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PGES Energy Policy Priorities

Low Carbon Heat – the Leeds H21 Project – Dan Sadler, Northern Gas Networks

“Trumponomics” – Dr Duncan Connors, Durham Energy Institute

Taking On the Energy and Climate Change Brief – Iain Wright, Chair of the Select Committee for Business Energy and Industrial Strategy

ENERGY FOCUS



Cutting the strings, but not the interconnectors

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The journal of



PGES
All-Party Parliamentary Group
for Energy Studies



The All-Party Parliamentary Group for Energy Studies

Established in 1980, the Parliamentary Group for Energy Studies remains the only All-Party Parliamentary Group representing the entire energy industry. We champion cross-sector energy research and development. The Group's membership is comprised of over 100 parliamentarians, 100 associate bodies from the private, public and charity sectors and a range of individual members.

Published three times a year, Energy Focus records the Group's activities, tracks key energy and environmental developments through parliament, presents articles from leading industry contributors and provides insight into the views and interests of both parliamentarians and officials.

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CHAIRMAN'S FOREWORD



6 February 2017 marked 65 years since the Queen acceded to the throne, becoming the first British monarch to mark their Sapphire Jubilee. She has chosen to celebrate this in a quiet and low key manner, as have we with the cover colour of our journal.

Similarly, this session has been a relatively quiet and settled period in politics, although we are just about to discover if the Northern Ireland Assembly can reform, France is going to the polls on St George's Day for the French Presidential Election and we have just had the final Spring Budget from the Chancellor.

PGES has established its preferred Energy Policy Priorities which were presented to the Minister of State for Business, Energy and Industrial Strategy, Jesse Norman MP. This was at the first meeting of the new year and reports of our meetings are carried inside.

This edition of *Energy Focus* is being published as we approach the constitutional landmark of triggering Article 50 of the Treaty on European Union. This is yet another major change in the political world which will have long lasting ramifications for all of us in the UK and the energy world. It starts the two year timetable for negotiations leading to the termination of our Membership of the European Union.

Within the Group, we can look forward to a strong Summer session of speakers on heat, energy storage, flexibility and consumer engagement. We will be holding our AGM and Summer Reception on 4th July where we will have the Government Chief Scientific Advisor, Sir Mark Walport as our Guest of Honour. Plans are also in place for later in the year.

To conclude, whatever the future may hold for UK energy, I am still confident that the Parliamentary Group for Energy Studies, along with its members, will be leading policy discussion.

Ian Liddell-Grainger MP
Chairman, PGES
An All-Party Parliamentary Group

ENERGY POLICY PRIORITIES

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JANUARY SPEAKER MEETING



The way in which we produce and consume energy is evolving faster than ever before. As technology develops it opens up new and exciting opportunities to help us make the energy systems of tomorrow as clean and customer focussed as possible. This presents policy makers and industry alike with important decisions on energy policy.

The PGES speaker meeting on 10th January was the follow up to the PGES energy policy workshop that took place in November 2016 and was very well attended by parliamentarians, academics and industry. The workshop produced some thought-provoking discussion and the findings of the group were presented to the Group and Jesse Norman MP, Parliamentary Under Secretary for BEIS.

So, what should be the government's priorities on energy policy?

Ian Graves, Director, European Business Development at National Grid and PGES Executive Committee member presented the group's findings:

It became clear from the workshop that there were six main areas of focus:

- Energy efficiency
- Heat
- Future generation, market design and operation

- Carbon targets
- Flexibility – Demand Side Response, Management, Smart Grid and Storage
- Future of gas

In addition, there were themes that ran through the priorities and rather than considering these separately, it was acknowledged that they should be incorporated within the priorities. These themes were:

- Energy as national infrastructure
- Transport
- Energy in Brexit
- Consumer engagement
- Investment

So, let's briefly explore each priority area and the interweaving themes;

Energy efficiency

Through greater energy efficiency the same level of comfort can be achieved for far less energy expenditure, generating a dual win, both financially and environmentally. Energy efficiency includes a range of approaches, from efficiency in building design and manufacture to demand reduction. There is a mix of organisational, financial and informational barriers that hinder the uptake of energy

efficiency measures and these should be understood and addressed to facilitate greater energy efficiency across the industrial, commercial and domestic building stock.

Heat

Heat and energy efficiency can be treated simultaneously, especially when we consider that 85% of the energy consumed in the average home is used to heat space and water. Steps should be taken to address existing building stock that falls short of energy performance requirements.

Future generation, market design and operation

An ideal approach is one that integrates management and governance across the interdependent areas of the energy sector. Policy should move to a coordinated and holistic approach that actively drives out silo thinking. With a silo approach to policy we end up missing critical opportunities to make things work more effectively.

Carbon targets

An interesting output from the workshop was that, due to the impact of heat on decarbonisation, it has been pulled out as a priority in its

own right. The overarching view from the workshop is that carbon targets should look beyond 2050 since they are the driving force behind how we tackle carbon emissions. There is also a growing case for increasing our focus on other greenhouse gases in addition to just carbon dioxide.

Flexibility – Demand Side Response, Management, SmartGrid and Storage

This is an essential focus for energy policy. Increased flexibility is dependent on two key areas where change is required. There should be greater clarity in policy to articulate the interdependent nature of what flexibility means and how it can be leveraged. This must be backed up by a value proposition to the consumer and the operator, as well as owners of assets, to allow demand side response to flourish. This requires a commercially-led, not regulation-led, approach to allow the market to grow and establish itself.

Storage in particular is rapidly evolving. As battery prices fall, the opportunity for storage to provide consumer benefit is growing. Storage classification as generation is locking potential players out of the market and stifling progression in this area. It is firmly in the best interest of consumers and communities that the market is open and competitive without undue regulation.

Future of gas

It is acknowledged that gas has a major role to play in flexibility. After all, gas can be compressed and decarbonised and this gives it a role to play in the energy plans of the future.

Carbon capture and storage (CCS) is still relevant to achieving decarbonisation targets. Government cannot afford to take

a back seat on CCS and hope it will be deployed at the exact moment it is needed. It takes structure, planning and a stable policy approach to make this happen.

Energy as national infrastructure

The UK energy sector was designed in a different era, when requirements were vastly different to the emerging trends we see today that lean towards distributed energy and consumer-led energy innovations. Despite this, we must remember the reputation of our national transmission system is world-class. An integrated macro approach is vital to maintain the world class reliability and safety that we currently enjoy, but market-led solutions must be encouraged. These should be balanced through coordinated energy policy, but the focus on a reliable, safe and consumer orientated approach must be front and centre as we move towards a decentralised energy system.

Transport

In the UK today, distributed energy exists on a fairly small scale, but tides are turning. An example is the residential electric vehicle charging market, where there is currently a large reliance on subsidies for installing domestic charging points and where highway charging models are loss leaders. Tomorrow's world looks different: electric vehicles are set to be part of wider distributed energy business propositions where the role of the electric vehicle is far more than simply getting from A to B.

Despite the potential demand increase, the impact on the electricity network could be less than expected, even with a large increase in the amount of electric vehicles as it will drive understanding about the role that

consumers can play in energy management and the impact they can have on how they use energy.

Energy in Brexit

There was a strong consensus that Brexit presents a unique combination of challenge and opportunity. We need to ensure that Brexit does not bring barriers to energy trade. It is therefore important that a post-Brexit deal features a mutual agreement to continue the free trading of energy between Europe and the UK. The Internal Energy Market brings mutual benefits.

Consumer engagement

It is clear that consumer engagement is essential for commercial success. Consumers must understand what reward is in it for them so that they are clear on the role they can play – they must have clarity on how they fit in with the energy networks and this must be complemented with the right incentives and support frameworks.

Investment

In our sector we have the knowledge and expertise in abundance on subjects such as energy, efficiency, flexibility and transport but we must make this a value proposition to potential investors. This requires both industry and Government to work harder to bring greater clarity for investors and put the spotlight on the opportunities that exist.

LOW CARBON HEAT - THE LEEDS H21 PROJECT

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MARCH SPEAKER MEETING

The UK, as with most other countries around the world, recognises the importance of meeting the challenge of climate change and has resolved, by 2050, to reduce carbon emissions by 80% of the level in 1990 under the terms of the Climate Change Act. This is the biggest energy challenge facing the world today although, to date, there has been little investigation or thought leadership around the opportunity to decarbonise the UK distribution gas network by specifically focusing on large cities.

Even natural gas (predominantly methane), the lowest carbon dioxide emitter per unit of energy of any fossil fuel, produces about 180 gm/kWh CO₂ equivalent whereas hydrogen emits none (at the point of use). Changing from natural gas to hydrogen has potential to provide very deep carbon emission reduction. The true carbon footprint of hydrogen depends on its source. For example, grid power electrolysis has very high emissions whereas hydrogen made from stripping the carbon atom from natural gas has about 50 gm/kWh CO₂ equivalent including indirect emissions, a large reduction over the existing natural gas fuel. Renewable based electrolysis could be used, but

for the foreseeable future the required quantities do not look realistic.

This report suggests that we can significantly decarbonise parts of the existing gas network at minimal additional cost to consumers. This would significantly contribute to the UK's 2050 and Paris Agreement commitments, remove the risks of carbon monoxide poisoning, increase energy storage, potentially remove air pollution from vehicles, and enable new product development and innovation for manufacturing and industrial businesses.

The UK gas industry is over 200 years old. For the first 150 years, the gas used was locally manufactured town gas which contained about 50% hydrogen with smaller quantities of carbon monoxide and methane. In the early days, this was made by distilling coal and later, oil. Following the initial discovery of natural gas in the North Sea, made up predominantly of methane, during the 1960/70s the UK underwent a nationwide gas conversion programme converting 40 million appliances, reaching a peak of 2.3 million per year. Over 80% of the UK population now use

this gas network for heating and cooking. A hydrogen conversion would follow a similar process to the town/natural gas conversion undertaken so successfully and within living memory. The process will involve minimal disruption for the customer (domestic or commercial) and require no large-scale modifications to their property.

Since 2002, the UK has been undertaking the Iron Mains Replacement Programme (IMRP), upgrading the majority of its distribution pipes to polyethylene. This is a risk prioritised, Health and Safety Executive mandated initiative due to complete in 2032. These polyethylene pipes are considered to be suitable for transporting 100% hydrogen.

The H21 Leeds City Gate project is a study with the aim of determining the feasibility, from both a technical and economic viewpoint, of converting the existing natural gas network in Leeds, one of the largest UK cities, to 100% hydrogen.

The project has been designed to minimise disruption for existing customers, and to deliver heat at the same cost as current natural gas to customers.



The project has shown that:

- The gas network has the correct capacity for such a conversion
- It can be converted incrementally with minimal disruption to customers
- Minimal new energy infrastructure will be required compared to alternatives
- The existing heat demand for Leeds can be met via steam methane reforming and salt cavern storage using technology in use around the world today

The project has provided costs for the scheme and has modelled these costs in a regulatory finance model.

In addition, the availability of low-cost bulk hydrogen in a gas network could revolutionise the potential for hydrogen vehicles and, via fuel cells, support a decentralised model of combined heat and power and localised power generation.

The full report can be found on the NGN website or searching for "Leeds H21 Report".

The Results

Demand vs. Supply (Section 2)

The energy demands calculated for the area of conversion are:

1. Average yearly gas demand = 678 MW (derived from DECC data)
2. Maximum peak yearly demand = 732 MW (temperature corrected DECC data)
3. Maximum peak hour demand = 3,180 MW (NGN 1 in 20 peak hour demand)
4. Peak day average demand = 2,067 MW (derived from NGN 1 in 20 peak hour demand design parameter)
5. Total average yearly demand = 5.9 TWh

6. Total peak year demand = 6.4 TWh
This demand would be serviced by hydrogen production and storage facilities:

Hydrogen production capacity of 1,025 MWHHV (305,000 Sm³/h) provided by four Steam Methane Reformers (SMRs) located at Teesside, fitted with 90% carbon dioxide capture. This CO₂ is then compressed to 140 bar and assumed to be exported 'over the fence' to permanent sequestration deep under the North Sea. Such hydrogen production at large scale is fully proven, with worldwide production standing at about 50 million tonnes per annum compared to 0.15 million tonnes per annum for the proposed area of conversion.

Additional intraday storage, which together with the SMRs and inter-seasonal storage, will supply a maximum 1 in 20 peak hour demand of 3,180 MWHHV. This will be in the form of salt cavern storage located at Teesside, some which may be repurposed from already existing caverns.

Inter-seasonal storage of 702,720 MWHHV (40 days of maximum average daily demand (coldest year), 209 million Sm³ hydrogen). This will be in the form of salt cavern storage located on the East Humber coast.

A Hydrogen Transmission System (HTS) will connect the SMRs and salt caverns to the proposed area of conversion (Leeds) and will be capable of transporting at least the peak supply requirement of 3,180 MW.

Gas Network Capacity (Section 3)

Both the Medium Pressure (MP) and Low Pressure (LP) gas distribution networks within the area of conversion have been modelled for hydrogen conversion using the network analysis software and data currently

used by Northern Gas Networks. The conclusion is that the gas networks have sufficient capacity to convert to 100% hydrogen with relatively minor upgrades.

Gas Network Conversion (Section 4)

It is possible for the existing gas network to be segmented and converted from natural gas to hydrogen incrementally through the summer months over a three-year period. This approach would mean minimal disruption for customers during the conversion.

Appliances Conversion (Section 5)

Hydrogen appliances and equipment for domestic, commercial and industrial sectors can be developed. There are already a few models on the market, although sales are extremely low, due to an absence of piped hydrogen. Just with the knowledge of this study, several manufacturers are showing real enthusiasm for their development. A firm long-term plan and significant stimulus would be needed to provide the motivation to develop and produce the wide range of equipment required, perhaps in the form of a national heat policy.

Hydrogen Transmission System (Section 6)

High pressure hydrogen transmission pipelines are operating around the world today. Similar pipelines have been proposed for carrying hydrogen from the SMR site to the conversion area and hydrogen storage sites. In addition, a connection between the natural gas transmission system and the SMR has been proposed along with a pipeline from the SMR to CCS. Costs for these have been estimated at £230 million with ongoing OPEX costs of £0.5 million per annum.

TAKING ON THE ENERGY AND CLIMATE CHANGE BRIEF – A COMMENT FROM IAIN WRIGHT MP, CHAIR OF SELECT COMMITTEE FOR BEIS

Iain Wright, Chair of the Business, Energy, and Industrial Strategy Committee and Labour MP for Hartlepool

A STATEMENT FROM THE CHAIR OF THE SELECT COMMITTEE ABOUT THEIR WORK ON ENERGY

In the autumn 2016, our Select Committee became the Business, Energy and Industrial Strategy Committee, incorporating energy and climate change and reflecting the Prime Minister's changes to the 'machinery of Government'. As a Committee we are keen that energy and climate

change is central to our work and we will be determined to hold the Government to account in their efforts to develop a low-carbon industrial strategy, tackle climate change, and to secure reliable, clean and affordable energy.

We've already had some lively evidence with energy suppliers and with the regulator, Ofgem. Our recent hearing followed announcements of price increases by Npower, Scottish Power and EDF Energy and we pressed Lawrence Slade, Chief Executive, Energy UK, and



Dermot Nolan, Chief Executive, Ofgem on the consumer aspects of the Competition and Markets Authority's investigation of the UK's Energy Market. The session covered a lot of territory. The evidence we heard certainly highlighted the need for customers to fight back by switching suppliers, but also that energy companies need to get their act together to reward customer loyalty rather than punishing it.

Brexit inevitably dominates the political agenda and as we leave the European Union there are serious questions about the UK's future energy and climate change policy. Our inquiry on the Government's Brexit negotiation priorities on energy and climate change will report shortly. We've looked at areas such as the internal energy market, security of supply and cross-border trading, including the current and future role of cross-border interconnectors in security of electricity and gas supplies, and particular challenges for Northern Ireland. The EU emissions trading system (ETS), climate change, energy standards and consumer protection have also been a focus of the inquiry and we heard from witnesses about the implications of the UK's decision to withdraw from the European Atomic Energy Community (Euratom), including what it means for research and development and for future investment in nuclear power. Dame Sue Ion, Chair, Nuclear Innovation and Research Advisory Board, told us the nuclear industry would be 'crippled without [deals] in place'.

We recently published our Industrial Strategy report, urging the Government to focus on horizontal policies, such as boosting skills and infrastructure. We also called on the Government to step back from its current trajectory of

focussing on sectoral 'deals' and recommended a targeted, mission-based approach to meet global, UK-wide and local public policy challenges and maximise UK advantage for businesses in such matters as decarbonising energy intensive industries or automating and electrifying transport infrastructure.

We will be keeping a close eye on the upcoming Emissions Reduction Plan – it's vital investors, businesses and households are given certainty around how the Government intends to meet its future carbon budget commitments.

Looking ahead, our Committee will be holding evidence sessions on electric vehicles and their role in the UK's transition to a low carbon economy. We will look at barriers to the market's development, charging infrastructure and fears that there is a postcode lottery in the provision of charge points, as well as purchase costs and incentives to increase electric vehicle sales. The inquiry will also investigate whether the Government's Industrial Strategy sufficiently address the challenges and opportunities for electric vehicles. We expect this short inquiry will be part of a wider body of work over the next year looking at energy innovation.

The UK must take advantage of the economic opportunities presented by decarbonisation and ensure the UK continues to be seen as a world-leader in the transition to a low-carbon economy. As a Committee we will continue to scrutinise Whitehall policy and action in this area and ensure that the Government and regulators are doing all they can to ensure the UK moves to an energy system which is clean, affordable and secure.

THE 'ART OF THE DEAL' AND ENERGY GEOPOLITICS: WILL THE ELECTION OF DONALD TRUMP MAKE THE UNITED STATES A NET ENERGY EXPORTER?

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The election of Donald Trump as President of the United States has challenged American political orthodoxy for the first time in a generation. Trump has proposed scaling back global free trade, restricting immigration and protecting for America workers from competing imports. Additionally, the President has proposed a series of public works funded by increased public debt, whilst at the same time attempting to roll back the state and lower taxes.

This will have economic consequences. Prices will rise if cheap goods from China and Mexico are subjected to tariffs,

sectors requiring skilled migrant labour will suffer and public debt must be repaid. The post war economic model of the United States will undergo profound changes that will affect many countries, not least nations that export to the American market. However, the United States has an ace up its sleeve. With the president's known affection for deal making, it might help to alleviate the disruption caused by radical changes in economic policy. In short, the United States has ample reserves of oil and gas and it might be in a position to export much of its production if certain conditions are met.

In the final decade of the Soviet Union, the USSR was (and Russia is) rich in oil and gas accounting for almost half of its export revenue. However, in the 1960s the Soviet Union attempted to wean itself off hydrocarbon exports under reforms implemented by Kosygin intended to increase industrial productivity through incentives. This was short lived as the oil prices rise during the 1970s made it easier for the Soviet Union to export more oil than increase productivity. Focus



shifted to military equipment and consumer goods to keep the populace happy. The Soviet Union was the only resource rich nation that pursued a crash programme of nuclear power with the aim of exporting (instead of burning) oil and gas for hard currency. The upshot was a series of dangerously shoddy reactors built quickly and cheaply. Indeed one reactor achieved a global notoriety in 1986 – Chernobyl.

Extending this hypothesis to the United States in 2017, we must understand that it has changed from a net importer of natural gas, to an exporter and can meet domestic demand. It has done this through the process of hydraulic fracturing – fracking – which creates natural gas ready for exploitation. This has brought about a 'gas revolution' in America; gas power stations are much cheaper to build and run than coal plants, due to the necessity for expensive anti-pollution measures. Indeed, a new coal plant can cost as much as a nuclear plant because of this. Additionally, the gas produced by fracking can be turned into petroleum through a process known as Gas to Liquids (GTL) which the US could also export after legal restrictions on exporting crude oil were removed in 2016.

There is, however, one obstacle in the way: the price of oil and gas on the global market is too low to justify making GTL petroleum to sell. Indeed, the low price of oil has led to hiatus in the production of oil from the coal sands in Alberta and in the North Sea revenues are very low. This situation cannot last forever, there is a finite supply of oil and gas and prices will therefore rise. For President Trump, however, if his economic policies happen and the United States needs export revenue, then the price of oil cannot rise fast enough to justify

selling gas and petroleum from unconventional sources.

Which is where a tome called the 'Art of the Deal' (Trump, 1987) comes in – Donald Trump has shown a willingness to talk to regimes that have become detached from the global community, the most important being Russia. A nation that is reliant upon hydrocarbon exports for most of its foreign exchange. It is not inconceivable that a Null Sum (Win-Win) Game will be agreed by Presidents Trump and Putin that will solve the Crimea situation to the benefit of the Russians in exchange for a rise in oil prices. Along the same lines, the United States might soften its position on Iran, perhaps even weakening safeguards for a rise in oil prices. Add in the narrow leadership of OPEC, potential regime change in Venezuela and other geopolitical factors then, the United States might engage in diplomatic trade-offs to guarantee high prices and a substantial income from oil and gas exports.

As an aside, this could benefit the United Kingdom as the North Sea will be viable and exploration and exploitation in harder to reach locations will be encouraged. With the (admittedly contentious) introduction of fracking, the UK might regain its energy independence and once again become a net exporter of energy. Certainly, the Canadian oil sands in Alberta will again be productive, signalling a return to the high economic growth levels of the past decade and a half.

However, this approach might weaken the United States. At the time of Chernobyl, the Soviet Union was so dependent on hydrocarbon exports that the oil glut of 1985/86 – where oil prices fell by two thirds – hit the Soviet economy hard. Add in the short-term closure of the nuclear

sector which was replaced by burning valuable gas, the state had no recourse but to borrow money. Therefore, Chernobyl did fatally compromise the Soviet Union, not due to political repercussions but from a fatal blow to its economy, too weak to survive. In the US context, a parallel may be a revival of coal fired power stations or a restart of the nuclear resurgence to free up more gas for sale on the global markets and therefore further increasing US dependency on hydrocarbon exports.

Imagine a United States reliant on high oil prices to generate export revenue and add the effect that a fall in the price of oil has on a hydrocarbon exporting economy. This is the flaw in the 'Art of the Deal' approach, the stakes always increase and in setting his sights on a single goal, Donald Trump has shown that he is willing to offer whatever he can offer to achieve a given end. Therein lies the rub; Russia, Iran, OPEC and whoever President Trump deals with will now have an incentive to lobby for price reductions, fully aware that to do so will threaten the United States economy – something it would never allow to happen. In short, the United States would have to enter into an ongoing series of compromise arrangements to ensure a high oil price to sustain its economy. That is the fallacy of this age – we are not looking at a Null Sum Game, we are looking at hydrocarbon exports becoming central to the US economy for the first time since the 1920s. However, in the 21st century, America no longer has the hegemony it once held over global energy supply. Perhaps, to keep the economy going, a bad deal might be the only deal it can make to guarantee its economic survival.

IAN LIDDELL-GRAINGER MP RECEIVES FELLOWSHIP OF THE INDUSTRY AND PARLIAMENT TRUST

On 28 February 2017, the Industry and Parliament Trust (IPT) hosted a dinner discussion on the subject 'A Roadmap of Energy Now and in the Future'. The discussion, chaired by Ian Liddell-Grainger MP, featured a speech by Michael Borrell, Senior Vice-President for Europe and Central Asia, Total. The dinner provided an informative discussion on current challenges in the energy sector where Ian was able to share experiences from his IPT Fellowship.

Ian's Fellowship saw him spend the majority of his time with Total and Drax. Two particular highlights of his time with Total were visits to both the Shetland Gas Point and the Research and Development Centre (R&D) in Pau, France. At the Shetland Gas Point Ian spent a full day offshore where he received a briefing on the Laggan-Tormore Project which will supply 8% of the UK's gas requirements. Ian also gained insight into the West of Shetland region development and was given a full site tour.

When Ian visited their R&D centre in Pau he was given an overview of global project management and insight into new technology. Since January 2010, Total has

developed the first complete industrial CO2 capture-transport-storage chain in the Lacq basin in southwestern France. From January 2010 to March 2013, Total captured, transported and stored 51,000 tonnes of CO2 at a depth of 4,500 meters in an old natural gas field.

At Drax, the focus of Ian's Fellowship switched from gas to biomass. Drax currently provides 7% of the UK's electricity and Ian was able to view the four storage domes at Drax's handling facilities. During the visit, Ian viewed the Drax trading floor where he learnt how electricity is traded as well participating in a briefing on the White Rose Project (Drax's plans for carbon capture and storage).

Ian's IPT Fellowship has given him a vital insight into the global energy business. From site visits, to the trading floor and examining new R&D projects Ian was able to see the industry from the floor to the boardroom.

Industry and Parliament Trust (IPT) Fellowships programme are designed to provide MPs, MEPs, Peers and senior Parliamentary staff with a unique insight into business and industry.



Mike Borrell, Total; Ian Liddell-Grainger MP; Nick Maher, IPT

Fellowships are open to all Parliamentarians on a cross-party basis, and also open to senior House Staff. Fellows have the opportunity to work with one or more organisations - from multinational corporations and FTSE100 companies to social enterprises and government agencies. Most Fellowships consist of 15 days of placements over an 18 to 24 month period.

For any parliamentarians interested in commencing their own Fellowship in the energy sector, please contact Liz Dawson Parliamentary Affairs Manager on 020 7839 9405 or email eleizabethdawson@ipt.org.uk.

PARLIAMENTARY OFFICE OF SCIENCE AND TECHNOLOGY POSTNOTE NO 550 FEB 2017



By Paul Brack and Aaron Goater of POST
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POST has released a new POST Note on Energy Efficiency.

Future Energy Efficiency Policy

This POSTnote outlines the benefits and costs of future improvements in energy efficiency across various UK sectors. It then describes the barriers to energy efficiency measures, outlines options for future energy efficiency policy including regulatory and economic interventions and summarises analyses of the effectiveness of different policy options.

Overview

The Government will set out future energy efficiency policies and proposals in its Emissions Reduction Plan in early 2017.1 Future energy efficiency policy choices will also arise from Brexit.

Energy efficiency improvements can reduce fuel poverty and greenhouse gas emissions and improve comfort, health, wellbeing, energy security and economic productivity.

Barriers to improvements include financial constraints, misaligned

incentives, hassle, poor return on investment, lack of prominence and low confidence in results.

Regulatory, economic and behavioural policies could improve UK energy efficiency.

There is insufficient evidence to identify which types of policy are most effective.

The full POSTnote may be found on <http://researchbriefings.parliament.uk/ResearchBriefing/Summary/POST-PN-0550>

BUILDING OUR INDUSTRIAL STRATEGY

Government Green Paper and Consultation

The Government Issued a consultation for their Business Strategy on 23rd January 2017. The Consultation closes on 17th April 2017. To submit a response, contact the Industrial Strategy Team on **020 7215 5000** or email industrial.strategy@beis.gov.uk.

The section dealing with energy is shown below.

Delivering affordable energy and clean growth

Actions under way:

- We have acted to limit policy costs on energy bills and have reduced such costs for the most energy intensive industries by up to around 80 per cent.
- We have doubled support for energy innovation, and are already investing £600 million in support to accelerate the transition to ultra low emission vehicles. Additional funding of £270 million was announced in the 2016 Autumn Statement.
- We are requiring energy suppliers to offer interactive smart meters to every household and small business site in Great Britain by the end of 2020.

New commitments:

- The Government will set out in 2017 a long-term road map to minimise business energy costs.
- To inform this, the Government will commission a review of the opportunities to reduce the cost of achieving our decarbonisation goals in the power and industrial sectors. The review will cover how best to support greater energy efficiency, the scope to use existing instruments to support further reductions in the cost of offshore wind once current commitments have been delivered, and how the Government can best work with Ofgem to ensure markets and networks operate as efficiently as possible in a low carbon system. We will also review the opportunities for growth from the energy sector and the opportunities for the UK.
- We will publish our Emissions Reduction Plan during 2017, providing long-term certainty for investors.
- As set out above we will review the case for a new research institution to act as a focal point for work on battery technology, energy storage and grid technology, reporting in early 2017.

Questions for consultation

27. What are the most important steps the Government should take to limit energy costs over the long term?

28. How can we move towards a position in which energy is supplied by competitive markets without the requirement for ongoing subsidy?

29. How can the Government, business and researchers work together to develop the competitive opportunities from innovation in energy and our existing industrial strengths?

30. How can the Government support businesses in realising cost savings through greater resource and energy efficiency?

ENERGY REPORT FROM THE BUDGET

Chancellor of the Exchequer,
the Rt Hon Philip Hammond MP

8th MARCH 2017



On Wednesday 8th March, the Chancellor of the Exchequer, the Rt Hon Philip Hammond MP, delivered his first Spring Budget speech. This will be the final Spring Budget, because from now, the Budget will be combined with the Autumn Statement.

Energy topics

There was little energy content contained in the speech, but the following announcements were made:

One of his most prominent announcements was a review of tax relief for the North Sea oil and gas sector. The Chancellor had "heard... the calls by North Sea oil and gas producers and the Scottish government to provide further support for the transfer of late-life assets."

"As UK oil and gas production declines it is essential that we maximise exploitation of remaining reserves and so we will publish a formal discussion paper in due course,"

He announced:

- Tax incentives to make it easier for operators to sell oil and gas fields, helping to keep them productive for longer and maximise exploitation.
- A panel of experts will be set up to examine the issue.
- A discussion paper on how to help the industry will also be published,

The Chancellor announced the levy control framework for low-carbon subsidies will be replaced with a new set of cost controls, but he avoided setting out the details of any replacement until "later in the year". He deferred changes to the UK's carbon price until his Autumn 2017 budget.

He also announced £270 million to launch the Industrial Strategy Challenge Fund

Initial funding will support research and innovation in universities and businesses, in areas like:

- developing artificial intelligence and robotics that will work in extreme environments, like offshore energy, nuclear energy and space
- designing and manufacturing better batteries for new electric vehicles that will help improve our air quality

PARLIAMMENTARY RECORD

SELECT COMMITTEE STATEMENTS, REPORTS AND INQUIRIES

12th December 2016 to 12th March 2017

House of Commons

Select Committee on Energy and Industrial Strategy

Industrial Strategy: First Review

Second Report of Session 2016–17

Published 21st February 2017

This report is best summarised by an extract of the conclusions and recommendations.

We urge the Government to continue to be ambitious developing its industrial strategy and ensuring that it remains true to the vision of achieving an economy that works for everyone.

In its response to this Report, the Government should outline a set of clear, outcomes focussed metrics that can be used to frame its goals and to measure progress in meeting these. We recommend that the Government should consider including metrics relating to the following:

- Improving in real-terms earnings per household and closing regional disparities;
- Reducing differential regional GDP per head between least and best performing nations and regions;
- Improving UK productivity relative to comparator economies and closing the gap with the G7 average;
- Improving UK Gross Domestic Expenditure on R&D relative to comparative OECD economies;
- Improving levels of UK investment in fixed capital relative to comparable OECD economies;
- Improving the UK's position in international rankings on basic skills;
- Improving the UK's position in international rankings on infrastructure;
- Ensuring emissions remain within Carbon Budgets and legal limits for air pollution;
- Closing the UK trade deficit; and,
- Improving the proportion of businesses which scale-up.

HOUSE OF LORDS

European Union Committee

12th Report of Session 2016–17

Brexit: environment and climate change

Published 14th February 2017

An extract from this report:

The UK is leaving the EU, not Europe. Its environment will remain inextricably linked to the environment of Europe. In many areas, such as species conservation, or air and water quality, it will be vital for the UK and the EU to continue to co-operate in order to protect the shared European environment, whether terrestrial, marine, or atmospheric.

PARLIAMMENTARY ORAL QUESTIONS AND DEBATES

House of Commons

Oral Questions - From 12th December 2016 to 12th March 2017

Energy Questions: 13th December 2016

Science and Innovation

Liz Saville Roberts (Dwyfor Meirionnydd) (PC)
Alan Brown (Kilmarnock and Loudoun)(SNP)
Column 600

Energy Bills

Justin Tomlinson (North Swindon)(Con)
Caroline Flint (Don Valley)(Lab)
Antoinette Sandbach (Eddisbury)(Con)
Sammy Wilson (East Antrim)(DUP)
Column 608 – 609

Advanced Manufacturing - Low Carbon Energy Sector

Albert Owen (Ynys Môn)(Lab)
Mr David Nuttall (Bury North) (Con)
Column 609 - 610

Energy Supply

Jeremy Lefroy (Stafford) (Con)
Steven Paterson (Stirling)(SNP)
James Heapey (Wells)(Con)
Dr Alan Whitehead (Southampton, Test)(Lab)
Column 610 - 611

Topical Questions

Deidre Brock (Edinburgh North and Leith) (SNP)
Steven Paterson (Stirling)(SNP)
Mr Iain Wright (Hartlepool)(Lab)
Stephen Kinnock (Aberavaon)(Lab)
Bob Blackman (Harrow East)(Con)
Graham Evans (Weaver Vale)(Con)
Column 614 - 618

Sale of Green Investment Bank

Caroline Lucas (Brighton, Pavilion) (Green)
11 January 2017 Column : 317-330

Introduction of a Universal Market for Electricity Pricing

Ian Blackford (Ross, Skye and Lochaber) (SNP)
18th January 2017 Column : 933

Go-ahead for Fracking on Church Land

Kerry McCarthy (Bristol East) (Lab)
19th January 2017 Column : 1066

Swansea Bay Tidal Lagoon

Chris Elmore (Ogmore) (Lab/Co-op)
25th January 2017 Column : 275

Trump withdrawal from Paris Climate Change Treaty

Edward Milliband (Doncaster North)(Lab)
25th January 2017 Column : 298

Oil and Gas Supply Chain

Callum McCaig (Aberdeen South) (SNP)
26th January 2017 Column : 428

Energy Questions 31st January 2017

Science Funding

Dr Sarah Wollaston (Totnes)(Con)
Column 794 - 795

Tidal Lagoons

Tim Loughton (East Worthing and Shoreham)(Con)
Mr Barry Sheerman (Huddersfield)(Lab/Co-op)
Michael Fabricant (Lichfield)(Con)
Danny Kinahan (South Antrim)(UUP)
Dr Alan Whitehead (Southampton, Test) (Lab)
Column 800 – 802

Hendry Review

Stephen Doughty (Cardiff South and Penarth)(Lab/Co-op)
Byron Davies (Gower)(Con)
Jim Shannon (Strangford)(DUP)
Stephen Crabb (Preseli Pembrokeshire) (Con)
Clive Lewis (Norwich South)(Lab)
Column 802 – 803

Offshore Energy: Humber

Martin Vickers (Cleethorpes)(Con)
Nic Dakin (Scunthorpe)(Lab)
Column 806 - 807

Topical Questions

Clive Lewis (Norwich South)(Lab)
Christina Rees (Neath)(Lab/Cop)
Kerry McCarthy (Bristol East)(Lab)
Dr Sarah Wollaston (Totnes)(Con)
Mr Iain Wright (Hartlepool)(Lab)
Column 809 - 811

Rein in Cost of Energy in Northern Ireland

Mr David Anderson (Blaydon) (Lab)
1st February 2017 Column : 1010

Toshiba review of its investment in the Moorside Nuclear Power Plant

John Woodcock (Barrow and Furness) (Lab/Co-op)
1st February 2017 Column : 1024

Protection from increase on dual fuel bills

Caroline Flint (Don Valley) (Lab)
8th February 2017 Column : 428

Swansea Bay Tidal Lagoon Project, following the Hendry Review

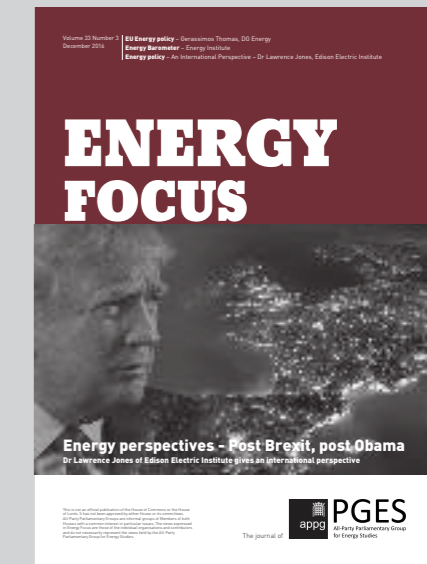
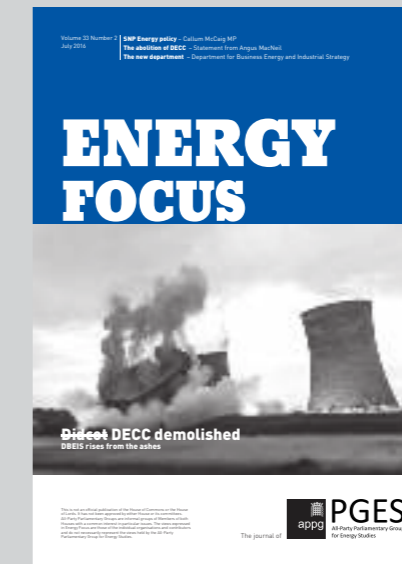
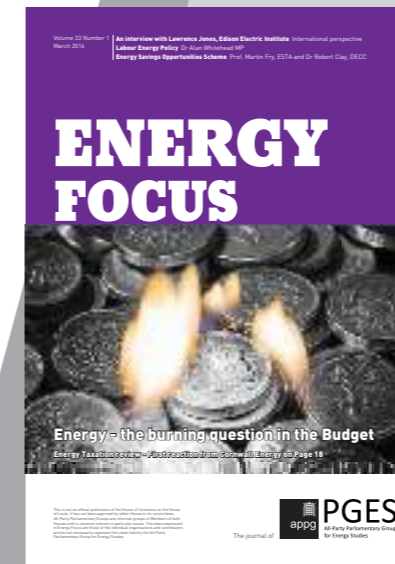
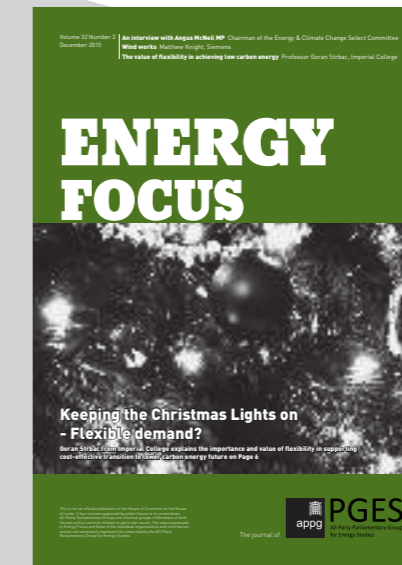
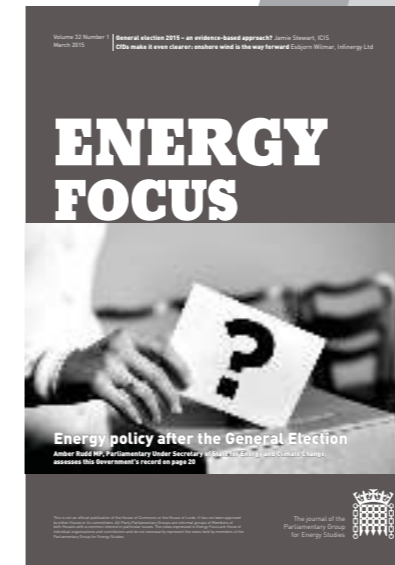
Albert Owen (Ynys Môn) (Lab)
28th February 2017 Column : 151

Reinstate the Funding for Carbon Capture and Storage

Alan Brown (Kilmarnock and Loudoun) (SNP)
28th February 2017 Column : 160

Membership of the Customs Union and the Single Market for the Oil and Gas Industry

Alan Brown (Kilmarnock and Loudoun) (SNP)
9th March 2017 Column : 931



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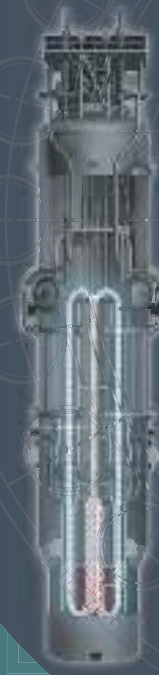
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Technology overview



With the backing of our major investor, Fluor Corporation we expect to be generating for our first U.S. customer by the mid-2020s.

We also see our technology being manufactured, deployed and generating electricity in the UK within a similar timeframe.

