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GREEN ENERGY: THE 2022 OUTLOOK



This paper sets out a number of predictions for the direction of travel in the energy and transport sectors in the coming year, as we continue the transition towards net zero here in the UK.

Battery storage

At the beginning of 2022, it was tempting to think of energy policy in multi-year terms, bearing in mind the scale of the challenge inherent in de-carbonisation. The Russian invasion of Ukraine, however, has neatly underscored the challenges of making longer-term predictions in what has become an increasingly volatile global environment.

EV charging infrastructure

The core assumptions underlying the predictions set out in this note remain unchanged at a fundamental level. However, we can already see that the invasion of Ukraine and the geopolitical instability that it has caused is going to drive a shorter-term reemphasis here in the UK (and within the West more generally) on energy security. We believe this re-emphasis is likely to cause Western governments to seek carbon intensive quick fixes, as they look to ensure stability of supply through the current crisis.

Offshore wind generation

Recent events have underscored the need for greater energy independence here in the UK and, in the medium term, may act as a catalyst for a strengthening consensus around that drive, which in the medium to long term, here in the UK at least is likely to come through more investment in renewable sources. That said, with energy policy to a certain extent already taking a back seat to the Covid pandemic over the last couple of years and now with the likely focus on short term energy security there is a significant risk that timeframes for mitigating climate change and achieving net zero targets may need to be reassessed.

Smart meters

Domestic energy supply



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BATTERY STORAGE

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2021 was a significant year for battery storage as an asset class after a number of years in which the sector was in something of a suspended state. Attracting funding and demonstrating the market for utility scale battery storage has proven difficult for a number of years. 2021 saw a big shift in market sentiment, however, as a result of a number of factors, including:

1. Improved market opportunities for the battery energy storage systems e.g. dynamic containmentment.
2. The ever increasing contribution of renewables to the electricity mix in the United Kingdom causing increasingly marked power price fluctuations (noting here that there are other contributory factors to these fluctuations).
3. The removal of certain cost related obstacles (such as a reduction in planning complexity and use of system charges).
4. Increasing sophistication of software available to assist owners in accessing different parts of the revenue stack.
5. The development of PPAs by energy providers such as EDF Energy.

In 2022 we expect to see a material increase in the number of utility scale battery storage assets being constructed. There is now a significant backlog of such assets at the shovel ready, planning and pre-planning stage which are ready to be constructed (or should be ready during the course of 2022). The key to pushing forward the construction of these assets in 2022 will be access to funding (debt and equity) and the ability to connect to the distribution network.

Obtaining funding for battery storage projects in development remains challenging but much improved compared to prior years. Banks like Santander and Natwest have been prepared to debt finance battery storage projects. Whilst companies have been able to find a route to obtain equity financing such as Harmony Energy through its IPO. It would also appear that the asset class is becoming increasingly of interest to LPs and other investors who were previously wary of the sector.

The signs are that 2022 is set to be the best year for the utility scale battery energy storage sector since its initial boom in 2015/16. This time, however, it would seem that the sector is based on more solid foundations than the rush to capture the frequency response market in 2015/16.

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EV CHARGING INFRASTRUCTURE

Battery storage

The rate of adoption of electric vehicles continued to increase in 2021. As reported in the Guardian in early December, vehicles capable of being zero emission accounted for 28% of all new cars registered in November 2021. Electric vehicles accounted for almost 22,000 new vehicles more than double the number of electric vehicles sold in November 2020. This increase is illustrative of the increasing consumer confidence and interest in zero emission cars. No doubt helped by an increasing awareness of our environment brought on by the Covid pandemic and by events such as the fuel shortage witnessed earlier this year.

Whilst the increasing proportion of electric vehicles on the UK's roads during 2020 and 2021 is good news. The rate of deployment of charging infrastructure during 2021 is such that the number of cars sharing an on street charger has increased rather than decreased compared to 2019. This increase against a backdrop where electric and hybrid cars account for 2% of cars in the UK. There is still a significant way to go before the UK's electric vehicle charging infrastructure is sufficient to support a transport system in which the sale of new internal combustion engine cars is banned in 2030.

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In particular, the deployment of residential on street charging infrastructure remains slow and significantly less than that required to support the mass adoption of battery electric vehicles that is required to enable the UK to meet its Net Zero objective. For those members of the public that do not have private off street parking (particularly relevant to people living in town and city centres) the lack of access to charging infrastructure is more than a factor against adoption of electric vehicles but an absolute barrier.

2022 will need to see the issue of residential on street charging start to be tackled in a more meaningful and coherent way. Local authorities will need to engage with other stakeholders in the electric vehicle charging infrastructure sector such as Liberty Charge and Chargy to ensure that the roll out of on street charging infrastructure is scaled up sufficiently and is delivered in a manner which does not create a new kind of fuel poverty.

It also remains to be seen the dampening effect that the UK Government's changes to the plug in grant introduced without warning in mid-December 2021 has on the take up of electric vehicles in 2022.



Battery storage

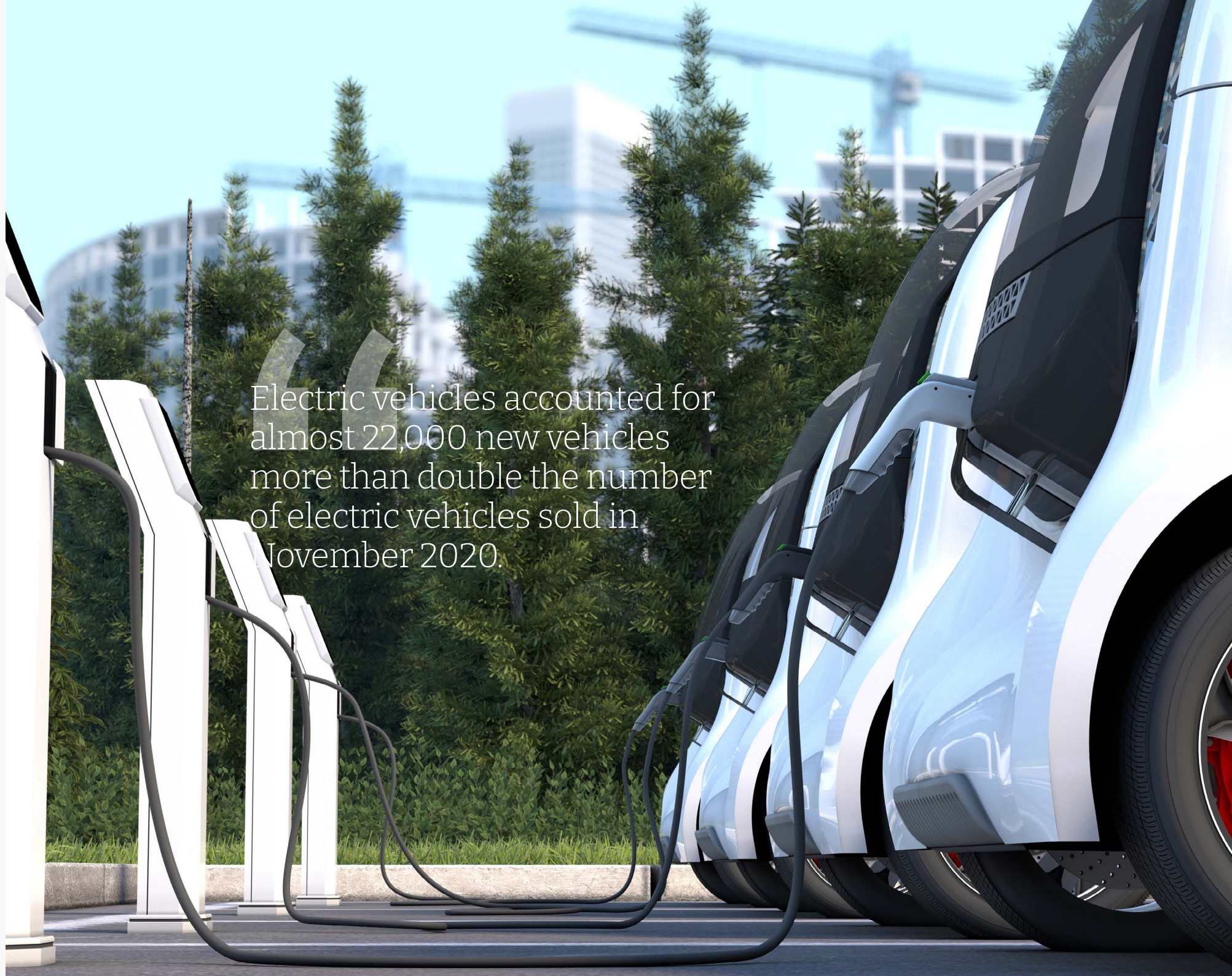
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OFFSHORE WIND GENERATION

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The deployment of offshore wind generation continues to receive the strong backing of the UK Government which is targeting reaching 40GW of capacity by 2030. The fourth contracts for difference allocation round closing in January 2022 has allocated over two thirds of the total budget to offshore wind: Underscoring the continued dominance of offshore wind in the UK Government's approach to decarbonising the UK power system by 2035.

Onshore wind and solar PV have, however, for the first time since the first contracts for difference allocation in 2015 been permitted to participate in the contracts for difference albeit with a comparatively low allocation of £10 million across both asset classes. Their inclusion nevertheless marks an acknowledgment that both technologies have a part to play in achieving a net zero power system by 2035.

The number of solar developments in the UK has increased markedly since the post-subsidy dark days of 2017 to 2019. There is now a significant pipeline of solar projects which for the first time in the post subsidy era could result in new large scale solar PV (rooftop and ground mounted) in excess of 1 GW being developed in 2022.

In the case of onshore wind, whilst development of new wind farms has been able to proceed in Scotland the picture in Wales and England is markedly different. The planning regime in England in particular continues to play a significant role in preventing the development of new onshore wind much as it has done since 2016. Unless the UK Government gives a clear direction to planning authorities to permit onshore wind development then 2022 will continue to see the development of onshore wind being stifled in England. Onshore wind development in Great Britain is set to continue to be concentrated in Scotland with the balance largely in Wales.

In relation to existing renewable generation assets, in 2022 we expect to continue to see the aggregation of these assets by parties looking to hold them over the longer term. There is also likely to be continued interest in investing in existing renewables developers and fund managers (e.g. the recent acquisition by Schroders of 75% of Greencoat) as those with funds to invest look to deploy capital in the infrastructure space with an eye on their ESG credentials and their own net zero targets.



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SMART METERS

As an increasing proportion of the UK's overall energy supplies are generated from intermittent renewable sources, in line with the Government's decarbonisation agenda, we are also entering a period where the decade-long trend of declining household energy consumption is likely to reverse due to the increasing adoption of EV's and continuing growth in the use of technology and the IoT devices which comprise the "connected home".

This environment will necessarily require significant increases in our national clean energy generation capacity and we believe that this will, in turn, demand an increasing emphasis on the need for transmission and supply networks which are better able to accurately balance and distribute supply and demand in real time.

Widespread roll out of smart meter technologies will be vital in assisting with this type of dynamic balancing. However, this has taken longer than expected to implement, with the Government's already delayed roll-out schedule for smart meters further

hampered by the national lockdowns over the last two years. Coupled with the localised storage potential offered by home battery technologies and the significant storage reservoir that is latent within the UK's growing national fleet of EVs, smart meters can deliver significantly more than the accurate pricing and differentiated usage tariffs which were their initial selling points.

With the two-way connectivity offered by smart grid concepts, they have the potential to act as nodes within localised storage and distribution networks, enabling users to draw energy during off-peak hours (storing it in home and EV batteries), with the stored energy then being available for use during periods of peak demand and surplus energy being available for supply to other local meter points on an "export tariff" basis.

As part of a smart grid which leverages technologies to channel and store energy dynamically across a national network in response to peaks and troughs in supply and demand, it is clear that smart



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meters in both domestic and commercial/industrial settings have a vital role to play in smoothing out the supply inconsistencies which will be inherent in a system which is likely to have some reliance on intermittent renewables.

While the roll out of smart meters in the UK continues to lag, with the current installed base at around 50% of the UK's meter points, we expect that the transition back towards more normal times may see the government looking to place a new emphasis on accelerating this programme.

In the meantime, we believe that smart meters as an asset class with utility-like features, linked to the transition to net zero, will continue to be highly attractive to investors, both in the listed space and private markets. The takeover of Calisen at a valuation of £1.4bn last year, at just a little over a year following its IPO, is a good example of how attractive these assets can be to PE investors seeking long-term yields.

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DOMESTIC ENERGY SUPPLY

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2021 represented, in many ways, a mixed year for the UK energy market. On the one hand, it saw further significant progress on the transition towards net zero, with close to 50% of the UK's electricity now being generated from renewable sources. However, consumers also experienced a period of acute market distress due to spiralling wholesale energy prices and the knock-on impact this has had on domestic supply business in the UK.

A large number of the smaller suppliers failed and one significant supplier (Bulb Energy) was deemed to be too big to be absorbed by the market through OFGEM's SoLR programme and was placed in the government's energy supply company administration regime, in a market first for a domestic energy supply company.

The disruption and subsequent retrenchment in the domestic supply market represents a setback, given OFGEM's stated goal of broadening the supply options for domestic energy customers away from the largest incumbent suppliers.

Continuing geopolitical tensions, especially those arising from Russia's invasion of Ukraine also represent a significant volatility factor for wholesale gas prices and the market more generally.

These recent price shocks, particularly in the wholesale gas market and the risk of additional supply disruption are factors which may provide additional political impetus for the government to seek to accelerate the UK's supply rebalance away from gas in favour of intermittent renewables, however, in the shorter to medium term, it is quite possible that we will see the UK, along with other Western governments, falling back on traditional energy sources as they seek to lessen their dependence on Russian supplies.

A significant factor in the failure of a number of the smaller energy firms was their lack of hedging protection against adverse movements in wholesale pricing, coupled with an inability to pass the related cost increases on to customers. In light of this experience, we may see the government considering steps to enhance the regulation of suppliers and imposing requirements for the smaller suppliers to engage in hedging against wholesale energy costs.

We believe that the trend towards consolidation in the UK domestic supply market will continue and, quite possibly, accelerate this year, with larger suppliers continuing to acquire customer books from the smaller competitors within the space on an opportunistic basis.



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