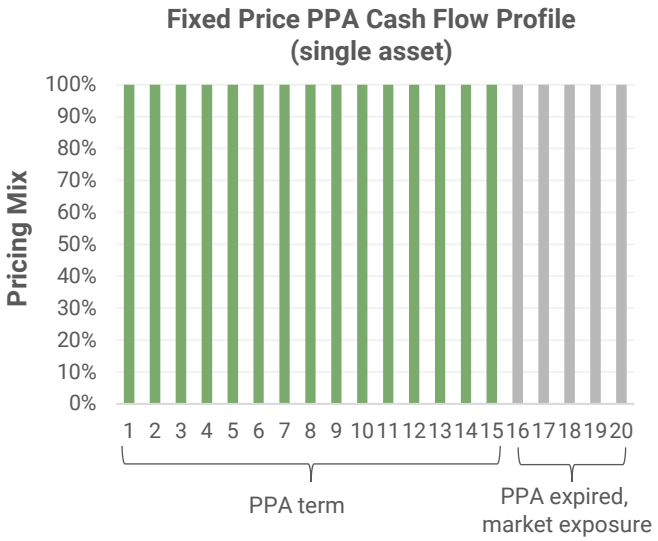
The Varying Impact of Power Prices

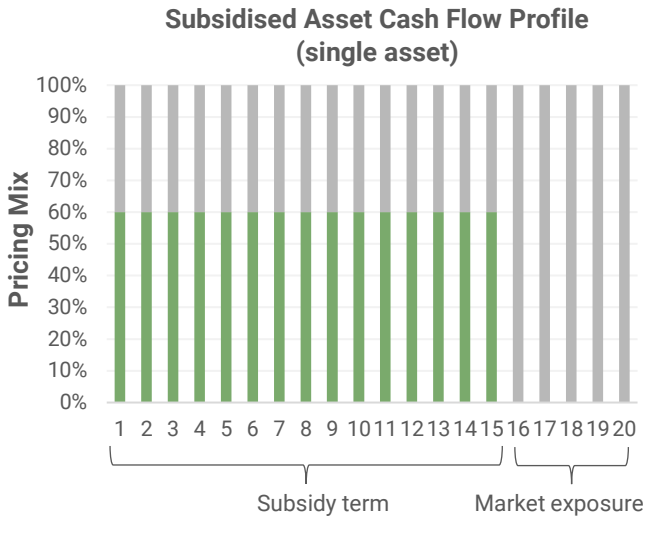
For any renewable power generator, the price of electricity – and indeed forecasts for how the price of electricity will evolve over the long term – will be an important component in projecting the revenue streams that a wind farm or solar park, for example, will be capable of generating over its assumed lifetime.

For companies that own renewable energy assets benefiting from long-term fixed/known price Power Purchase Agreements for the electricity they generate (*see Power Purchase Agreements – what are they?*), there is very little or no sensitivity to fluctuations in power price expectations owing to the fact that cash flows are linked to a pre-determined price. Arrangements like these appear frequently in North American renewables projects where contracts can be >15 years in length. If an asset is still operational at the time of the PPA expiry, the asset owner may re-tender for a follow-on PPA or sell output at market prices. At this point in time, the asset will become exposed to prevailing pricing trends, meaning the new PPA could be priced above or below the prior level. However, assets are valued on a discounted cash flow basis and nearer years account for a disproportionate amount of the overall value of those future cash flows. In addition, companies will typically ascribe a low value to cash flows that may be produced beyond the existing PPA – either by using a high discount rate in order to discount those far off cash flows to a present day value, or by assuming zero cash flow.

In jurisdictions where PPA markets are less developed and long-term fixed price contracts are not readily available, such as the UK, the build-out of renewable energy capacity has been aided by subsidies that provide an element of certainty to the cash flows which in turn incentivise developers to commit to a project. The Renewables Energy Certificate, Feed-In Tariff and Contract for Difference schemes used in the UK, Europe and Australia, for example, assisted in that process by facilitating a payment to the generator per unit of electricity produced, or by providing pricing certainty for the expected output from an asset over a 15-year time horizon (or longer). In this scenario, there remains an element of uncertainty as long-range forecasting is difficult and can lead to inaccuracies.

Example of simplified cash flow profiles for single renewable energy asset (fictional) under long-term fixed PPA and subsidy basis





The 'value' of assets that are developed without any form of certainty to the cash flows (either through a subsidy mechanism or long-term PPA) will be highly sensitive to movements in near-term electricity prices and long-term price projections. Now that renewable energy technologies are in many geographies and cost-competitive with conventional forms of electricity generation, the construction of new, unsubsidised assets is becoming more common. However, the asset owner will need to be

prepared to take on material uncertainty for future cash flows. That risk may be considered acceptable: it is widely anticipated that society will become increasingly reliant on electricity to power our lives, for example through the electrification of transport and heat, and increasing digitalisation, and this expectation is likely to ensure that demand will grow – the International Energy Agency forecasts annual demand growth of c.2% per annum between now and 2040 - and that prices will increase in real terms over coming decades.

Renewable energy assets located in different geographies, where subsidies differ, or assets that are of varying 'vintage', since subsidy schemes have adjusted over time, will typically have different cash flow profiles owing to the nature of the underlying mix of fixed (or 'known') pricing and commensurate merchant price exposure. Therefore, companies that own diversified portfolios of renewable energy assets (by geography, by technology and by vintage) will have a unique blend of cash flows and varying degrees of sensitivity to assumptions relating to power prices.

Near term cash flow mix (1 year view):

Innergex Renewable Energy Inc	Aquila European Renewables	Greencoat UK Wind
>95% long-term fixed PPA + government regulated tariff Asset location: North America & France	~75% fixed price + government regulated tariff Asset location: Scandinavia & Iberia	~60% output sold forward + government regulated tariff Asset location: UK

Source: Company data, Gravis analysis

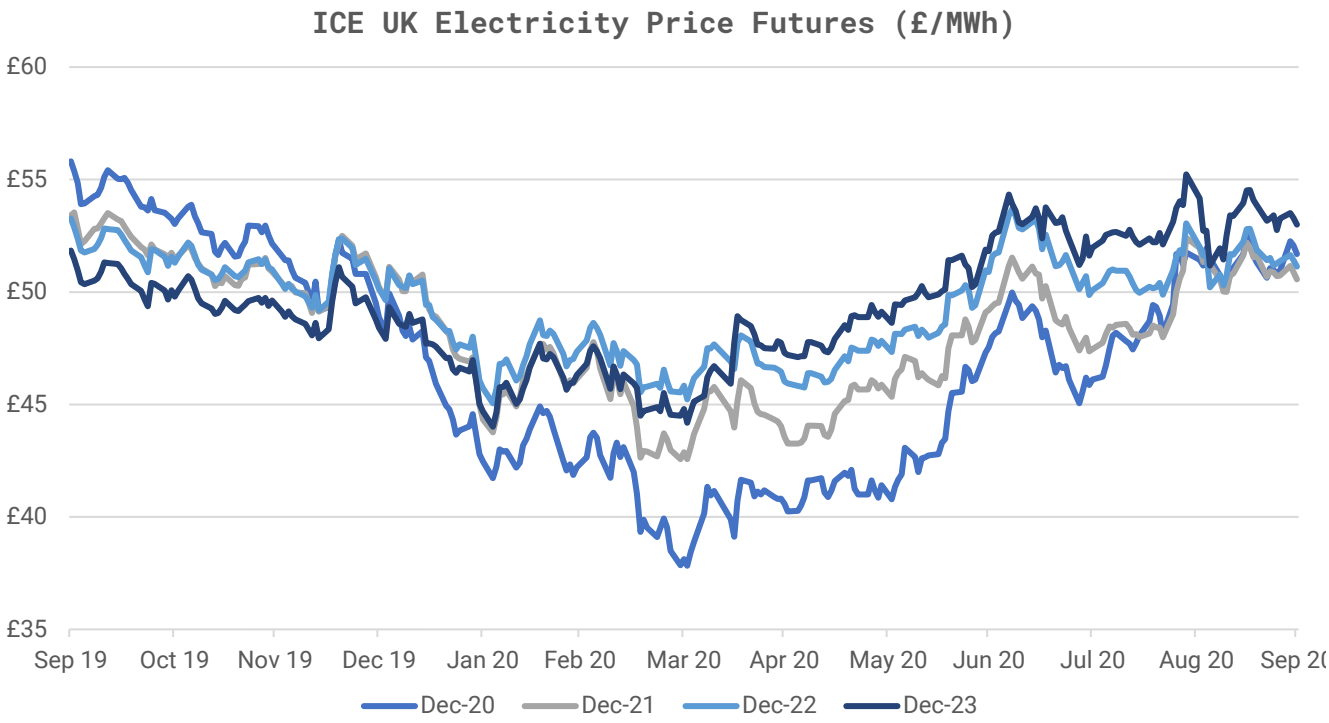
Since asset valuations are calculated by discounting future cash flow expectations, a higher exposure to merchant power prices results in valuations having greater sensitivity to movements in price projections – both near-term and long-term. We observe this clearly in the net asset valuations reported by UK-listed renewables companies on a quarterly basis, which incorporate the latest long-term pricing projections from a small group of energy consultancies. Greencoat UK Wind, a company which owns wind farms located in the UK (typically onshore assets), has historically adopted a strategy of retaining a relatively high level of spot price exposure, so will demonstrate considerable sensitivity to movements in UK electricity prices. In contrast, Innergex, which operates renewable assets predominantly located in Canada and with a very high level of fixed pricing, will be relatively unaffected by changes in expectations for electricity pricing. Aquila European Renewables' current cash flow mix sits roughly in the middle, with approximately 75% of very near cash flows being underpinned by fixed pricing and subsidies. However, Aquila's portfolio moves to a greater proportion of merchant price exposure in coming years and so its near term cash flow profile will become less certain unless the company fixes new PPAs or introduces more assets with contracted pricing into the portfolio.

Over the last year or so, electricity price forecasts have been under pressure, owing to a range of dynamics. On the supply side, a general oversupply of oil and natural gas has weakened pricing (electricity prices are still somewhat linked to the trajectory of gas prices) while on the demand side, the Coronavirus pandemic and resultant cessation of economic activity meant that demand fell sharply during March and through the second quarter of 2020, compounding the price weakness.

Nevertheless, we have observed a sharp improvement in pricing in Europe and the UK since the lows of April/May, with spot prices moving beyond pre-pandemic levels in many areas. Moreover, futures prices have firmed significantly and while futures markets may only 'go out' a few years in key markets, this improvement is of importance. If renewable energy companies value future cash flows based on energy consultancies' price forecasts and those forecasts are at odds with the reality of what may be presently achieved, as we see now, then the challenges and inaccuracies resulting from using long-term price

forecasts to drive asset valuations becomes apparent. For example, if a renewable energy generator removes its price risk for anticipated output in two years' time by locking in prices via a short-term PPA or through futures markets, then any subsequent change in pricing forecasts for that period becomes irrelevant.

The owners of portfolios of renewable energy will typically have energy trading teams who are seeking to lock in attractive prices at opportune moments. The chart below illustrates the movements in UK electricity price futures (December contracts) over one year. Extracting the December 2021 contract, we can see a significant improvement in the price from the nadir in March 2020 to the end of September 2020. Current valuations will still be factoring in prices for 2021 that incorporate futures prices from earlier this year, whereas trading teams could be locking in prices for power output in late 2021 at rates some 20% higher. This demonstrates the potential for significant divergence between prices that are factored into valuations from period to period and what is ultimately achieved.



Source: Bloomberg L.P.

It appears reasonable to anticipate that recent improvements in electricity pricing across the UK and Europe will have a positive impact on asset valuations once incorporated into future cash flow expectations. While very long-term expectations may be relatively unchanged, if not softer, the disproportionate impact of near-term cash flows on the discounted cash flow model is likely to dominate.

One region where pricing has not rebounded strongly as economies have begun to 'open up' is Scandinavia. A wet, mild winter meant that hydro balances were high going into 2020, while lower demand caused by lockdown meant that supply has been easy and price recovery has been slower. Regional factors such as this will ordinarily drive different electricity price dynamics at any given time in different markets. That is in contrast with recent months, where the pandemic has had a homogenous, overarching impact on demand and pricing. In addition, the level of interconnection between two geographic energy markets will also impact how correlated electricity prices are in those markets. For example, the correlation between electricity pricing in Scandinavia and Iberia is close to zero owing largely to very limited interconnection between the two markets. As a result, geographic diversification will typically have a beneficial influence in reducing price risk for a mixed portfolio of renewable energy assets.

The **VT Gravis Clean Energy Income Fund** is well positioned to withstand volatility in long-term electricity price forecasts as a result of its diversified portfolio, which is exposed to companies that own renewable energy assets across a range of geographies, technologies, and contractual counterparties, in addition to a significant bias towards fixed/known revenue streams as opposed to merchant price exposure.

William Argent
Fund Adviser, Director
14th October 2020