

# RENEWABLE ENERGY INVESTMENT ENVIRONMENT

## JANUARY 2020

The transition to net zero carbon electric generation will require a material step up in investment in renewable energy projects. Infrastructure investors and pension funds have been drawn to the sector, attracted by long term contracts, high cash flow yields and exposure to climate change related policies. Some estimates suggest that in the year to June 2019<sup>1</sup> more than 50% of all deals (by number) in private markets infrastructure were in the renewable energy space. Investors, particularly those looking at the special purpose vehicles established to fund renewable projects such as yieldcos and renewable energy investment trusts, should be paying close attention to the characteristics assets that are being acquired and the assumptions underpinning the acquisitions. In particular, investors should be paying careful attention to merchant price assumptions, PPA risk allocation and the total project return - not just the short term cash flow yields.

### **Falling Investment Returns**

The level of capital seeking completed and contracted renewable energy projects has pushed down expected returns in the sector. The speed of decline has varied considerably between jurisdictions, with some geographies experiencing relative stability (US onshore wind) and some jurisdictions showing much faster declines, albeit from higher starting points (European offshore wind).

European policy makers in particular have responded to developer windfall gains from historically generous support policies by tightening incentive schemes and increasing competition in new project tendering. This has led to significant decreases in support mechanisms and in some recent cases projects have reached financial close with zero support required.

### **Asset Rotation as a Driver of Returns**

Despite falling project returns and tighter, renewable developers have continued to generate attractive returns by taking advantage of falling capital costs and strong demand from investors, to whom they can sell down completed projects. Of the renewable asset owner operators that we have reviewed, nearly all are currently engaged in some form of asset rotation strategy where developed or mature assets are sold to fund new developments. This approach was previously limited to specialist developer / 'yieldco' structures but has now spread to most of the renewable energy firms in our investment universe.

### **Increasing Merchant Exposure Risks**

Even as expected returns fall, a number of factors are leading to increasing risks in the sector. Contract periods for energy generation from renewable assets have shortened even as asset lives have increased, leaving more asset life exposed to unpredictable merchant markets. This has

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<sup>1</sup> Prequin Quarterly Update: Infrastructure Q2 2019

implications for project developers as secondary buyers generally require a minimum contracted period of 5-10 years in order to support project debt.

As the merchant exposed tail becomes longer, we have seen more emphasis on merchant price forecasting including justifications of assuming increases in merchant prices over time and including CPI in long term merchant forecasts. Whilst forecasting merchant prices is often an exercise in futility, taking a view on future power prices is unavoidable in estimating the value of renewable assets. We feel that there are reasons to believe that the assumptions being made by some investors around future merchant prices are potentially ambitious.

Depending on the rate of cost decline, new renewable projects will soon be highly influential in establishing average market power prices. In our own modelling we assume that a gradual decline in capital costs results in the marginal price of wind driving merchant prices by 2037. However, if we assume faster capital cost declines then this point moves to 2026 and the average merchant price declines by nearly 1/3 over the forecast period. This has a material impact on existing wind farms where the cost base is locked in and they are expecting to earn a substantial portion of their return either as merchant generators, or at least to strike new PPAs over the time period of 2030 to 2050. We are not convinced that the available investment returns for asset owners adequately compensate for future merchant price risks on existing projects.

### **PPA Structures Moving Risk to Asset Owners**

As government subsidies are withdrawn and more corporate and financial PPAs are used to finance renewable projects, we expect to see more risk transferred to renewable generators as the providers of PPAs exercise their comparative buying power. PPAs can be structured in such a way so as to either remove substantially all risk from the generator or in ways that transfer material amounts of market risk onto the renewable generator.

The market risks we have identified include curtailment of generation due to network or demand shortages, price capture and negative pricing at periods of high generation and low demand. These risks are all positively correlated to growth in renewable assets within a given market. Since most wind and solar assets will generate simultaneously, increased build out of wind farms will decrease the value of existing wind farms through reducing the spot price of electricity as well as increasing the risk of system oversupply.

### **Cash Flow and Accounting Distortions**

Earnings and cashflow yields for renewable projects are highly sensitive to the project year in which the yield is measured. This is because tax incentives and subsidies materially distort the available cash flows over time. The main distortions include:

- Fixed contractual or regulated prices that are materially above market prices – leading to a step down in the future. This becomes particularly pertinent as contract lives shorten;
- The use of limited time tax credits such as production tax credits (PTCS) or accelerated depreciation which bring forward cash benefits from the future;

- Management accounting practices (such as including the grossed-up value of PTCs in EBITDA) which inflate near term EBITDA, especially for wind projects.

Given the above cash flow distortions, investors who target a cash flow yield (rather than calculating the lifetime return on the investment) are at risk of overpaying for assets, with the potential for either asset write downs or low long-term returns. By way of example, investors buying assets at a current cash flow yield of 7% are likely to have a total investment return over the life of the investment of only around 2-3%. Even assets with a 10% cash flow yield are unlikely to provide a long term return much in excess of 5%.

### Accelerating Growth Imperative

A number of firms, particularly the Renewable Energy Infrastructure Trusts, appear to be trading at valuations which are materially above the valuation of existing assets. This premium assumes or requires a material level of value creation from either developing or acquiring projects at returns above their cost of capital. Whilst firms have been able to achieve this value add through development and/or through accretive “drop-downs”, this is becoming more challenging as project costs fall.

We note that if capital costs for renewable assets halve (which is foreseeable), then either every project will deliver half as much absolute value, or the company will have to deploy twice as many projects to generate the value accretion that is necessary to justify the current premium to existing asset valuations. This presents downside risks to any structures which assume significant value creation from new projects.

### Renewables Growth Creating Attractive Ancillary Investment Opportunities

Although our analysis has highlighted some risks associated with greenfield renewable investments and the special purpose vehicles which are established to finance these investments, the growth in renewables does create the potential for a number of attractive investment opportunities, which are highly relevant to the listed infrastructure opportunity set:

Impact of renewable growth	Investment Opportunity
Negative pricing and greater volatility in market prices	Greater variation in daily prices will create more potential value for electricity storage operators such as batteries and pumped hydro storage
Increase in renewable penetration driven by lower capital costs and demand for assets	Transmission grid companies providing connection for renewable assets will be able to increase investment and potentially earn excess returns due to demand for connection
Increased time of day price arbitrage between countries	Differential renewable generation between countries and time zones will create more demand for transmission links and allow existing deregulated (or semi regulated) transmission links to capture more value
Lower overall electric prices	Lower generation prices are good for electricity distribution and transmission operators as it relieves political pressure on allowed returns and incentives. Falling prices are also good for electric retail operators who are able to keep more margin from customers

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Near zero marginal cost of electricity	Ever increasing levels of renewable penetration will shift the electricity markets towards a 'near 0' marginal cost model. This will greatly accelerate the adoption of EV cars as well as household electrification and storage solutions (i.e. hot water) which can take advantage of zero pricing
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Some of these investment impacts are relevant now (i.e. grid connections) and some will be more material in the medium and long term (i.e. EV cars and electrification). However, what is clear is that the development and growth in renewable generation will have both a beneficial direct impact on climate transition and decarbonisation but also a transformative impact across electric network assets and users of electric power. We believe that the lower risk and more stable return characteristics of these associated opportunities could be more suited to infrastructure investors.

The listed infrastructure sector provides an ideal way to access these opportunities given the breadth and depth of electric network investments available, which are difficult to source in either the unlisted market or through the listed infrastructure trusts.

This article is derived from a more substantial renewables sector study complete with case studies, published by ATLAS Infrastructure. For further information, or to request a copy of that research, please contact [info@atlasinfrastructure.com](mailto:info@atlasinfrastructure.com)