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ENERGYEYE

Brexit is the real threat to our energy security

Without a bespoke Brexit deal, we could see the lights go out, warns senior deputy general secretary **Sue Ferns**

THE security of our energy supply was given a brief flash of prominence in February when defence secretary Gavin Williamson warned that the Russians may target our energy infrastructure as part of an attack on the UK.

But the real challenge to our energy security is not the threat of foreign attack, it is the entirely self-inflicted sabotage that might occur as we leave the European Union.

There are serious concerns about energy supply after Brexit and whether the UK would be prepared for a surge in demand if, for example, there was a major weather event.

The House of Lords EU select committee published a report in February assessing the impact Brexit could have on the UK's energy security, picking up on a number of concerns Prospect has highlighted.

One key concern is whether the UK will have access to electricity supplies from Europe if we leave the EU's internal energy market (IEM), which allows for free trade in energy between member states.

Once outside the IEM, we might have to pay more for electricity from the EU and supplies might not always be there when we need them. This is especially worrying since the government thinks we will import 25% of our electricity from Europe by 2025.

Ferns - serious concerns about energy supply after Brexit

Some of the most pressing concerns relate to having enough skilled workers to do the jobs that keep the lights on. Prospect members working at Hinkley Point, in the Office for Nuclear Regulation and doing Euratom work, are all potentially affected by energy policy changes triggered by Brexit.

The committee's report suggests that EU workers make up between 1% and 5% of the energy industry's workforce.

The low numbers disguise a reliance on EU nationals working in high density in specialised engineering roles. The roll-out of smart meters, for example, depends in part on EU workers.

Hinkley Point, the UK's first new nuclear power station in a generation, will need 1,400 steel fixers when construction is in full flow, according to evidence given to the committee. There are only 2,700 currently in the UK, meaning Hinkley Point would take up more than half the capacity. In short, we will have a skills shortage.

Prospect has previously called for guaranteed protections for EU nationals living and working in the UK. The nuclear industry relies on free movement of people.

The Office for Nuclear Regulation may also face a similar situation. There are genuine concerns about whether there will be enough time to train and recruit new people to work in this area.

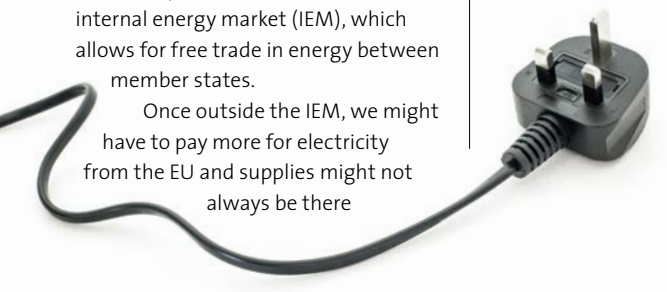
While ministers continue to maintain that there will be minimal disruption, these are the kinds of pressure points that could result in real difficulties.

The report is right to highlight these issues and the challenges surrounding Euratom, Europe's nuclear free trade agreement. The committee said there are big risks associated with exiting Euratom without putting in place an adequate alternative.

> 'There are big risks associated with exiting Euratom without putting in place an adequate alternative'

The consequences would pose significant challenges for energy security. The UK's eight nuclear power stations provide 20% of the UK's electricity need. Without an agreement in place before leaving the EU, the transportation and use of nuclear material could completely dry up. This scenario would have a significant impact on energy security.

The warnings are clear – energy security is key to the UK's infrastructure and this bespoke industry needs a bespoke deal.



Energy storage research gets £42m boost

UP to £42m in government funding has been allocated to four UK-based consortia for research into overcoming the challenges of using batteries, says the Faraday Institution.

The independent institute, based at the Harwell campus in Oxfordshire, was set up in 2017 as part of the government's £246m investment in battery technology through its Industrial Strategy.

It says the research will encourage both the transition to electric vehicles and the decarbonisation of the UK's energy supply.

- The University of Cambridge will lead a project on extending battery life by examining how stresses such as high temperatures and charging and discharging rates damage batteries over time.
- Imperial College London will lead a consortium in equipping industry and academia with battery system modelling software tools to understand and predict battery performance.
- A project led by the University of Birmingham – and involving the Science and Technology Facilities Council, where Prospect represents scientists, engineers and managers – will look into recycling and reusing lithium batteries.
- The University of Oxford will lead an effort to overcome the barriers preventing the progression to market of solid-state batteries that would be lighter and safer.

Business minister Richard Harrington said: "Government investment in the projects announced will deliver valuable research that will help us seize the economic opportunities presented by battery technology and our transition to a low-carbon economy."

Nuclear waste disposal consultations welcomed

PROSPECT has welcomed the recent launch of consultations into the handling of radioactive waste management and called for union input to find a long-term solution.

These are being held separately by the Department for Business, Energy and Industrial Strategy and Welsh Government to find ways to work with communities that wish to host a nuclear disposal facility (GDF).

The Welsh Government has said that no community will be forced to host a storage site. Scotland has its own policy.

Nuclear disposal involves placing radioactive waste deep within suitable rock formations that can prevent radioactivity escaping. There is no such facility in the UK at the moment.

The consultations follow a 2006 recommendation by the Committee on Radioactive Waste Management to use geological disposal after an independent review into options.

The UK Nuclear Industry Association has also said it "is the best policy for the long-term safe and secure management of radiological waste and is being adopted internationally".

Prospect senior deputy general secretary **Sue Ferns** said: "We can resolve the issue of long-term storage for the UK's nuclear waste and create hundreds of skilled jobs if the siting process is conducted with the right expert input and local communities, nuclear workers and trade unions are consulted."

The last effort ended in 2013 when Cumbria County Council, the last in the running, decided not to pursue it.

The consultations run until 19 April.

Policy Exchange renews push for small reactors

ACCELERATING the production of small modular nuclear reactors may be the solution to decarbonising our energy system, according to Policy Exchange.

The think tank argues in a recent report that small modular reactors (SMRs) could help the UK meet its pledge for 85% of its power to come from low-carbon sources by 2032.

SMRs provide about 10% of the power of conventional nuclear stations, but are pitched as cheaper and quicker sources as they are small, made in factories and assembled on site.

Prospect has called for greater use of SMRs. *A New Deal for Nuclear*, a recent pamphlet outlining the union's vision for UK energy, repeated a call to reactivate a government competition launched in 2015 to find the best SMR.

The UK has been closing nuclear plants and aims to phase out coal power by 2025, meaning it will have lost about 40% of its reliable capacity.

The report warns it would be costly to rely on renewable energy to replace these sources, while importing electricity could be problematic and using battery storage also too costly.

- ***To read Small Modular Reactors: The next big thing in energy?, go to bit.ly/PolicyExchangeSMR***
- ***To read A New Deal for Nuclear, go to bit.ly/nuclear-deal***

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Northern Ireland energy shake-up threatens jobs

NORTHERN Ireland Electricity (NIE) Networks met trade unions including Prospect recently to announce it was launching a 30-day consultation over redundancies in a drive to reduce its workforce by 90 roles this year.

It follows the sudden announcement in late January by power company AES that it planned to close most of its Kilroot power station near Carrickfergus within four months and begin closing parts of Ballylumford power station in Islandmagee at the end of the year.

A recent auction for new capacity contracts running through until September 2019 saw Kilroot, a coal-fired power station, and the second unit of Ballylumford B station, a gas-fired power plant, lose out.

New market arrangements have been designed to integrate the electricity markets of the Republic and Northern Ireland with those in Europe, enabling the free flow of energy.

The American owner of the two power stations, which together supply the bulk of Northern Ireland's electricity, said this had sent a "strong signal for AES to exit the market", throwing into doubt the jobs of 270 employees and 120 full-time contractors.

Prospect negotiating officer **Clive Scoggins** said: "NIE Networks entered into a formal consultation period with Prospect and sister unions on 5 February over a number of measures, including proposals to cut the number of job roles by 90 across the business.

Scoggins - local politicans must protect local power sector jobs

"This news is very worrying for those employees at NIE Networks, especially coming after the announcement of planned redundancies at AES Kilroot and Ballylumford, which could close later this year.

"Losing hundreds more skilled jobs will be devastating to the Antrim area following redundancies at Bombardier, Gallahers, Michelin, Mivan, Schlumberger and Schrader Electronics over the past three years.

"Local politicians must protect local power sector jobs and demand that the system operator and the utility regulator guarantee security of electricity supply for Northern Ireland until new generation and the second North-South interconnector are operational from late 2021.

"Prospect is in contact with NIE Networks and is working closely with AES to support our members through this devastating time and ensure the best possible outcome for them."

Any Prospect members affected can contact the Member Contact Centre on 0300 600 1878 between 8.30am and 7pm from Monday to Friday. Alternatively, email helpdesk@prospect.org.uk

Clean growth strategy 'does not go far enough'

THE government must take urgent action if it is to meet the UK's carbon emissions targets for the 10 years to 2032, according to the Committee on Climate Change.

The independent body that monitors the UK's progress on emissions reductions has published a report in response to the government's clean growth strategy that was launched in October 2017, which set out its proposals for decarbonising the UK's economy.

The proposals include improving housing energy efficiency, phasing out the sale of new conventional petrol and diesel vehicles by 2040 and generating 85% of the UK's electricity requirements from low-carbon sources by 2032.

The committee report argues that measures to meet the targets are not set out in sufficient detail and that a gap in meeting the fourth and fifth carbon budgets – from 2023-27 and 2028-32 respectively – remains, despite the strategy's aspirations.

This is cause for concern, given that it is based on the assumption that the government's policies deliver in full. Any underperformance gap would grow if, for example, the new nuclear power station at Hinkley Point C was further delayed or clean energy policies produce less than forecast.

Prospect senior deputy secretary Sue Ferns said: "The delays and lack of detail around the clean growth strategy highlight the problems facing the UK energy market. It's time for an urgent, serious overhaul of energy policy, so the UK can benefit from the clean energy revolution while showing true global leadership on climate change."

The Committee on Climate Change says it will monitor developments closely in its annual report to Parliament. To read its recent report, see: *bit.ly/CCC-CleanGrowth*

Smarter change...

How will our increasing demands for electricity be met in the coming decades? **Roger Hey**, future networks manager at Western Power Distribution, shares his crystal ball with Prospect communications officer **Boc Ly**

First of all, what's your background in the energy supply sector?

I'M a lifer in the industry. I started as an undergraduate trainee with the Yorkshire Electricity Board pre-privatisation. I've also worked for the East Midlands Electricity Board, Powergen, E.ON, and now I'm with Western Power Distribution.

By trade, I'm a chartered engineer. I studied electrical engineering at university and I've stuck with power distribution engineering through my career, which is fantastic. I absolutely love it.

What's a future networks manager?

When I'm explaining that to external stakeholders in the business community, I say that it's probably the closest thing we have to business development, where a company would be looking at the products and services that customers might want in the future.

Hey - the smart future will bring with it many opportunities

My job is to work out how people will be using electricity in the future for charging cars, batteries or their own distributed generation, and to make sure that the electricity grid can support it.

You spoke at Prospect's WPD delegate conference a few weeks ago. What was your message to them?

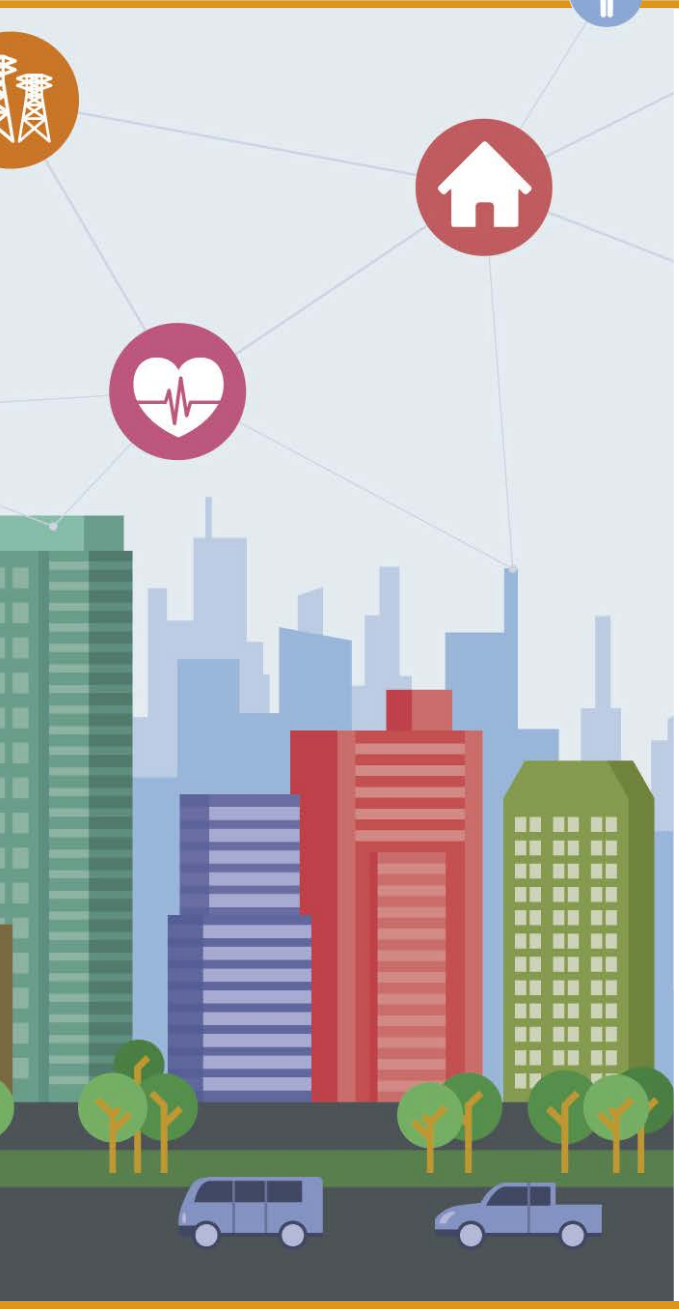
It's really just about raising awareness. Staff and trade unions are obviously key stakeholders. One of the key messages is that we're not expecting a complete transformation and radical change as an industry.

The vast majority of our employees will still be using the same skills that they've already got. What's changing is the way that we package it up, or operate the system, and how we explain it to customers.

We probably spent just as long on the Q&A and I think that's a good balance.

What are some of the biggest changes that we can expect to see with regards to future energy networks?

Most of our customers are domestic customers at home or in small shops and the like. At the current time, for



...not radical change

decisions and perhaps even want the process of selling services to us to be more flexible. We can do all that too.

So, if you get this right people should not notice that much of a change in their daily lives?

I don't think they will. Although there will be a tipping point when smart solutions become ineffective or too noticeable for customers. For example, when there's very high penetration of electric vehicles – we're talking a 25% penetration on an individual street; or perhaps 40% across a region – at that point, to make best use of the grid, you'll need to start upgrading it.

We are probably quite unique in saying to the government and energy regulator that "smart" is good and it gets you a long way but it doesn't get you all the future capacity needed. At some point the Distribution Network Operators need to upgrade the network by laying cables and building substations as well.

What is the government's role in this?

All major change in the energy industry is driven by policies coming from national government, or international policy, like climate change targets and European directives.

The renewables boom was funded through things like the feed in tariff. We're starting to see the same small extent with renewable heat, but to a much larger extent with grants for things like electric vehicles.

Every winter there are scare stories in the media about energy blackouts. How resilient is the electricity supply sector?

I don't have any serious concerns to be honest. But with long-term energy policy, more certainty is always better when you are building things for the future.

The one thing that we can see is that energy is becoming far more decentralised and more flexible. That's inevitable, whether it's a Combined Heat & Power unit in smart cities, or whether it's battery storage or whether it's wind farms or solar panels.

A big, big chunk of future energy needs are going to be local. And that means they'll be connected to the distribution rather than the transmission grid. It almost doesn't matter where the energy is coming from. Our job is to make sure that we achieve the balance and facilitate the deployment of sufficient local generating capacity.

What's the future for jobs in the sector? Are the robots taking over?

There isn't going to be a robot apocalypse! In our sector, we have a relatively large workforce and the jobs tend to be quite complex. It's not like a production line where you've got high volumes and low complexity. That would be easy to automate. That's really not the case in our sector.

If anything, the smart future will bring with it many opportunities. That's one of the things I was saying at the delegate conference. In these exponential times, we are starting to see things like computer control systems and more complex commercial arrangements coming into the energy sector.

I think there are a lot of opportunities for people who want to get involved in the technology and ICT side of things. I'm very optimistic for the future.

those consumers, how electricity is delivered to them is invisible. I think the vast majority of them would like it to continue that way.

So our challenge is to try and make all the "smart" things – optimising the use of the system by working with suppliers and aggregators and other intermediaries – work invisibly in the background.

It's like with mobile phones. There is a lot of clever network management stuff going on with mobile phone networks. We don't care how it actually works, do we?

Larger customers may well want to be more engaged and active in making

'The one thing that we can see is that energy is becoming far more decentralised and more flexible'

How might a smart network meet the needs of increasing electricity demands?

We rely on diversity. That's the way a passive grid works – we take advantage of the fact that people don't do all same things at the same time.

When you start increasing the capacity that each customer is using, that's when a "smart network" really kicks in because there's no diversity if everyone starts charging the car when they get home.

You can enforce diversity by managing that charging period over perhaps 11 or 12 hours. An electric car only needs to charge for four hours and people won't care whether it's charging the first four hours or the last four hours of when it is plugged in, as long as it's charged when they need it.

Waiting for a just energy transition in Castleford

Perched on the edge of the former Yorkshire coalfield, the industrial town of Castleford feels a long way away from policy makers in Whitehall, writes Prospect negotiations officer **Mike MacDonald**

BUILT on the heavy industries of coal, engineering and power generation, Castleford's 41,000 inhabitants have seen dramatic change over the past 30 years.

This close-knit community has learnt that when policy wonks, seemingly unaware of Castleford's existence, talk about a justifiable price of change, it is often towns like theirs that pick up the bill.

While the town successfully rebuffed an attempt by the Rugby Football League and Sky to merge their beloved rugby league team – thereby reducing a local ethos of hard challenging work into a bland modern franchise – campaigns to preserve and transform high skill, high value jobs have had less success.

Barely four years ago, you could look east from Castleford and in a 12-mile arc, see three power stations along with Kellingley colliery. With 8GW of capacity, Drax, Ferrybridge and Eggborough, could provide nearly as quarter of Britain's average demand that year.

Ferrybridge, Eggborough and Kellingley then employed nearly 1,100 direct staff and a similar number of contractors putting over £100 million into the local economy.

MacDonald - we must build an innovative energy sector that creates high-skilled jobs

By January this year, only a slimmed down Eggborough remained: a combination of carbon taxes and languid dithering over clean-coal technology made the investment in Ferrybridge after a fire too risky.

The fragile finances of UK Coal had also sealed Kellingley's fate as Britain's last deep coal mine in December 2015.

Winter hopes dashed

This year, after another winter of high hopes, the capacity auction for electricity generation finished on 2 February, which was ironically also the first day of the rugby league season.

With no supply contract, Eggborough has no funds or reason to maintain the plant beyond September.

So on that fateful day, my morning started with the Prospect reps telling me that, despite their hard work, they would be redundant as the station entered the long process of closure.

While Castleford Tigers quickly recovered from their opening day drubbing by St. Helens, the T-4 capacity auction for electricity capacity in 2021/22 dented hopes for a replacement gas-fired power station at Eggborough.

Despite optimism from politicians and civil servants that prices would rise from the £22/kW last year towards the £45 point where new capacity is viable, prices fell to £8.40.

New interconnectors, which allow the transfer of electricity across national borders, to mainland Europe won the auction but with no commitment to provide any power.

Risky assumptions

It seems we are relying on the assumption that a post-Brexit EU will have plenty of excess power to supply the UK if our renewables can't meet the necessary demand. This is possibly good news for investors in non-unionised interconnectors but hardly a solution to how we supply variable plant generation to complement low carbon generation.

An energy commentator suggested to me, possibly tongue in cheek, that we had an energy plan consisting solely of Contracts for Differences for renewables and nuclear along with the Capacity Market *(see opposite)*.

Prospect's concerns, and our lobbying efforts, rest on our belief on a just transition to low carbon. This requires a more careful design and management of the market rather than a blind faith that something will pop up regardless of the incentives in place.

This fatalism chimes with the view that securing innovation, retaining skills and reducing the cost of capital so we have lower prices is not desirable because the current market framework cannot provide them.

There is a need for change, as without it we will lose another opportunity to build a robust, innovative energy sector that provides high-skilled jobs. If a just transition is to become more than a rhetorical flourish then it needs to mean something to the power workers of Castleford, not just policy makers in the capital.

Markets are good at helping investors seek out short-term profits, but are generally bad at planning for the UK's long-term needs, writes Prospect energy researcher **Nick Kardahji**

Record low Capacity Market prices paint bleak picture for UK

The results of the recent Capacity Market auction offer a troubling glimpse of what is going on in the UK's electricity sector and illustrate how "market forces" are being left to make key decisions about our energy future.

What's good for the market is not necessarily good for the rest of us.

The Capacity Market was a key pillar of the 2013 electricity market reform programme to address the limitations of the free market. It was supposed to ensure security of supply, at the lowest cost to the consumer, and incentivise the building of combined cycle gas turbine plants to replace ageing assets.

In that respect, it has failed – no large-scale new power plants have been built as a result of it. And this year's record low price of £8.40/kW – less than half of last year's price – will not help.

Of the winning bidders, 86% were existing plants and 9% were interconnectors. Only about 750MW out of 50.4GW (1.5%) of total capacity procured is new-build plant, all of it small scale.

But with prices so low, many generators struggled to compete; of the UK's major coal plants, only Drax and Ratcliffe secured contracts, increasing the likelihood that coal will be off the system before the official phase-out date of 2025.

Perhaps, as some claim, we don't need to worry. The rapid expansion of renewables can be supported by investing in new flexible technologies like battery storage. But, even if these live up to the hype, they can make only small contributions to energy security. Battery storage accounted for just 0.3% of capacity in the auction, while nuclear and coal was about a fifth (roughly 10.5GW).

However, coal will be phased out and ageing nuclear plants decommissioned over the next decade, while decarbonisation targets require us to limit the use of natural gas in generation, probably by about 75% by 2030.

'In theory, two-thirds of the plants that won contracts won't be available for auctions in less than a decade'

In theory this means two-thirds of the plants that won contracts won't be available for auctions in less than a decade. It seems unlikely that new technologies will be ready to fill the gap, at least not without much more government support.

The government seems to hope imports will fill the gap, and expects 25% of our electricity will come from interconnectors by the mid-2020s. But there are a number of problems with this, not least of which is that interconnectors do not actually generate electricity and would be of little help during a supply crunch.

There's also, of course, Brexit. Most of our interconnectors link to the EU's Internal Energy Market, and the prices of, and access to, European electricity could be affected by leaving the EU. Ultimately, relying on interconnectors means relinquishing control of a significant proportion of our electricity supply, with all the associated risks that entails.

Given the scale of these challenges, letting market forces shape energy policy seems especially risky. Markets are good at helping investors seek out short-term profits; they are generally very bad at planning for the long-term needs of the whole population.

This is why Prospect is calling for more strategic intervention from government, potentially in the form of a new high-level energy planning body that can manage the low-carbon transition in a way that properly takes account of the technical needs of the system.

This could help ensure that vital skills are not lost and that there is a just transition for the whole energy workforce. Markets can't do this, and if the government doesn't step in, a sustainable future for our energy system will be in doubt.

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The union for specialist and technical staff at Hinkley Point C

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