

## A Cleaner Energy Future

The focus on a 'green agenda' has gained significant momentum in recent years. Despite the challenges faced by society and the global economy at this time, the desire to move towards a more sustainable and low-carbon economic model has shown no signs of abating. If anything the transition has been bolstered, and potentially accelerated, as a result of the stimulus packages being proposed and deployed by governments, which have clear biases towards the development of sustainable projects, for example, in energy and transport.

The direction of funding towards sustainable projects is clearly aligned with the move towards achieving 'net zero' (i.e. an environment where any residual greenhouse gas emissions are completely offset by removals, through activities such as carbon capture and storage), a target being adopted increasingly by governments around the world. While the UK was the first of the G7 group of major economies to commit to achieving net zero, (following recommendations from their official adviser, the Committee on Climate Change) it has been joined by a growing cohort of countries who have committed themselves to similar ambitions.

To date, eight countries, which cumulatively account for ~4.4% of global energy-related CO<sub>2</sub> emissions, have signed net zero targets into law, typically by 2050: Norway, Denmark, New Zealand, Sweden, Hungary, France, the UK and Germany. However, this group is likely to increase substantially with many governments proposing legislation or introducing new policy measures. There is also scope for more concerted efforts. For example, the European Commission (EC) is working towards a bloc-wide net zero emissions target agreement as part of its 'Green Deal', which was published in December 2019 and described by EC President Ursula von der Leyen as being "Europe's man on the moon moment". The overarching objective of the Green Deal is to achieve a 'climate neutral' Europe, with the 'net zero' target enshrined in law. Renewable (and other low carbon intensity) energy generation targets will be a major component of the Green Deal but there is also a focus on renovating buildings and toughening up regulatory requirements as part of energy efficiency measures, targeting transport-related emissions through tougher emissions standards for vehicles, and acceleration in the development of the infrastructure required to encourage a greater transition to electric vehicles. Europe wants to be a front-runner in climate friendly industries and clean technologies. As a whole, the bloc is responsible for almost 8% of global energy-related CO<sub>2</sub> emissions.

The US is a notable omission from the list of major economies with federal-level climate change commitments and notably the Trump administration set out plans to withdraw from the Paris Climate Accord. However, the lack of federal ambition has not impeded climate change targets at a more localised level. Policies including carbon pricing, emissions limits, and energy efficiency mandates have been adopted at the state and regional levels in order to help reduce greenhouse gas emissions, develop clean energy resources, promote alternative fuel vehicles, and promote more energy-efficient buildings and appliances.

In sum, twenty-three states (plus the District of Columbia) have adopted specific greenhouse gas reduction targets, while an even greater number have introduced policies (such as the renewable portfolio standard or clean energy standard) that require electricity utilities to deliver a certain amount of electricity from renewable or clean energy sources. The state of California has led the way, passing a law in 2018 to ensure that by 2045 all electricity is generated by renewable sources. The state also targets net zero CO<sub>2</sub> emissions by the same year. Although specific targets and policies diverge between different states, the prevalence of these targets demonstrates widespread support for climate action.

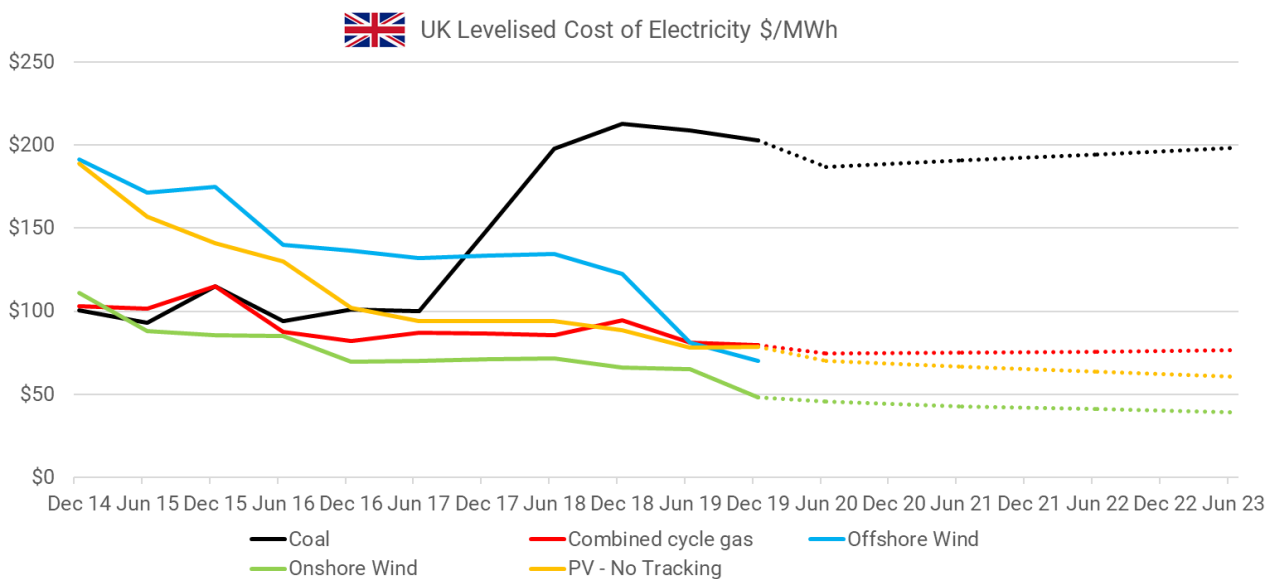
**Significant capital deployment** is required to deliver on existing and planned policies relating to climate change. The International Renewable Energy Agency (IRENA) forecasts that the global energy sector will require cumulative investment of \$110tn to 2050, including expenditure on energy

system infrastructure required as part of the adaptation to a reliance on renewable forms of power generation. This represents, on average, 2% of global gross domestic product p.a. over the period.

The types of investments will be in stark contrast to historic norms, with a shift away from the fossil fuel sector towards energy efficiency, renewable power generation and related enabling infrastructure. As we discussed in our recent chapter about energy efficiency, investment in reducing energy intensity will be critical as part of reaching climate change objectives. Meanwhile, the share of renewable energy generation would increase from around a quarter of global energy supply, to two-thirds in 2050. In addition, the anticipated transition to electrified forms of transport and heat means that electricity is likely to become the central 'energy carrier' and as a result gross electricity consumption would more than double, according to IRENA.

In support of emission reduction ambitions, many governments have introduced varying forms of support to prime the clean energy sector. In the UK, for example, the government has used subsidy mechanisms such as Renewable Obligation Certificates to underpin large proportions of expected revenues for renewable energy assets and has more recently employed a contract-for-difference model to underpin offshore wind developments by providing a floor price for the electricity produced. In the US, tax equity incentives have been used to encourage private investment in renewable energy projects.

Although the focus of this piece has been on governmental policies and the shift in focus of authorities towards climate goals, there are other factors driving the build out of renewables and sustainable infrastructure assets: notably corporate sustainability initiatives and the falling cost of renewable energy generation. High profile corporates like Amazon and Google recognise the increasing awareness of consumers in matters relating to sustainability and the environment and that is driving 'additionality', i.e. investment in renewable energy generation capacity that would not otherwise be developed under governmental targets. But it is not all about perception or climate change initiatives. The rapidly falling cost of renewable energy technologies means that in many regions wind and solar power generation is cost-effective even relative to the most efficient forms of conventional power generation. The decision to develop new wind or solar capacity instead of a natural gas-powered plant, for example, is in a growing number of instances, one of economic sense.



Source: Bloomberg New Energy Finance

The chart above shows the Levelised Cost of Electricity in the UK for a range of power generation types over time. The measure aims to standardise the cost per unit of output over an asset's lifetime including all associated costs (e.g. construction, maintenance, decommissioning). Common forms of renewable energy generation are now economically preferable to conventional forms of energy generation when considering new capacity. (Dotted lines are forecasts).

The outlook for the clean energy sector is positive and the industry is likely to see a long-term structural growth trend. This is good news for successful companies operating in the supply chain and related service industries, but it is also an attractive dynamic for infrastructure investors looking to gain exposure to long-dated and reliable cash flows from long-life assets. The pipeline for capacity growth in infrastructure such as energy generation assets (for example wind farms and solar parks), energy efficiency projects and energy storage solutions is very sizeable and this is the type of investment targeted by the **VT Gravis Clean Energy Income Fund**. There is a large and growing investible universe of publicly listed companies operating in the clean energy infrastructure space, which benefit from long-dated, contracted cash flows linked to portfolios of such critical assets.

We hope you have enjoyed our recent series of chapters exploring key aspects of the renewable energy sector: power purchase agreements, power prices, energy efficiency and energy storage solutions. If you would like to review previous editions, please visit our [website](#).

**William Argent, Director**  
**Fund Adviser, VT Gravis Clean Energy Income Fund**  
4<sup>th</sup> November 2020