the Barents Sea is such an example of Arctic resources that has struggled to be developed, yet remains a field of strategic significance as it becomes the pivotal point of a new gas producing region on the Russian Arctic Shelf. Discovered in 1988, the Shtokman field has undergone significant exploration and appraisal. However, its location and the challenging Arctic conditions (particularly ocean conditions and engineering challenges associated with the accumulation of gas hydrates in pipelines) have meant that petroleum production has been delayed whilst suitable means of extraction are found.

Current proposals for development include the use of a deep-water production system tied to a Floating Production Unit (FPU) and the transmission of produced gas to Murmansk for processing. From Murmansk, it is proposed that natural gas will be delivered to the Unified Gas Supply system of Russia through a newly constructed Murmansk/Volkhov pipeline, and liquefied natural gas (LNG) loaded onto LNG ships in Murmansk for transport to consumers.

Several recent technological developments provide huge potential for Russian development of its Arctic resources, commencing with the Shtokman gas field. The most important of these developments is that of FLNG technology. Developed by Shell to access the remote Prelude gas field offshore in the Timor Sea off Western Australia, the FLNG is the first floating liquefied natural gas production and processing platform, and will commence production in

36 Ibid. p. 20.
37 Ibid. p. 22.
39 Ibid.
41 Ibid.
42 Ibid.
Rather than relying on a production platform and then piping gas onshore for processing before transporting to market in LNG tankers along conventional shipping routes (as proposed for the Shtokman field), the Shell FLNG facility will be able to undertake all of these facilities onboard.

The impact of the new FLNG technology on arctic gas production, particularly the Shtokman field is enormous. No longer will there be a need to build a pipeline from Shtokman to Murmansk and Murmansk to Volkhov and a LNG processing facility in Murmansk. Instead, the gas can be produced on the FLNG facility using existing subsea technology. This provides extraordinary benefit, since the formation of gas hydrates is problematic deep-water and cold-water pipelines such as those in Arctic regions. Coupled with this is the capacity to load LNG transport ships at the field production site, rather than in port providing significant time and cost savings in the transport of gas to market.

The transport of LNG to markets, particularly Asian gas consumers, is likely to be assisted by two developments. The first is that of new icebreaker ship innovation. Russia has long been a leader in icebreaker technology, using nuclear energy since 1959 to power a fleet of civilian icebreakers. However recent technological advances in shipping, in particular the development of an oblique icebreaker cargo ship by Aker and the Daewoo icebreaker LNG tanker enable new shipping competencies for petroleum extraction in the Arctic. Coupled with technological advances is the impact of climate change and the reduction of the Arctic ice sheet, opening of the Northern Sea Route (NSR) across the top of Russia. Following the first successful transit of LNG from Statoil’s Snøhvit field in the Barents Sea across the NSR to Tokyo in summer 2012, in the first two months of the 2013 NSR season twenty transit vessels (often escorted by icebreaker ships) moved over 450,000 tonnes of cargo through the NSR. In shipping cargo through the NSR, it is possible to reduce cargo time by at least one quarter, demonstrated by a reduction of delivery time of LNG from Northern Norway to Tokyo from 37 days to 27, meaning a saving of about US$1 million per trip. The entering into service of the Arctic LNG tanker Arctic


48 Northern Sea Route Information Office, Transit Shipping on the NSR in the first half of the season of 2013, 3 September 2013, http://www.arctic-lio.com/node/201

49 Stan Jones, Northern Sea Route beckons LNG Shippers.
Aurora in 2014 makes such shipping a reality.

Together, technology and global warning have created the capacity to produce and process gas using the newly developed but yet to commence production FLNG ship by Shell, then transit the LNG from the giant Arctic petroleum fields (such as Shtokman) in the Barents and Kara Seas to the energy-hungry Asian consumer markets. Such technological developments are creating a new energy paradigm, one where resource depletion is not driven by the need to secure energy supply, but instead driven by the need to secure energy markets in Asia.

**Conclusion**

The postwar geopolitics of energy has been dominated by real and perceived scarcity, focusing on the importance of Middle Eastern oil in the energy security paradigm. This geopolitical perception has enjoyed a hiatus in the golden years of shale petroleum, where the USA has basked in the glory of its newly found energy independence.

However, such basking has been brief, as the realisation that shale petroleum resources are not the sole answer to energy independence, and has triggered a new scramble for energy resources. However such a scramble is unlikely to revert back to a focus on the Middle East, and therefore a return to the dominant energy security paradigm. Rather, there is likely to be yet another energy security paradigm, as Arctic States scramble to secure the last of the great frontier of petroleum under the frozen north.

Such arctic oil and gas resources have, through the combination of technology, innovation and physical factors (particularly climate change), the potential to alter the energy security paradigm for not only the players but also consumers. In particular, the energy security the Asia will alter, with Russia playing an increasingly dominant role in the new energy paradigm as it seeks security of demand for its arctic petroleum in Asian markets.

**About the author**

Dr Tina Hunter is a Reader in Energy Law at the University of Aberdeen, and an Associate of the Aberdeen University Centre for energy Law (AUCEL). She received her PhD from the University of Bergen, Norway, and has taught or researched in over 20 countries including the UK, Norway, Russia, the Philippines, the USA, Canada and Iceland.

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50 At least that petroleum which is accessible in the existing international legal framework: it is probable there are vast petroleum reserves under the Antarctic, however the Antarctic Treaty System, in particular the Madrid Protocol, prevents exploration or production of petroleum until at least 2041.
At Keystone XL’s Destination, A Global Battle Brewing

David W Livingston

Abstract

Recent upheavals in the oil market, most notably the growth in North American unconventional oil and the evolving response of OPEC, are prompting a re-appraisal of conventional wisdom across a number of areas. Though analysis has tended to focus on global dynamics, many of the oil market’s defining characteristics are determined by regionalized micro-competition. This article explores evolving supply dynamics in the U.S. Gulf Coast, the most important refining hub and single largest source of heavy oil refining capacity. The implications of these evolving dynamics hold repercussions for the debate over the Keystone XL pipeline, Saudi Arabia’s ability to maintain a foothold in the North American market, and the heightened competition among heavy crude oils in the Western Hemisphere. It is suggested that U.S. policymakers place their ultimate focus not upon individual pieces of infrastructure, but instead upon establishing strategic priorities for managing the new and dynamic supplies of oil – including heavy oil – that is competing for refinery capacity in North America.
Introduction

With the Keystone XL pipeline having occupied headlines and the U.S. Republican legislative agenda in early 2015, Canadian oil is once more in the spotlight. It is a place that Prime Minister Stephen Harper once cherished. Just prior to the 2006 G8 summit, he spoke of Canada becoming an “energy superpower” on the back of its 167 billion barrels of extra heavy crude oil reserves in Alberta.¹ With uncharacteristically expansive rhetoric, he likened the mobilization of the oil sands as “akin to the building of the pyramids or China’s Great Wall. Only bigger.” Never have these ambitions been more in doubt, due not only to the fact that the Keystone XL pipeline still awaits a long-delayed decision by the Obama administration on a requisite permit that would enable its construction², but also due to the precipitous fall in oil prices witnessed over the course of late 2014 and early 2015.

This dramatic upheaval in the global oil market has likewise shined a second spotlight on another major producer of a very different profile: the Kingdom of Saudi Arabia. The country’s position within OPEC is something akin to Germany’s role within the European Union: an anchor of power and stability amidst an often chaotic assortment of peers struggling to adjust to dynamic geo-economic circumstances and, increasingly, an actor able to impose its agenda – implicitly, and without force – on others within the broader institutional constellation. This role was no more apparent than at the historic 166th OPEC Ministerial Conference in November 2014, when Saudi Arabia led the cartel to maintain constant production quotas even in the face of a growing oil market oversupply and quickly falling prices.

Subsequently, a number of convenient – if hurried – narratives emerged in media and discussion circles that sought to rationalize the Saudi decision. Initially, coverage of the decision was dedicated to its price impacts, as a majority of market participants appeared to have anticipated a unilateral reduction in the production quota, consistent with an OPEC strategy of privileging price stability even at the expense of market share. Oil prices took a further leg down immediately following the decision, with the physical oversupply of crude in the global market compounded further by negative speculative shocks as various players exited structural “long” positions and both the WTI and Brent oil benchmark price began to enter into a contango structure.³

² In 2008, the Keystone XL project was proposed as an extension to the Keystone Pipeline, an existing piece of infrastructure already carrying crude from Alberta to the United States
³ Matthew Philips, Cheap Oil and Expensive Oil Tankers: This is Contango, Bloomberg, 17 September 2014, http://www.bloomberg.com/bw/articles/2014-09-17/what-is-contango-cheap-oil-makes-for-expensive-tankers
Not long thereafter, discussion turned to the possibility of a globally-coordinated effort to sink oil prices, namely a tacit agreement between Riyadh and Washington, D.C. that a declining oil price would help Saudi Arabia reassert its relative strength vis-à-vis other OPEC countries while also placing the budgets and geopolitical leverage of countries such as Iran, Russia, and Venezuela under severe strain. Despite their coincidental convenience, little material evidence has been offered to support such hypotheses.

A third narrative began to take hold at the end of last year, with Saudi Arabia and the United States this time framed in opposition to one another, with the world’s historically dominant low-cost producer aggressively seeking to regain market share from the United States. The North American “shale revolution” has already seen U.S. total liquids production surpass that of Saudi Arabia, and Riyadh’s stoicism in the face of falling prices was seen as an attempt to “kill off” the U.S. tight oil sector, with some even suggesting that OPEC’s very existence was at stake.

A review of the available facts suggest that each phase of coverage of the oil price decline, while containing kernels of truth in every case, has systematically dramatized and oversimplified the dynamics at play. The reality is that beyond a handful of key individuals with privileged access to decision-making processes in Riyadh and elsewhere, there is no way to say with certainty just exactly what has occurred in oil markets, who has reaped the greatest geopolitical gains or suffered the greatest losses, nor to prognosticate where exactly we are heading next.

In any case, it is sufficient to say that even at the highest levels of the Saudi oil ministry there is incomplete information, uncertainty, and accordingly an emphasis on long-term strategy over responsiveness to short-term phenomena. Moreover, the analytical community within Saudi Aramco and other key OPEC producers understand the flexible economics and nimble nature of the shale industry quite well, and are wise enough to know that shale oil cannot be pushed out of the market. The best it can hope for is the sector’s consolidation, rationalization, and abandonment of production that is unprofitable at all but the highest of oil prices.

For all of the talk focused on competition between Saudi Arabian and shale, however, little attention has been paid to a crucial regional market in which the growth in competition is real, measurable, and has significant implications for a number of key oil market players, not least of which include Saudi Arabia and Canada. This market is the U.S. Gulf Coast, the world’s most important refining hub.

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and single largest source of heavy oil refining capacity. There are key developments underway in the Gulf Coast that are challenging a number of conventional truths related to Keystone XL, Saudi Arabia’s strategic priorities, and the future of heavy oil in the Western Hemisphere.

**Oil Infrastructure Developments in North America**

The future of the Canadian oil sands is portrayed as hinging upon the fate of the Keystone XL pipeline. This is reductionist on a number of fronts. First, the long-term average oil price matters more than any other factor to the future viability of the oil sands. Second, the southern leg of the Keystone XL pipeline – the TransCanada “Gulf Coast” pipeline - was already constructed in early 2014, and has the capacity to carry up to 700,000 barrels per day of crude from the WTI physical delivery point of Cushing, Oklahoma to a Sunoco-owned logistics terminal in Nederland, Texas. Finally, new U.S. pipeline construction projects completed in late 2014 have alleviated a number of internal crude transport bottlenecks and are allowing significant volumes of Canadian heavy crude to reach the Texas Gulf Coast even as construction of the northern segment of the Keystone XL pipeline remains frozen amidst the Presidential approval process.

This latter point is immediately consequential, even if it has transpired without much public recognition. In December 2014, Enterprise Product Partners constructed the 585 mmb/d Flanagan South pipeline from Pontiac, Illinois to Cushing, while Enterprise and Enbridge finished the 450 mmb/d joint venture Seaway Twin pipeline connecting Cushing to refineries at Freeport, Texas. An original Seaway pipeline had already been expanded to 400,000 b/d of capacity in 2014 to join the Gulf Coast pipeline’s 700,000 b/d of capacity, bringing new Cushing-to-Gulf Coast capacity to well over 1.1 mmb/d even before the additions in December of last year.

However, prior to the new interconnectivity brought by the Seaway Twin and Flanagan South links, flows of Canadian crude to the Gulf Coast was limited by the inability of the crude to first reach Cushing. As a result, most Canadian heavy crude entering the U.S. on pipeline had used the Spearhead pipeline and original Keystone pipeline to access refineries in the Midwestern U.S.

In 2013 only 118,000 b/d of heavy Canadian crude reached the Gulf Coast market out of a total 2.1 million b/d of heavy crude imports, with an average specifically upgraded to handle increasing inflows of Canadian heavy crude.

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6 Reuters, TransCanada says Keystone XL’s southern leg moving 400,000 bpd, 13 February 2015, [http://www.reuters.com/article/2015/02/13/transcanada-results-gulfcoast-idUSL1N0VN26Y20150213](http://www.reuters.com/article/2015/02/13/transcanada-results-gulfcoast-idUSL1N0VN26Y20150213)
7 Many of these refineries, such as the 400,000 b/d Whiting refinery in Illinois operated by BP, had been

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of 75,000 b/d of those flows reaching Texas over the past five years. Entry into the Texas market has been facilitated primarily via the 98,000 b/d ExxonMobil Pegasus pipeline up until 2013 (when the pipeline was closed following an accident), and since 2013 via the reversal of the original Seaway pipeline, via the Cushing Marketlink pipeline (which links Cushing to the Sunoco Nederland Terminal near Beaumont, Texas), and via increasing shipments of crude by rail.9

By the start of 2015, this situation had begun to change. Average flows on Flanagan South were approximately 390,000 b/d and flows on the Seaway Twin were approximately 240,000 b/d immediately following the opening of the two pipelines.10 A derivative effect of the pipelines, constructed at a total cost of $4 billion, is the ability to now transport up to 240,000 additional barrels per day of Canadian heavy oil imports. This nearly doubles the capacity reaching the Gulf Coast, where it must jostle with legacy heavy oil suppliers to secure entrée to the 1.5mmb/d of heavy crude refining.

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10 Genscape Mid-Continent Pipeline Services, http://info.genscape.com/mid-continent-pipeline-service
capacity in the region – the world’s largest and most strategic heavy refining hub.¹¹

**Refining Markets in the U.S. Gulf Coast**

Why might heavy oil imports into the Gulf Coast be a significant matter at all, if the U.S. continues to produce record volumes of tight (shale) oil from nearby formations, including the Eagle Ford and Permian formations of Texas that should eventually minimize the importance such imports? The answer lies in the specific character of crude being produced and the appetite of America’s refineries.

Crude oil, though often treated as a homogenous commodity, can vary widely in its physical characteristics.¹² U.S. tight oil supplies are light (as measured by an indicator known as “API gravity”) and “sweet” (i.e. – low in sulfur, as opposed to “sour”, more sulfurous oils). While the API gravity of production from the Bakken shale can approach 42 degrees (a cubic metre of which weighs approximately 815kg), the benchmark for heavy oil from the Middle East is around 27 degrees (885kg), and the benchmark for heavy Canadian oil production – “Western Canadian Select” - is 22 degrees (925kg).¹³ Some oil sands resources, prior to upgrading or dilution, are even heavier – approaching 10 degrees or below in API gravity terms.

Individual refineries are suited to handle different crudes with varying degrees of efficacy and efficiency, as determined by the “complexity” - in other words the variety of different specialized process units - of the refinery. More complex refineries are more costly to build and operate, as they require greater investment and process energy, but can also produce high-value petroleum products from heavier, sour crudes that often trade at a discount in global markets.

On average, U.S. refineries are best suited to process crudes ranging between 30 to 32 API gravity (between 865kg to 875kg per cubic metre)¹⁴, a narrow window of optimality made feasible by the ability of refiners to blend various crude streams until the desired characteristics are achieved. For example, Bakken oil is around 55kg too light for many average refineries in the U.S., while Western Canada Select is around 55kg too heavy. When blended, the resulting mix becomes a viable feedstock, though the consistency of petroleum product slates derived from such blends is not always comparable to a single crude stream of similar specifications.¹⁵

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Each refinery is unique, and while the U.S. has access to abundant light, sweet crude oil domestically, it must also seek to accommodate the refining complex of the U.S. Gulf Coast which, having undergone a massive new wave of investment over the past decade, now devours some of the world’s most difficult crude oils and in turn yields a slate of multiple high-value products destined for markets around the world. More than 50 per cent of U.S. refining capacity is concentrated in the 51 refineries spread throughout the Gulf Coast, and over four-fifths of these refineries are complex facilities designed to handle sour, medium to heavy crudes.\textsuperscript{16} In aggregate, the Gulf Coast possesses over 1.5 mmb/d of coking capacity, meaning that the logic of private players optimizing profit margins will continue to pull heavy oil into the region even when there is more than enough light oil nearby.

\textit{Heterogenous Markets, Heterogenous Impacts}

This is precisely what has transpired over the past few years, as made clear by a decomposition of the impact that U.S. light sweet oil production growth has had on various oil imports into the United States. The first imports to be displaced by U.S. tight oil as early as 2010 were light, sweet crudes from the North Sea and West Africa. Historically, U.S. refiners have been major consumers of African crude oil, including light sweet streams from Nigeria, Algeria, and Angola. Although the U.S. imported as much as 2 mmb/d in 2010 from African countries, this has since declined by more than 90%, with most African flows being redirected to Europe to serve better-suited refineries there.\textsuperscript{17} After a rapid and precipitous decline in such imports, light sour crudes were the next to show vulnerability as tight oil production growth continued unabated into 2013 and 2014. Of the five most prolific light sour crude exporters to the United States in 2010 – Saudi Arabia, Mexico, Iraq, Kazakhstan, and the United Kingdom – only the first three remained active at the start of 2014. Overall volumes of light sweet and light sour imports to the United States have since been virtually eliminated, even in four historical bastions of Arab light sour refining intake – Exxon’s refinery in Baytown, Texas; Motiva’s refinery in Port Arthur, Texas; Marathon’s refinery in Garyville, Louisiana; and Exxon’s refinery in Baton Rouge, Louisiana. Exporters are thus left fighting over the medium/heavy oil capacity in the U.S. Gulf Coast. Notably, some of region’s largest suppliers have at least partial ownership interests in key refineries configured for processing heavier crudes. Developments in the heavy oil market are testing an important shibboleth: that geopolitics, joint ventures, and contractual commitments will buffer existing heavy oil crude imports into

\textsuperscript{16} U.S. Energy Information Administration, \textit{Regional Refinery Trends Evolve to Accommodate Increased Domestic Crude Oil Production}, 15 January 2015, \url{http://www.eia.gov/todayinenergy/detail.cfm?id=15701}

\textsuperscript{17} U.S. Energy Information Administration, \textit{This Week in Petroleum}, 21 May 2014, \url{http://www.eia.gov/petroleum/weekly/archive/2014/140521/twipprint.html}
the U.S. Gulf Coast from growing competition with Canada.

**Crude Oil Imports to U.S. Gulf Coast, by Quality**
(millions of barrels per day)

Source: U.S. Energy Information Administration, Crude Import Tracking Tool (Beta Version)

Mexico is the largest supplier of heavy crude to the region, and its state oil company, PEMEX, has a 50/50 joint venture with Shell in a 340,000 b/d refinery in Deer Park, Texas.\(^{18}\) PEMEX has been one of the most proactive in anticipating the competition from Canadian supplies, tripling the Gulf Coast discount for its Maya benchmark crude against a weighted average of prices for West Texas Sour (WTS), Louisiana Light Sweet (LLS), and Gulf Coast fuel oil. To be effective, such a discount must be wide enough to cover the additional costs of getting crude from Canada to the U.S. Gulf Coast by pipeline (approximately $9) or rail (approximately $14-$18).\(^{19}\) By March 2015, there were already signs of attrition, as PEMEX reduced the discount by over half.\(^{20}\)

Venezuela, the second largest supplier of heavy crude to the Gulf Coast, finds itself in a unique situation given its ownership of an extensive refinery and retail network in the United States via Citgo, a subsidiary of state-owned PDVSA. Citgo has been the subject of persistent divestment rumors as the Venezuelan government finds itself in a worsening economic situation, but for the moment no such move appears to be imminent.\(^{21}\)

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\(^{19}\) Estimated range elicited from discussions with market analysts.


Regardless of Citgo’s future ownership, most of the approximately 400,000 b/d of Venezuelan crude imported into the U.S. Gulf Coast is vulnerable to displacement by Canadian crude. Only a portion – that imported to feed a 157,000 b/d Citgo refinery in Corpus Christi, Texas – is buffered from Canadian competition at the moment due to continued pipeline bottlenecks. The opening of a new pipeline in late 2015 connecting the ECHO terminal to the Beaumont, Texas refining complex will change this and expose almost all key heavy oil refineries in the Gulf Coast to competition from growing Canadian imports. Additionally, because Beaumont was the original target refining market for Canadian crude transited via the hypothetical Keystone XL pipeline, the marginal economic benefits of constructing Keystone XL in the future may be mitigated once ECHO and the Beaumont market see greater integration.

Saudi Arabia’s exports of heavy crude to the U.S. Gulf Coast refining market have increased markedly since 2013, following upgrades to a 600,000 b/d refinery in Port Arthur, Texas operated by Motiva, a 50/50 joint venture between Saudi Aramco and Shell. With this solid foothold in Gulf Coast coking capacity, Saudi heavy oil exports to the U.S. climbed steadily to just under 100,000 b/d in 2014. Many analysts have assumed that Saudi imports into the U.S. would prove to be the most immutable of any supplier, given broad flexibility to discount crude sales and the geostategic prioritization of market share as revealed by the November 2014 OPEC Ministerial Meeting.

However, the political drivers behind Saudi Aramco and the Saudi oil ministry have often been overestimated. The pursuit of market share is not an “ideological” absolute and has often grown more or less pronounced due to broader market circumstances. Saudi for many years maintained a generous discount for U.S.-marketed crude oil that afforded it a competitive position in the market, but this was unceremoniously ended in the early 1990s. As the prospect of growing Canadian access to Gulf Coast markets approached, the Saudis recognized the coming threat, and have consistently cut the price for U.S.-bound Arab Medium crude oil on a monthly basis from August 2014 through January 2015. These moves have been insufficient to stem the slow loss of

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22 Sandy Fielden, They Did It Seaway – Canadian Heavy Crude Starts To Compete At Gulf Coast Refineries, RBN Energy, 2 March 2015, https://rbnenergy.com/they-did-it-seaway-canadian-heavy-crude-starts-to-compete-at-gulf-coast-refineries
23 U.S. Energy Information Administration, Crude Import Tracking Tool (Beta Version)
24 Nilofar Saidi, There is a Light That Never Goes Out – The Resilience of Saudi Light Crude Imports to the Gulf Coast, RBN Energy, 15 October 2014.


25 In 1986, for example, Saudi Arabia clearly prioritized market share over price in circumstances that in some ways shadow those today, while in 1998 it unambiguously reversed this strategy to privilege prices over market share amidst changing conditions and the perception of unacceptably low per-barrel revenues.

market share, however, and even Motiva has reduced Saudi crude imports amidst a surge of Canadian crude.\(^{27}\) With the first quarter of 2015 behind us, it now looks likely that the much-publicized expansion of discounts in the U.S. market in late 2014 was only a harbinger of a broader re-calibration of its global pricing strategy that continued into early 2015.\(^{28}\)

**Conclusion**

It is not only the pricing decisions of Saudi Aramco and various Canadian suppliers going forward, combined with the continued evolution of domestic U.S. infrastructure networks that will determine the exact character of this growing competition in the years ahead. Broader market dynamics do matter, most notably an oil price in the $50 - $60 range that is perceived as comfortable for Saudi Arabia but fundamentally unsustainable for Canadian oil sands producers.

Added to this are, *inter alia*, clouds looming over political stability and continuity in Venezuela, the uncertain prospects for Mexico’s successful implementation of reforms to its hydrocarbon laws, and the strategic choices made by secondary producers such as Colombia that may seek to either defend market share in North America or instead turn their focus to expanding Asian heavy crude refining markets.

The U.S. Gulf Coast market analyzed in this commentary is not a point in time, but instead a vector acted upon by various endogenous and exogenous forces over the course of days, months, and years. Undoubtedly, some of the trends highlighted here will prove to be durable harbingers of the “new normal” in oil markets. Others will reveal themselves to be transitory adjustments to a global market in upheaval. In any case, regular appraisals and modifications will be needed. However, the underlying point remains the same: the heavy oil market in the U.S. Gulf Coast region is undergoing a fundamental heightening of competition not seen in many years. The way this competition plays out will have consequences across the Atlantic Basin, and indeed for the fortunes of various oil supplies and suppliers around the world.

**About the author**


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The Limits of Gulf Arab Aid: Energy Markets and Foreign Policy

Karen E. Young

Abstract

The Arab Gulf States (AGS), or the member states of the Gulf Cooperation Council (Saudi Arabia, Kuwait, Oman, Bahrain, Qatar and the United Arab Emirates), have historically used foreign aid and humanitarian aid as a quiet tool of their respective foreign policies within the wider Middle East. More recently, however, we have seen targeted financial aid and military assistance by these states, particularly Saudi Arabia, Qatar and the United Arab Emirates, towards neighbours in crisis. The UAE, Saudi Arabia and Qatar have used financial and military aid to jockey for influence within Egypt’s evolving political leadership, to attempt to remove Syria’s Assad from power, to counter the growth of Islamic State movement in Iraq, to influence political battles in Libya, and even in newly democratic Tunisia. Windfalls in wealth generated from the rapid ascent of oil and gas prices between 2009 and 2014 allowed budgets to expand for both military expenditure and financial aid. The dramatic fall in oil prices in late 2014 raises questions about the ability of these states to continue their generosity and the exercise of economic statecraft in the MENA region. The article tracks the expansion of Arab Gulf State aid in the wider region after 2011, with attempts to correlate the movement of oil prices with financial aid and more interventionist foreign policy historically since the 1970s. From this it engages with theoretical debates about how effective aid can be as a foreign policy tool. We would expect as Gulf aid is dependent on the ability of states to earn income from natural resources, the price of carbon energy should have some effect on aid allocations. The evidence presented here reflects a more nuanced relationship between energy markets and Gulf Arab state aid. The politics of Gulf Arab state aid is, above all else, strategic. Political goals can override economic prudence.
Introduction

An interesting shift has been underway in the development assistance world. So-called “emerging donors” are replacing, or at least challenging the logic and conditionality of foreign aid from Western donors since the 1960s.¹ The Development Assistance Committee, or DAC, formed in the 1960s to coordinate and promote aid from donor states of the Organization for Economic Co-operation and Development. DAC is a community of shared values, in that its members largely problematize development as appropriate relationships between state and market in the liberal democratic tradition.² Gulf Arab states are not “emerging”, but rather diverging from the DAC norm, as their targets of aid and their practice of giving differ from the pro-capitalist, pro-democracy conditional aid from prominent Western donors.³ Nor are Gulf states new donors; rather, Gulf Arab states have been active donors in waves since the discovery of oil and state foundation in the 1960s and 1970s.

The Gulf Arab States, also member states of the Gulf Cooperation Council (Saudi Arabia, Kuwait, Oman, Bahrain, Qatar and the United Arab Emirates), have historically used foreign aid and humanitarian aid as a quiet tool of their respective foreign policies within the wider Middle East.⁴ The UAE, Saudi Arabia and Qatar have used financial and military aid to jockey for influence within Egypt’s evolving political leadership, to attempt to remove Syria’s Assad from power, to counter the movement of Islamic State in Iraq, to influence political battles in Libya, and even newly democratic Tunisia. Windfalls in wealth generated from the rapid ascent of oil and gas prices between 2009 and 2014 allowed budgets to expand for military expenditure and financial aid. While the dramatic fall in oil prices from late 2014 (falling from a year peak of $107 per barrel in June 2014 to a low of $50 per barrel in January 2015) should affect the ability of these states to continue their generosity and the exercise of economic statecraft in the

³ In this paper, I conceptualize aid in a very broad sense, including foreign aid, development aid and targeted investment, from both private and public sources. Gulf states’ political economy merges state and private funds through ownership structures blending ruling family and government institutions. Cash, in-kind oil and gas, and directed aid in foreign direct investment are all part of the Gulf Arab states “aid” portfolio and foreign policy tools.
MENA region, the short-term aid decision-making suggests a different logic and strategy in play. The debate on how long Gulf Arab oil producing states can bear the fiscal pressure is mixed, given their massive reserves. This article tracks the expansion of Gulf Arab state aid in the wider region after 2011, correlating the movement of oil prices with aid since the 1970s. Both oil resources and foreign aid are “sovereign rents”, so there should be some commonality in the experiences of states that earn these rents and use them to facilitate an economic development agenda. It may now be relevant to explore how states that both accrue these rents and disperse them as aid make choices about foreign aid recipients and mechanisms of assistance. Scholars have argued that Gulf states prefer some recipients over others on cultural and religious bases of support. Gulf Arab states, particularly since 2011, have generated novel aid mechanisms, including non-restricted cash grants, injections to central banks, and in-kind oil and gas deliveries. Aid, understood here, includes these mechanisms as well as facilitations of foreign investment from both state and private sectors in the Gulf. Furthermore, we would expect the price of carbon energy to affect aid allocations. The evidence here reflects a more nuanced relationship between energy markets and Gulf Arab state aid.

**Oil Price and Gulf Arab Foreign Aid: Not Always Closely Linked**

There is a positive correlation between oil price and Gulf Arab state aid, but it is not always so closely linked. There are episodes in which oil prices rise without a respective increase in Gulf foreign aid. There are also very recent examples of Gulf states extending regional development aid at a moment in which oil prices are at historical lows and the fiscal budgets of Gulf states themselves are facing deficits. The politics of Gulf Arab state aid is, above all else, strategic. Political goals can override economic prudence. The reverberation of this shift challenges both norms and foundational institutions of North-South interactions.

Before the recent investor conference in Sharm al Sheikh in March 2015 (at which Egypt received new offers of Gulf aid), the

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Egyptian minister of investment, Ashaf Salman acknowledged receipt of at least $23 billion in combined direct funds from Saudi Arabia, Kuwait and the UAE since General Sisi came to power in late summer 2013.\textsuperscript{10} Gulf states are targeting aid in the region in increasingly large tranches, with little strings attached. Gulf state aid to Egypt exemplifies this trend. (See chart 1.)

The growing trend is that Gulf Arab states are willing to export their own political economy models, as a challenge to Western advice and hegemony, in their strategic efforts to limit political competition, especially political space that is tolerant to activist religious political organization, or political Islam. General El-Sisi, in his address to potential investors at Sharm el Sheikh, called Egypt “the first line of defence” against regional terrorism, and therefore, in his view, a good place to invest.\textsuperscript{11} The use of oil and gas products as aid in kind; the targeting of construction and real estate as both investment vehicles (for state and private sector firms) and employment strategies; and the manipulation of central banks as quick fixes to a depreciating currency, all of these strategies relate to Gulf practices in economic governance. Gulf Arab states regularly use the availability of oil and gas products, at steeply subsidized prices, to stimulate otherwise inefficient manufacturing and construction industries, while at the consumer level, provide a cost of living rebate.

Gulf economies are highly concentrated in provisions of investment vehicles, mostly in construction and real estate because these sectors facilitate Sharia compliant investment, while they also work in line with government spending cycles.\textsuperscript{12} Most of the Gulf Cooperation Council states have restricted monetary policies tied in some form to the US dollar. They are not experienced with extreme currency volatility (or hyperinflation). It may be that donor expectations are that a hard currency deposit in a central bank should stabilize an economy. The cash deposits could in fact exacerbate the inflation problem, as monetary policy becomes reliant on the external source of hard currency to maintain a target exchange rate. There is evidence that aid volatility and windfalls, particularly in cash deposits, create incentives for receiving governments to increase consumption and fiscal spending.\textsuperscript{13} This, in turn, creates volatility in the exchange rate (inflation), which is also linked to lower growth.

\textsuperscript{10} Reuters, Egypt Got $23 bln in aid from Gulf in 18 months—minister, 2 March 2015. http://af.reuters.com/article/commoditiesNews/idAFL5N oW41XL20150302
\textsuperscript{12} Zsofia Arvai, Ananthakrishnan Prasad and Kentaro Katayama, Macroprudential Policies in the GCC Countries, IMF Staff Discussion Note, SDN/14/01. Washington, DC: International Monetary Fund, March 2014, p. 9-11.
Chart 1: (Select) Gulf Arab State Aid to Egypt, 2011-2015
Sources: UAE Ministry of Foreign Affairs, African Development Bank Group, KSA Ministry of Foreign Affairs, Qatar Ministry of Foreign Affairs.

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<td>UAE</td>
<td>$3 billion (of which $1.5bn Khalifa bin Zayed fund for housing and SME support) <strong>Private reported aid:</strong> $22.8m</td>
<td>Private reported aid: $22.19m</td>
<td>A grant of $1 billion and a further $2 billion deposit Central Bank of Egypt. In kind (petroleum and gas) $225m.</td>
<td>$4 billion aid package committed to Egypt: $2 bn Central Bank of Egypt, and $2 bn project finance</td>
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<td>KSA</td>
<td>$5 billion aid package: $1bn cash grant, $2bn in kind (petroleum and gas), $2 bn deposit Central Bank of Egypt</td>
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<td>Qatar</td>
<td>$500m cash grant, $2bn deposit Central Bank of Egypt.</td>
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<td>Kuwait</td>
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14 The investment pledges are thought to combine public and private enterprise, though they are unspecified in media accounts and not included in official ministry announcements. See as an example, Al Arabiya, Gulf States Offer $12.5 bn in Aid to Egypt, 13 March 2015. http://english.alarabiya.net/en/business/economy/2015/03/12/Saudi-announces-4-billion-aid-package-to-Egypt.html
Historically, the Gulf Arab states have increased aid for political goals related to shifts in the international political economy. After the 1973 oil embargo, petro-dollars rapidly accumulated in international banks, creating the lending boom to developing countries. OPEC surpluses in 1974–76 were close to $142 billion, while developing country deficits reached around $80 billion. Gulf Arab foreign aid was an average of 12.48 per cent of gross national product (GNP) at the height of the oil boom in 1973. Andre Simmons has argued that Gulf aid was targeted to developing countries (through multilateral and bilateral institutions) to lessen the sting of post-embargo wealth among developing economy peers. The 1980s through the 1990s, Gulf Arab state donors exercised more restraint as oil revenues decreased, on average 2.38 per cent of GNP by 1985. After the Iraqi invasion of Kuwait in 1991, Gulf Arab states prioritized security over development aid and a more interventionist or public display of foreign policy goals. There was a brief spike in Gulf aid in the reconstruction effort in Kuwait, which quickly diminished by the mid-1990s.

As Momani and Ennis demonstrate, Gulf Arab foreign assistance reduced by half in the late 1990s ($1.3 billion) compared to 1990–1994 ($2.6 billion), in itself a period of restraint. The period following the second Gulf war and American invasion of Iraq in 2003 had a profound effect on Gulf Arab state donor practices. Under intense scrutiny by Western governments for their support of Taliban Afghanistan before 2001, Gulf states recalibrated aid targets and, in some cases, made more efforts to present their aid practices as global poverty reduction programs. The Dubai Cares model, created by Sheikh Mohamed bin Rashid (ruler of Dubai), is a case in point, in which donors shifted from traditional Arab or Muslim country recipients to those in most need. The second oil boom of 2003–2008 created an aid dilemma for Gulf Arab states, in that the largesse of the early 1970s was not to be repeated, either because state priorities (and constituent demands) for domestic spending had increased, or because the states saw little reward in the exercise of aid to gain prominence in international institutions or to acquire allies in other developing states. GCC

15 Momani and Ennis, 2013, p. 608.
20 Momani and Ennis, 2013, p. 609. Momani and Ennis rely on data adapted from MEES, a subscription oil and gas industry service (www.mees.com).
official reserves increased from $53.5 billion in 2003 to $514.3 billion in 2008, yet foreign aid increased only modestly, back to levels of the late 1980s. (Momani and Ennis estimate Gulf Arab foreign aid between 1985-1990 as $3.1 billion.)

The charts below tracks Gulf Arab state aid from the 1970s to the present, using ODA data from the OECD. The data itself is politicized, as we have a limited view of official government aid from Gulf Arab donors, while private donations (often sourced from members of the respective ruling families of Gulf monarchies) go unreported. Gulf Arab states have made efforts to streamline reporting of official aid in the last few years. The UAE made its first foreign aid report in 2013 and has since created an institutional framework to track and coordinate state aid efforts. Kuwait has perhaps the most long-standing transparent aid framework of the Gulf Arab states, at least in its channelling of aid through one institution, the Kuwait Fund for Development. The Kuwait Fund regularly reports its projects and contributions, exhibiting a wide regional disbursement pattern. Kuwaiti individual donations, however, continue to be a source of concern to many Western governments. Qatar has also begun to report their foreign aid and to attempt to track private charity within the sheikhdom. Saudi Arabia makes the least effort to publicly account for its donor activity, though (like the UAE and Kuwait) it has managed a formal institution, or fund, for state directed development aid. Villanger stresses the historical Emirati, Saudi and Kuwaiti preference for bilateral aid via funds, rather than via multilaterals (OPEC fund, IMF, Arab Monetary Fund, etc.) contributing to the divergence in norms between Gulf Arab aid and DAC donors. There is also significant divergence among Gulf Arab donors, particularly after 2001 in their aid practices, donation amounts, and in their reporting of aid. The charts below illustrate these differences.

24 The Foreign Aid Coordination Office (FACO) of the UAE Ministry of Foreign Affairs, created in 2014, signals a public commitment to its aid and intervention strategy in the region and beyond. http://www.mofa.gov.ae/mofa_english/portal/gedde886-bb7e-46be-a2e5-6c988e0ab84.aspx
26 Evren Tok, Rachael Calleja and Hanaa El-Ghaish, *Arab Development Aid and the New Dynamics of Multilateralism: Towards Better Governance? European Scientific Journal* Vol 1, Special Issue, 2014, pp. 591-604. Tok et al. give special attention to the evolution of Qatari donations, including the establishment of the Qatar Charitable Society in 1992, meant to streamline private donations going outside the country. The Qatar Development Fund is one mechanism of aid disbursement, along with the Ministry of Foreign Affairs, Qatar Foundation (state education and charity institution) and Qatar Investment Authority (a sovereign wealth fund). There has been one foreign aid report released by the government in 2012.
Chart 2 a, b, c: Gulf Arab Aid (KSA, UAE, Kuwait) and Oil Prices (Brent crude), 1970-2014
Sources: ODA from OECD.stat and Brent crude prices from BP Review of World Energy 2014.

Chart 2a: Saudi Arabia (KSA) Official Development Aid and Oil Prices, 1970-2013

Chart 2b: Kuwait Official Development Aid and Oil Prices, 1970-2013
Theoretical and Practical Implications of Gulf Arab Foreign Aid

Foreign aid is clearly a priority of Gulf Arab state foreign policy; aid creates alliances and seeks to uphold friendly regimes. However, foreign aid’s track record for efficacy, at least in the comparative experience of Western donors to developing countries, is questionable. The literature and empirical evidence, both in qualitative studies and large-N surveys, reveals foreign aid is no panacea. Like a resource curse, aid can act as an exogenous shock to developing political economies, entrenching problems in governance and financial volatility, even as it seeks to alleviate human suffering.28 Governments seeking to promote strategic goals have had little success in also creating incentives for liberal economic reform agendas in aid destinations.29 Aid creates allies, or it might propel reform and economic growth, but not usually at the same time.30 Scholars know that foreign aid can extend the tenure of inept and corrupt rulers and governments.31 In fact, work by Faisal Ahmed demonstrates that sources of resource rents (including remittances and foreign aid) can

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28 There is some debate on how foreign aid can help or hinder a country at risk of civil war, depending on the timing of the aid allocation and if it allows governments to continue fiscal expenditure to stave off crisis, particularly in agricultural/primary product economies. See Burcu Savun and Daniel C. Tirone, Exogenous Shocks, Foreign Aid and Civil War, *International Organization* Vol 66, No 3, 2012, pp. 363-393; also, Paul Collier and Anke Hoefler, Aid, Policy and Peace: Reducing the Risks of Civil Conflict, *Defence and Peace Economics* Vol 13, No 6, 2002, pp.435-450.


prolong a government’s rule if used towards rewarding elites, even while worsening aggregate welfare. Gulf states are also balancing demands for domestic spending, including welfare benefits and infrastructure investment, at moments of incremental public concern for fiscal deficits and lower oil revenue. Gulf Arab states are engaging a long debate on the efficacy of aid with their own set of norms and priorities, which are not necessarily cohesive within the sub-region. Most of the critiques of foreign aid concentrate on the problem of governance and how aid does little to change the behaviour of corrupt or inefficient regimes. Gulf Arab states are probably in a good position to create foreign aid projects with novel approaches to job creation and public-private partnerships. The UAE investment in Egypt and proposal to build a new capital city is one example. Qatar’s investments in food security in sub-Saharan Africa are others. However, that success depends on the strategic goals of Gulf Arab states in their aid portfolios. If security is their primary concern, we should not expect to see great economic miracles (or political openings) unfolding across North Africa. Potential obstacles to increased or prolonged aid are more likely to be domestic pressures in the Gulf states themselves, based on fiscal concern, and blowback or policy reverberation in the form of domestic threats to state security.

Conclusion

Findings here suggest that the objectives of Gulf Arab state aid, though enabled by resource wealth, are not strictly tied to volatility of these commodity prices. There are instances of rising oil prices in which aid did not increase on par with increased state resource revenue. Furthermore, we are currently in a climate in which oil revenues are decreasing, while the promise of Gulf aid (mostly from activist GCC members Saudi Arabia, Qatar and the United Arab Emirates) is increasing, at least to states identified as strategic partners in Gulf security. Contrary to public statements and prevailing analysis of the motivations of Gulf Arab aid based in cultural and religious traditions of charity, I have argued that since the Gulf states have had the financial ability to give, they have directed aid at political goals. It is perhaps the Gulf cultural aversion to public discussion of economic statecraft that reinforces preferences for bilateral, flexible (or, uncoordinated) foreign aid, and further encourages private donations with myriad political effects.

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