

THE GREEN RECOVERY



**THE KEY OPPORTUNITIES
FOR CREATING GROWTH
IN THE TRANSITION TO
NET ZERO**

October 2020

A Utility Week Insight Report in
association with Addleshaw Goddard

 **ADDLESHAW
GODDARD**

FOREWORD

DIRECTIONS NEEDED

It was just two years ago that Addleshaw Goddard published its last major report on the disruptive forces at play in the energy and utilities sector Energy Disruption in GB. Since then, a huge amount has changed; the conversation has changed. For years, we have been advising clients in the energy and utilities sector and power intensive industries on low carbon infrastructure projects, renewables, investments into green technologies and everything else besides. Gradually the decarbonisation and sustainability agenda has become a focus for big business too. But now everyone, in every sector is talking about this.

We are of course still dealing with the devastating impacts of Covid and there was a concern that the real progress that was being made might have been derailed as companies were forced to re-focus their priorities in order to survive the pandemic. Thankfully it seems most companies have been able to remain on track amid strong calls from politicians and industry leaders to build back better and build back greener.

Government has been clear that hitting its net zero targets is an absolute priority. Those net zero targets are looming large and there are still many huge challenges that we need to overcome - particularly in areas such as transport and heat which haven't seen anywhere near the level of 'greening' that we have in power generation. We need the right policy frameworks to encourage increased investment sufficiently far ahead of time to stand any chance of meeting the UK's targets. That means clear direction and meaningful and transformational action now without any missteps.



Paul Dight
partner, head of low
carbon energy and
electric vehicles,
Addleshaw Goddard

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INTRODUCTION



MAKING PROGRESS

As politicians and businesses look to navigate a way through the economic uncertainties facing the UK, one thing has emerged as a north star – the desire to ‘build back better’. From the 200 or more business leaders who signed a letter urging the government to invest in a green infrastructure to build back better, to the prime minister himself promising an offshore wind revolution, the concept of using investment to spearhead a green industrial revolution, creating new skills and opportunities would appear to

be a no brainer. In the run up to the mini-budget in July, a whole host of businesses and trade organisations set out persuasive arguments as to what could be achieved with the right investment and commitment to bolster growth and ‘level up’. Oil and gas leaders are also forging ahead with energy transition initiatives and will be pivotal in using their time and resources to support net zero targets.

But while the pandemic has helped train a spotlight on the net zero transition, the journey along the route

still remains as bumpy and winding as ever. The Committee on Climate Change has laid down destination markers as we aim for the 2050 net zero emissions target, but so many political decisions need to be made before a more confident course can be plotted.

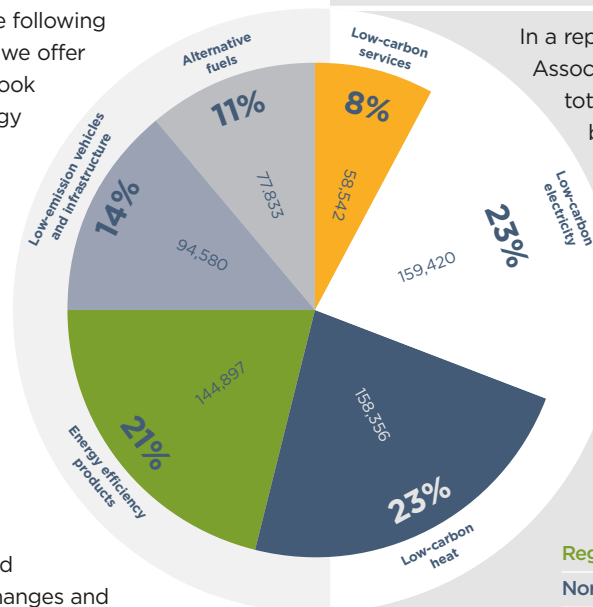
Getting to net zero will require unlocking a wave of essential infrastructure investment to create jobs, as well as an acceleration to market of emerging technologies and new business models which can empower consumers to live more sustainably and affordably.

Critically, however, movement to catalyse the creation of a green economy must be undertaken in a way which keeps whole-system benefits and costs firmly in sight. In an increasingly complex energy system, this presents a major challenge and may require fresh thinking about institutional architecture and investment incentives.

It invokes an enormous number of questions that the sector will grapple with for some time: How do we decarbonise heat? Can the new £2 billion Green Homes Grant finally spark a much-needed revolution in energy efficiency? How do we utilise the expertise of the big oil producers in accelerating efforts in the transition to net zero? And will a new £500 million package of measures announced by the Chancellor in March help alleviate the lack of confidence that many people still have in electric vehicles and the charging network that supports them?

At this hugely exciting juncture for the utility sector, our Utility Week Insight Report, in association with Addleshaw Goddard, explores these questions and many more.

Across the following six chapters, we offer an in-depth look at what energy and water companies are doing to develop 'green solutions' and adapt their businesses to the low carbon transition. We discuss the policy and regulatory changes and financial support which might be required to banish greenhouse gas emissions and potential threats that stand in the way. Our report also highlights the enormous progress that has been made and offers optimistic glimpses of a low-carbon future we all need.



WHERE LOW CARBON JOBS WILL COME FROM

In a report published in June 2020, the Local Government Association commissioned Ecuity Consulting to estimate the total number of low-carbon jobs that will be supported by England's net zero transition by 2030 and 2050.

This research, published in *Local green jobs – accelerating a sustainable economic recovery*, found that there could be as many as 694,000 direct jobs employed in the low-carbon and renewable energy economy by 2030 in England, rising to over 1.18 million by 2050. These cover the whole of the value chain from manufacturing, construction and installation, to operation and maintenance.

The report also gave a breakdown of where these jobs will be created, based on calculations from Ecuity Consulting:

| Region | Number of low-carbon jobs in 2050 |
|--------------------------|-----------------------------------|
| North East | 84,205 |
| North West | 170,601 |
| Yorkshire and the Humber | 167,697 |
| East Midlands | 96,842 |
| West Midlands | 97,015 |
| East of England | 119,294 |
| London | 143,764 |
| South East | 163,014 |
| South West | 139,765 |
| Total England | 1,182,197 |

Source: Ecuity Consulting/
Local Government Association report

BUILDING ON SUCCESS

The triumph of offshore wind has shown how long-term policy and price signals can rapidly drive technology forward. But can the same model work for other renewables or is it time for a new set of energy market reforms?

The records keep on falling. In April 2017 Britain celebrated the first 24-hour period since the 1880s in which no coal was used to produce electricity. Fast forward to the same month three years later and the country began a run of coal-free generation that was to last an astonishing 67 days.

Of course, 2020 has not been a representative year, with energy demand skewed massively by the pandemic. However, the trends are clear and it cannot be long before we see our first coal-free summer.

In fact, during the entire second quarter of 2020, coal accounted for just 0.5 per cent of all electricity produced, according to the latest Energy Trends report from the Department for Business, Energy &

Industrial Strategy (BEIS). The share provided by renewables stood at 45 per cent – a nine percentage point rise on the same period last year although down slightly from the record high of 47 per cent in the preceding quarter.

Alongside these milestones consider the even greater advances in bringing down the costs of renewables projects. In August, the government brought out revised forecast costs for renewable energy which showed offshore wind projects commissioned in 2030 are now expected to supply power at less than half of the rate predicted in 2016. The same analysis also predicted a fall in large-scale solar cost of about 40

per cent against the previous estimate and a 30 per cent downward revision for onshore wind.

There is more to these records than a feel-good factor. To hit our goal of reaching net zero emissions by 2050 the UK needs to rapidly ramp up renewable capacity as it seeks to eradicate dirty fuels and cope with significantly increased demand sparked by the decarbonisation of transport and potentially heat.

To get a scale of the task at hand, in National Grid's most conservative Future Energy Scenario the share of renewable generation will need to rise from its 2019 level of 120 terrawatt hours (TWh) to 372TWh by 2050 – a more than threefold increase. If that doesn't sound as dramatic as you might expect, it's worth clarifying that in this scenario we miss the mid-century net zero target. Looking at the most ambitious route to that target, the UK would need to be generating 559TWh of green power.

Prime minister Boris Johnson is promising a 'green industrial revolution'. In his speech to the Conservative Party Conference he

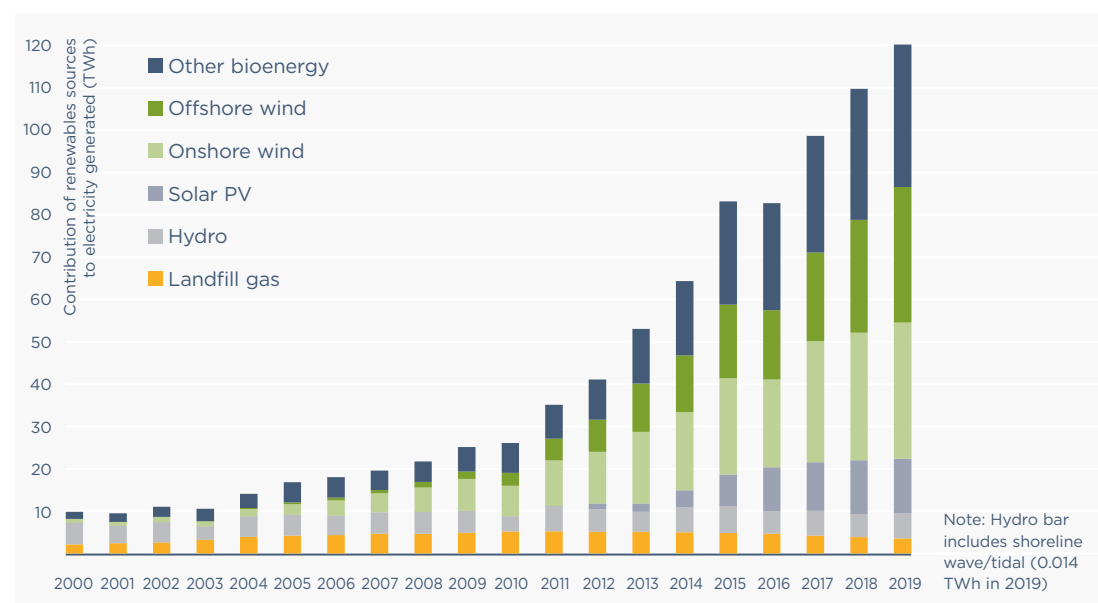
announced a number of new measures to bolster offshore wind. This included a pledge to roll out 40GW of offshore wind generation capacity by 2030, confirming last year's Conservative manifesto commitment to raise the existing target of 30GW.

So, can we get there? The prevailing view is a heavily-caveated yes.

CLEAR SIGNALS WILL TEMPT INVESTORS

Jess Ralston, analyst at the Energy & Climate Intelligence Unit (ECIU), says: "Net zero in the UK now makes financial as well as environmental sense. BP have invested \$1 billion

Electricity generation from renewable sources since 2000 Source: UK Energy in brief 2020, BEIS



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One of the constant themes when we talk to investors and the developer communities is certainty. Certainty drives ambition, appetite”

Paul Dight Addleshaw Goddard

in renewables and their response is going to make people sit up and take notice and see that this is now the future.

Ralston says the UK has the skill and the will to make even the wildest renewables dreams a reality. However, she warns that the missing piece of the jigsaw for this and

other renewables targets is to make the case to investors that the UK is serious about decarbonisation.

"Investors need the long-term view that gives them the confidence they are going to have returns in the near future. We need clear signals of which way the market is going and which direction policy is heading.

"The key to the success of offshore wind was that there were clear long-term signals on what needed to be done and what return investors would get."

The framework for this success came from the 2013 Electricity Market Reform (EMR) and specifically its introduction of the Contracts for Difference (CfD) auctions – the first of which was held in 2014.

Although other forms of renewables took part in the first auction the CfD has been dominated by offshore wind, and with dramatic results. Strike prices have fallen from £140-150/MWh in the first auction to as low as £39.65/MWh in the most recent round last September.

Technologies such as onshore wind and solar are to be readmitted to the auction process for the next round with the intention of seeing a similar impact on costs. Nearly 12GW of electricity could be delivered in the next CfD round following an announcement in October that the government is doubling the size of contracts awarded through the mechanism.

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Renewables have been a success story, but now we need another set of reforms"

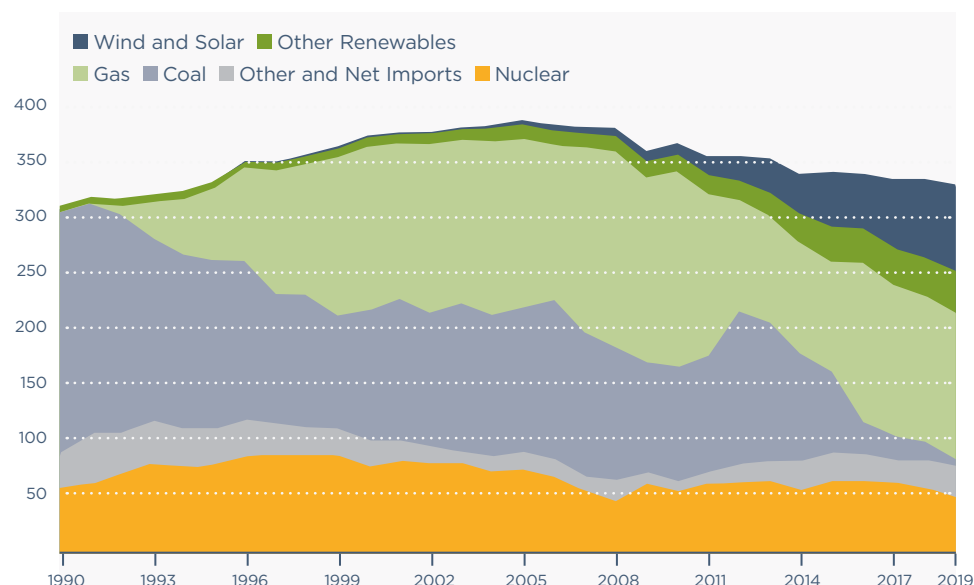
George Day, Energy Systems Catapult

CAN ANYTHING COMPETE WITH OFFSHORE WIND?

Paul Dight, the low carbon energy group lead in law firm Addleshaw Goddard's energy and utilities division, was one of the team that advised the government and the Low Carbon Contracts Company (which manages the CfD and is counterparty to the contracts awarded) on the creation and implementation of the mechanism.

He says: "In theory, the current CfD architecture should still support solar and onshore wind projects. Onshore wind was the runaway winner in the first auction round. Solar didn't do so well. But that auction was specifically for the pot 1 'established technologies'. The last two auctions haven't allowed bids from those pot 1 technologies. So whilst onshore wind and solar would

Electricity supplied by fuel type, 1990 to 2019 Source: UK Energy in brief 2020, BEIS





always need to compete with the other on price, the real challenge for those technologies has been whether government will hold another pot 1 auction. We don't know what the plans are for allowing onshore wind and solar back into the CfD process but there is a strong sense that they will feature next year. The CfD was always designed to be technology agnostic but never truly was because of the two-pot system. It will be interesting

to see if solar and onshore wind are pitched against offshore wind or if there will be two auctions for the two pots. However it is done, it would be nice to think that there will be sufficient room for good solar, onshore and offshore wind projects (as well as other technologies of course)."

Some commentators have suggested moving to yearly or even bi-annual auctions and Dight says this was exactly what was envisaged by

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There seems to be a suggestion that there have been great strides in tackling intermittency. I don't see that"

Rory Connor, Addleshaw Goddard



many when the mechanism was being created.

"One of the constant themes when we talk to investors and the developer communities is certainty. Certainty drives ambition, appetite.

"When the CfD was introduced you felt a real groundswell because there was an expectation and anticipation that there was going to be money behind it. If you weren't successful in this auction round, you could be

successful in the next or the one after in 6 or 12 months. But the gaps were much longer.

"You're left with a huge amount of projects vying for quite a small pot, and then no real visibility as to when the next auction process might be or how much money is going to be available. So, you get lots of projects that don't get a CfD and they need to look for alternatives. Waiting for the next auction process just isn't an option."

For the smaller to medium-sized solar and onshore wind generation projects that previously benefitted from participation in the Renewables Obligation programme before it closed to new capacity in 2017, Dight says interest is turning to corporate power purchase agreements (PPAs) - long-term contracts under which a business agrees to purchase electricity directly from an energy generator either on or off-site.

But Dight cites a tension between PPAs and the CfD process, with many projects suitable for both but having to choose between two very different approaches to structuring an investment package.

DISTORTING THE MARKET

For George Day, head of markets, policy & regulation at the Energy Systems Catapult, this tension is holding many parts of the market in paralysis.

He says: "We need to move away from this very centralised approach to contracting. All the new capacity that comes on the system now has to have some kind of policy underwritten contract. And those central contracting mechanisms distort the markets in many ways.

"They cause problems in that we don't have the price signals and the incentives for a lot of the flexible technologies to come into the marketplace. We have to find a way of migrating away from those kinds of interventions and let the markets work better.

"More granular price signals would provide better, more dynamic pricing and also better locational pricing, because currently we have got one wholesale figure for the whole country."



Day acknowledges that the reforms brought about by the EMR have been "tremendously successful" but says it is time for a new approach.

"Now that we have got the cost of renewables down, there are a whole set of issues around the functioning of the market and the incentives to bring along the investment in system integration that will complement the variable renewables.

"You've seen a lot of focus recently from the government and Ofgem on smart flexibility plans but it doesn't go far enough. It's tinkering around the edges.

"We need some fairly big reforms of the electricity market. As well as carrying on investing in delivering renewables, we need a lot more

investment in storage, flexibility, flexible generation, demand side response and smart controls.

"Renewables have been a success story but now we need a new set of reforms. Fundamentally we need to make price signals much more accurate and decentralise responsibility for contracting."

WHAT ROLE FOR NUCLEAR

A big unknown is what role nuclear power has in the generation mix.

Hinkley C is under construction in Somerset, but there is uncertainty in the market as to how many other projects will be built out - with EDF demanding clarity from Treasury on funding and policy.



I would like to see us take a much more holistic view of our sources of energy and how they will best work together"

James Reynolds, Addleshaw Goddard

THINKING SMALL

A bright hope on the horizon for nuclear is the development of so-called small modular reactors (SMRs). Rolls-Royce is leading a consortium bid to build these SMRs at former nuclear sites in Cumbria and Wales. The consortium also includes Assystem, SNC Lavalin/Atkins, Wood, Arup, Laing O'Rourke, Bam Nuttall, Siemens, National Nuclear Laboratory (NNL) and Nuclear AMRC.

The claim of SMRs is that they can produce affordable energy with a lower carbon footprint than traditional nuclear sites. The reactors will be built from prefabricated parts using advanced digital welding methods and robotic assembly, which are shipped to site and bolted together. Rolls-Royce has said that the company's plan is to get energy on the grid in 2029.

Under Rolls-Royce's plan, between 10 and 15 mini-nuclear power stations could be built across the UK, with each reactor producing 440MW of electricity, or enough to power a city the size of Leeds. Rolls-Royce has said that it would be able to build a power station of this magnitude for about £1.75 billion.

All of our experts agree that there will be a role for nuclear in the net zero pathway. As Rory Connor, partner energy & utilities at Addleshaw Goddard puts it: "There seems to be a suggestion that there have been great strides in tackling intermittency. I don't see that. Certainly not to the point where the kind of technologies that typically provide baseline output are becoming less important. We will continue to need that mix of intermittent and baseline technologies to provide security."

His colleague James Reynolds, partner, head of UK nuclear practice, Addleshaw Goddard, agrees: "20 per cent of our electricity is generated by the current nuclear fleet, most of which are due to retire before the end of the 2020s. In my view it simply isn't realistic to imagine that can be replaced without significant investment in nuclear new build as part of our overall energy mix. I would like to see us take a much more holistic view of our sources of energy and how they will best work together to deliver secure, reliable, low carbon power, judging the cost of nuclear in that context."

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COMMENT **The nuclear option**

It is clear that to meet the country's net zero emissions target by 2050, there needs to be significant additional clean energy generation and that in the UK nuclear energy still has an important part to play. In addition to the 50TWh of electricity produced in 2019, nuclear energy is able to provide the baseload electricity and resilience that so far cannot be delivered through battery storage and demand side response (as seen during last year's blackout).

The government's pledge not to directly subsidise nuclear power plants and the large development and construction costs involved in comparison to other forms of clean energy generation, has led to uncertainty in the sector. This is illustrated by Hitachi's recent withdrawal from Wylfa on Anglesey, off the northwestern coast of Wales. The government's Energy White Paper, due to be published this autumn, urgently needs to address funding delivery models for nuclear projects to encourage investment from the private sector.

In the future small modular reactors (SMRs) may be the solution to plug the gap in baseload electricity, allowing nuclear energy to be delivered for a cost similar to offshore wind, without the intermittency. However, SMRs are a relatively novel concept and are not yet a tried and tested method of delivery. So it is important to see government support for proven nuclear new build technologies now.



Sara Gilmore, partner,
energy & utilities

UNLOCKING THE FUTURE

Energy networks have high aspirations to be part of the green recovery and deliver vital investment, but there are some significant policy and regulatory challenges to navigate on the way.

The opportunities for GB's energy network operators to make significant and varied contributions to a green recovery are myriad. Unfortunately, so are the challenges which might prevent them from doing so - or at least from fulfilling their full potential.

By unlocking network spending power on a wide range of projects that span hydrogen demonstrator projects to EV charging infrastructure; the gas mains replacement programme, to expansions in transmission link capacity, the UK could accelerate its progress towards its 2050 net zero ambition and generate enormous green economic benefits - both direct and indirect.

As this report was being finalised, the Energy Networks Association, at the behest of Ofgem, was finalising its work to put a figure on exactly how much value

projects of this nature could generate in the fairly immediate future in order to fuel a green recovery from the pandemic.

The trade body was reluctant to hazard a ballpark sum before its analysis was complete. But as a glimpse of the investment that could be unleashed, Western Power Distribution (WPD) says that accelerating its planned EV charging infrastructure alone would amount to spending £67 million by 2023.

Before this potential can be unleashed, however, a number of critical policy, regulatory and market challenges need to be addressed. Some of these have been on the industry's wish list for years - like policy clarity on the pathways for decarbonising heat - while others are tied up with controversy around Ofgem's framework for the networks' next regulatory period, RIIO2.

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Darren Pettifer, National Grid

It's a predicament which is weighing heavily on the minds of sector leaders, many of whom are vocal about their passionate belief in the role networks should play in supporting the build back better agenda and catalysing the net zero transition. Enabling a green recovery, they say, now sits at the core of their commitments to be responsible corporate citizens, serving both national and community interests.

"We are a massively purpose-led organisation, and the meaning of that is really enshrined in our responsible business charter, which is coming out quite soon," says Darren Pettifer, head of regulatory finance at National Grid.

"You'll hear John [Pettigrew, National Grid's CEO] and the board talking a lot about what it means to us to be a more sustainable business, a more community focussed business, but above all, what it means to us to be a business which will enable the UK to get to where it needs to get to by 2050."

The arrival of coronavirus has only redoubled corporate focus says Pettifer, and also added to its sense of responsibility for providing industry leadership.

"If we're not doing everything we can to contribute towards a green recovery, then there's a worry that others won't - especially at the moment when so many organisations are worried about their own futures, let alone the future of the UK," Pettifer explains.

It's a sentiment shared by Phil Swift, self-professed green recovery fanatic and chief executive of the UK's largest power distribution company, WPD.

"It all comes down to leadership," he says. "At WPD our focus in recent years has increasingly been on the role we have to play not just to facilitate but to lead progress in the UK's ambitions to achieve net zero carbon emissions. Covid has added a new perspective and urgency to that shift."



The regulatory approach and settlements companies receive, needs to allow them the breathing space to be innovative"

Richard Goodfellow,
Addleshaw Goddard

RIIO2 DRAFT DETERMINATIONS

But alongside other sector leaders, Pettifer and Swift are unabashed in voicing concerns that their good intentions to support a green recovery could be undermined by Ofgem's approach to its RIIO2 price control.

In July 2020 Ofgem published its draft determinations for GB's gas distributions business, transmission companies and the electricity system operators - for all of whom the five-year RIIO2 period will begin in 2021.

While the historically low cost of capital set by Ofgem for RIIO2 continues to play a prominent part in the sector's concerns, the overall message from leaders has been that they fear Ofgem has been so tough in pursuing cost reductions for consumers over the next five years that it has pitched performance targets unfeasibly high. This leaves very little incentive for outperformance and has stripped out work from business plans which networks believe to be essential to sustained reliability as well as to their net zero transition.





Ofgem has pushed a lot of planned work into 'uncertainty mechanisms' in the name of regulatory flexibility. However, especially in light of the need for a green recovery, sector leaders say they believe Ofgem should show more willingness to green light investment in projects to support decarbonisation "ahead of need."

Admittedly, it is transmission owners like National Grid which have been especially stung by the draft determinations owing to the scale

and number of projects which Ofgem has pushed towards uncertainty mechanisms. Pettifer explains that in addition to the concerns this is causing about delayed action on the net zero goal, it also exposes transmission companies - and National Grid Electricity Transmission in particular - to a high level of cash flow risk due to delayed revenue returns.

For power distribution companies, meanwhile, the current brouhaha over gas and transmission settlements is a portent of things to come - they are due to submit business plans next year for their own RIIO2 period, which begins in 2023.

WPD's Swift says he has been watching developments "with interest", with an especially keen eye on how Ofgem's position on the extensive use of uncertainty mechanisms may alter.

"The possibility that companies will be required to check back every 12-18 months to seek approval for major investment schemes only serves to heighten uncertainty and slow investment at a time when the duty to deliver a green economic recovery rests firmly with us all," he comments.

Ofgem, of course, has been keen to distance the debate over the draft determinations from its work with industry to identify what investment could be accelerated in the interests of a green recovery. The regulator's director of networks Akshay Kaul says: "We're consulting on our next price controls, but we and the industry must act fast to power the green recovery. That's why we want network companies to seize the opportunity to invest now.

"Ofgem and industry have demonstrated throughout the crisis that we can work at pace for consumers at times of significant economic change, and we want to bring that pace to the energy transition. We have asked the Energy Networks Association to lead a project to identify investment that can be accelerated within the existing price controls."

Ofgem's final determinations for gas and transmission are due out in December this year. But even if the regulator shifts significantly, there are other issues too which networks need to overcome to play a full role in the green recovery.

HYDROGEN CLARITY AND GAS MAINS REPLACEMENT

For gas, there are key policy questions to be answered around the role of hydrogen in the provision of low carbon heat for both industrial and domestic applications which stand in the way of any major asset overhaul and construction initiative. (Read more in Chapter 6)

In the meantime, the industry also faces some significant challenges around the completion of the long-running iron mains replacement programme, a multi-billion-pound initiative due for completion in 2030. While the programme is primarily driven by a need to shore up the safety of the gas network it also lays important foundations for the future of the gas grid by preparing networks for the possibility of carrying different, greener gasses, including hydrogen. And it is a source of work for multiple engineering and technical professionals in network supply chains.

But the 'production line' of the gas mains replacement programme took

a big hit during lockdown when the industry unanimously decided to call it to a halt (except in high risk cases). This was a necessary step under the circumstances, but it leaves the industry today with two major challenges. Firstly, restarting the programme and catching up in an efficient way in the context of continued local lockdowns which mean projects could be disrupted at any moment. And secondly, maintaining the good will of customers and communities who are highly sensitive to having newly regained freedoms disrupted by major street works projects.

One gas networks CEO says the latter issue is a particular concern. “We have to be really sensitive,” he says, “especially about work in high

streets where businesses that have just been allowed to reopen their doors are desperate to attract all the footfall they can. The last thing they want is us coming and digging up the pavement outside their shop.”

TRANSMISSION REINFORCEMENT

For power transmission companies, the green recovery challenges beyond RII02 centre on uncertainty around decarbonisation policy, misaligned government bureaucracy and Brexit.

In the case of the former issue, there's solace to be drawn from the fact that things are moving fast. For instance, the announcement that government may bring forward its



end date for the sale of new petrol and diesel vehicles could provide the required justification for heavy investment in network reinforcement to support fast EV charging infrastructure along motorways. (Read more in Chapter 4.)

The latter two points are real bugbears, however, according to

National Grid's Pettifer who worries that key projects to allow for growth in the connection of offshore wind as well as increased interconnection could remain caught in the gears.

The Eastern Link project to expand transmission capacity between Scotland and England is a prime example, says Pettifer. “This is exactly the kind of project which could be brought forward and accelerated. We want to be starting work next year and the first tranche of work for the project represents £600 million - and that's just from our side. Scottish Power would be investing a similar amount.

“However, at the moment our challenges are not just the draft determination, but also the amount of time it takes to get a project of this scale through planning. Then too, it's likely the East Coast is going to be hit with a lot more offshore wind development and the more we can allow for that now, with the early work on Eastern Link, the more efficiently we can accommodate it.”

With this in mind, Pettifer says policy work to support the creation of a so-called “offshore grid” should

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Phil Swift, CEO WPD

be accelerated. He also argues that Eastern Link could be a good demonstrator for the concept.

Another challenge for Eastern Link and similar projects in the pipeline is legislative delay over the introduction of competitive tendering for onshore transmission schemes via the proposed CATO (Competitively Appointed Transmission Owner) mechanism.

CATO, which is designed to build on the success of its offshore equivalent, OFTO, was meant to come into force in 2017. The distraction of Brexit means the required legislative changes to allow for it have been continuously pushed down government's to do list, causing delay and inefficiencies.

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We're consulting on our next price controls, but we and the industry must act fast to power the green recovery"

Akshay Kaul, Ofgem

DISTRIBUTION REINFORCEMENT, LOCAL ENERGY, AND FLEXIBILITY

For power distribution networks, which have more time to run within their current price control, there is more flexibility for companies to bring forward key investments to boost green recovery, given the right regulatory go-aheads.

WPD's Phil Swift says it has identified around £200 million of net zero-friendly investment which could be accelerated, "with an initial £67 million brought forward within the current RIIO-ED1 regulatory period. But we will need the support of the regulator to do so." In particular, Swift says he needs Ofgem to allow for a "minor modification to the allocation of costs which will enable a greater portion to be shared across our customer base."

In the scramble to bring forward investment for net zero, it's important the industry does not lose sight of the role energy flexibility has to play in delivering a cost-effective energy transition for consumers and that the potential for more dynamic flexibility



markets to underpin a growing digital green economy is also recognised.

In recent years, innovation projects run by a number of DNOs have proven that energy flexibility - which uses smart technologies to modulate supply and demand - can provide enduring solutions to network constraints in areas where the impact of low carbon technologies is more predictable. There has also been some significant progress made in the past year or two in matching up the procurement of flexibility services at a national and local level, creating greater confidence among potential market players.

Reflecting on the potential role of energy networks in the green recovery in the round, Richard Goodfellow, partner, head of infrastructure, projects

& energy at Addleshaw Goddard, expresses considered optimism.

"There are still a lot of unanswered questions for networks around relevant policy decisions, and there still does not appear to be an obvious owner of responsibility in government for delivering net zero - which means that misalignments between the priorities of different departments persist and could hamper a green recovery.

"But this landscape is moving fast - recent announcements around EVs in particular have been helpful in boosting market confidence about the road to decarbonisation of transport and will underpin the justification for an accelerated wave of investment at both transmission and distribution levels to support EV adoption."

While the policy framework for decarbonising heat (and heavy goods transport), is less clear, Goodfellow also notes that the long-promised Energy White Paper, along with the upcoming publication of the Buildings and Heat Strategy, should soon provide firmer foundations on which networks can build business cases for accelerated investment in underlying infrastructure projects.

Policy advances like this do need to be met with a regulatory environment which is both agile and appreciative of the conditions needed for innovation, notes Goodfellow. “Ofgem undoubtedly has an unenviable task in balancing the need for affordability - all the more sensitive right now - with the need to support the significant investment needed for net zero.

“Putting the debate around the RIIO2 draft determinations aside for the moment, the general observation I would make is that the regulatory approach and settlements companies receive needs to allow them the breathing space to be innovative. If there is an overwhelming focus on bringing down business as usual costs, it is

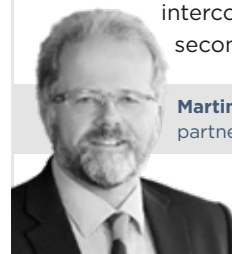
inevitable that organisational resource and talent will constantly find itself drawn back towards a focus on business as usual operations and that leaves very little space for innovation.”

Notwithstanding this challenge, however, Goodfellow is clear he expects to see GB’s energy networks playing a prominent and fundamental role in the UK’s green recovery from coronavirus. “There remain huge policy and regulatory challenges before networks can play the role they want to in this recovery. However, I remain confident that they will barge their way to the table in order to do so. The skills are there, the knowledge is there. Investors stand behind the reinforced purpose that companies see for themselves in this context. Essentially, they see it as non-negotiable that there will be a green recovery, and they are determined to be a part of it.”

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COMMENT **Let’s open a new window for interconnectors**

Time for an update – let’s call it windows 3.0. That’s not another piece of software from California. This is a different window altogether – it concerns interconnectors. Interconnectors are high voltage DC cables which allow for large quantities of electricity to be transferred rapidly between markets. If the wind is not blowing in one part of Europe (or the sun shining), it will be elsewhere. Interconnectors are fundamental to making renewables work better. The EU established three tests to determine when further interconnection is needed. First, if the spot price differential is more than €2/MWh between relevant countries or bidding zones; second if renewables are more than 30 per cent of the generation mix; and third, if capacity of interconnectors is below 30 per cent of peak load. Trigger one of these three tests and further new interconnection is needed ‘urgently’. All these tests have been triggered between the UK and several EU states. Ofgem, meanwhile, has launched a review of the cap and floor policy concurrently with the offshore transmission review by BEIS. However, a change to the regulatory revenue mechanisms for either offshore transmission or interconnectors will unnerve investors, delaying projects and increasing bills for consumers. The UK is already behind milestones to achieve net zero by 2050 and the need for new interconnection is apparent from the number of projects registered on National Grid’s TEC register for assessment in a third window. Regardless of Brexit, further interconnectors are clearly needed. It’s five years since the second window for the UK’s cap and floor mechanism for interconnectors. Time then surely for windows update 3.0.



Martin Stewart-Smith
partner, energy & utilities

GETTING INTO GEAR



There's no shortage of ideas and innovation for transitioning to low carbon cars. But can we move fast enough?

If government brings the ban of petrol and diesel cars forward to 2030, as is being widely trailed, it would certainly get the seal of approval from corporates in the energy sector. Scottish Power, SSE, and Centrica are just three organisations that have been pressing for an acceleration of the deadline as a means of stimulating the green economy and facilitating the zero carbon transition.

In February 2020 government said that the ban on the sale of petrol and diesel cars and vans and, crucially, hybrid vehicles, would be brought forward from 2040 to 2035 at the latest. The 2040 date introduced in 2017 was criticised as cutting it close to guarantee all combustible engines cars were off the road by 2050. But if the decision was made to end the sales of new petrol and diesel vehicles by 2030, that would

“

It's such a complicated matrix of things that all need to be resolved, and that also requires money”

Will Smith, managing associate, energy & utilities, Addleshaw Goddard



put the UK ahead of France, which has a 2040 deadline, and in line with Germany, Ireland and the Netherlands. Norway will bring in a ban in 2025.

While many in the sector are supporting an early ban, confident that it would send out all the right signals and, with the right incentives, would focus effort and investment, no one believes it will be easy. What makes the low carbon transport transition particularly difficult is that there really is no silver bullet. All the constituent parts are interdependent and need to be developed in parallel. As Philip New, chief executive of the Energy Systems Catapult and chair of the government-backed EV Energy Taskforce, remarks: “It has implications for the future design of electricity markets and the upstream capacity that will need to be put in.”

It's also the proverbial chicken and egg. Consumers and manufacturers need more and more reliable infrastructure to be put in place to overcome consumer 'range anxiety'; infrastructure investors want to see more affordable cars from manufacturers and greater appetite from consumers. That's at the very basic level. To bring those into equilibrium requires massive technology investment along with manufacturers to put in place new supply chains, and some say, greater financial incentives to get consumers fired up. On the other side, we need more charging infrastructure, which

requires greater connection capacity from the networks, balanced with more flexibility including more mega battery storage and vehicle-to-grid charging capability (at the moment it's very expensive and not necessarily a commercial proposition), and a better solution for overnight charging for the 30 per cent or so of car owners who do not have access to off-street parking.

What's more, for a seamless transition, any EV needs to be able to be plugged into any public charge point with the electricity that it uses



It definitely feels like the government response has been positive since the report was launched and there's a lot of good work underway"

Philip New, chair EV Energy Taskforce

being paid for in a way that is both transparent and fair for the consumer. This will require a standard unit of charge (for example p/kWh) to mirror how drivers of conventional vehicles

refuel today where downloading an app or buying a charge card are not necessary and which will require greater interoperability and common standards. The 2019 EV Energy Taskforce report set out 21 areas that needed to be addressed.

Will Smith, managing associate, energy & utilities, highlights another thorny problem, that of establishing a second-hand market. "If battery technology develops at pace for new cars, those on sale today will struggle to retain their value," he points out.

CHARGING AHEAD

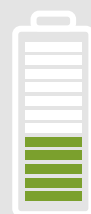
Government has set out its rapid charging ambitions for England's motorways and A roads. It says rapid chargepoints can deliver around 120-145 miles of range in just 15 minutes for a typical electric vehicle – three times faster than those currently available.

BY 2023



aiming for
SIX HIGH-POWERED, OPEN ACCESS CHARGEPOINTS

BY 2030



aiming for there to be around
2,500 HIGH-POWERED CHARGEPOINTS

BY 2035



expecting around
6,000 HIGH-POWERED CHARGEPOINTS

The Society of Motor Manufacturers and Traders (SMMT) has expressed concern over bringing forward the ban to 2030, warning neither industry nor charging infrastructure or consumers would be ready for that date. The trade body also warned that pulling forward the phase-out date by a decade to 2030 could have a devastating impact on the UK automotive industry and jobs, with the equally unintended consequence of undermining sales of today's low emission technologies,

which are needed to make environmental improvements now.

"It's such a complicated matrix of things that all need to be resolved, and that also requires money," observes Smith. "I remain open minded whether 10 years gives us long enough to get it all in place."

Vincent de Rul, director of EV Solutions at EDF, also points to the scale of the challenge: "Development of new cars, batteries, distribution network operator capacity, charging - we need

to bring all of these together to crack the EV rollout. That's hard to do, but there is certainly an appetite for it. Everyone has realised that they can't provide the solution on their own."

And that perhaps is at the heart of why the sector is bullish that an accelerated deadline is the right ambition. Consumers too are warming to it. By September, EVs accounted for 6.7 per cent (66,611) of all cars registered in the year-to-date. That is up from just 2.2 per cent during the same period in 2019.

TASKFORCE RECONVENED

In an equally positive development for the sector, New says that he has been asked to reconvene the EV Energy Taskforce. "We'll continue to draw together the multiple actors in the space to be a sort of clearing house to connect people and provide coherent feedback to policy makers and government about the progress of the different sectors," he explains.

"Our role is also to provide an independent view of how proposals in the original report are being actioned - and, where they are not progressing, set out actions - so in essence monitoring what is going on."

New adds: "It definitely feels like the government response has been positive since the report was launched and there's a lot of good work underway." He mentions the development of British Standards for smart appliances, including smart chargers as well as the work of the Energy Data Task Force on handling and sharing data "which crosses into our recommendations."

He also welcomes the introduction of the £500 million package of



measures to include the rapid charging fund announced in the March 2020 budget, as a means of boosting confidence amongst consumers. The purpose of the RCF is to fund a portion of grid connection costs at strategic sites across motorways and A roads where upgrading connections to meet future demand for high powered charge points is prohibitively expensive and uncommercial. The RCF alone is unlikely to bring new entrants into the market, as many of those sites will already be sewn up, remarks Smith, but like New, he acknowledges it could boost confidence amongst consumers if it results in faster and more reliable charging possibilities at more strategic sites up and down the country.

New says that the 2030 deadline would be challenging, but that we are running out of time to meet the 2050 net zero target. The reconvened task force will be looking at what the major blocks are to the EV charging roll out. In particular New would like to see more local authorities and distribution network operators (DNOs) coming together to create local area network plans that can provide evidence-based



decision making around the need for connection capacity to be bolstered.

Overall, there is no shortage of electricity capacity to cope with a surge in EVs. National Grid project director Graeme Cooper says that even if we all switched to EVs overnight, demand would only increase by around 10 per cent. "So, we'd still be using less power as a nation than we did in 2002 and this is well within the range of manageable load fluctuation," he says.

The key is making sure load on the system is spread and does not add to the 6-8pm peak when people are finishing work. Hence the need for more consumer pricing incentives.

“

Bringing forward the ban would have big implications for the networks if EV charging happens in an uncontrolled way”

Dr Jeff Hardy Grantham Institute, Imperial College

NETWORK TENSION

Capacity of the networks to facilitate charging is another matter. This is providing a source of tension between Ofgem and DNOs. Networks have been making the case to invest in boosting capacity, but Ofgem needs to balance any such spending plans with affordability to consumers.

Dr Jeff Hardy, a senior research fellow at the Grantham Institute on Climate Change and the Environment at Imperial College London, says: "Bringing forward the ban would have big implications for the networks if EV charging happens in an uncontrolled way. And so it would have to go hand in hand with the right price signals – that is, people being incentivised to charge up at off-peak times.

"It also requires strategic investment in networks and will form a key discussion plank in the RII02 discussions, with networks arguing that if we want to stimulate EV take up, Ofgem should allow them to invest now. But Ofgem will be nervous about giving them money upfront without strong evidence on EV growth. More likely there will be some upfront funding together with an uncertainty mechanism, like a volume driver."

EDF's Vincent de Rul agrees with the need to take a balanced view: "Regulation should encourage investment – but there needs to be the right investment at the right time, and it's also about encouraging flexibility to reduce the investment necessary. There could be local flexibility that is available and we need to draw on that. There is not a global solution."

EDF is investing heavily in a number of areas connected with EVs. In November 2019 it acquired battery storage and EV charging infrastructure firm Pivot Power in a bid to bolster its position in both markets. In February it boosted capacity in the home charging market with a majority stake in Pod Point, one of the largest EV charging companies in the UK, as part of a newly-formed joint venture with Legal & General Capital. Pod Point has more than 70,000 charge points in the UK and more than 10,000 on commercial

premises and is currently in discussion with Tesco and Lidl to install them there.

Meanwhile, EDF is offering consumers a one stop shop to switch to EVs - leasing of vehicles, installation of home charging points and a smart tariff (which de Rul says is the first stage to a time of use tariff).

The race is certainly on to deliver the biggest revolution in transport since the development of the motor car. But as de Rul, himself firmly behind the 2030 deadline, notes: "We have to deliver. We have no choice."



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COMMENT **The trouble with EVs...**

When you speak to most people about EVs, the response tends to be quite positive. The majority of car owners understand that diesel and petrol engines are big emitters of carbon and that it therefore makes a whole lot of sense to go electric. But whilst the number of new electric vehicles being purchased is showing a pleasingly steady incline it seems there are still too many reasons to not make the change. Maybe it's down to cost. Maybe it's the fear of running out of charge before reaching the next chargepoint, or that the chargepoint won't work when you get there. Maybe it's because you want a car with a battery that can cover 600 miles on a single charge for the one occasion a year you travel anywhere near as far as that. The trouble with EVs... is us.

Embracing electric requires a change of mind-set and that's the real challenge. Buying a car is a big investment and not one that we do every day. So we need to make the case for electric irresistible. That means strong policy direction at a central level with positive action at local levels, more funding for chargepoints and more chargepoints. The charging infrastructure must provide a holistically designed network offering a choice of charging speeds - including super-fast charging to reduce dwell times to a minimum where that's needed, overcoming cost and capacity issues on the grid, universally viable on-street charging solutions which don't clutter our pavements and simple and efficient charging products. And of course a range of reliable, affordable, and exciting, cars to choose from. When all of that is in place, next time it's time to think about a new car, you wouldn't think about choosing anything else would you?



Paul Dight, partner, head of low carbon energy and electric vehicles

TECHNOLOGY ADVANCING AT RAPID PACE

Electric vehicle technology is advancing fast, with innovation coming in all areas, from longer range batteries to charging infrastructure, and much collaboration across the sector to share costs and risk. Here Catherine Fearnhead, partner, electric vehicles highlights three big ideas.



Image courtesy of
Trojan Energy Ltd

VOLKSWAGEN

A key breakthrough is the new battery-powered electric vehicle being developed by VW - which will be sold to other OEMs, thus spreading costs and risks. The German manufacturer has invested in QuantumScape, a Californian start-up working on solid-state batteries, which it hopes will lead to cars using pure metallic lithium in their batteries on the road by 2025.

Greater energy density is the most important driver of solid-state lithium metal batteries. According to VW: "A solid-state battery would increase the range of the E-Golf to approximately 750 kilometers compared with the present 300 kilometers. This battery technology has further advantages over the present lithium-ion technology: higher energy density, enhanced safety, better fast charging capability and — above all — they take up significantly less space."

TROJAN ENERGY

In the UK, start-up company Trojan Energy is trialling under-pavement electric vehicle chargers that are only visible when a car is charging (see above). The innovation is aimed at inner-city car-owners without a driveway or garage, and would minimise street clutter.

A trial project in Brent and Camden, north London, will soon see 200 chargers installed kerbside. Each charger comprises a charge point slotted into the ground, and a "lance" which drivers insert into the charge point to start to recharge. Up to 18 chargers can operate from one electricity network connection. The system will charge cars at up to 22kW and offer smart charging capabilities to allow users to charge when electricity is cheapest.

"Our new technology will give drivers who park their cars on-street the confidence to switch to EVs and accelerate the transition to net zero," says Ian Mackenzie, Trojan Energy's chief executive officer.

LIBERTY CHARGE

Liberty Global joined forces earlier this year with Charging Infrastructure Investment Fund, a dedicated infrastructure fund backed by the Treasury, to create a 50:50 JV known as Liberty Charge. Liberty Charge utilises Virgin Media's delivery capabilities, existing connectivity network and builds on its trusted relationships with local authorities to develop public charging infrastructure points across the UK. Following on from Liberty Global's Virgin Media Park and Charge (VPACH) project - a partnership with Innovate UK and a 19 strong consortium - Liberty Charge aims to deploy 1,200 charging sockets in towns and cities in 2021.

5 CUTTING EMISSIONS IN BUILDINGS



GETTING WARMER

Energy efficiency improvements will be essential to meet the 2050 zero carbon commitment. Can the latest government initiative prove a turning point in persuading consumers to insulate their homes?

It sounds like a no brainer. As well as cutting carbon emissions, improving the energy efficiency of the nation's buildings could reduce hard-pressed consumers' energy bills while transforming the health and well-being of the nation's most fuel poor households – and create thousands of jobs around the country.

And yet efforts to upgrade the energy performance of the UK's building stock have not made the kind of progress many believe is necessary.

Prime minister Boris Johnson joked last month, in his address to the UN General Assembly, that the UK is not “lagging on lagging”. But that is exactly what critics of the country's performance say it has been doing for many years. The flagship Green Deal, introduced by the coalition in 2012, was the highest profile failure. In this scheme households would pay for improvements on the savings to the energy bills, but the numbers did not stack up for most consumers, and it was scrapped three years later.

According to a report published in September by Citizens Advice, the energy efficiency of 17 million homes

“

If we can make a success of this scheme in the challenging time period, it will open the door for further support for decarbonisation policies in the home”

James Griffiths, Association for Decentralised Energy

must be upgraded in order to meet net zero targets for England alone.

According to recent figures, just 15 per cent of UK dwellings meet the Energy Performance Certificate (EPC) band C standard, which the government states “as many homes as possible” must meet by 2035. In the commercial sector, this ask is greater. A consultation put out by government which closed earlier this year is demanding that all non-domestic privately rented properties attain a Band B EPC (see page 25).

Heating the nation's building stock still accounts for around a third of emissions, according to recent BEIS department figures.

But the pace of improvement has decelerated in recent years. Funding for the ECO (Energy Companies Obligation), until recently the government's flagship energy efficiency programme, was slashed two years ago from the £1.3 billion per annum set under the coalition government, to £640 million.

Emissions from buildings did fall by 14 per cent between 2008

and 2018, but the bulk of this drop occurred during the early part of that decade and stemmed largely from improvements in efficiency of boilers rather than the building stock.

Figures published in August 2020 showed that the government met its target of 1 million energy efficiency measures fitted over the five years ending April 2020, but only just.

EFFICIENCY RISES

However, recent months have seen energy efficiency head up the agenda – with widespread lobbying from all corners of the energy sector calling for investment in energy efficiency measures as their number one priority to build back better. The call was answered in July's Summer Statement, Chancellor of the Exchequer Rishi Sunak unveiled the £2 billion Green Homes Grant voucher scheme.

The voucher scheme was the centrepiece of a £3 billion package of measures, which also included £1 billion for upgrading non-domestic public buildings such as schools and hospitals with insulation and green heating technology to make them more energy efficient.

This £3 billion worth of investment, the bulk of which is meant to be spent by the end of the current financial year next April, will run alongside the ECO, which is due to continue until 2028.

Tom Davies, a BEIS official, said during a presentation during Warm Homes Week virtual conference in September, that Green Homes Grant measures will deliver benefits

worth £300 per annum in bill savings to the average participating household, rising to as much as £600 for those with poor existing insulation or larger households.

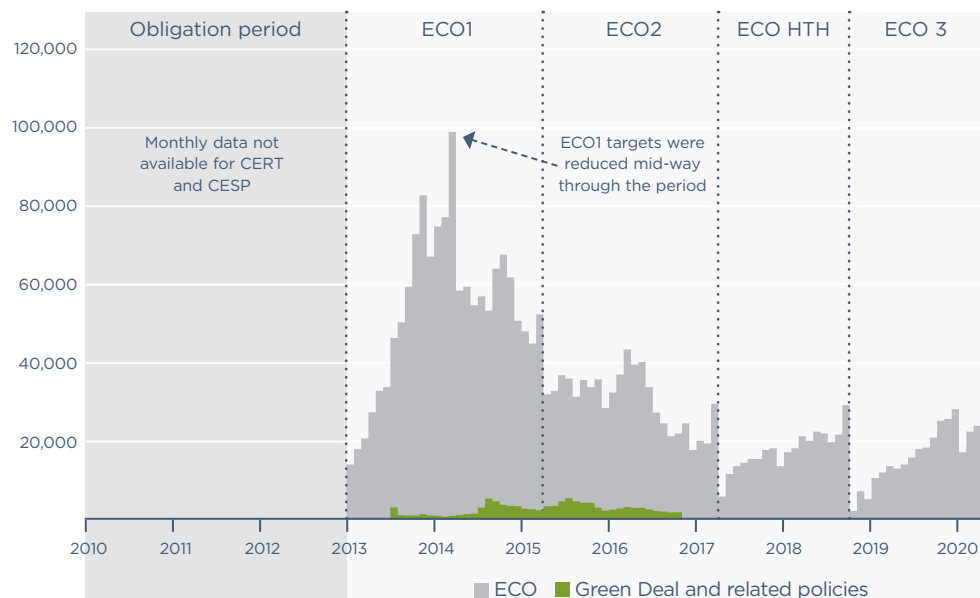
However, the underlying anxiety for many energy efficiency veterans is that this autumn's £3 billion worth of largesse will turn out to be a one-off cash boost rather than the first step in a truly long-standing effort they agree is required to tackle the issue.

Installers and materials manufacturers are understandably wary having had their hands burnt by the 'stop start' approach taken by the government to energy efficiency over the past decade.

Figures, contained in the Committee on Climate Change's latest progress report published earlier in 2020, show that the annual number of domestic energy efficiency installations has shrunk to an eighth of their level in 2012 when the government replaced a previous Labour-era grants programme with the Green Deal loans initiative that many home-owners found too complex.

Citizens Advice has warned that the government must avoid an energy efficiency 'boom and bust' with its latest set of initiatives.

Energy Company Obligation and Green Deal Measures installed, by month



Source: Citizens Advice

THE GREEN HOMES GRANT EXPLAINED

- Typical owner occupier or landlord will be able to secure up to £5,000 in grants towards the cost of installing energy efficiency and low carbon heating measures.
- Poorer households, including those on benefits and low-income workers in receipt of tax credits, will be able to recoup the full cost of measures up to a higher cap of £10,000.
- In order to qualify for grants, households must install at least one 'primary measure', which it specifies are insulation, heat pumps or solar thermal devices.
- The government claims the programme will upgrade more than 600,000 homes across England, while creating 100,000-plus jobs.
- £500 million allocated to two local authority schemes – £200 million is being earmarked for the Local Authority Delivery scheme for shovel ready projects councils can roll out immediately and £300m million to Local Energy Hubs that can be spent beyond the end of this financial year.

Follow up funding may rely on how successfully the current Green Homes Grant programme is delivered, says James Griffiths, energy efficiency policy officer at the Association for Decentralised Energy.

"If we can make a success of this scheme in the challenging time period, it will open the door for further support for decarbonisation policies in the home," he says.

LACK OF DETAIL

Supply chain companies have been frustrated though by the lack of detail available from the government about how the voucher scheme will work, like details about how installations will be paid for, says Griffiths: "Our members tell us that their phone has been ringing constantly and people really want to get this work done but at the moment they are unable to convert these quotes into a pipeline of work.

"If they have to wait a while to receive payment, it will affect how businesses pitch for this work."

Such lack of detail is particularly pressing due to the government's stipulation that work funded by Green Homes Grant vouchers must be completed and paid for by the end of March.

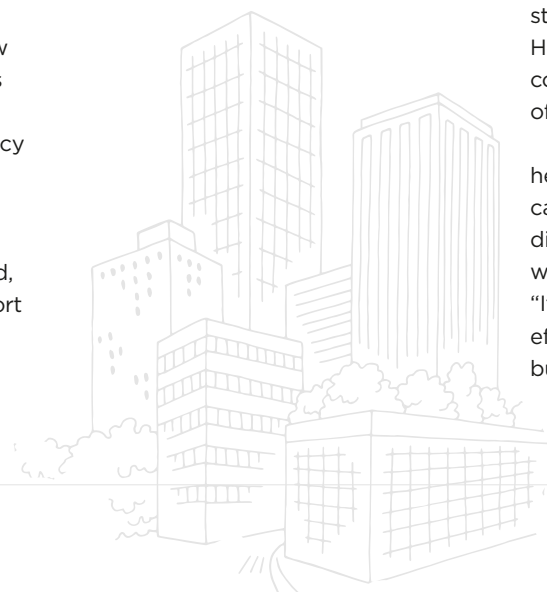
This deadline will be a particular headache if a resurgence in coronavirus cases during the winter makes it more difficult for tradespeople to carry out work in people's homes, says Griffiths: "It is important to show that energy efficiency can deliver: industry wants to but we can't at the moment."

“

The outcome of the consultation is awaited but the clear direction of travel for owners of both existing and newly developed non-domestic properties is that they need to be proactively considering and implementing more energy efficient measures"

Peter Mason, Addleshaw Goddard

Davies told the Warm Homes Week event that BEIS will be setting out guidance to ensure consumers are not liable for costs due to unforeseen circumstances that lead to work being delayed. Griffiths says a slow start to the Green Homes Grant scheme may bolster the case for the government to make fresh commitments to energy efficiency in the one-year spending review, which Sunak has said will take place later this autumn.



"If we are looking at slower start that shrinks delivery window to closer to five months and highlights the case for a longer-term commitment to an energy efficiency programme. As time goes on, we need to know what happens next" he says, adding that the prospect of a longer pipeline of work will give the industry "real confidence" to employ people in full time jobs.

Energy minister Kwasi Kwarteng addressed these concerns when he told Warm Homes Week delegates that the funding announced so far "won't be the end of government programmes to upgrade the housing stock".

He added that it is his job to remind colleagues in the Treasury of the Conservative party's election manifesto commitment to spend £9.2 billion on energy efficiency during the lifetime of the current Parliament.

As the colder evenings draw in and many are forced to spend more time indoors, the sector wants to get on with energy efficiency work as soon as possible, says Griffiths: "The last thing we want is people locked down in cold homes in the winter."



MORE STICK THAN CARROT FOR NON-DOMESTIC BUILDINGS

Whilst government is offering sweeteners to households to kickstart greater energy efficiency in the residential sector, the approach in the non-domestic sector is rather more stick than carrot, explains Peter Mason, partner, real estate, Addleshaw Goddard. Government is looking for businesses to reduce their energy use by at least 20 per cent by 2030.

The government ran a consultation between October 2019 and January 2020 in connection with its proposal to amend the

2015 Non-Domestic Private Rented Sector Regulations to set a more ambitious target. The government's preference, says Mason is that landlords of all non-domestic privately rented properties in England and Wales will have to ensure that their properties achieve a minimum energy efficiency standard of an Energy Performance Certificate band B by 2030. This is provided that carrying out the works to the property required to achieve such energy efficiency standards is deemed cost effective by

meeting the Government's seven-year payback test.

Mason says: "The outcome of the consultation is awaited but the clear direction of travel for owners of both existing and newly developed non-domestic properties is that they need to be proactively considering and implementing more energy efficient measures.

He adds: "Alongside the Government's steps to drive this change, sustainability and energy efficiency is now also much higher on the agenda of many boardrooms and

so landlords are increasingly faced with prospective tenants that are keen to understand the energy efficiency of a building.

"Failure to act will likely result in landlords facing the value of their properties being eroded. This combined with the risk of reduced demand for retail and office premises following changes to shopping habits and working practices that have been expedited by coronavirus pose some real challenges for landlords of non-domestic properties."

COMMENT

Opportunity knocks

Studies have shown that in the UK, buildings are responsible for around 40 per cent of greenhouse gas emissions and almost 70 per cent of electricity consumption and related emissions. The reality is that for the 2050 zero carbon commitment to be achieved it will be essential for the UK's building stock to become significantly more energy efficient.

This will involve both efficiency measures being applied to existing buildings as well as the real estate and construction industry embracing new technologies and methods of construction, whilst, for example, adapting to changing demands for office space and affordability challenges in the residential sector.

Whilst new energy efficient development schemes, sustainable and modular methods of construction and district heating networks grab the headlines and drive change in the industry, equally important is improving the energy efficiency of the UK's aging building stock with, for example, improved glazing, LED lighting and insulation together with localised energy generation technology such as solar and ground source heat pumps. There are significant opportunities for the real estate and construction industry to embrace both across the residential and commercial sectors over the next 30 years if the 2050 commitment is to be achieved. Those that adapt and supply buildings and products

that meet the changing demands and awareness of the population, and businesses with regards to climate change and energy efficiency will be best placed to succeed.



Peter Mason, partner, real estate, Addleshaw Goddard
Sarah Baillie, partner, planning and infrastructure consenting, Addleshaw Goddard

CAN SMART METERS REDUCE DEMAND?

Alongside changes to the physical fabric of the buildings we live and work in, the government sees behaviour change as another key plank to achieving improved energy efficiency. And a key driver for this is the installation of smart meters.

BEIS hopes that increased smart meter uptake will help households become more aware of their energy consumption and therefore take steps towards reducing it. The personalised insights thrown up by smart meter consumption data could provide consumers with prompts that could lead them to make improvements to their homes, it said in a report issued last year.

Smart meters can be a tool to track the performance of energy efficiency and heating measures, according to a submission by Smart Energy GB to the ongoing environment audit select committee.

The problem is that that the £11 billion smart meter roll out has been beset with problems and the deadline for offering all customers a smart meter has been put back to 2025 from the original date of 2021. There are now 21.5 million of smart meters installed in Britain, with a total of five million of those, the second-generation SMETS2 smart meters.

CUTTING EMISSIONS IN BUILDINGS

5

THE TOP 10 AREAS IN ENGLAND FOR SMETS2 TAKE-UP

- 1 **Tewkesbury, Gloucestershire**
(36 per cent)
- 2 **South Derbyshire**
(36 per cent)
- 3 **Wokingham, Berkshire**
(35 per cent)
- 4 **Hart, Hampshire**
(35 per cent)
- 5 **Rugby, Warwickshire**
(35 per cent)
- 6 **North West Leicestershire**
(35 per cent)
- 7 **North Kesteven, Lincolnshire**
(35 per cent)
- 8 **Rushcliffe, Nottinghamshire**
(34 per cent)
- 9 **Mansfield, Nottinghamshire**
(34 per cent)
- 10 **Newark and Sherwood, Nottinghamshire**
(34 per cent)

Source:DCC/ONS

6 LOW CARBON HEAT AND THE ROLE OF HYDROGEN

GETTING THE RIGHT BLEND

There's a lot of new pilot projects exploring how to decarbonise heat, which accounts for more than 30 per cent of all the UK's greenhouse gas emissions – but what it's crying out for is a clear strategy.

Filling the UK's gas pipelines with hydrogen instead of natural gas is a concept that's simultaneously simple to grasp and mind bogglingly complex. It involves creating a new end to end energy system, from production to consumer, with new regulatory controls, commercial incentives and contractual mechanisms all supporting the vast new infrastructure needed to produce hydrogen at scale. The existing networks represent the bit in the middle – and so far there's not much else to see.

Instead, there's a patchwork of pilot projects, research trials and demonstrators, such as HyNet, HyDeploy and H100. Together, they're exploring the feasibility of swapping hydrogen for the natural gas supplied to 84 per cent of UK homes, looking at how hydrogen behaves from the transmission and distribution levels down to domestic boilers and cookers, how the public will react, and how – as a non-intermittent energy source – domestic demand or long-term storage can balance out a hydrogen oversupply in the industrial sector.

The research programme operates under the umbrella brand of 'Gas Goes Green', facilitated by the Energy Network Association to help inform government-level policy decisions. At Cadent, director of strategy Dr Angela Needle stresses that the patchwork is in fact a co-ordinated quilt. "We have all got a bit of the ultimate answer, to whether it is safe and technically feasible. After all, we're spending consumers money, and we don't want to duplicate effort."

Antony Green, project director for hydrogen at National Grid, agrees with that assessment. "All the projects are talking to one another and working really collaboratively, they're patching on to each other's projects and co-funding them together."

“

It's important to have a clear line of sight so that hydrogen becomes investable"

Angus McIntosh, SGN

But because hydrogen scale-up involves a domino sequence of interconnected decisions, there's also a collective sense of a sector waiting for something to happen. Put simply, the Health and Safety Executive (HSE) is waiting for confirmed safety data, BEIS is waiting for HSE sign-off, industry stakeholders are waiting for clear BEIS policy signals, and investors are waiting until there's a guaranteed consumer and industrial demand. "BEIS will only make those policy decisions once safety is satisfied by the trials. So the trials are very relevant to production happening and demand getting underway," says Green.

NEED FOR A HYDROGEN STRATEGY

Top of the wish-list for the sector is a national hydrogen strategy, mapping out steps towards a hydrogen economy spanning multiple sectors, including aviation, shipping and rail, as well as domestic heat and industrial applications. Here, business secretary Alok Sharma has indicated a

publication date in early 2021. Work is also underway on the narrower issue of establishing "business models" for a low carbon hydrogen production, for which BEIS published an interim report in August 2020.

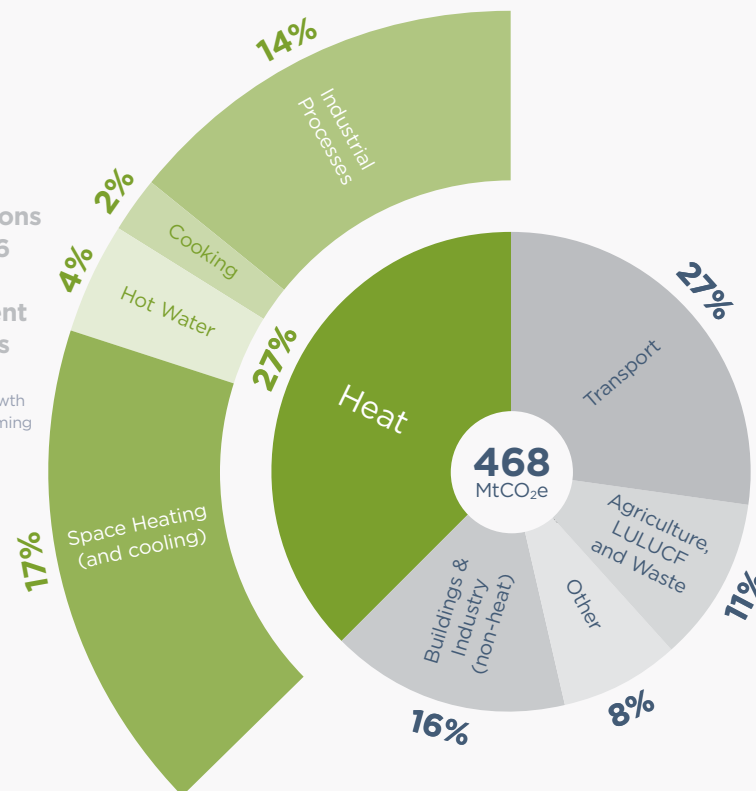
A hydrogen strategy - the lack of which was recently highlighted by MPs on the Environmental Audit Committee - is seen as a means to narrow the gap between proof of concept and commercial viability. "It's important that the hydrogen strategy is published with clear visibility of what will be supported to commercialisation levels," says Angus McIntosh, director of energy futures at SGN. "It's important to have a clear line of sight so that hydrogen becomes investable."

Richard Goodfellow, partner, head of energy & utilities, Addleshaw Goddard agrees: "As is often the way in GB, the policy makers are behind where the stakeholders are. The stakeholders are already investing in hydrogen and exploring its potential. The role of the policy makers is to speed up what is already happening."

However, delays to the Energy White Paper and Heat Strategy, both now due

UK emissions in 2016 across different sectors

Source:
Clean Growth
- Transforming
Heating,
December
2018, BEIS



this autumn, have also impacted on progress. In the drive to decarbonise heat, hydrogen is constrained by the lack of production capacity and supply chain, but has the advantage that our homes and businesses are already equipped with compatible

infrastructure. Meanwhile, the reverse is true of heat supplied by electrification and heat pumps: plenty of generation capacity and infrastructure upstream, set against the prospect of invasive works in millions of downstream homes and commercial properties.

COMBINED APPROACH

Needle argues that the UK will be best served by steering a course that combines both approaches. “You need a combined approach because of the limitations – on both electrification and heat pumps, and hydrogen – in terms of scaling production. Both routes have issues so we need hybrid solutions. Continual waiting for the answer is unhelpful, because there won’t be a single answer.”

The pilot projects include HyDeploy, where Cadent is feeding a 20 per

cent hydrogen mix into commercial and domestic boilers at Keele University’s private gas network to establish that real life performance matches the desk top modelling; Needle reports a successful first phase. For its FutureGrid trial at Spadeadam in Cumbria, National Grid plans to repurpose redundant assets to construct a new transmission-level testing facility, comprising of 3m diameter pipework, valves, inlet and outlet pipes, and a connection to Northern Gas Network’s H21 distribution rig.

While both these projects rely on blending natural gas and hydrogen produced using current methods, Scottish Gas Network’s H100 trial in the town of Levenmouth, Fife, will offer 300 volunteer domestic consumers 100 per cent hydrogen produced by a new electrolysing facility, which will be powered by offshore renewable electricity. “We’ll have a 7MW turbine, a 4MW electrolyser, and the 300 domestic customers will consume 12-14,000 kW hours per annum, or around 100 tonnes of hydrogen,” McIntosh suggests, adding that hydrogen will also be stored on the site.

At both the HyDeploy and FutureGrid trials, blending hydrogen at 20 per cent could be a key interim target: today’s domestic or industrial boilers and cookers can typically accept hydrogen at this level without adverse effects (beyond this level, appliances would need to be ‘hydrogen-ready’). Blending at this level would also stimulate production of both blue and green hydrogen. “If the whole of the UK was at 20 per cent, that would be a useful carbon reduction and puts us well underway

“

As is often the way in GB, the policy makers are behind where the stakeholders are. The stakeholders are already investing in hydrogen and exploring its potential. The role of the policy makers is to speed up what is already happening”

Richard Goodfellow,
Addleshaw Goddard

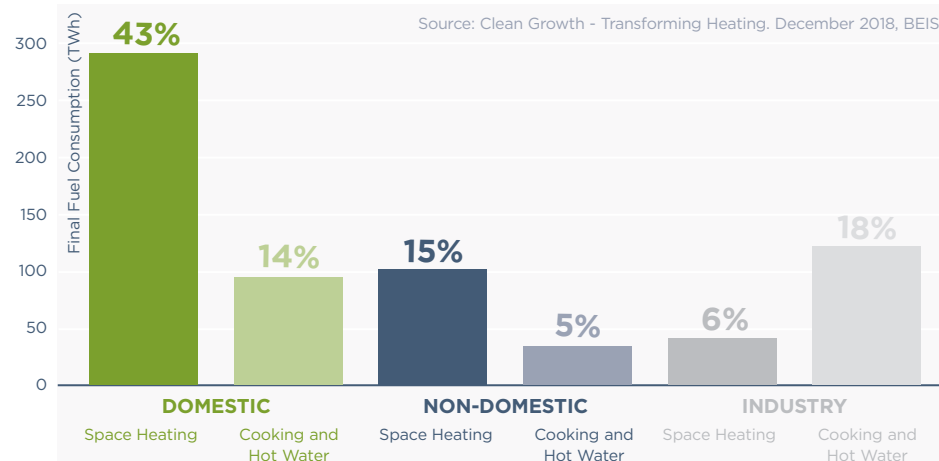
on the journey to a ‘hydrogen future’, says Green.

Counter-intuitively, however, a 20 per cent blend would only represent a 6 per cent cut in a household’s heat-related carbon emissions, as an equivalent volume of hydrogen holds less energy than methane. “But those are emissions that are easy to save, they don’t require behaviour change or new infrastructure or assets,” Needle points out.

A prerequisite to commercial blending is an update to gas safety regulations. As McIntosh says, “the Gas

Fuel consumption for heat in 2017

Source: Clean Growth - Transforming Heating, December 2018, BEIS



TWh. Percentages may not sum to 100% due to rounding

Safety Management Regulations are very outdated and need to be changed to make it agnostic in terms of natural gas or hydrogen, so that customers will have the same protection. And then industry standards [such as the Gas Safe Register] can be reformed.”

As well as a regulatory regime, Needle adds that commercial incentives for producers may be needed, along the lines of the Contracts for Difference that support renewable electricity production. But she also sees blending as an important step towards building consumer confidence in hydrogen. “It needs a commercial regime that allows consumers to buy it as ‘green gas’, similar to buying biomethane today,” she says. “Blending will make hydrogen a ‘real thing’.”



Germany and a few other countries may have more clarity on their strategies and commitments, but the UK is on a good trajectory right now”

Antony Green, National Grid

SUPPORT FOR LARGE SCALE PRODUCTION

But before blending can begin, another domino needs to fall into place – large-scale hydrogen production. Here, Norwegian energy giant Equinor, with project partners including National Grid Ventures, is planning a ‘kick-starter’ project at the Saltend Chemicals Park near Hull, H2H Saltend. A 600 MW auto thermal reformer (ATR) with carbon capture could be built by 2026, supplying hydrogen to the nearby chemical plant operators, offering the nearby Triton Power Station a 30 per cent hydrogen blend, and later blending hydrogen for local homes and businesses.

After 18 months of preparatory work, Equinor’s Henrik Andersen, project director of the wider Zero Carbon Humber initiative, explains that H2H Saltend is waiting to hear whether it has secured £11 million from Phase II of the government’s £131 million fund to decarbonise industrial clusters and – more importantly – the moral support that lies behind the grant.



“The recognition and support of the government is the key. The biggest cost is when you do the Final Investment Decision [scheduled for 2023], so we want the business model [on low carbon hydrogen production] to be in place so that there is economic substance to the project. We are on that journey, but we need to see it is progressing at the right pace,” he says.

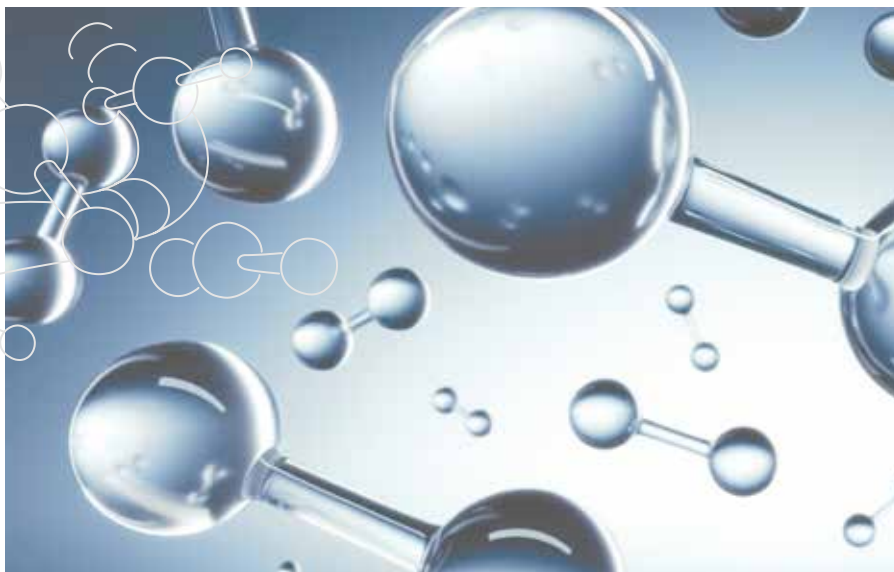
Green hopes to see additional carbon capture and storage

(CCS) projects supported by the decarbonisation fund, part of the £4.7 billion Industrial Strategy Challenge Fund (ISCF). “Bids have to be submitted by 7 October, so we should see more projects moving forward. We want to see government back two or three carbon capture, utilisation and storage (CCUS) projects, particularly in areas such as the Humber, which is close to the Teesside industrial cluster, and in the offshore fields in Scotland.”

Andersen's comments come as countries around the world place hydrogen in their post-Covid 'green' recovery plans. In June, Germany announced an investment of EUR 9 billion in hydrogen, and a National Hydrogen Strategy as part of an overall EUR 130 billion recovery plan; Norway also announced a hydrogen strategy

that month. In July, the EU adopted its Hydrogen Strategy, outlining plans to support the installation of at least 6GW of electrolyzers by 2024 and 40GW by 2030.

Meanwhile, both South Korea and Japan plan to switch their respective car industries to hydrogen-powered fuel cells rather than EVs, and are also committed



“

We see that the UK is the most advanced in Europe in terms of developing the business model and policy framework”

Henrik Andersen, Equinor

to hydrogen for power generation.

But if the UK has been relatively reticent on strategy and headline figures, any overall assessment has to read across policy, technical and research agendas. On this broader scorecard, it's agreed that the UK is making good progress, particularly on hydrogen for heat. As Green says: “Germany and a few other countries may have more clarity on their strategies and commitments, but the UK is on a good trajectory right now. We have the best technology in electrolysis and on manufacturing electrolysis facilities, we have the offshore resources to do CCUS, and companies such as Johnson Matthey have the systems for gas reforming.”

McIntosh adds that the Netherlands, which has similar penetration of gas for domestic heat, “is progressing at a

similar pace or slightly behind”, while Needle believes that “no other country is doing more work on hydrogen in homes. We might not have a strategy, but we've done more of the groundwork.”

Speaking from Norway, Andersen tends to agree. “We see that the UK is the most advanced in Europe in terms of developing the business model and policy framework. The EU framework sets a vision and goal but is not so mature on how to get there.” He also endorses Green's view on the UK's engineering capability. “There are a lot of highly skilled engineers in the UK in the hydrogen space.”

Everyone involved in shifting the UK away from natural gas agrees that building hydrogen capability will be a long, slow haul. But in five years' time, the sector is optimistic that the first large-scale hydrogen plants will be in operation, probably anchored to industrial clusters; that hydrogen will be blended onto the network in some parts of the country, fuelling commercial and domestic boilers, and that large-scale decarbonisation will be on its way to becoming a reality.

HYDROGEN ON TRIAL

FUTUREGRID IN CUMBRIA

The FutureGrid project, to be built at consultancy DNV-GL's testing site at Spadeadam, Cumbria alongside Northern Gas Network's H21 rig for distribution level tests, will trial blending hydrogen with natural gas in typical National Transmission System (NTS) assets.

National Grid will repurpose redundant infrastructure to construct a new testing facility, comprising 3m diameter pipework, valves, inlet and outlet pipes, and finally a connection to NGN's H21 distribution infrastructure, which includes the purpose-built 'HyStreet' of test homes and shops, built by NGN and DNV-GL as part of the government-backed Hy4Heat trials.

"We're bringing the two projects together in a single family," says Antony Green, hydrogen project director at National Grid. "You could call it 'beach to meter' testing, or even 'beach to burner'."

The plans have been submitted to Ofgem; if funding is awarded, the aim is to start construction in 2021 with testing commencing in 2022.

The tests will first explore how the hydrogen behaves at a 2 per cent blend, then at 20 per cent: the safe maximum level of hydrogen to feed into today's generation of domestic cookers and boilers.

The project will eventually test at 100 per cent hydrogen, as determining performance at 100 per cent would also give the research team data on levels between 20 and 100 per cent. The tests would be conducted at transmission level pressures up to 90 bar, similar to levels seen in the gas networks today.

H100 AT LEVENMOUTH

The four year H100 project from Scottish Gas Network is described as a "turbine to burner", feeding 100 per cent hydrogen produced by offshore wind to the homes of 300 SGN customers in the Levenmouth area of Fife, Scotland. It has already secured £6.9 million in funding from the Scottish Government, plus financial contributions from the other three gas networks.

It is also awaiting the outcome of its funding bid to Ofgem's Network Innovation Competition. "Green hydrogen and repurposing of the oil and gas sector is equally important to the Scottish and UK governments," notes Angus McIntosh, director of energy futures at SGN.

There are around 1,000 homes in the target area, but SGN needs approximately 300 households to come forward to connect to the hydrogen network in the project's first phase to produce a representative demand profile. Households that volunteer to participate will be offered hydrogen-ready boilers, supplied by Worcester Bosch and Baxi. Residents may be persuaded to switch from natural gas by a demonstration house built by SGN. "The customers will be able to see, hear and feel hydrogen in the home, and be able to interact with the appliances," says McIntosh.

In later phases, more homes will be connected to the network, as well as a major industrial customer, the Diageo distillery and bottling plant in Leven, part of the Levenmouth conurbation. Hydrogen could also possibly fuel the planned Levenmouth Rail Link.

The hydrogen will be produced by a 7MW turbine, a 4MW electrolyser, stored on the site then piped to 300 domestic customers, who are expected to consume 12,000 to 14,000 kWh each. Renewable electricity will be sourced direct from an Orec-owned turbine, while SGN division SGS Futures will commission and operate the electrolysis facility, which is currently in procurement.

HYDROGEN ON TRIAL

HYDEPLOY AT KEELE

The HyDeploy project at Keele University, Staffordshire, is the first UK project to blend hydrogen into the existing network, exploiting the fact the campus has its own private gas distribution network.

The HyDeploy consortium is led by Cadent, with partners including Northern Gas Networks, Progressive Energy, Keele University, the Health and Safety Executive and ITM Power.

It is targeting a blend of 20 per cent hydrogen, the level that today's current appliances can safely accept before there is a need to replace with hydrogen-ready appliances. The boilers and cookers will operate normally, but some boilers will be set to operate continuously to build accelerated data.

Cadent's director of strategy Dr Angela Needle says that the project has been running smoothly since the HSE granted permission to start trials in autumn 2019; according to the project website, a level of 15 per cent has now been reached although Covid has delayed the programme.

"We didn't expect any drama, the gas network used to have up to 50 per cent hydrogen [in the era of 'town gas'] and appliances tend to have a tolerance. So from a safety and technical perspective the results are not unexpected," says Needle. "The next stage is moving on from a small trial to expand it to more properties and more variety of appliances, including larger assets such as CHP engines."

COMMENT **Plan for scaling up**

Heating our homes and businesses accounts for over 30 per cent of all the UK's greenhouse gas emissions. It must be decarbonised if we are to reach our net zero goal by 2050, but as yet there is no clear policy direction from government.

In the meantime, industry has been busy doing the groundwork, with various pilot projects testing the feasibility of using hydrogen instead of natural gas for heating. It should be a 'no regrets' action to start blending up to 20 per cent of hydrogen into heat networks: the safety standards would need revising, but the existing infrastructure and appliances can cope with this level. That could be a quick interim solution.

In the longer term, using hydrogen for heat will need production at scale. This will likely involve producing 'blue' hydrogen from natural gas and capturing the carbon released, through carbon capture, utilisation and storage in industrial clusters such as Zero Carbon Humber, and 'green' hydrogen from renewables using electrolysis, as demonstrated by the H100 project in Fife.

We need a national hydrogen strategy that sets out how we move towards a hydrogen economy spanning multiple sectors: transport, heavy industry, power and heat. Investors need business models they can invest in. The downstream infrastructure is already there: it is the upstream production that needs to start happening. Investment will come once government support and policy is clearer.



Suzanne Moir, partner, energy & utilities, Addleshaw Goddard

Anna Sweeney, senior knowledge lawyer, energy & utilities, Addleshaw Goddard

It's now 18 months since water companies made a joint pledge to achieve net zero emissions by 2030, but what progress has been made, where are the gaps and is the target actually achievable?

COUNTDOWN TO NET ZERO

When water companies announced a joint plan, in April last year, to cut greenhouse gas emissions to net zero by 2030, the news was greeted with a mixture of excitement and trepidation from industry experts who knew the scale of the task at hand.

The target, one of five stretching social and environmental ambitions set out in a new sector Public Interest Commitment, will arrive two decades in

advance of a national commitment to hit net zero by 2050. It also represents a steep hill to climb for what is the fourth most energy-intensive industry in the country.

Eighteen months on and the mechanisms of how this bold vision will be delivered still need clarity. A route map outlining the framework of measures companies must take, drawn up by consultancies Mott MacDonald

and Ricardo, has had its Summer publication postponed until November.

Net zero is a group strategy designed to recognise the fact that different companies face different challenges, depending on factors such as location, population, and available assets and resources. Each company will therefore develop its own methodology to reach the target with the route map shaping the overarching approach.

The sector builds from a strong baseline, gross operational emissions have fallen by 43 per cent and renewable electricity generation has risen by over 40 per cent since 2011. Individual utilities have made progress since last year, announcing a range of initiatives and investments, in renewable technologies, greener fleets, carbon offsetting and more.

Anglian Water is a leading force in renewable energy, which is expected to provide 44 per cent of its total electricity requirement by 2025. In September, the company switched on its largest ever solar array, at the Grafham water treatment facility, in Huntingdonshire, designed to generate over a quarter of the site's annual energy requirement. A second major array, at a recycling plant in Jaywick in Essex, went live in December, and is expected to save over 300 tonnes of CO2 in the first year.

The solar framework used to deliver these projects was recently replaced by what Anglian claims is the largest subsidy-free solar framework in the UK, covering over 100 sites.

THE HGV CHALLENGE



A significant quantity of carbon is locked up in vehicle fleets that will need to shift progressively from petrol and diesel fuels to electric or other low carbon alternatives.

Sutton & East Surrey (SES) Water has said that at least two-thirds of its fleet should be fully electric by 2025, including vehicles run by its main contractor Clancy Group and, and the rest by 2030.

The company is currently involved in a trial with Haven Power, part of the Drax Group, of 12 electric vehicles and 34 charging points located at head office, treatment sites and across the network.

Speaking to Utility Week earlier this year, Henrietta Stock, energy and carbon manager at SES Water, said the trial had uncovered the need for better charging coverage, especially for drivers who don't routinely visit sites, and a limited choice of certain vehicle types in terms of size and the weight they can carry.

Some heavier vehicles could run on hydrogen in future. Yorkshire Water mobilised the industry's first hydrogen dual fuel truck, a 7.5-tonne clean water tanker that will refuel at ITM Power's hydrogen filling station in Catcliffe, near Rotherham.

Others have focused on forms of anaerobic digestion to generate their power from sewage sludge. Northumbrian Water was the first company to use 100 per cent of its sewage sludge to create energy through Advanced Anaerobic Digestion. Its £9.5 million Bran Sands gas to grid plant was commissioned in 2019.

Yorkshire Water opened a £72 million energy and recycling facility at Knostrop wastewater treatment works in Leeds last July, designed to power 55 per cent of the site, equivalent to 7,600 homes. Another plant is currently on site in Huddersfield and due for completion next year.

Gordon Rogers, head of sustainability at Yorkshire Water says: "We've been on the carbon and energy journey for over 10 years and delivered an 80 per cent reduction in operational carbon footprint during that time. But to get to net zero is another thing again, a new solar framework has been escalated in priority, as well as a focus on fleet, land, capital emissions and other elements of our carbon footprint."

"Water companies have, to some extent, been pioneers in the renewable energy space," says Paul Dight, partner, head of renewables and electric vehicles practice, Addleshaw Goddard. "We have been advising water companies on renewables projects since the turn of the millennium. They typically benefit from a large portfolio of land and sites which lend themselves to a variety of renewable technologies including wind, solar, and

biogas among others. In many cases, because of the existing use of the land, those projects are not beset by the usual planning or environmental challenges that can thwart other similar projects. But deploying enough renewables to achieve net zero by 2030 industry wide - together with the other measures we are seeing around operational changes - is a massive undertaking. Even the best performers are way off that target.

"So if it is really going to be achievable there needs to be a root and branch review by every water company of the potential for renewables on a huge scale involving not just onsite generation but probably also things like corporate PPAs where the power they use is generated offsite at much greater volumes. And that process needs to start now."

INNOVATION NEEDED

As utilities clean up their energy supply, supported by the continued decarbonisation of the national grid, process emissions from wastewater treatment, such as nitrous oxide and methane, account for an increasingly large chunk of overall emissions. A lack of viable options to remove these gases is now recognised as a key obstacle to delivering net zero.

Part of the problem is insufficient technology innovation, explains Anthony Browne, energy development manager at Northumbrian Water: "Process emissions account for more than 30 per cent of the company's net emissions yet abatement costs for process emissions

are high. Innovation is required to develop a better understanding of the scale of process emissions and the most effective mitigation strategies. I expect this to be a focus for future work.” The sector has already engaged with UK Water Industry Research (UKWIR) to begin to tackle the issue.

Another on-going discussion is what part tree planting will play in reaching net zero targets. Water companies in England collectively own 140,000 hectares of land, which has highlighted the opportunity for

extensive tree planting, peatland and woodland restoration and other carbon offsetting measures that suck CO2 from the atmosphere.

A joint plan to plant 11 million new trees was announced in August 2019 as part of the sector’s wider commitment to improve the natural environment and to support their goal of achieving a carbon neutral water industry by 2030. The tree planting will also deliver greater biodiversity, improved water quality and better flood protection. However, critics have pointed out that

the effect of planting on mitigating emissions would not materialise for a couple of decades, because trees need to reach maturity, and many will not survive that long. A rethink of the sector’s offsetting strategy may be reflected in the forthcoming route map. Pete Stevens, manager of carbon neutrality at Yorkshire Water says: “Being able to develop carbon offsets that are verifiable, and meet all the reputational challenges that offsets have, at speed and scale by 2030, is going to be a challenge for us, there’s no doubt about it.”

Among the many other challenges along the road to 2030 is the need to collaborate with supply chains, regulators, local authorities, government and other sectors to ensure that strategies align and meet with wider social and economic goals.

“Achieving our ambitions on renewable energy activity will require support from the DNOs in our operating areas – it’s important that affordable, green and secure energy supply is placed at the centre of energy regulation,” says Browne. If the Government decides that nature-led

solutions are preferable then different funding streams may become available.

The economic fallout from the pandemic has triggered calls from across the utilities sector to build back better and create a green recovery, could this also have a direct impact on considerations under net zero? Such complexities will need swift and actionable resolutions as the ambitious deadline looms.

Andrew Walker, partner, co-head of water practice, Addleshaw Goddard concludes: “Water companies have made commendable progress in recent years towards their goal of cutting greenhouse gas emissions to net zero by 2030. As well as tree planting and other carbon abatement measures being carried out, operational emissions have fallen significantly and many water companies have undertaken renewable electricity generation projects. However more needs to be done. It is vital that water companies look to rapidly innovate from here to better comprehend the scale of process emissions from waste water treatment and the most effective mitigation strategies.”



Water companies have made commendable progress in recent years towards their goal of cutting greenhouse gas emissions to net zero by 2030”



Andrew Walker,
Addleshaw
Goddard

CONCLUDING REMARKS

OUR GREEN FUTURE

The industry is raring to go concludes Richard Goodfellow, partner, head of energy & utilities, Addleshaw Goddard

2050 is closer than we think. And the 2030 target for the water industry to decarbonise, and potentially the road transport industry too, is only 10 years away. Can we really do this in time?

The answer is yes, if we get some clear policy direction from the government and if the right price signals are in place to persuade customers to use energy more efficiently. We have been waiting for around 18 months now for the Energy

White Paper to set out the policies that will lead to net zero. Plus we are promised a heat strategy, a buildings strategy and a hydrogen strategy. The government has, understandably, been distracted by Brexit and the Coronavirus pandemic but hopefully soon we will have more clarity.

In the meantime, the industry has been doing the groundwork. The networks have been working together on hydrogen trials and on how to increase EV infrastructure, via the EV Energy Taskforce. Ofgem has tried to regulate for policy uncertainty in the next round of price controls, whilst also trying to keep consumer costs down. There is a recognition that the net zero target needs to be met, but that there are various options for doing so and until the government firms up on its policy direction, no one knows which way to jump.

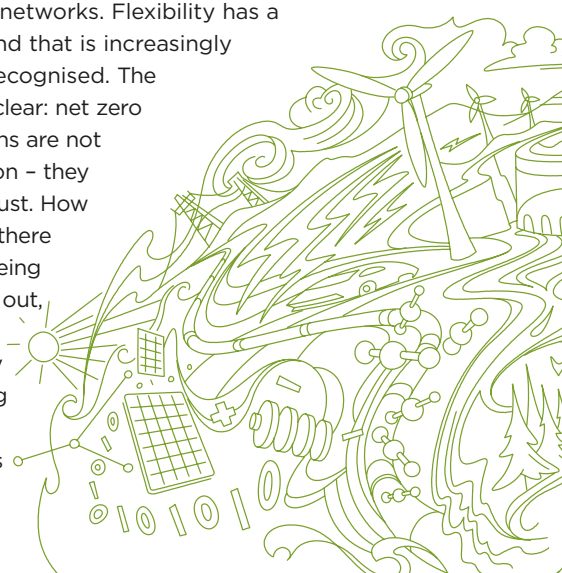
What we do know is there is government support for a green economic recovery from the Coronavirus pandemic. Both the UK and Scottish government have plans to create green jobs. Energy efficiency measures in buildings seem like an easy win here. The Green Homes Grant and the tougher measures on non-domestic properties should see trades people being kept busy for the next few years, providing the pandemic allows them to work in homes.

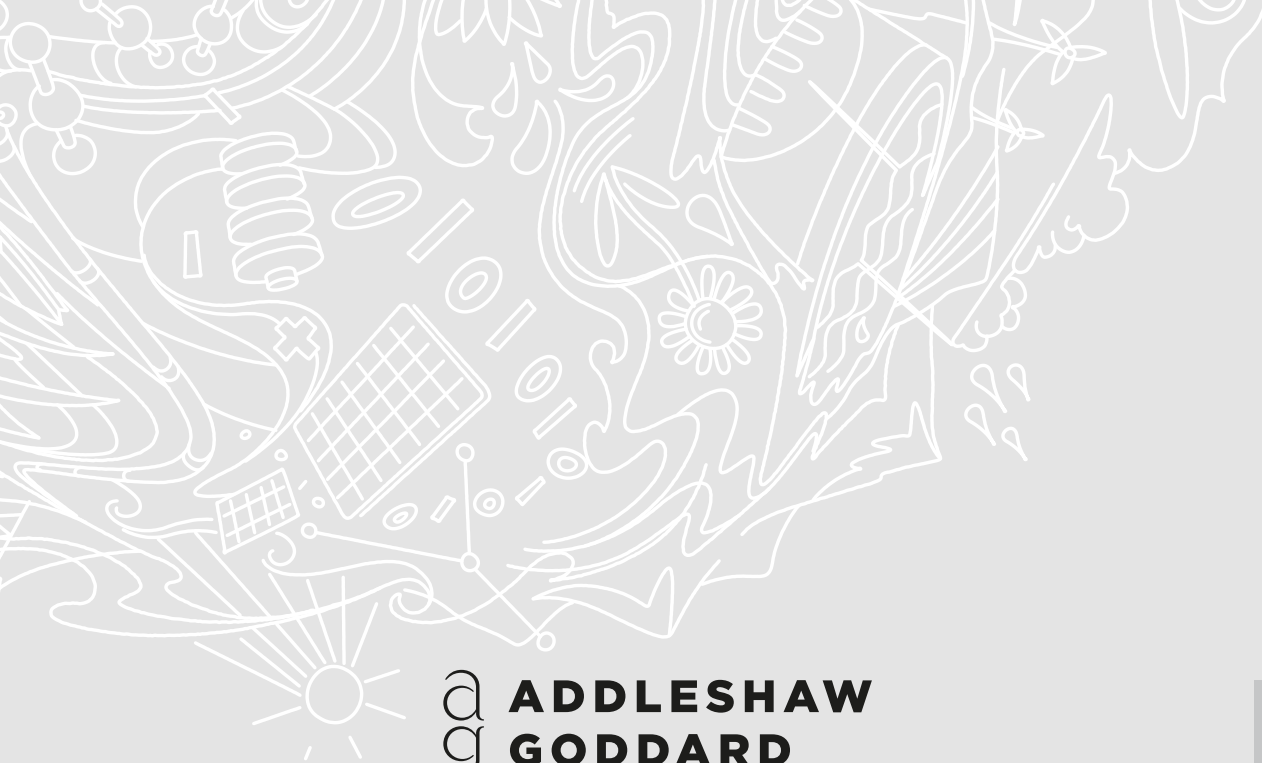
The UK has the skills to scale up hydrogen production, which in any net zero scenario will need to be at an industrial scale. Here there will be new jobs created, potentially using existing skills transferred from the fossil fuel industry as we move away from oil and gas to power our needs. There needs to be a four-fold increase in renewable energy so investment in such projects is surely a safe bet.

Investors are ready to invest. The money is there. They just need policy certainty that the investment will be supported by subsidies initially, until the market matures. We've seen how successful subsidies for solar and

onshore wind have been, and how the cost of offshore wind has come down as the technology, supported by the CfD, scales up.

Flexibility will be the buzzword for the future. With more intermittent generation in the system, we need to control energy demand even more. That means data is key. The smart meter rollout is not just about consumers seeing their energy usage, it's a way of opening up time of use tariffs and price signals that will encourage more efficient use of our energy networks. Flexibility has a value and that is increasingly being recognised. The goal is clear: net zero emissions are not an option – they are a must. How we get there is still being worked out, but the industry is willing and the future is green.





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Utility Week is the UK's unrivalled provider of utility news, insight and impact analysis. Our high profile Build Back Better campaign is exploring the crucial role water and energy firms can play in powering a green economic recovery by unlocking investment, creating jobs and supporting local communities whilst providing resilient and affordable services.

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