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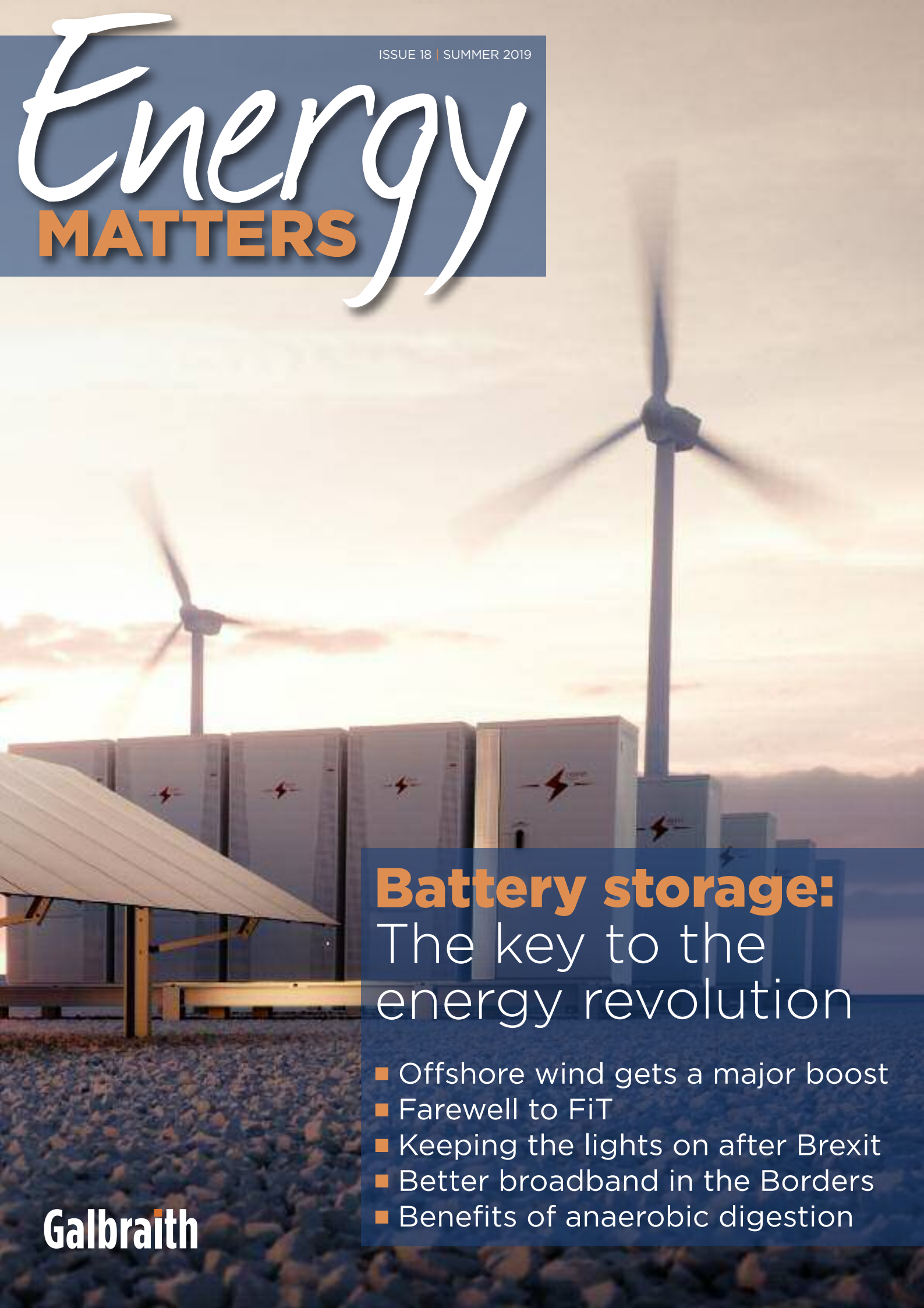
Energy MATTERS



Battery storage: The key to the energy revolution

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- Benefits of anaerobic digestion

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WELCOME

Rising to the power challenge

WELCOME to *Energy Matters* issue 18.

The transition to electric-powered transport is gaining traction, now supercharged by a Government commitment to end sales of new conventional petrol and diesel cars and vans by 2040. Battery technology will have to make big strides to meet this need, not only in transport, but also in an electricity distribution grid that's increasingly reliant on renewable energy sources. We talk to the man responsible for driving battery innovation in the UK to meet these daunting challenges.

Joanne Plant looks at how forward-looking businesses are addressing their energy needs by co-locating battery storage with on-site generation from renewable sources, and discusses some of the planning issues involved.

The Feed-in Tariff scheme has ended after a decade. Galbraith advisers John Pullen and Gareth Taylor review the legacy of an incentive aimed at encouraging investment in renewable energy generation and reflect on what the loss of the subsidy means to the UK's wind sector.

The new Communications Code was meant to deliver much improved digital services but, more than a year on, progress has halted due to differences between landowners and phone companies.

We are delighted to have merged with Land Factor, the rural estate management company with offices in Northumberland and Cumbria, Land Factor is also particularly strong in forestry. Both firms operate across the border and by joining forces, we shall provide enhanced services across a wider geographic area. The combined skills are already delivering greater breadth and benefit to the clients of both businesses under the Galbraith brand.

Mike Reid, head of energy

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Energy Matters is produced by **Allerton Communications**, London, and designed by **George Gray Media & Design**, St Andeux, France.

Keeping the lights on in post-Brexit Britain

The UK's departure from the European Union brings challenges, but we should be looking at our energy security anyway, says **Mike McWilliams**.

BREXIT was meant to have happened by now but hasn't. Had we left the EU, would your lights still burn, or would you be reading this by candlelight?

For a while Great Britain – the UK apart from Northern Ireland – was largely self-sufficient for electricity and gas. However since 2004 gas production has progressively fallen short of demand, such that now we import a huge 55% of our gas, mainly from Europe. We also import about 5% of our electricity. There are plans to increase our dependence on Europe for electricity; in some scenarios up to 25% of our peak demand could be supplied from Europe by 2030. While this makes sense from a trading perspective, it reduces our system security.

There is a range of political, technical and climatic conditions that could affect both Europe and GB, leading to supply shortfalls in both regions. For example a large persistent high pressure over the North Sea would bring extreme cold conditions causing a surge in gas and electricity demand, potentially leaving insufficient gas supply for electricity generation. This occurred in March last year when the Beast from the East struck. Fortunately the high pressure remained over Scandinavia, bringing strong winds and plentiful wind generation to UK and Northern Europe. Also we still had 10GW of old coal generation that was able to bail us out.

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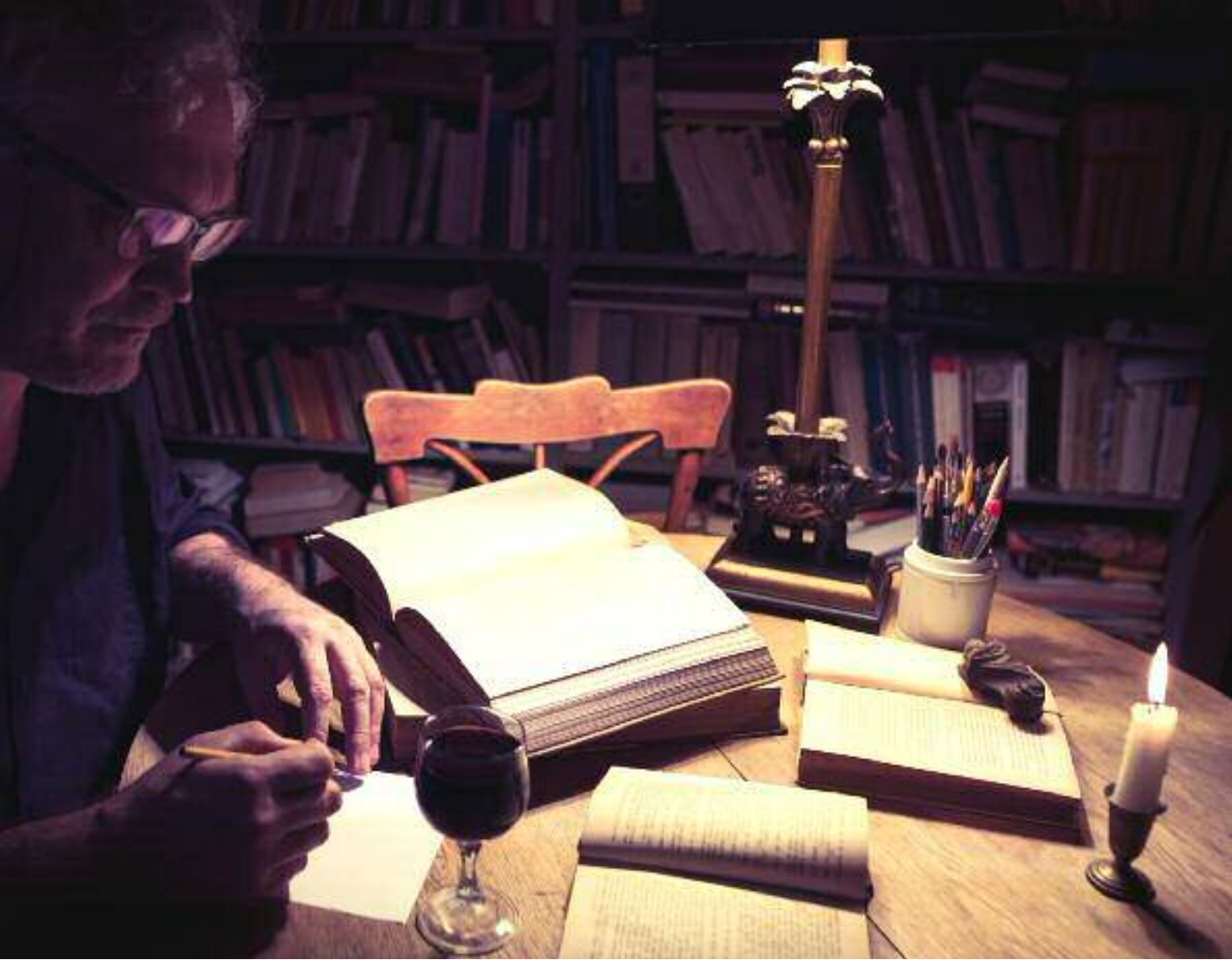

We may not be so lucky when the next Beast strikes. If the wind drops, we are short of gas, have no coal (all gone by 2025) and little nuclear, we will be dependent on our friends across the channel to meet the supply gap. However they may be in a similar predicament. Germany is shutting down its nuclear and coal plants; France seems likely to reduce nuclear generation from 75% to 50% and Belgium is phasing out nuclear and subsidising new gas-fired generation.

If Europe is short of electricity, can it cut off supplies to GB? Technically, yes it is possible, and it will need to be done.

Twenty-five countries of Europe are part of a synchronous system. If there is a shortfall of electricity supply in one region, the system frequency drops from 50 Hz across the whole grid. This happened for two months in early 2018 when a supply imbalance in Kosovo reduced the frequency by 0.1%. While this was inconvenient, with cooker clocks from Athens to Zaragosa losing six minutes, a larger imbalance could trigger a collapse of the whole 25-nation grid.

GB has its own synchronous area and is insulated from disturbances in Europe, being interconnected using direct current cables. This means we set our own frequency, and collapse of the European grid would not affect ours. It also means there is no need for Europe to balance supplies on the GB grid.

The island of Ireland has its own synchronous grid, with free-flowing cross-border electricity exchanges managed under a single electricity market, so there is no need for a "backstop" solution.

On the gas front there are ructions in Europe. Germany is determined to proceed with Nord Stream 2 (NS2), angering the US and many neighbours who argue it will reduce the existing gas transit fees for Ukraine and Poland, and make it easier for Russia to cut their gas supplies. Sceptics say that the US wants to sell more LNG to Europe, which will not be economic if NS2 proceeds. Most agree that NS2 will increase Europe's dependency on Russian gas, diminishing our supply security. With the UK at the end of the gas pipeline, our supplies will be first to go.

A Brexit at the start of spring would have been preferable to avoid energy supply disruptions, leaving us six months to sort out trading with Europe. But with our departure now due in June – or October, we have little time, let alone any certainty, to achieve this.

So, will the lights go out after Brexit? Almost certainly yes, but not because of Brexit, and not immediately.

Mike McWilliams is Head of Energy at CEBR, the Centre for Economics and Business Research.

> "With the UK at the end of the gas pipeline, our supplies will be first to go.