EUCERS Newsletter

Newsletter of the European Centre for Energy and Resource Security (EUCERS)

Introduction

Dear readers and friends of EUCERS,

It is my great pleasure to welcome you to this latest edition of the EUCERS newsletter, in which we present you with two articles.

In the first article, journalist and King's War Studies MA candidate Richard Kent analyses the current crisis in the Gulf region and its possible impacts on energy markets.

The second article, written EUCERS Senior Research Associate Peter Kaznachev, discusses the need for and possibilities through artificial intelligence in the oil and gas industry.

This edition also features a report of our third EUCERS/KAS Energy Talk in 2017: Industrial Carbon Performance from a European and global perspectives. Thanks to all the speakers and attendees.

I would like to take this opportunity to congratulate EUCERS Research Associate Moses Ekpolomo for the successful completion of his PhD.

Feel free to keep us informed about your research projects and findings as we look to remain at the forefront of new knowledge and innovative ideas.

Thank you for your interest in EUCERS and for being part of our community.

Yours faithfully,
Thomas Fröhlich
EUCERS Newsletter Editor

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ARTICLES

The Crisis of the Gulf Cooperation Council and its Impact on Energy Markets

By Richard Kent

Richard Kent is an MA candidate in International Peace and Security at the Kings College Department of War Studies. He was formerly a journalist at Argus Media, and a visiting researcher at the American University of Beirut (AUB) and International Centre for Tropical Agriculture (CIAT) in Calí, Colombia.

The economic blockade of Qatar by its neighbouring Gulf states in the Gulf Cooperation Council (GCC) on the 5 June, has caused rifts and uncertainty in global energy markets, and conveys a rebalancing of power and emergence of strategic foreign and energy policies within the wider MENA region. The blockade halted all land, air, and sea traffic, and GCC states have expelled all Qatari diplomats and citizens, causing a diplomatic crisis.

Qatar has long tried to carve out an independent foreign policy apart from the regional GCC bloc. The gas-rich country has used its wealth to form a multitude of engagements with other states, accumulating soft power, mainly through its media outlet Al Jazeera. The state's attempt to have friendly relations with Israel, and speaking with groups designated as terrorist organisations in the US, such as Hezbollah, Hamas, and the Houthis in Yemen, has alarmed its neighbours in the GCC.

The Historical Context of the Blockade

Qatar has a long history of failing to prosecute influential figures alleged to be involved with the financing of terrorist organisations.[1]

Qatar took a markedly unilateral stance at the outset of the Arab uprisings, beginning in 2011, when it backed various Islamist groups in the region, including the Muslim brotherhood in Egypt, and later the Jabat al-Nusra Islamist organisation in Syria. Qatar's attempt to take a more polarised stance in practice was interventionist, and later during the fall of Ghaddafi, Doha sent special forces into Libya to help with the disposition of Ghaddafi.[2]

The Arab uprisings of 2011 not only indicated a shifting balance of power in the MENA region, but also marked the beginning of a trend in unilateral action taken by the GCC as a whole, that would eventually escalate into the uniform isolation of Qatar. One consequence was the forming of a GCC-wide security force, the Peninsula shield[3] that sought to put down uprisings in the GCC, particularly in Bahrain. The formation of a unified security force was a significant step for the GCC in operating unilaterally, one of which western officials said there was little warning.[4] In the same way that unilateral action under Peninsula shield repressed uprisings around the GCC, the Presidency of Mohammad Morsi was countered by a series of carefully executed protests, orchestrated by the Saudi and UAE aligned gulf states, again crucially leaving western states out of the loop.[5] GCC member states soon began to elicit support from the security force. Yemen foreign minister Yassin made a plea to the GCC Peninsula Shield and the UN to impose a no-fly zone.[6]

Prior to the abdication of the Emir of Qatar, in 2013, the Qatari leader came under fire from the IMF and the US government for failing to implement laws against illicit terror finance[7], and later for failing to comply with sanctions imposed by the US treasury department, agreed as part of the US-led Jeddah communique initiative.[8] Intra-GCC divisions over Qatar's political activities widened to the point where Saudi, the UAE, and Bahrain withdrew their ambassadors from Doha, but Kuwaiti

[1] Weinberg, David. "Qatar and Terror Finance." Foundation for Defense of Democracies. http://www.defenddemocracy.org/content/uploads/documents/11717_Weinberg_Qatar_Report.pdf 18 January 2017

[2] Black, Ian. "Qatar admits sending hundreds of troops to support Libyan rebels." The Guardian. http://www.guardian.co.uk/world/2011/oct/26/qatar-troops-

[3] Guzansky, Yoel. "Defence Cooperation in the Arabian Gulf: The Peninsula Shield Force Put to the Test." Middle Eastern Studies, Volume 50, Number 4, pp. 640-654. (4 July 2014)

[4] Salisbury. P & Quilliam. N. "The Crisis in the Gulf: Live Webinar. Chatham House. 15 June 2017.

[5] Salisbury. P & Quilliam. N. Et al. 15

[6] Gaub, Florence. "An Arab Army – coming at last?" European Union Institute for Security Studies. 12 December 2014

[7] Weinberg, David. "Qatar's Muslim brothers: A Failing Regional Strategy." Foundation for Defense of Democracies. FDD Press. 2014.

[8] Glaser, Daniel. Filmed October 2016. "The Evolution of Terrorist Financing: Disrupting the Islamic State." The Washington Institute on October. YouTube video. !:13:58 (41:35-41:50). (https://www.youtube.com/watch?v=eHzYH0IIq-8&feature=youtu.be&t=41m35s)

mediation led to the ambassadors returning to Doha in November 2014.[9]

Earlier this year, a Foundation for Defence of Democracies report stressed the need to revaluate Qatar's involvement in the financing of extremist Islamist and organisations designated as terrorist organisations, in light of the Jabat al-Nusra front's July 2016 decision to rebrand itself as Jabat Fateh al-Sham (JFS), which purports to have no relationship with any foreign party.[10] Indeed it has not just been Qatar that was under investigation for its links to Al-Qaeda and the Nusra front, the 9/11 commission concluded that various Saudi officials had links to the hijackers.[11]

On 23 June 2017, Qatar leaked a list of 13 demands made by the Saudi-led GCC bloc, imposed as conditions of lifting the land and naval blockade. They stipulate that Qatar closes al-Jazeera and other media outlets, scale back cooperation with Iran, removes Turkish troops from Qatar's soil, ends contact with groups such as the Muslim Brotherhood, and submits to monthly external compliance checks. Qatar has been given 10 days to comply with the demands or face unspecified consequences.[12] The stipulation on cooperation with Iran demands that all trade and cooperation would have to be confined only to trade allowed under the international sanctions regime and approved by the GCC.

Impact on the Energy Market
If drawn out, the dispute will likely have a long-lasting effect on the structure of global energy markets and geopolitical alignment within the region. The blockade has inevitably affected trade routes, particularly after the emirate of Fujairah —the largest bunkering port in the Gulf— severed ties on 5 June, as did Dubai's Jebel Ali,

and tankers had to reach international seas through the Iranian Exclusive Economic Zone (EEZ).[13]

Qatar is the largest exporter of LNG in the world and has the third largest proven reserves, after Russia, and Egypt[14]. Qatar exported 77.8 mn t of LNG, almost 32% of global exports in 2016[15]. Saudi, Iran and Qatar's natural gas reserves account for 76% of those in the Middle East, and the Saudis are concerned that cohesion between the latter two will cause a loss in Saudi market share.

Qatar's state owned QP's plans to increase natural gas production at its North field, that shares a maritime border with Iran, will potentially boost annual production by 10mn t/yr.[16] QP previously had a moratorium on further developments to the north field in place since 2005, but since Iran decided to rapidly develop its South Pars section of the gas reservoir, Qatar quickly followed suite.[17] The perception of strategic collusion with Iran has angered the other GCC countries. But the Qatari Finance minister accused the GCC bloc of hypocrisy, given that Qatar's trade with Iran is less than $200mn, compared to the rest of the GCC bloc that amounts to $10bn.[18]

Meanwhile Iran is progressing with licensing rounds to develop the South Pars gas field, and the list includes the majority of European oil majors. Iran's state owned NIOC said that it aims to close €15bn of new deals by March 2018[19], in what is the first major round of upstream investment since the lifting of US and EU led sanctions against Iran last January, a move that prior to the Trump administration seemed to result in a pivot of power and regional influence to Iran, but now the situation may be

[9] Aboudi. S, Abdelaty. A & Bakr. A. "Saudi Arabia, UAE and Bahrain end rift with Qatar, return ambassadors." Reuters. Nov 16 2014
http://uk.reuters.com/article/uk-gulf-summit-ambassadors-idUKKCN0J00Y220141116
[10] Weinberg (2017). Et al.
[11] National Commission on Terrorist Attacks, The 9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks upon the United States, (New York: W. W. Norton & Company, 2011), inter alia pages 371-374; & Lawrence Wright, "The Twenty-Eight Pages," The New Yorker, September 9, 2014. (http://www.newyorker.com/news/dailycomment/twenty-eight-pages)
[12] Wintour, Patrick. "Qatar given 10 days to meet 13 sweeping demands by Saudi Arabia"
https://www.theguardian.com/world/2017/jun/23/close-al-jazeera-saudi-arabia-issues-qatar-with-13-demands-to-end-blockade

[13] Fattouh, B and Farren Price, Bill. "Feud Between Brothers: the GCC rift and implications for oil and gas markets" Oxford Institute for Energy studies. June 2017. https://www.oxfordenergy.org/wpcms/wp-content/uploads/2017/06/Feud-Between-Brothers-the-GCC-rift-and-implications-for-oil-and-gas-markets.pdf
[14] International Gas Union (IGU). "2016 World LNG Report." www.igu.org/download/file/fid/2123. April 2016
[15] IGU Et al.
[16] Finn, Tom. "Qatar restarts development of world's biggest gas field after 12-year freeze". Reuters.
http://www.reuters.com/article/us-qatar-gas-idUSKBN175181 April 3 2017.
[17] Argus Media, Argus LNG Daily. "QP says revenue drive behind North Field boost." 4 May 2017
https://direct.argusmedia.com/newsandanalysis/article/1454187?keywords=south%20pars%20qatar
[18] Sharif Al Emadi, Ali. "Qatar Finance Minister on trade blockade: We hope for a peaceful resolution"
[4:43] https://www.youtube.com/watch?v=qS_XcvH0v4o interview
[19] Natural Gas World. "Iran adds five IOCS to IPC-qualified list". 19 June 2017

complicated by the US Senate voting overwhelmingly for new sanctions against Iran.

It is uncertain whether Qatar is an economic position to bow to some of the more stringent demands levied by the GCC, such as ceasing strategic cooperation with Iran in the development of gas export capacity at the expense of GCC neighbours, or closing al-Jazeera.

Pressure from lower oil and LNG prices, and the demands driven by the $200bn infrastructure upgrade program ahead of the 2022 World Cup forced Doha to run a budget deficit last year, for the first time since 2000[20]. The World Bank expects the budget deficit to decrease to 2.3% of GDP this year from 8.2pc last year, before turning to a surplus in 2018. [21]

Despite the severity of the blockade across various sections of the economy, there are signs that Qatar will be able to weather the storm longer than expected. Although Standard & Poor downgraded Qatar's credit rating from AA to A- on 8 June, mainly due to consequences for reduced regional trade and corporate profitability, it estimates that only 10% of Qatar's exports last year headed to the countries that blocked trade.[22] Qatar's finance minister reaffirmed that no shipment of LNG or oil was missed during the last 3-4 weeks to any existing customers.[23] Qatar's main trade partners Japan, South Korea, China, and India are unlikely to impose similar sanctions.[24] Nonetheless Qatar will now have to consider with caution its plans to expand its LNG production capacity in the north field by 10% in 5-7 years' time.

While Asian markets make up the lion's share of Qatari exports, the vital trade route with the western world is through the Suez Canal Authority. The Authority operates almost autonomously to the Egyptian government, and said this month that Qatari vessels would still be able to use the waterway. The Suez Canal has not been closed to Europe since the 6-day war in 1976-75, but if Qatari tankers were to be banned from the Suez Canal, this would cause a major disruption of LNG supply to the European market, and cargoes would need to divert around the cape of good hope.

Egypt began importing Qatari LNG in 2015, which made up 60% of its 7.3mn t imports in 2016[25], and aims to achieve self-sufficiency by 2018-2019. But the diplomatic row could put additional pressure on Egypt to strategically reduce Qatari supply. Prior to Egypt achieving self-sufficiency though reaping the Zohr gas field and other large East-med reserves, it will be Qatari reserves that are squeezed first, so there seems a degree of harmonisation between Egypt's foreign and energy policy. Given that the vast majority of Qatar's oil and LNG is exported to other locations around the world, the standoff is unlikely to have an impact on Qatar's role within OPEC, but will likely result in increased freight costs for exports and increased costs for imports. Qatar was successful in the mediation role it played between Saudi and Iran in the OPEC deal, and the blockade of Qatar and regional instability it brings is unlikely to affect the OPEC framework to cut production as a whole.

While the impact on trade routes and markets will be significant, it will be the multinational oil majors heavily invested in Qatar that bear the brunt of the economic fallout, particularly US based Exxon mobile. During US foreign secretary Rex Tillerson's time as CEO of Exxon mobile, he oversaw the construction of Qatar's $30 billion LNG facility of which the company continues to hold roughly 30% interest in the assets[26]. Exxon partnered with state-controlled Qatar Petroleum, including the Golden Pass LNG terminal on the Texas gulf coast. The Golden pass terminal is in the process of a $10 billion project to transform Golden Pass into an export facility and send American shale gas to the world, which will compete with Qatari gas. The consortium also operates projects in the Mediterranean: Adriatic LNG, a floating regasification terminal off the coast of Italy and Ocean LNG, a concession for exploratory drilling off Cyprus. By 2020, when all US liquefaction projects are expected to be completed, the US will account for almost one-fifth of global liquefaction capacity, and have the third largest export capacity in the world after Qatar and Australia.[27]

[20]The World Bank. "GCC: Economic Outlook- April 2017." April 2017. http://www.worldbank.org/en/country/gcc/publication/economic-outlook-april-2017
[21]The World Bank. (April 2017) Et al.
[22] Argus Media. Argus LNG daily. "S&P cuts Qatar rating reflecting diplomatic crisis". June 8 2017
[23] Sharif Al Emadi, Ali. Et al.
[24] Argus Media. (June 8 2017) Et al.

[25] S&P Global Platts "Egypt to put squeeze on Qatari LNG volumes" http://blogs.platts.com/2017/06/13/egypt-squeeze-on-qatari-lng/ June 13 2017
[26] Helman, Christopher. "Exxon's LNG Ventures Could Be At Risk As Saudis Lead Sanctions Against Qatar."
Forbes. https://www.forbes.com/sites/christopherhelman/2017/06/05/saudis-blockade-qatar-over-terror-financing-exxon-lng-assets-at-risk/#2eeaee9c277d
[27]US Energy Information Administration. International Energy Outlook 2016. https://www.eia.gov/outlooks/ieo/nat_gas.php. Chapter 3. Natural gas. May 11 2016

This means that the US will continue to tread a cautious path in its role of mediation of the crisis, and there has recently been a discrepancy in the overtures from President Trump and Foreign Secretary Tillerson, who has questioned Saudi's real motives in the region.[28]

The evidence against Qatar funding illicit terror financing is compelling, but the timing and strategy behind the GCC and Egypt's request for Qatar to shut down its regional media network, and diminish its comparative advantage in oil and gas production is part of a broader strategy by Cairo and Saudi Arabia. While the move may, for now, reposition Saudi on the world stage as the de-facto leader in the fight against terrorism, it is too early to say whether they will be able to maintain this stance. And indeed, whether Qatar will manage to continue with business as usual, relatively unscathed.

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[28] Bayoumy, Yara. "U.S. State Department questions Gulf motives on Qatar boycott." Reuters
http://www.reuters.com/article/us-gulf-qatar-usa-idUSKBN19B2SR 20 June 2017

The Next Frontier of Innovation After Shales. Application of Artificial Neural Networks in the Oil and Gas Industry

By Peter Kaznacheev

The energy industry is in need of new technological solutions that would allow it to adapt to lower crude prices, increase efficiency and maintain operational safety and environmental security. One of the areas of intense innovation is the use of artificial neural networks. This article[1] provides a brief overview of the three main areas where artificial neural networks are applied in the oil and gas sector, namely: interpretation of geological data, automation in field management, and market research.

A New Technological Frontier

The Japanese celebrity scientist Michio Kaku at a global energy conference in Abu Dhabi drew a possible picture of the future: "We are witnessing a new generation of oilfields. If something breaks down in the oilfield, your contact lenses will identify it and order the new part by simply blinking. Very soon we will have intelligent wallpaper which will be inscribed with artificial intelligence...".[2]

That may sound more like science fiction but, in fact, artificial intelligence is already changing the shape of the industry. For many oil and gas producers, innovation is not a trendy buzzword anymore but a matter of survival. Today, when the oil price is less than half what it was in 2014, there is very strong demand for technologies that would allow companies to cut costs and dramatically increase efficiency.

Over the last three years, United States' shale producers have taken the lead in transformation. They demonstrated impressive adaptability – most observers

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expected a much stronger decline in shale production. The unexpected resilience of U.S. oil output was the result of two main factors: intense cost cutting and improvements in efficiency. In 2015 – just in three years – upstream costs were brought 25%-30% below their 2012 levels.[3] Efficiency improvements included, among others, shorter drilling and completion times, and increased well productivity.

At the moment, the global oil industry beyond U.S. shales is in desperate search of new technological solutions that can boost efficiency. Hence, the time for advancing artificial intelligence is arguably more favourable right now than ever before. Artificial intelligence is used in various segments of the energy industry value chain. For the purposes of this overview we will focus on three areas where, in our opinion, artificial intelligence is adding the most significant value. These three areas are: interpretation, automation and research.
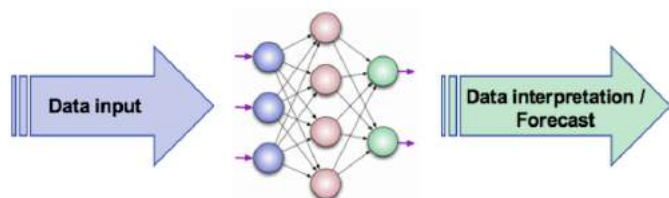
Interpretation: Geological Data Analysis

Artificial intelligence comes in different varieties – Support Vector Machines, genetic algorithms, Bayesian networks, fuzzy logic etc. – but the most popular among them are artificial neural networks (ANNs). At their core, artificial neural networks are a mechanism of information processing – a computer system with many connected and interacting processors (artificial neurons) which is capable of learning. The advantage of ANNs is that they can handle large volumes of complex multi-

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[1] This article is an updated and shortened version of a study published in October 2016 in Russian: Kaznacheev, P., Samoilova, R., Kjurchiski, N., Improving Efficiency of the Oil and Gas Sector and Other Extractive Industries by Applying Methods of Artificial Intelligence. Economic Policy Magazine, 2016, No 5, pp. 188-197. (In Russian: Primenenie metodov iskusstvennogo intellekta dlya povysheniya ehffektivnosti v neftegazovoj i drugih syr'evyh otraslyah // Ekonomicheskaya Politika). Online: http://ecpolicy.ru/archiv/2016/5#title

[2] Graves, L., Physicist sees augmented reality playing key role in hydrocarbon industry's future. The National. 2014.
Online: http://www.thenational.ae/business/energy/physicist-sees-augmented-reality-playing-key-role-in-hydrocarbon-industrys-future

[3] A joint study by the U.S. Energy Information Administration and IHS https://www.eia.gov/analysis/studies/drilling/

format data (including missing and erroneous observations), work with nonlinear relationships, analyse non-stationary and volatile data series, adapt to changing conditions, generalise and learn on past data.

A schematic depiction of an artificial neural network

The area where ANNs were first applied in the energy industry almost 30 years ago was interpreting data acquired through geological exploration. It includes both imagery from seismic studies [Kuroda et al., 2012] and data from well logs. Neural networks are used to analyse various geophysical parameters and reservoir properties, such as porosity and permeability [Huang, 1996], water saturation [Nakutnyy, 2008], and fluid contents [Akinyokun et al., 2009]. Such data evaluated with the help of ANNs is then used for digital reservoir modelling.

Some studies demonstrate that digital modelling of soil layers using artificial neural networks can lead to very high levels of prediction accuracy about hydrocarbons in geological formations – as high as 90% compared with data from test wells [Choobbasti et al., 2015]. Efficient data interpretation saves costs due to fewer wells that need to be drilled and less time spent on data interpretation by geoscientists. The use of neural networks reduces the cost of research, accelerates geological evaluation and improves the accuracy of forecasts.

Automation: Digital Fields and Monitoring
At the next stage of technological innovation, the application of ANNs went beyond geological data interpretation and into field operations. Automation in field management allows to both reduce costs of production and to monitor field development in order to maintain safety and environmental standards. Some of the areas where ANNs help to reduce human involvement in the process include: monitoring of the drilling process, wells construction and well testing, analysis of hydraulic fracturing, optimising gas lift, monitoring oil production [Bello et al., 2015].

Several major oil companies have introduced holistic solutions to automation and developed what is often referred to as "digital fields". International oil companies have invested significant resources in such technologies and even given them brand names: for example, Shell develops "Smart Fields", and BP – "Fields of the Future". Some national oil companies have followed suit and advanced digital field solutions – for instance, Saudi Aramco and Petrobras. In Russia, a joint venture between Shell and Gazprom Neft operating the Salym group of fields in West Siberia applied ANN-based automation and digital control of wells and reservoirs. As a result, operating costs were reduced, downtime was lowered, and production increased at a rate 2-2.5% a year.[4]

Automation is also used beyond field management – for instance, in oil and gas transportation ANNs are applied to corrosion monitoring, leakage detection and pipeline diagnostics. All of this contributes not only to gains in efficiency but also to accident prevention and increased operational safety.

Research: Planning and Strategy
The uncertainty which followed the oil market shift of 2014 created demand for deeper structural analysis of energy markets and new approaches to forecasting. So far, artificial intelligence methods in market research have been primarily the domain of traders – mostly in price forecasting of highly volatile products (stocks, commodities, derivatives etc.). More recently, ANNs are starting to make their way into the realm of oil and gas companies.

One of the main advantages of analytical methods based on artificial intelligence is that they are better capturing the non-linear nature of market behaviour than traditional statistical models. ANNs are also more adaptable to changing market trends; they are more tolerant to errors and incomplete data sets; and they have the ability to learn based on new available data [Sehgal et al., 2015]. In addition, machine learning

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[4] Smart Fields of Salym // Russian Oil and Gas Technologies Magazine, 2014. https://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwi_iYXMwp_VAhVGLMAKHaWSDcYQFggrMAA&url=https%3A%2F%2Frogtecmagazine.com%2Fwp-content%2Fuploads%2F2014%2F09%2F06_SPD_Smartfields.pdf&usg=AFQjCNH4ybusJ0Wq_wZ9u9Gk2ehG5eaFzg&cad=rja

algorithms can be applied to big data, for instance, as semantic analysis of news reports or so called "refined text mining" in order to determine changes in market sentiment and how such mood swing among investors can affect the price trajectory of curtain commodities [Yu et al., 2005].

The application of neural networks to market research in oil and gas companies has so far been less visible than in data interpretation and automation (as described above). But it carries a lot of potential. It elevates artificial intelligence to a new level: from an operational instrument in exploration and field management to an analytical tool for corporate strategy and planning. More accurate forecasts of supply and demand of crude oil, oil products and natural gas can have a direct positive effect on oil companies' performance and strategic development. In addition, in the public sector the use of ANNs could allow to better estimate the future energy balance and make forecasts that strengthen supply security in the long run.

Conclusion

As there are fewer easily reachable oil deposits left worldwide, oil companies have to move into areas where hydrocarbons are contained in complex geological formations several kilometres underground or deep beneath the ocean floor. This is becoming ever more challenging at a time of lower oil prices. The use of artificial neural networks allows companies to increase efficiency, cut costs, and strengthen operational and environmental safety. The time is right to advance artificial intelligence as the energy industry is in search of innovative technological solutions that would help adapt to the new reality of cheaper oil.

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DISCLAIMER

ANNOUNCEMENTS

EUCERS Research Associate completes doctoral studies

We would like to congratulate Dr Moses Ekpolomo for the successful completion of his PhD! Moses has been a Research Associate from EUCERS' early day, since 2011. His doctoral thesis has been published as a book, titled 'Ethnicity and Dynamics of the Oil Conflict in the Niger Delta of Nigeria' by Lambert Academic Publishing. Moses is always enriching our EUCERS workshops with his inspiring and thoughtful contributions. He is regularly publishing expert pieces in our newsletter series. We hope Moses will keep closely connected to EUCERS.

Report: Third EUCERS/KAS Energy Talk 2017

Consequences of the US leaving the Paris Agreement for Industrial Carbon Performance

Summary of the 3rd EUCERS/KAS Energy Talk 2017

This summary presents a discussion of decarbonisation strategies for industries from the EU and global perspectives. It presents the positions and predictions made at the third 2017 EUCERS/KAS energy talk that took place at King's College London on 14 June 2017. The event gathered energy and climate experts from think tanks, academia, governmental and private sectors who were asked to assess the consequences of the US leaving the Paris Agreement for Industrial Carbon Performance.

The panel was facilitated by Professor Friedbert Pflüger (Director of EUCERS) and consisted of four speakers: Dr. Brent Layton (Chairman, Electricity Authority New Zealand); Dr. Frank Umbach (Research Director, EUCERS); Laura Sandys (former MP, Visiting Senior Research Fellow at The Policy Institute at KCL, Member of the Carbon Capture and Storage Advisory Group, Imperial College London) and Dr. Martin Porter (Executive Director, EU Affairs and Industrial Innovation and European Climate Foundation).

In the first part of the talk, the speakers were asked to comment on the implications of President Trump's recent statement about the US leaving the Paris Agreement. Professor Pflüger's perception about the US decision is that the country is giving uncertain signals by leaving the agreement. According to him, there are two appreciations about the US leaving the Agreement; the first one is the current confidence about the US Federal States continuing to follow international environmental targets. On the other hand, there is a sense of loss of driving force in climate change with the US leaving the agreement as some countries may follow the lead and leave the agreement.

Brent Layton has been working on the forms of the energy market in New Zealand since the early 2000s. In 2009, he worked on the review of the government performance on the NZ market, and since 2010 he has been working in the implementation of new policies. Dr Layton shared statistics about how the electricity generation in New Zealand has been shifting in recent years from fossil fuels to renewable energy sources such as geothermal, gas and wind. He exposed that one of the issues they are faced with in decarbonizing electricity is the perspective sustained by economists that the electricity market cannot be run with the real prizes and that there is a need to relocate energy prices. The main reason is that the costs of operation in renewable energies such as the wind and solar energy are close to zero. However, in Dr Layton's perspective, the focus should not be on the cost of production but rather on the cost of opportunity: on the value of using the existing resources and in consequence, refraining from using fossil fuels.

The next panellist to share his opinion was Dr Frank Umbach. He expressed his general remarks about the President Trump's decision on three main issues: Firstly, the US has decreased its emissions more than any other country in the world over the last five to ten years as a result of the coal to gas shift. However, he mentioned that it would be not sufficient to achieve the two-degree Celsius goal. So, that was the reason why the Obama administration focused on renewables and supported environmental regulations and environmental entrepreneurs. To illustrate this concept, Dr Umbach gave the example of Texas, as the home of the oil industry in the US and how it has expanded to green energy like any other Federal State. Due to this, Dr Umbach does not believe that the investments in green energy will dramatically decrease even with Trump's agenda, but the process could be slowed down. Secondly, regarding legal conditions, the US can only withdraw from the Paris Agreement by the year 2020, which is the same year as the next US presidential elections. Dr Umbach believes that until that time many Federal States will block Trump's anti-climate agenda or at least try to continue their environmental regulations. Thirdly, if the information of the Energy Administration is confirmed, in 2016 the US would have become the largest leading oil and gas producer combined - larger than Saudi Arabia and Russia - even if Trump goes ahead with his decision, the gas shale revolution will continue and also it will expand a little faster. The industrial carbon performance is not just related to the oil and gas sector; it includes all intensive industries such as steel, manufacturing, chemical, and construction. It is a huge phenomenon that has to be taken into account. The overall effect of the gas shale revolution has been increasing transfers of investments from Europe to the US. Here, Dr Umbach gave the example of the chemical industry: These transfers, at first sight, seem to decrease the national CO2 emissions, but the country has imported some other products, and the transport of those products cost energy and produce carbon emissions. This generates, even more, carbon emissions on a global scale. So, national emission reductions do not automatically decrease emission in a global scale. Emissions performance will not be sufficient to contribute realistically to achieve the two-degree

Celsius target. As a conclusion, Dr Umbach expressed that in general terms, there are so many problems aside from Trump´s decision. Hence, it is necessary to reinforce the efforts efficiently to decrease carbon emissions and achieve the two-degree target because Paris Agreement is not sufficient.

The third specialist that shared her thoughts was Laura Sandys; she expressed that Trump has taken a regressive retrospective and emotional response to an international agreement. There has been a fragmentation in decision making between what is happening in Washington and what is going on in the environmental leading Federal States such as Hawaii and California. President Trump is withdrawing from internationalism, and he is going to realize that Dr Umbach has given up a significant place of influence. Yet he is not going to stop the international movement. In the next presidential election, it will be Interesting to see how the young generation and the Millennials respond regarding Trump's agenda.

Laura also stated some points about the carbon productivity aspect. Productivity is about doing more

with less. It is the bottom line of business to improve company inputs. There is a need to re-engine how we look the carbon inputs; we need to stop the use of the word waste. There is a need to reconstruct the carbon reputation because everything that we touch is carbon, and carbon is not a bad name, but we need to have a correct carbon taxation to maintain the carbon cycles. Finally, Laura expressed that regarding policies we have to reutilize, we have to re-carb, and we need to add value to the carbon asset. Carbon is a resource but is also a bottom line business opportunity.

The fourth speaker was Dr Martin Porter who focused on intensive industrial activities as a major part of the problem that needs to be solved. Dr. Porter thinks the target is achievable, and even a target below two degrees but it will be hard to get it. And it has to do with the energy efficiency and the energy transition. We produce carbon emissions independently of the energy, we produce emissions by almost each industrial activity, and it means a double challenge to address industrial carbon performance.

Regarding EU policy perspectives, Dr. Porter said that industrial policies have focused on the emissions trading system, and that is the key driver to European decarbonisation. Even though it has some advantages regarding accountability, it is evident that it has not worked well. The problem is that it has not been driven by innovation to solve the decarbonisation and get Industrial benefits.

Dr. Porter said that there is a risk on what will happen in a new context. The Paris Agreement has focused on the next 10 to 15 years, but it may not be sufficient to decarbonize. What we need to do in addition to achieve this challenge is to stimulate innovation in each industrial activity as soon as possible. That is not just about climate change if we think in 2050, all sectors will have enormous shift and just regarding pollution. There has been a problem about thinking in sectors as separate actors or clusters, but there is a need to have a vision of how the industries will be in 2050. It requires rethinking the industrial activities to get competitiveness. Moreover, the view to think about it is through new industrial strategies and new strategic visions and goals in the creation of industrial strategies for intensive activities. We require now a constant process of innovation.

About Trump's decision to leave the Paris agreement, Dr. Porter mentioned that the fact that the US is withdrawing is an opportunity for the EU in respect to competitiveness. Although Europe cannot be competitive regarding natural assets the innovation capacity is a great area, and Europe has the potential. Innovation is a mind-set opportunity not just in the context of climate and energy. The challenge is enormous but the economic potential is as enormous, and now is the moment to address the industry with an innovation mind-set as a race to the top, and not a race to the bottom.

The second part of the event offered interesting discussions. The participants had the opportunity to interact with the expert's panel by raising additional queries and by commenting on the interventions made by them. One of those questions was about the carbonization shift driver to generate capacities in a global context. Dr. Martin Porter said that there is a need to rethink the carbonization system as a whole with an integration strategy through correct and innovative instruments, financial and policy tools to address climate problems.

Laura stated that policy-making is a complex process and deeply diverse regarding locations. However, sometimes the results do not address solutions, which is a big challenge and needs to be addressed. Laura illustrates this concept talking about the subsidies; she explained that sometimes subsidies could work for countries regarding transitions – fostering the private participation. Nevertheless, they may not work in other nations because subsidies might stop efficiency and innovation.

Another question was when innovations to decarbonize industries should need to be subsidized. At the point, Dr. Martin Porter said that it has to be done relatively quickly, and said that innovation subsidies are a timing question with many opportunity costs. Also, innovation subsidies should not represent political costs.

This third EUCERS/KAS energy talk was successful in setting the stage for the debate on the consequences of the US leaving the Paris Agreement for Industrial Carbon Performance through different points of view. It captured some valuable insights for the Agreement, and the subject will continually be addressed in greater detail during the next energy talk exploring changes in energy financing under Paris.

EUCERS ON THE ROAD

Our team represents EUCERS at various conferences and events all over the world. This section gives a regular update and overview of conferences and interview contributions by EUCERS Director Professor Dr Friedbert Pflüger, Research Director Dr Frank Umbach and Associate Director Dr Adnan Vatansever, as well as by our Research Associates.

10.07.2017 Almaty, Kazakhstan	Frank gave a presentation on "Creating a Political Framework for Eurasian Cooperation", organized by the International Workshop "Domestic and Regional Challenges for Kazakhstan's Energy Transformation", organized by KAS, EUCERS and Almaty Tech Garden.
10.07.2017 Almaty, Kazakhstan	Friedbert chaired the panel on "Domestic Challenges for Kazakhstan's Energy Transformation" at the Domestic and Regional Challenges of Kazakhstan's Energy Transformation Workshop of the Konrad Adenauer Foundation and EUCERS at Almaty Tech Garden.
08.07.2017 Issyk Kul Lake, Kyrgyzstan	Frank gave a presentation on "The Role of China, Russia and the European Union in the 'Great Game' in Central Asia", organized by the international conference "Resources in Central Asia: Chances for Cooperation.
08.07.2017 Issyk Kul Lake, Kyrgyzstan	Friedbert chaired the panel on "Energy Market Integration in Central Asia: Enhancing Regional Stability" at the Resources in Central Asia: Chances for Cooperation Workshop of the Konrad Adenauer Foundation and EUCERS.
27.06.2017 Berlin, Germany	Frank was a panellist at the "Expert Roundtable on Energy Security of Ukraine" at the German-Ukrainian Energy Symposium "The Potential of Ukraine in Renewable Energy".
23.06.2017 Bernried, Germany	Frank gave a presentation on „Veränderte geopolitische Situation: Europäische Energieaußenpolitik" („Changing Geopolitical Situation: European Energy Foreign Policy") at the expert-workshop "Internationale Energie- und Klimastrategien" („International Energy and Climate Strategies") at the Akademie für Politik und Zeitgeschehen der Hanns-Seidel-Foundation (HSS).
15.06.2017 Bukarest, Romania	Frank gave a presentation and keynote speech on "Global Trends with Local Impacts" at the Opening Session of the International Conference «Shaping the Future – The Corporate Perspective»,

	2017 Energy Strategy Summit.
12.06.2017 Warsaw, Poland	Frank gave a presentation "Cybersecurity 2017- Global Threats and Strategic Trends" at the publishers of Polish newspaper "Rzeczpospolita Daily", upon invitation by Geopolitical Intelligence Service (GIS) and KAS.
11.06.2017 Baunatal, Germany	Frank gave a presentation on „Globale Energiemegatrends – Energiewende in der Kritik" („Global Energy Mega Trends – Criticism of [the German] Energiewende"), KAS-Seminar/Viessmann Deutschland GmbH.
09.06.2017 St. Julians, Malta	Frank gave a presentation on "EU-Energy Supply and Strategic Interests" at the international expert conference «Energy Security and Regional Cooperation in the Eastern Mediterranean Rim», organised by KAS.

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