

Renewable Energy Infrastructure: Lessons from Manager Selection

March 2021



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Why read on?

Ushered into existence by government subsidies and guarantees, the renewable energy infrastructure sector has grown into a diverse, global and highly competitive asset class.

Appetite for renewable energy infrastructure among asset owners has been extremely strong, buoyed by **ESG agendas** (page 4) as well as broader demand for infrastructure as an asset class. Pricing pressure has increased: an increasingly numerous group of fund managers (65 fundraising at last count) and direct investors are vying for deals, while large oil and gas firms are also bidding for assets with a view to offsetting their large carbon footprints – often with a substantially lower cost of capital.

Asset managers' strategies have therefore evolved rapidly, with substantial changes taking place since bfinance last published commentary on the sector in 2019 (*Investing in Renewables*). At that time it was already evident that subsidies were in decline and that this asset class could no longer be treated as a 'fixed income proxy' with stable bond-like income streams and low exposure to energy price risk. Since then, the broad trends towards **more development and construction risk, newer technologies, alternative geographies** and **greater specialisation** have continued; managers are pulling at a variety of risk levers in order to support ongoing return expectations (page 5-6).

Investors must navigate the terrain with an increasingly steady hand. What presumptions and assumptions are underpinning return expectations? Are corporate Power Purchase Agreements (PPAs) an effective substitute for feed-in tariffs? How should the risks of new technologies be assessed? Are investors' and managers' interests appropriately aligned? How much exposure to merchant power price risk is desirable?

The **Covid-19 era** has thrown a spotlight on the extent to which renewable energy infrastructure assets are now vulnerable to power price risk. Assets in the early stage of the project lifecycle have continued to appreciate in value, whereas operational assets – supposedly the less risky group – saw valuations fluctuate due to volatile long-term power prices, even while continuing to generate their yields.

Furthermore, an unprecedented fall in demand for electricity during the pandemic, coupled with high levels of renewable energy generation, offered us a glimpse into a future where renewables accounted for a larger share of overall electricity generation. Although cleaner and greener, a renewables-heavy system is harder to manage, highlighting grid stability issues and the investment opportunities associated with addressing them.

As investors consider their approaches to renewable energy infrastructure, we hope that this short paper – which contains **two case studies** of manager searches conducted in 2020-2021 – will help to provide insight into the implementation of investment strategies in this space.

Jargon buster: feed-in tariff

A feed-in tariff (FIT, standard offer contract, advanced renewable tariff) is a government-created mechanism designed to encourage renewable energy generation by offering long-term contracts to renewable energy producers. Utilities pay eligible renewable electricity generators a set (e.g. cost-based) price for the electricity they supply to the grid.

Investor appetite

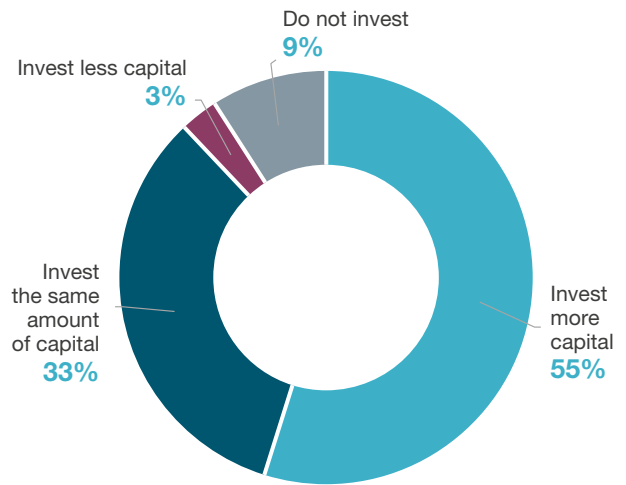
Demand for renewable energy infrastructure continues to rise as investors are driven by ESG-related priorities or drawn by the opportunities associated with the energy transition.

A growing number of institutional asset owners are seeking ESG-related ‘thematic investments’ and/or ‘impact investments’ that explicitly aim to deliver positive non-financial outcomes. The Infrastructure Investor 2021 *LP Perspectives Study* indicates that 88% of investors are either looking to increase or maintain their allocations to renewables (Figure 1). More broadly, bfinance data shows that 34% of investors in real assets (infrastructure and real estate) are involved in thematic investing, with an additional 20% considering it (Figure 2).

Many investors have added renewables to complement their existing infrastructure portfolios. We also see some newer allocators placing renewables at the heart of their infrastructure allocations and designing their investment strategies around a sustainable framework.

One newer tailwind, which is likely to become more powerful, is the rise of **carbon reporting** – a practice that can support demand for

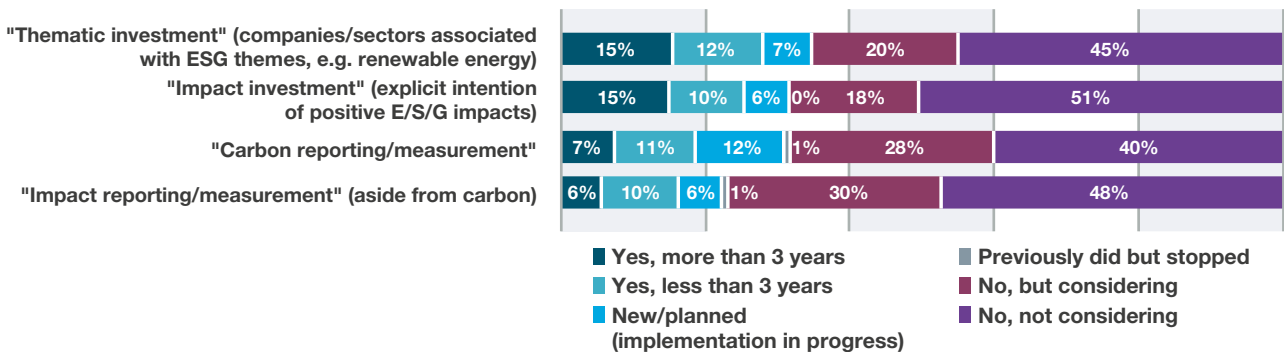
FIGURE 1: HOW WILL THE DISRUPTION OF COVID-19 IMPACT YOUR INVESTMENT STRATEGY IN RENEWABLE INFRASTRUCTURE?



Source: LP Perspectives 2021 Study, Infrastructure Investor

carbon-offsetting strategies in which investors establish targets for reducing overall emissions associated with their portfolio. *Recent data* shows that 46% of asset owners globally are now assessing portfolio carbon emissions, versus just 13% three years ago, and an additional third are “actively considering” doing so. It’s worth noting that a significant proportion of managers in this space do not produce fund-level information on carbon emissions.

FIGURE 2: WHICH OF THE FOLLOWING APPROACHES DO INVESTORS USE IN REAL ASSETS (REAL ESTATE OR INFRASTRUCTURE)?



Source: ESG Asset Owner Survey, bfinance, February 2021

Exploring strategies and risk drivers

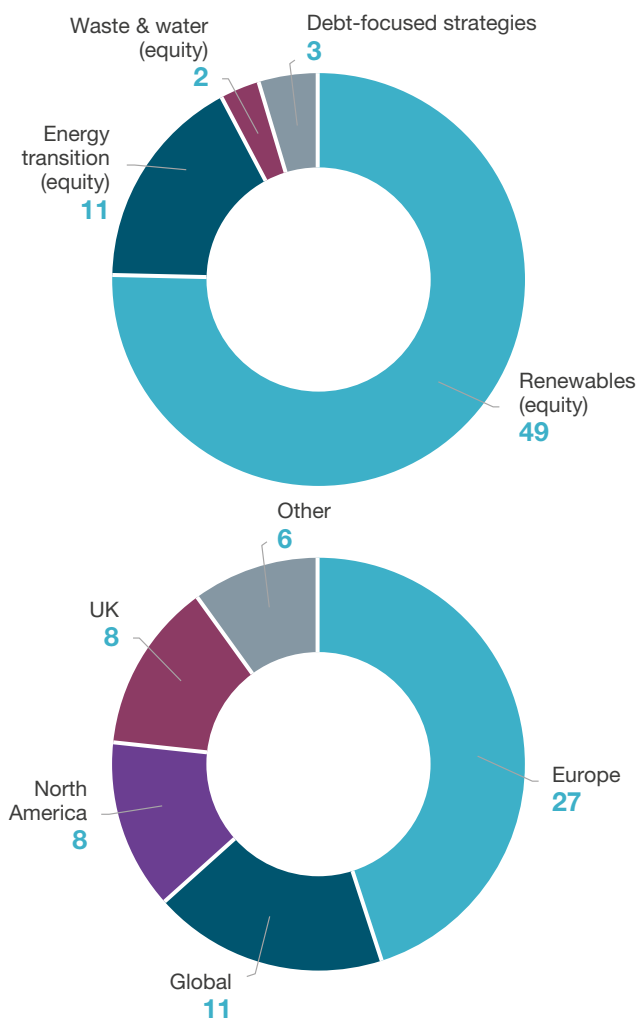
The landscape of dedicated funds in renewable energy infrastructure continues to grow as managers currently fundraise for more than 65 strategies, compared with approximately 50 in 2019.

Geographically, Europe remains the most popular region, followed by an increasingly credible group of global funds. In terms of **sector focus** we see a minority of strategies now focused on ‘energy transition’ rather than ‘renewables’, including themes such as energy efficiency, energy storage, electric vehicle charging and resource management. By **lifespan**, approximately three-quarters of strategies have a 10- to 12-year horizon while the rest have longer-term or open-ended structures. From a **risk** perspective, one can subdivide the universe of strategies into three segments: ‘Commoditised’ strategies with very well-established technologies, ‘Frontier’ strategies at the riskier end of the spectrum and ‘Crossover’ strategies in-between (*Investing in renewables*).

Expected returns, particularly for conventional technologies in developed markets, have declined. As a result, manager strategies have been evolving in order to remain attractive. It is important for investors to familiarise themselves with the drivers of risk and return – illustrated in Figure 4 – and understand which levers managers are pulling in order to boost outcomes.

For example, more managers are now prepared to enter projects during the development phase. Indeed, entering early and divesting upon commencement of operations now represents the most well-recognised route to double-digit returns in developed markets. Some managers are expanding the geographical remit, such as adding Central and Eastern Europe or developed Asia. Many are incorporating newer technologies, such as offshore wind, rather than focusing purely on the more conventional sectors of onshore wind, solar and hydro. We also see a growing number of strategies targeting less well-established themes associated with the energy transition, such as smart meters or grid stability projects. A notable emerging trend is the rise of ‘behind the meter’ energy storage solutions: on-site batteries paired with renewable energy generation.

FIGURE 3: MANAGERS BY SECTOR AND GEOGRAPHICAL FOCUS



Source: bfinance. Lower chart excludes ‘waste & water’ and ‘debt-focused’ strategies

Jargon buster: grid stability project

An emerging project type which involves producing or absorbing reactive power to the local grid (e.g. via a synchronised condenser) and ancillary services to maintain grid stability. Such projects can offer attractive risk-adjusted returns, especially where backed by availability-based payments from a (typically) investment grade counterparty. As renewables gain a larger share of the power mix, their intermittency means that grid stability becomes a more important theme.

¹ Based on bfinance manager research as of February 2021, for strategies raising commingled funds > US\$200 million.

Exploring strategies and risk drivers continued

FIGURE 4: KEY DRIVERS OF RISK AND RETURN

TECHNOLOGY	Conventional technologies (onshore wind, solar, hydro)	Complex technologies (offshore wind, biomass)	Less proven (grid stability, storage, EV)
OPERATIONAL MATURITY	Operational	Pre-construction	Development stage
REVENUE MODEL	Government subsidy	Corporate PPA	Merchant prices
LEVERAGE	No leverage	Long-term project finance	Future refinancing risk
COUNTRY/REGULATORY RISK	Western Europe, North America, Australia	Other OECD countries (e.g. developed Asia)	Developing countries
EXIT RISK	Buy and hold	Medium-term hold	Short-term hold

← Lower risk
Higher risk →

Source: bfinance. Note - this table should not be read as a linear assessment of risk.

To an investor looking to select an appropriate fund, these trends do represent a challenge in that they manifest as style drift for the relevant managers (as shown by the illustrative examples in Figure 5). This drift is not an obstacle per se: it certainly does not appear to have inhibited fundraising. Indeed there is a case to be made that infrastructure investors should remain nimble as societal needs and new technologies evolve. Yet a changing profile can make it harder to judge the team’s capabilities, with track records becoming less representative and relevant.

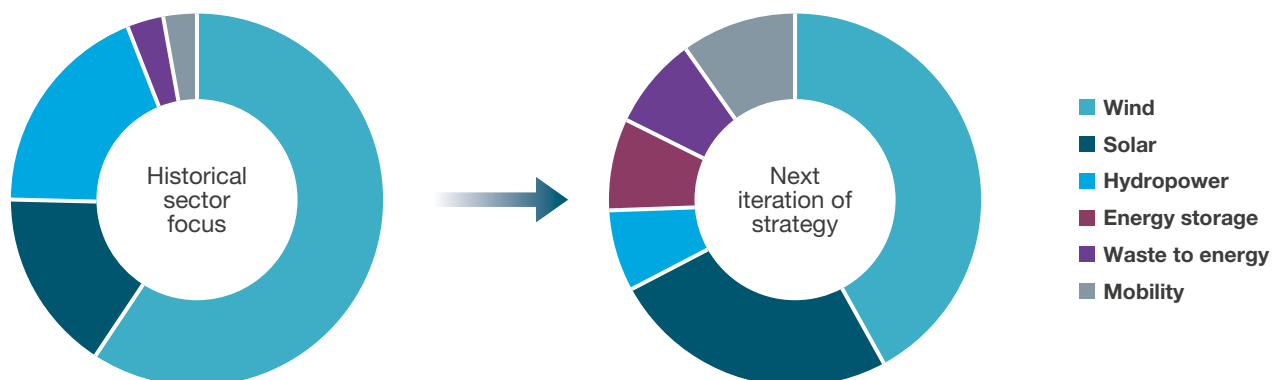
Development risk vs. construction risk

As greenfield investment becomes mainstream, investors need to distinguish between construction risk and development risk. Renewables differ significantly from other types of infrastructure investment in this regard: construction periods in mainstream infrastructure can often be longer than the development phase, whereas the construction lead-time for conventional renewable technologies is now

relatively short. As such, construction premia have fallen considerably – particularly in Western Europe, where the difference between operational projects and those that are ‘shovel-ready’ (underpinned by contractual revenue and a strong sub-contracting suite) is lower than ever. As such, managers have been moving towards taking development risk in search of returns.

One interesting trend associated with the shift towards development activities is the ‘internalisation’ of certain activities. While many managers have long had Operations and Maintenance (O&M) teams, bringing development and construction management in-house is a newer trend. Fee structures for construction and development often entail significant milestone payments: if these payments are being made to an in-house entity rather than an external entity, investors must ensure robust benchmarking; conflicts of interest must be managed effectively.

FIGURE 5: ILLUSTRATIVE EXAMPLE OF STYLE DRIFT IN LATER VS. EARLIER FUNDS (TECHNOLOGY)



Exploring strategies and risk drivers continued

Revenue models in focus

Although all of the risk drivers illustrated in Figure 4 should be handled with care, market participants should pay particular attention to revenue risk as government subsidies decline. Whereas investors formerly needed to assess exposure to merchant power prices after the expiration of subsidies, today's buyers must also understand the corporate PPAs that are being negotiated to cover the first 15-to-20 years of a project.

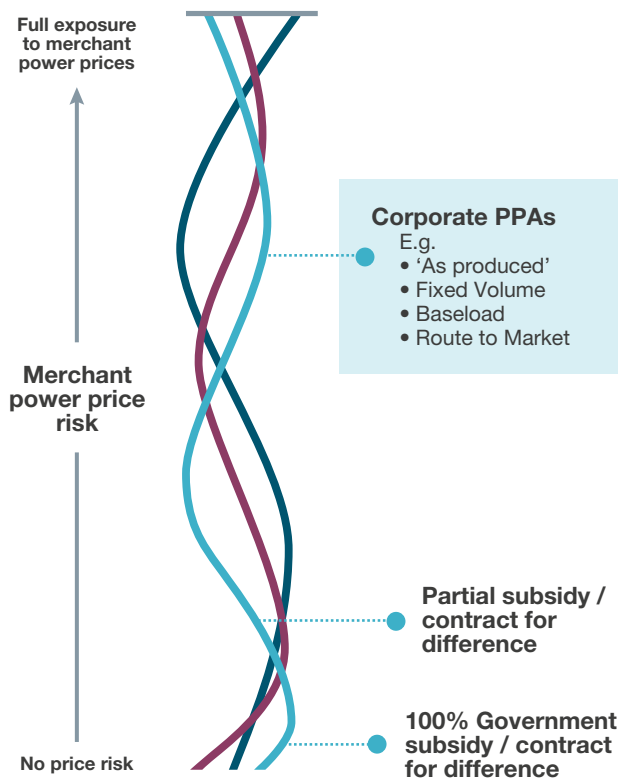
Not all PPAs are created equal. There are different structures, such as 'Sleeved' versus 'Synthetic' PPAs. There are different types – fixed-volume, baseload, route-to-market, 'as produced' – and different levels of coverage within each of those. Some PPAs are significantly more exposed to volume, production profile and merchant risk than others. The fundamental premise that 'contractual revenue' in renewable energy translates into "price certainty and minimal counterparty risk" is changing. It's worth noting that some asset managers are actively seeking to mitigate residual merchant price exposure with teams of hedging specialists in place to manage this component of risk directly.

When thinking about revenues, it is also important to think about 'volume risk' – defined in this sector as the possibility that the amount of wind, waves, sunlight or other source does not match expectations. Unlike power price risk, this one cannot be mitigated. We note several instances where companies have had to revise their assumptions around energy yields downwards, despite all the work that has gone into finding suitable locations, assessing the resource and designing the best layout and technology to suit site conditions. Forecasting is more challenging in some areas than others: offshore wind speeds, for example, are more predictable than those onshore. We have seen reports indicating that the average deficiency now lies between 1% and 10% in developed markets. Lower-than-expected production can have a meaningful impact on equity returns, depending on the financial structure.

ESG: a word of caution

Investors have different needs and priorities relating to broader ESG matters. Although ESG standards are generally improving in this asset class, we do still

FIGURE 6: ALLEVIATING EXPOSURE TO POWER PRICES



Source: bfinance

see differentiation between managers who rest on the argument that renewables represent a visible form of ESG in action versus those who are more committed to the broader ESG picture. A more credible approach should include the 'S' and the 'G' as well as the 'E', and within the 'E' it means considering issues beyond carbon emissions.

'Greenwashing' is a growing challenge. We have noted asset managers that talk about their ESG capability but have no ESG sections in their Investment Committee papers, and even ESG-related industry awards are no guarantee of strong integration in the investment process. Careful analysis should distinguish between substance and style. For example, understanding 'Noes' – where a team has turned down deals based on ESG issues – can be just as important as talking about 'Yeses'.

Manager selection case studies

1: GLOBAL RENEWABLES

Investor type: Asian pension plan

Date: 2020/21

Brief: The investor was seeking to allocate a substantial mandate (>US\$100 million) to one geographically diversified unlisted equity renewables strategy, driven by the desire to make more ESG-friendly commitments. Minimum target IRR: 8% net.

Client-specific concerns:

- > The investor’s first allocation to renewables.
- > Preference for one manager that offers diversification across geographies and technology types.
- > OECD focus (minimal emerging market exposure).

Understanding the manager universe

This engagement focused on the emergent group of global renewables managers; as discussed above, these managers represent a relatively small group in comparison with their European counterparts (the focus of the next case study). Global managers tend to offer closed-end ‘buy, build-and-sell’ strategies, although we do see open-ended global strategies emerging. This pattern represents a contrast with the European landscape where both ‘buy, build and sell’

and ‘buy, build and hold’ strategy types are relatively popular (page 9).

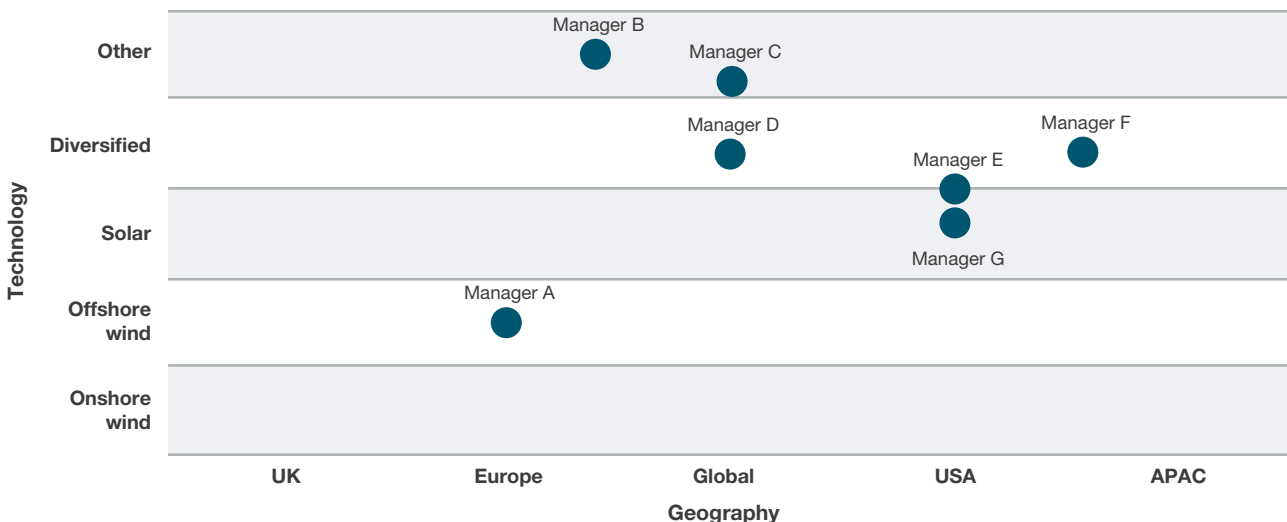
The diversification challenge

As illustrated in Figure 7, global strategies tend to be tilted towards a particular region or technology. Regional skews should not be surprising given the importance of local expertise and partnerships with regional developers in this asset class, especially in today’s more competitive environment. Among those that we would classify as genuinely globally diversified, only one delivered a strategy that was also diversified by technology type. This investor leaned towards managers focusing on more proven technologies. In terms of geographical focus, we observed a number of global managers pivoting their attention to developed Asia – most notably offshore wind assets in Taiwan.

Getting comfortable with track records

Since this allocation represented the investor’s first entry into renewables, it was crucial to provide strong validation for the manager’s track record and experience to gain conviction for the investment. Yet many of the available strategies lacked a direct predecessor, even if the relevant managers had previous renewables funds. A deeper understanding of the individual career experiences, personal track records of specific team members and relevant assets in predecessor funds all helped to provide a more robust picture, as did interrogating the investment thesis for seed assets within the new funds.

FIGURE 7: HOW DIVERSIFIED ARE ‘GLOBAL’ RENEWABLES MANAGERS?



Source: bfinance. Indicates at least 50% of capital allocated to the specified region/technology

Manager selection case studies continued

2: EUROPEAN RENEWABLES

Investor type: Eurozone-based insurer

Date: Autumn 2020

Brief: A seasoned investor in renewables was seeking to complement its existing portfolio with additional strategies. Minimum target IRR: 6% net of fees.

Client-specific concerns:

- > Solvency II-sensitive investor requiring predictable cash yield.
- > Preference for EUR-denominated funds.
- > Complementarity with existing renewables portfolio.

Understanding the manager universe

This engagement began with a landscaping exercise of all EUR-denominated strategies in the market. Given Europe's leading status for renewable energy generation, investors will not be surprised to find a plethora of options covering the entire region, single countries or subregions such as Scandinavia. We have also noted the growing number of **global** strategies denominated in EUR, with managers responding to European investor demand.

Figure 8 illustrates the breadth of offerings assessed at 'further analysis' stage, categorised in three ways that were relevant to this client: more conventional versus less-conventional technologies; 'build, buy and sell' versus 'build, buy and hold' structures; and the subregion ("Middle Europe" being continental Europe, "Other Europe" including the UK and Ireland). In the end, this particular investor ended up leaning towards conventional rather than emerging technologies.

Jargon buster: 'Buy, build and sell' versus 'Buy, build and hold'

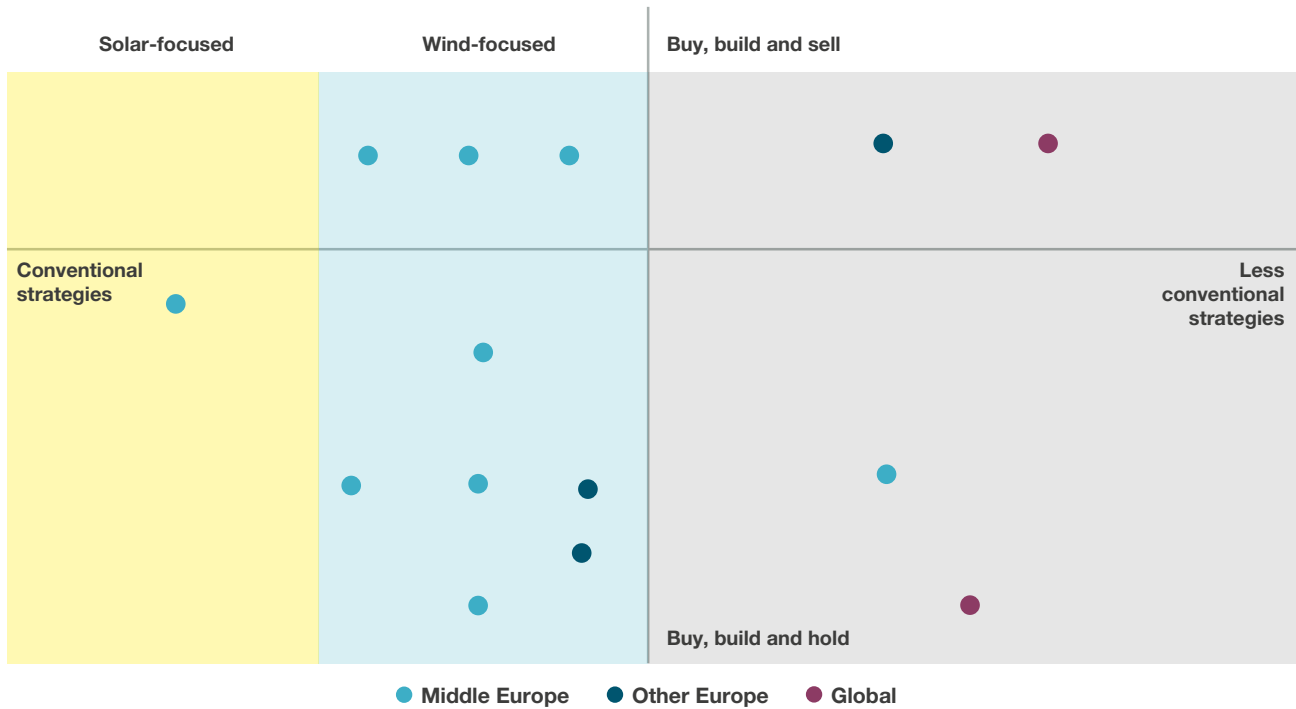
On average, 'buy, build and sell' strategies (10- to 12-year fund life) have higher return expectations than 'buy, build and hold' strategies (20-25 year fund life), although there is considerable overlap. 'Buy, build and hold' strategies tend to target a net IRR somewhere between 4 and 8%; 'buy, build and sell' strategies tend to aim at or above the 8% mark with many looking for 10%-plus.

Both types involve taking projects through the construction process, securing PPAs and project financing. The former seek to sell early in the economic life of the project, whereas the latter seek to deliver an ongoing return to investors, leaving limited residual economic value at the end of the project life.

'Buy, build and hold' strategies are typically viewed as less risky, but their return expectations rely heavily on the contractual nature of revenues (page 7) and on what happens between the time when PPAs expire – usually around the 15-year mark – and the end of the fund's life. It is important for investors to understand the extent to which managers expect returns to be generated during the PPA period versus the post-PPA period (see discussion about assumptions on page 10).

Manager selection case studies continued

FIGURE 8: EUROPEAN RENEWABLES FUNDS ANALYSED IN DETAIL FOR THIS CLIENT



Source: bfinance manager research

Scrutinising assumptions

When analysing ‘buy, build and hold’ strategies (page 9), investors need to consider the interplay between the duration and structure of PPAs, the maturity of debt and the assumptions that follow the expiry of PPAs (refinancing, power prices). Most managers projected that, by the end of the contractual life of the PPA, investors would receive their investment back and project financing would be fully repaid, with positive returns being generated after that point.

For the ‘buy, build and sell’ strategies, investors need to understand the manager’s experience in taking projects through development and construction as well as the cost of capital compression at exit. The holding period proved to be an important driver of projected returns, with many managers basing their performance expectations on holding projects for a relatively short period of time before selling them to a buyer with a lower cost of capital.

Another key ‘assumption’, which can be a source of controversy, is the projected asset life. Whereas we previously saw considerable uniformity around assets having a 25-year useful life, we now see some managers assuming periods of 35 or 40 years. The

shift might seem insignificant on a discounted basis but can materially impact projected returns.

Analysing past returns

When examining track records, it can be challenging to navigate differences in how different managers report on their returns, such as ‘Hold to Maturity’ versus ‘Since Inception’ figures. ‘Hold to Maturity’ figures are dependent on future cash flows (power prices); ‘Since Inception’ figures may be artificially inflated over the short term due to mark-ups in asset valuations. Detailed examination of track record was an extremely important factor in the choice of finalists.



Key takeaways

Evolution of the opportunity set. This sector should no longer be approached as a fixed income proxy. The line-up of investment strategies continues to evolve with a shift towards less well-established technologies and approaches as managers seek new ways of delivering outsized returns.

Changing economics of the asset class. With construction costs falling and subsidies being scaled back or eliminated, the profitability of conventional renewable technologies is becoming more dependent on merchant power prices. It is increasingly important to understand economics and asset underwriting.

Track records under scrutiny. The sector is increasingly difficult to navigate due to the number of new managers entering the field and the style drift of existing managers. Investors must have a clear approach for assessing managers, including track records or experience that may not be representative of the current strategy.

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