

THE MISSING RENEWABLE DEPLOYMENT

1 Executive summary.

- **The renewable generation sector hit a peak of growth optimism in 2020/21 with companies projecting a doubling of deployment growth rates compared to the previous period.**

This bold ambition reflected the increased demand for renewable generation combined with indications of stronger policy support. However, it may also have reflected the need to meet the growing expectations of investors in a sector where valuations had recently more than doubled.

- **What followed was an inevitable disappointment – deployment in 2021/22 fell approximately 40% short of projections with further cuts expected over the next three years.**

Although Covid restrictions played a role, companies have pointed to more persistent structural problems in permitting, grid connections and, more recently, supply chains and cost inflation, which have all contributed to the problems faced by renewable management teams worldwide.

- **So far companies have largely been able to offset the impact on earnings and cashflow by taking advantage of the exceptional electricity market prices caused by the European Energy crisis.**

European renewable operators in particular have seen earnings upgraded even as deployments have disappointed. In the US, the extension of tax credits has enabled some companies to continue to meet earnings targets through ‘repowering’ existing assets rather than installing new assets.

- **However, equity markets have now reacted to the downgrades and adjusted valuations accordingly.**

Valuation multiples in the renewable sector have halved from the 2020/1 peak, with a notable decline over the past 12 months as companies have started to update and downgrade growth forecasts.

- **From an Infrastructure Investment perspective, it is arguable that *growth* was never the issue – it has always been about *returns*.**

It has always been possible to generate headline growth by accepting lower returns on new projects. ATLAS analysis has consistently shown that it is the excess return over cost of capital on a project that matters, far more than the number of projects that can be completed.

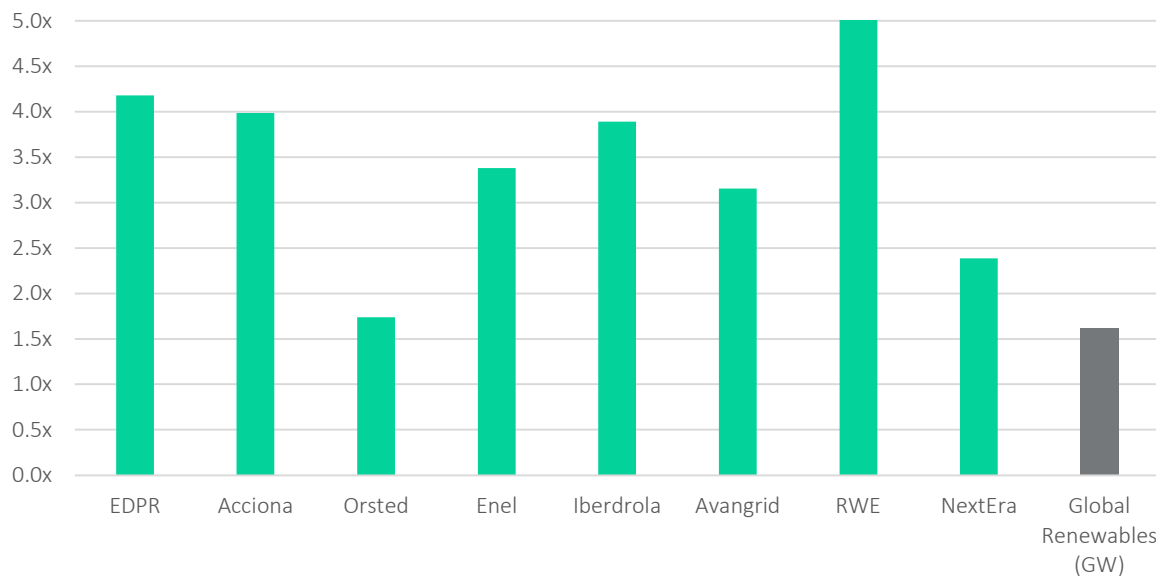
- **Therefore, lower growth and lower market valuations could represent an advantageous opportunity for Infrastructure Investors.**

The energy transition will require a multi-year acceleration in renewable energy deployment. However, growth on its own does not guarantee positive investment returns, especially as growth will be lumpy and equity markets tend to over-capitalise in high growth markets and under-capitalise when growth is falling. Therefore, the key job for infrastructure investors in this phase of the cycle is to look through the noise around deployment targets, understand what is going on at the project level, and determine the trajectory of the underlying renewable project returns.

2 Great Expectations of 2021 – Growth rates were expected to double, and deployment was expected to triple compared to the previous period

The chart below shows the acceleration in renewable deployment forecast by eight of the largest renewable developers in our coverage universe. On average, companies were guiding to more than triple annual renewable deployment in the next four years compared to the previous four years. This compared with the IEA forecast of an increase in Global Renewable deployments of 1.6x over the same period.

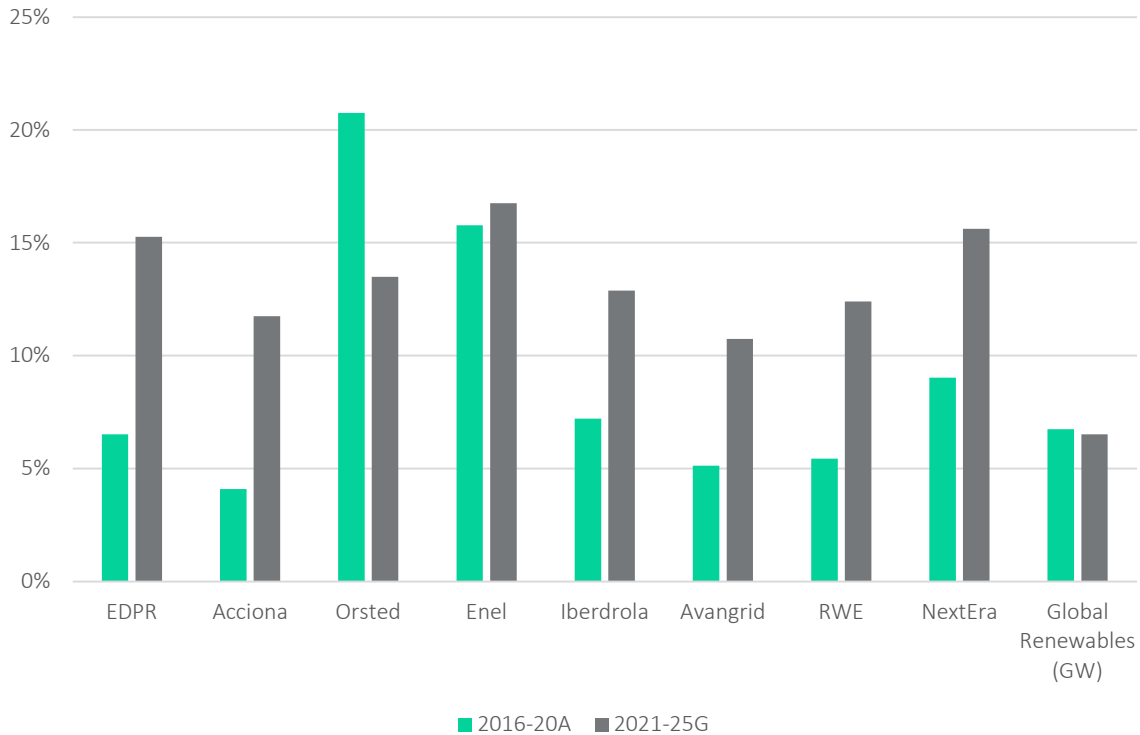
Annual projected MW build 21-25 vs average build 2016 - 20



Source: Company presentations, IEA Global Energy forecasts, ATLAS calculations

The chart below shows the acceleration expressed as a change in growth rates for each company. On average, companies were projecting a doubling of growth rates from an average of c. 6% in 2016-20 to between 10% and 15% in 2021-25. This contrasted with the IEA global forecast which had a stable growth rate (implying an increase in absolute additions).

Project change in renewable generation CAGR



Source: Company presentations, IEA Global Energy forecasts, ATLAS calculations

Within the company group there were some notable exceptions to the general growth forecast acceleration:

- Enel’s growth rate remained at a constant high level, reflecting the high rate of build out in the previous four years.
- Orsted’s growth rate was the only company rate to decelerate in the period, again as a result of coming out of a period of very rapid growth due to a small number of large offshore projects coming online.

Whilst each individual company was developing guidance based on their own strategy and business model, we would note that the acceleration in growth plans was coincident with a rapid increase in market valuations and capital flows into the sector:

The S&P Clean Energy Index, 2018 - 2023



Source: Factset

There was clearly a level of positive feedback between company growth plans and market valuations. Investor flows into renewable energy encouraged companies to accelerate their growth plans which in turn supported higher valuations which then resulted in increased investor flows into the sector.

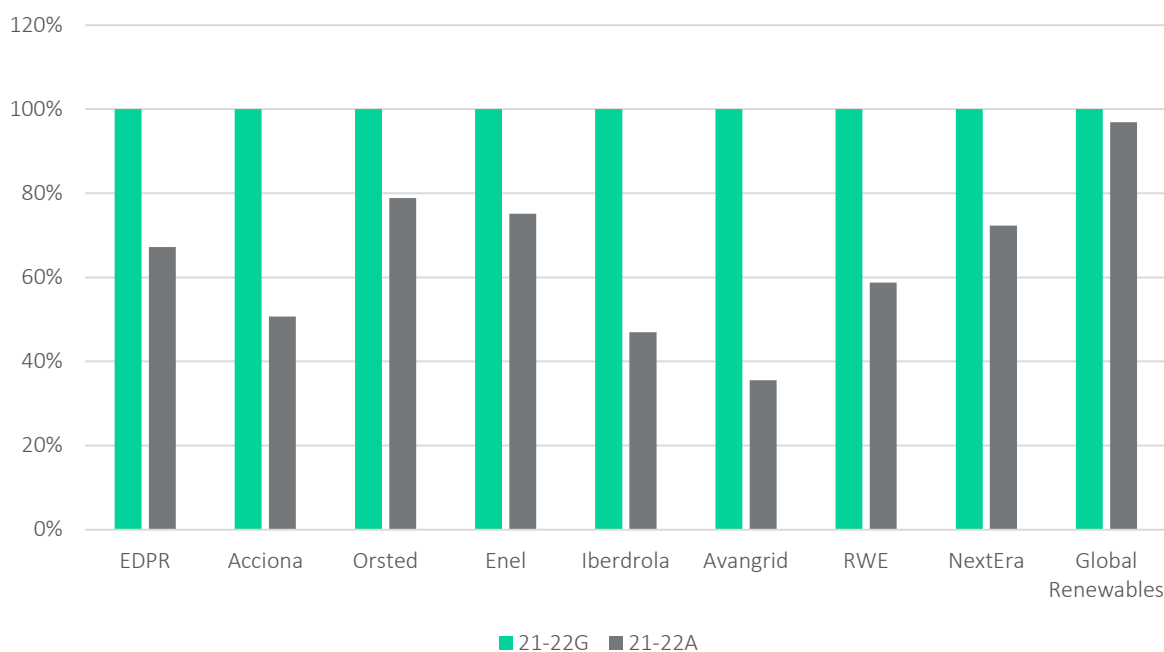
As an indication of how extensive the feedback loop became, companies that did not promise to increase renewable growth and capital allocation then became the targets of shareholder activism. Two of the most high-profile cases involved Elliot Capital Management which launched public activist campaigns against SSE and EDP (owner of EDPR). In both cases, Elliot made an explicit case that the company boards should be doing everything in their power to increase renewable deployment and growth given the high market valuations currently awarded to renewable assets compared with legacy businesses.

3 The great disappointment – renewable installations missed expectations by approximately 40% in 2021/2 and guidance on 23-25 expectations is falling fast

Current deployment is falling behind company forecasts

Looking back on actual deployment in 2021 and 2022, it has been clear that the promised acceleration in deployment has not come to fruition. On average, companies have delivered 40% less MW of gross deployment than expected in 2020/1.

Achieved renewable build vs guidance 2021, 2022



Source: Company results & presentations, IEA Global Energy updates, ATLAS calculations

The disappointment in company build-out performance was offset by a Global Renewable sector performance which almost exactly matched expectations. Hence management teams were not able to place as much responsibility on global issues (such as Covid related delays). Instead, management teams provided a number of region and sector specific explanations for the slower build out over the time period:

- Permitting and transmission related delays were particularly prevalent in Europe and the UK (but also in the US) and particularly impacted Acciona, EDPR and Iberdrola.
- Within the US market – the impact of the tariffs on Chinese Solar panels and the investigations into tariff avoidance were pointed at as causes for delays to solar project deployments (this impacted NextEra and Avangrid).
- More recently supply chain issues and capital cost inflation have led to companies starting to either cancel projects or, more usually, delay until economic conditions improve.

The shortfall in current deployment is now feeding into lowered guidance 2024 and 2025

Over the past 18 months, we have seen companies start to revise deployment targets following the slower growth in 2021/22. The chart below shows the change in total deployed MW in 2025, comparing the most recent management forecast vs the 2020/21 forecasts.

Change in 2025 MW target



Source: Company results & presentations, IEA Global Energy updates, ATLAS calculations

As seen on the chart above, on average, the selected companies are now expecting 20% lower MW in 2025 vs the original forecast. The individual variation reflects:

- Companies such as Avangrid, Iberdrola and Enel that have reduced their run-rate deployment for 23-25 based on the slower recent deployment.
- Companies such as EDPR and RWE where the companies are maintaining the same run rate forecasts, implying that the recent slowdown can be reversed (or simply reflecting that the companies are yet to update strategic plans).
- Companies such as Nextera and Orsted where their guidance is implying an increase in 23-25 deployment vs original forecasts, suggesting some form of incremental 'catch up' growth.

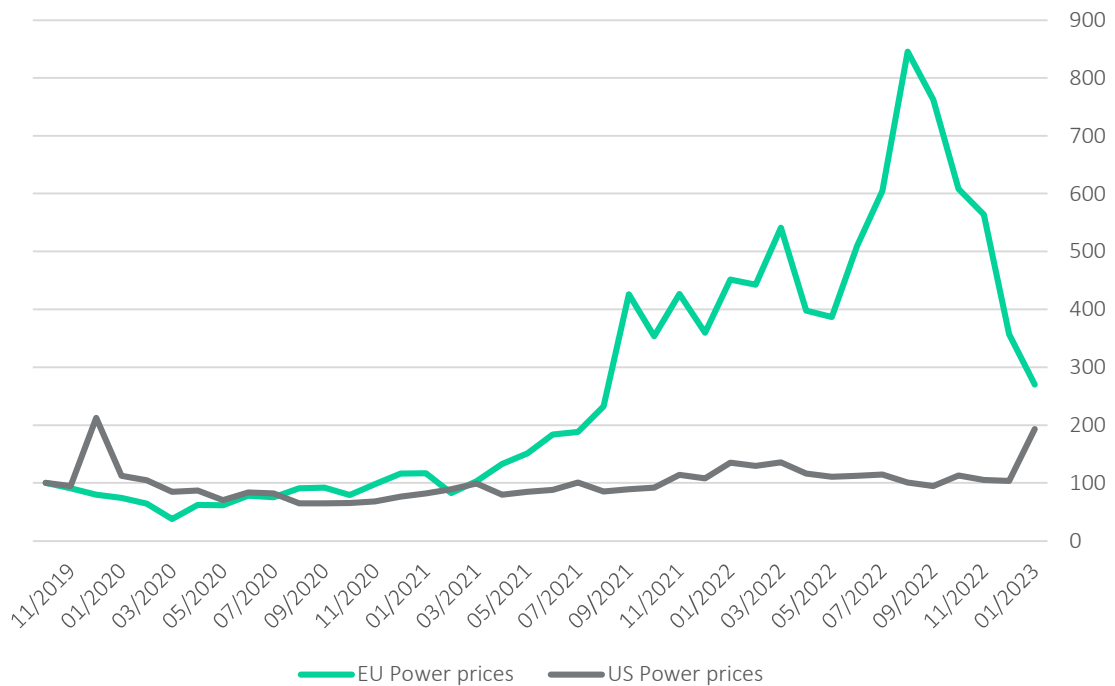
Hence, we would expect further marginal reductions in company targets over the next 12 months which will, in turn, start to feed into expectations for earnings and valuations.

4 Impact on earnings forecasts and valuations

The recent global spike in wholesale electricity prices has helped to mask the financial impact of the deployment shortfall

The chart below shows the development of wholesale power prices in the EU and the US from 2019 to 2023. Companies with renewable assets in the EU that were exposed to wholesale prices (i.e., not under long term contracts) enjoyed material increases to revenue and EBITDA (even accounting for the EUR180 / MW cap on pricing).

EU and US wholesale power prices, 2019 to 2023



Source: BNEF, ATLAS analysis

We can see the impact of this in the table below, which compares the change in expected renewable deployment in 2025 with the change in market expectations for EBITDA in 2025:

Change in 2025 EBITDA forecasts vs change in Renewable MW forecast							
		Old 2025(f)	Time / Guidance	New 2025(f)	Change in EBITDA(f)	2025 change in MW(f)	Comments
EDPR	EURm	2,300	2021, post CMD	2,600	13.0%	-13%	Exposed to merchant pricing in Iberia and Europe
Nextera	USDm	15,200	Post 2021 financial results	15,850	4.3%	-4%	Diversified business mix offset any impact from build out
Acciona Energia	EURm	1,500	2021 at the time of the IPO	1,500	0.0%	-28%	Exposed to merchant pricing in Iberia and Europe
Orsted	DKK	34,120	Post CMD 2021	33,000	-3.3%	4%	Lower forecasts due to lower gains from asset sell downs
Avangrid	USDm	2,800	Post 2022 Strategic update	2,685	-4.1%	-59%	Diversified business mix reduced impact from slower build

Source: FactSet, Company Presentations, ATLAS analysis

- EDPR and Acciona had the most exposure to European power prices and therefore the lower deployment has been more than offset by merchant revenues.
- In the case of US companies such as Nextera and Avangrid, although there was some benefit from power prices, the companies have had to rely on upgrades from their diversified utility operations to offset or mask the renewable downgrade.
- Orsted appears the outlier (higher MW, lower EBITDA); in this case the reduction in EBITDA expectations, despite maintaining deployment targets, has much to do with a lowering of expectations for value accretive 'farm downs' of offshore assets.

In this context, the passage of the Inflation Reduction Act in the US was significant in that it enabled renewable developers to continue to access tax credits for new projects and also for re-powering existing assets. Therefore, as new projects slowed, companies were able to switch focus to re-powering in order to maintain earnings guidance.

However, market valuations have clearly taken note of the deployment problems

Despite short term earnings remaining supported by higher wholesale prices, equity markets have clearly taken account of the slower growth trajectories as share prices have dropped and multiples across the sector have fallen from 2020/21 highs, with a marked deterioration over the past 12 months as slower deployment has started to feed into growth forecasts.

Renewable sector multiples 2019 - 2023



Source: Factset, ATLAS estimates

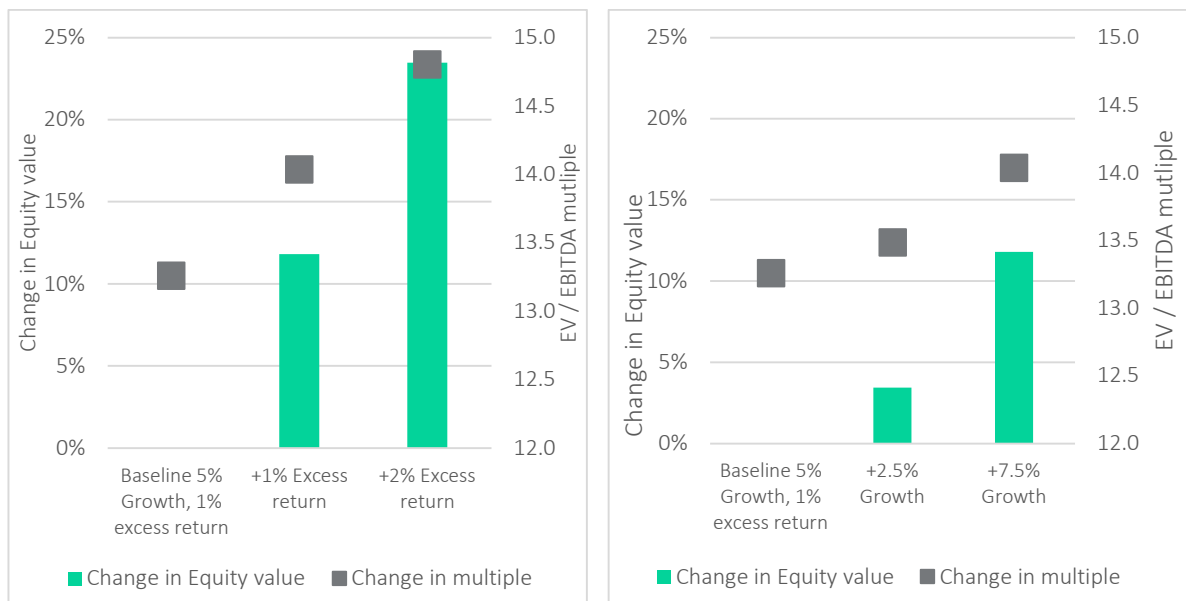
5 Implications for investors in Renewable Generation Infrastructure

Whilst the market worries about growth, investors should focus on returns

ATLAS analysis of renewable assets and developers has consistently highlighted that excess returns (project IRR – Project WACC) are far more significant for investor returns and valuations than growth.

The chart below highlights the valuation outcomes for a renewable company, currently growing at 5% p.a. with an average excess return on new projects of 1%, based on either accelerating growth or trying to improve project returns:

Impact on returns from growth vs excess returns



Source ATLAS Infrastructure analysis

In this worked example – every 1% of extra excess return is worth the same as adding 7.5% of growth CAGR per annum to the deployment pipeline.

Therefore, it matters more *why* companies miss targets rather than *how much* they miss targets by

Companies either lowering or missing deployment targets might not be bad news for renewable company returns provided that:

- If the problems are supply side – i.e., due to bottlenecks in permitting and transmission access, then we would expect to see a smaller number of projects getting built, but those projects should then experience higher demand which would support higher returns.
- Alternatively, if the missed targets are due to companies walking away from projects that don't meet return hurdles – then this would be seen as neutral for returns – no excess demand but no excess supply either.

However, we could equally be seeing a problem with the demand side as well:

- If companies are not able to meet targets because there is too much competition from developers for a limited number of opportunities, then it is more likely shareholder returns will suffer as competitive pressures on cost of capital become more prevalent.
- Likewise, if companies cannot meet targets because there are simply not enough offtakers (high quality counterparties able to contract for the renewable power) to support the project financing – then this again would be a negative environment for returns as it would be a ‘buyers’ market’ for renewable power offtakers which in turn would push down returns.

Early indications suggest that there may be elements of both. In the EU, site availability and major delays to permitting and transmission connections have dominated company commentary, with most companies optimistic that these issues will abate in the near future as governments have committed to expediting processes in order to facilitate the ambitious energy transition plans laid out in RePowerEU. Similarly, in the US, major issues in the supply of solar photovoltaic panels were blamed for the delay in project roll-out, particularly due to trade barriers placed on China, the leading global manufacturer.

On the flip side, there is potential evidence that contract availability was an issue in 2022, particularly in Europe as new PPAs signed in Europe amounted to only 8.5GW, down from the previous year high of 10.6GW in 2021, largely a result of utility backed PPAs falling by nearly 75% because of the energy crisis¹.

Renewable generation will remain a sector in which material capital can be deployed at good returns – however detailed due diligence on the project returns will be key

With the growth in global renewables set to rapidly increase from ~3600GW in 2022 to ~5600GW by 2027² the past few years have just been the start of the renewable generation growth cycle. With that level of deployment expected, it is reasonable to expect that a repeat of the issues observed in 2021-22 could occur again even if only affecting small pockets of the globe at any one time. Hence, we should expect further cycles of the equity market excess optimism and pessimism we have seen over the past 2-3 years. We believe that these cycles will present opportunities for active infrastructure investors to deploy material capital at attractive underlying returns.

The challenge however, is to identify the genuine opportunities amongst the noise of volatile equity markets and rapidly shifting forecasts. For ATLAS, our approach can be summarised as:

1. **Focus on the existing operating assets** – these are the projects where we can gain good estimates of capex, opex, production and realised prices and therefore an accurate estimate of the actual excess returns being generated. The cashflows from these assets should form the majority of the expected return for the company.
2. **Identify the growth assets where there is a meaningful competitive ‘barrier to entry’** – Nearly all renewable companies have growth pipelines, however these will often contain a range of projects spanning those that are nearing completion with costs and returns locked in, those that have secured planning and transmission, and those that are largely ‘paper’ projects that still have a number of hurdles to clear.

¹ Pexapark PPA tracker 2022 report

² IEA

3. **Add the value of the 'secured' growth projects where there is evidence of excess returns** – Where we see either barriers to entry or projects where the returns are locked in, we build those projects into our base case forecasts and valuation and make a specific assessment of the expected excess returns based on both the specific project due diligence and the management's track record.
4. **Include residual pipeline at zero excess return** – For the residual growth pipeline (which can be most of the total), we assume these will be built, but all at cost of capital which assumes no competitive advantage or value creation. This extra growth therefore has no net impact on our forecast returns.

The ATLAS approach has tended to give different signals to those of the equity markets. In times of optimistic outlooks and high valuations, when equity markets capitalise multi years of value creation, we see lower returns (real equity IRRs in the low single digit ranges) and therefore few investment opportunities. However, when markets turn and become pessimistic, our approach will often identify companies where the underlying assets are sound, where management has maintained financial discipline and where falling valuations have resulted in an attractive entry point (real equity IRRs in the high single digit range).

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