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Aon's Investment Research and Insights

Renewable Energy Infrastructure: Investing in The Global Energy Transition

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Contents

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By beginning to identify investment research and communicate ideas before they are needed we can shorten the implementation times for our clients and act in a timely way when opportunities are correctly priced.

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Executive summary

New technologies and regulatory pressure to tackle climate change have sparked a transition in energy production, distribution and consumption. In addition, demand for energy is in a long-term uptrend.

A fundamental part of the global energy transition is the development of renewable energy infrastructure. This can take the form of power generation, energy storage and consumption infrastructure. Investments in these projects give exposure to a fast-changing sector.

UK defined benefit pensions schemes are positioned to take advantage of these opportunities, which can be accessed through renewable energy infrastructure focussed funds. Return expectations of credible managers in this space are 8-10% net of fees, through capital appreciation and steady cashflows. Additionally, infrastructure offers valuable diversification within portfolios.

Due to lock-up periods of these funds and the length of the project lifecycles, the investment is appropriate for investors with longer investment time horizons who want to deliver competitive returns while also actively contributing to global sustainability goals.

This paper aims to:

- Provide background on the global energy transition and the investment opportunity set
- Detail the benefits and risks of an investment in renewable energy infrastructure
- Consider the investment characteristics and how an allocation would fit within a portfolio
- Review the implementation options

Global energy transition

Global demand for energy is increasing, particularly for electricity. In both developed and developing economies, electricity demand is growing through digitization, electric vehicle usage, and preference for electric devices in industry and homes. In emerging markets, urbanization and growing middle classes are driving new demand. At present, electricity comprises over 19% of total energy consumption, and this share is expected to rise[1].

The past century saw the primary sources of energy come from carbon-based materials, such as oil and gas, which were extracted and refined.

These processes are among the world's largest carbon dioxide (CO2) producers. However, renewable energy sources are not burnt to produce energy, and instead abundant natural sources, such as wind and sunlight, are harnessed. While these projects are energy and resource intensive in early stages, the carbon footprint over a project lifecycle is a more sustainable approach than fossil-fuel based alternatives.

[1]Global Energy Transformation: A Roadmap to 2050, International Renewable Energy Agency (IRENA), 2019

Arguments for renewable energy

Economic, social and regulatory pressures are driving renewable energy sources to play a greater role in the future.

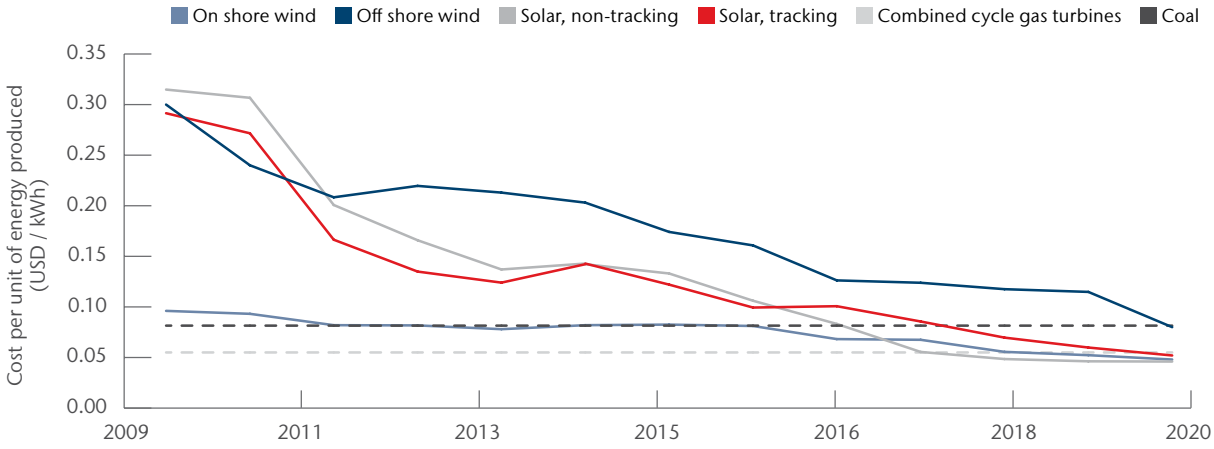
Economic

Technological developments have lowered the cost of energy production from renewable sources. We now see renewable sources surpassing 'cost parity' with conventional fuels on a full cost long-run basis, even when netting out government subsidies.

Going forward, continued research and economies of scale are expected to offer further benefits. Additionally, as existing infrastructure matures and sites are decommissioned, renewable energy assets are positioned to be a cost-efficient replacement that becomes the dominant supply of energy in coming decades.

Within the context of wider energy markets, there is little relationship between the performance of renewable energy infrastructure assets with oil prices. There is some relationship between the price of natural gas (a waste product of oil mining) and electricity, as natural gas makes up a large portion of current global supply. However, this share is expected to fall. Additionally, oil markets are linked with electric vehicle usage in the short term. Ultimately, revenue for electricity supply is tied into long-term power contracts and rising electricity demand, rather than commodity prices.

Renewable LCOE Data



Source: International Renewable Energy Agency, Bloomberg New Energy Finance, 2019. Combined Cycle Gas Turbines typically burn gas or oil to generate electricity.

Social

Major energy consumers are increasingly concerned about the carbon footprint of their energy sources. For instance, Amazon, Apple and Google have put in place agreements with renewable power providers to supply data centres and buildings, with the aim of becoming carbon neutral within the next decade.

On an individual level, consumers are increasingly aware of their 'carbon footprint', preferring low carbon energy sources, marking a change in social appetite.

Regulatory

The global policy landscape is changing as governments and local authorities encourage adoption of new technologies with low or no CO_2 production. There is also a clearly defined governance and cost structure, as views and votes of key stakeholders are written into mandates.

Given the significant and measurable impact to UN Sustainability Goals, renewable energy infrastructure offers a clear and measurable addition to an investment strategy from an environmental, social and governance ('ESG') perspective.

For pension scheme Trustees, guidance from The Pensions Regulator (UK) with respect to consideration of ESG factors (including responsible investing[2]) is expected to draw greater attention to this opportunity.

[2]Keeping Pace with Responsible Investing – Trustee Essentials, Aon, 2020

Opportunity set

Given the growing need for new energy infrastructure, there are ample opportunities to invest across different renewable sectors and geographies. The scale cannot be underestimated. It is estimated that this transition will require $120trn of new investment up to 2050 across the energy supply chain[1]. The opportunity set is global and includes:

Power generation

Power generation refers to projects to build sites that create energy from sources such as wind (turbines), solar (cells) and biomass (combined heat and power generators).

Energy storage

Storage helps 'plug the gap' between weather-dependent supply and predictable but varied demand. Consumer demand is not evenly spread across a single day, month or year. In warmer countries, energy demand spikes as air conditioners are turned on; in cooler countries demand rises as heaters are used in winter.

Advances in battery technology have lowered cost and increased efficiency of large systems. However, current battery technology is limited by cost and constrained mineral resource. Alternative storage solutions which are likely to prove cost effective include pumped hydro-electric storage (elevating water to be lowered on demand allowing energy capture), thermal energy storage (where water, sand, rocks or molten salt are either heated or cooled to store collected energy), compressed energy storage, fuel cells and hydrogen (H_2) generation.

Consumption infrastructure

Major shifts in electricity use will bring demand for enhanced electrical infrastructure. For instance, greater use of electric vehicles brings with it a demand for charging stations.

New solutions that facilitate efficient energy consumption are also required to meet sustainability goals. The energy intensity (energy consumption per unit of GDP) of the global economy must fall by two-thirds by 2050[1]. Energy improvements such as energy-efficient lightbulbs and housing insulation offer solutions.

Key risks

There is the risk that as technology develops rapidly, sites become **obsolete**. However, this does not render an existing site worthless, and contractual revenue streams may be set from a project's outset which stabilises value. Additionally, renewable energy is now a maturing sector, so the primary modes of power generation are well established.

Geophysical risks arise as weather is unpredictable. Year-on-year, weather tends to be fairly predictable e.g. there is little fluctuation in annual UK solar patterns. Energy storage solutions can also work to 'plug the gap' where weather patterns do not match up with demand. Climate change in the long term is less certain and there may be disruption to the favourable weather patterns[3] that facilitate renewable energy projects. However, all known information is used to project feasibility during the project lifecycle and would be a consideration of a best-in-class investment manager.

Policy risk should be considered, though contracts are often negotiated directly with governments. Broad governmental support to facilitate long-term sustainability goals looks likely to remain.

Finally, investors should be mindful of their **liquidity** requirements as these opportunities are accessed through closed ended funds. Which will mean investors committing capital for up to 10 years or potentially longer. This may be an issue for schemes which are looking to buy-out in the near term or those with strict de-risking policies which require easy access to liquid assets.

[3]Climate Change Challenges, Aon, 2018

Investment characteristics

Most credible managers in this space typically target a net return of 8-10% per annum through capital appreciation and income generation. In our view strong top-quality managers can deliver this return objective but manager selection is critical.

Firstly, capital appreciation can be generated in several ways including bringing a project to fruition and optimising processes to enhance energy production.

Secondly, income can be generated through regular cashflows in the form of energy contracts (power purchase agreements), which can be agreed from the outset with government agencies or companies for the supply of a specified amount of energy in return for a specified price.

These prices are typically given floors and may be inflation-linked, reducing inflation risk. These agreements reduce volatility of the revenue stream of a project and therefore stabilises the value of assets. This is particularly attractive as returns are less sensitive to market cycles and shocks. Demand and supply for energy typically proves resilient in crises and allows projects to better retain value.

Position within a portfolio

Such investments are well-suited to the long-dated liabilities of maturing defined benefit pension schemes. Income distributions are made from regular revenues for energy supply, which are utility-like in nature, and can be used to pay for regular pension outgo.

Additionally, because long-term investors have capacity for assets to be tied up for a long period of time, investors can benefit from illiquidity premia.

Renewable energy infrastructure is a useful diversifier within a portfolio. They provide reliable long-term cash flows which have a low correlation with equity and bond markets.

Implementation

Infrastructure is not a homogeneous asset class, and for the reasons outlined above, we believe manager selection is crucial to navigate these risks and opportunities. Appointment of a best-in-class investment manager presents the benefit of specialist experience from deal sourcing to due diligence, risk awareness and hands-on management of renewable assets across geographies.

A global renewable energy infrastructure fund will typically provide exposure to onshore and offshore wind, solar and other sources.

Within a pension Scheme's existing investment strategy or illiquid asset portfolio, renewable energy infrastructure would provide valuable diversification due to the low correlation with traditional asset classes, and we are supportive of infrastructure.

While it is possible to add exposure through listed infrastructure equities, we do not recommend this approach due to the stronger correlation with broader equity markets[4].

[4]Global Infrastructure Equity, Aon, 2018

Conclusion

As energy (in particular electricity) demand rises and new technologies make renewable energy sources increasingly competitive, the global energy sector is undergoing a large and important transition.

Investors directly involved in this energy transition are well-placed to generate sustained real returns on investments in renewable energy infrastructure through capital appreciation and steady cash flows in the long term. Additionally, low correlations with traditional asset classes positions infrastructure as a portfolio diversifier.

We believe investments in renewable energy infrastructure is an opportunity for Trustees to contribute to global sustainability goals and meet financial objectives.

Please ask your Aon consultant if you would like any more information on our Buy rated funds in this area.

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