Renewable energy returns – where next for investors?

As the macroeconomic environment shifts from one of low to higher interest rates, Marija Simpraga assesses how this may affect returns for investors in renewable energy projects.

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The returns required by investors for their direct investments in renewable energy were declining for the best part of the past decade. A low-inflation, low-interest-rate environment, coupled with increasing awareness of environmental, social and governance (ESG) considerations, has resulted in fierce competition for a limited pool of assets, exerting ever more pressure on return expectations.

As the macroeconomic environment shifts, however, will investor return requirements in renewable assets rise, and where will the corresponding increase in the cost of capital leave European clean energy investments?

Measuring the viability of projects

A simplified way to examine the viability of power projects involves comparing their levelised cost of electricity (LCOE) against the power prices the project is expected to achieve. LCOE is defined as the economic cost of a particular generating technology or a power project. Another way to define it is the electricity price at which the project owner would break even after paying the required rates of return on capital, given all costs (capex, fuel, maintenance etc.) incurred over the lifetime of a project. It is calculated by discounting costs during the project's lifetime per unit of electricity generated.

In other words, for a project to be economically viable, the electricity price at which the output is sold should be equal to or higher than the project LCOE.[1] Among the main drivers of a renewable project's LCOE are usually capex, output volumes and the cost of capital.

Using the example of a hypothetical onshore wind farm in France selling all its output in the wholesale power market, we modelled the LCOE at different levels of cost of equity. We incorporated higher capex requirements, higher debt costs and the EU power price cap in the analysis. What we found was that, at current power price projections, the project economics would likely remain sound even if equity costs were to increase from the current levels.

1. LCOE is a simplified way to look at project economics. For more on LCOE inputs and limitations, see IEA (2020)

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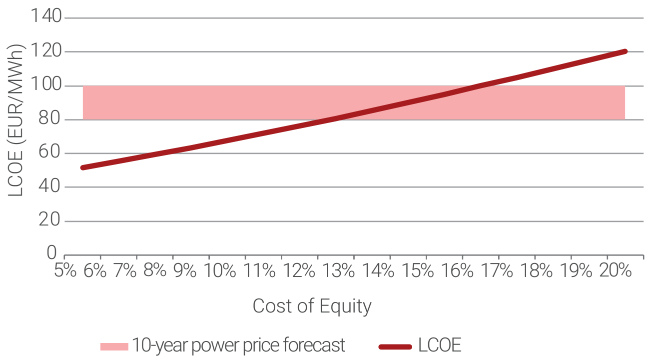
Rising cost of equity increases LCOE



Sources: BNEF, LGIM Real Assets Research as at 01 November 2022.

The LCOE data suggest that the overall project economics are likely to remain sound after accounting for the higher cost of equity. This is primarily driven by increased power prices, which offset the impacts of higher financing and build-out costs, even after taking into account the impact of windfall taxes and power price caps. In other words, if investors currently require a 10% return from a merchant onshore wind asset in France, the LCOE of the project is likely to sit in the 60-70 EUR/MWh range. Meanwhile, the prevailing power price forecasts over the next decade are higher than the LCOE, suggesting these types of projects are typically able to support higher return requirements.

This modelling exercise assumes a single owner who holds the project through its development, construction and operational phase. As we discuss below, in reality this is rarely the case, with assets usually changing hands between developers and investors in the early phases of a project's life.

The renewable market landscape in Europe

There are various market participants within the European clean energy market. They tend to be involved at different points in a project's life, bear different types of risk and achieve different levels of return from renewable projects as a result.

In the early phase, companies procure land suitable for renewable project development. This is followed by the development phase, where developers perform various technical analyses, which is then followed by project construction and commissioning.

The developers take on the initial risks related to, among other things, securing land, building permits, grid connection and offtake agreements. Once those key elements are in place, developers can either choose to sell projects as 'ready-to-build' or can complete the construction and sell once operational. There are other versions of the same process whereby developers – usually large utilities – sell a minority stake in the projects while retaining operational control (the farm-down model).

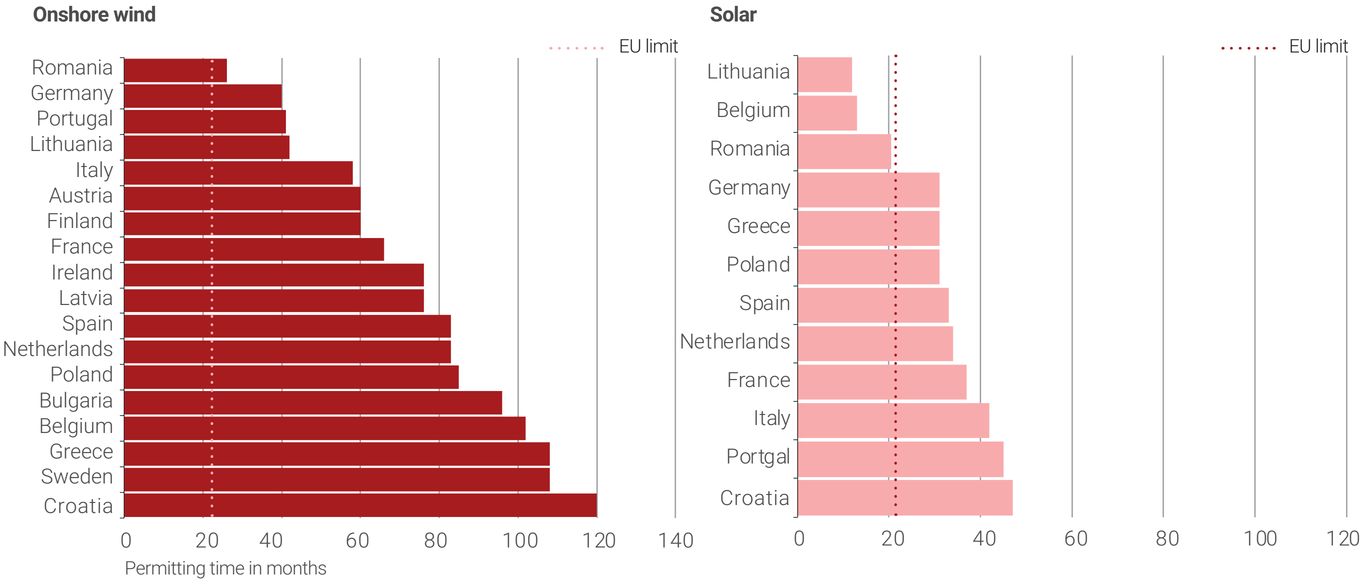
There is a considerable risk of delays and cost overruns in the early stages of the project's life, which is why developer rates of return on successful projects are often relatively high, with anecdotal evidence suggesting that internal rates of return (IRR) are usually in double digits.

Developer returns are highly sensitive to delays and cost overruns. While projects executed smoothly can potentially realise high returns, a 12-month delay can significantly reduce these, according to our modelling.

Delays in the permitting stage are often the key reason behind project overruns and slower-than-needed renewable capacity deployment. In this article we use 'permitting' to describe all administrative processes which take place between the conceptual phase through to construction: construction permits, environmental impact assessments, other technical studies and securing the grid connection.

While the EU target is for the permitting phase not to exceed 24 months, in reality, an average process takes much longer in most member states.

Wind and solar permitting delays exceed EU limits



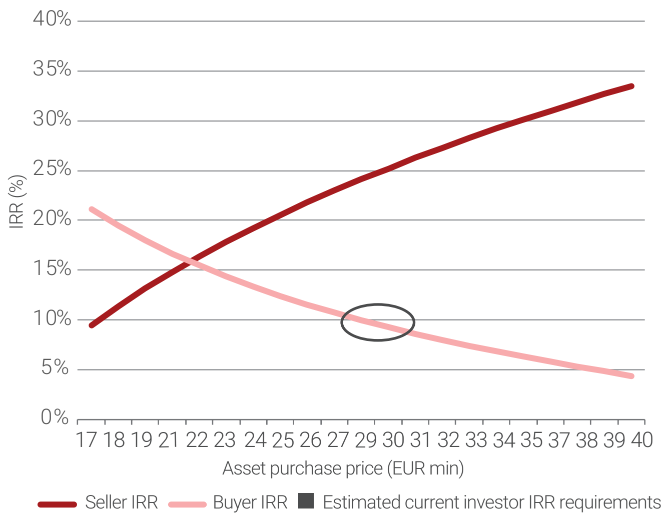
Source: Ember, WindEurope as at 01 December 2022.

Meanwhile, investors usually come into projects at a later stage and bear less risk of delays and capex overruns and, therefore, usually earn lower returns. During the low rate, low inflation environment of the past decade, investors' expected returns continued to decline – on average, the price investors paid for infrastructure assets increased, according to EDHEC data.[2]

As the macroeconomic environment changes, however, the returns investors require from renewable projects may increase. We turn back to our hypothetical onshore wind farm in France to analyse what rising investor returns may mean for project economics.

The exhibit opposite illustrates the levels of returns for the seller (developer) and buyer (investor) at various asset purchase prices. While an increase in the investor's required returns would mean lower returns for the developer, a 100-200 basis points (bps) increase in investor required returns would still leave developer returns well into double-digits. In fact, the notional lifetime IRR from owning the project through development, construction and end of useful life stands at around 15%. This suggests that, in this particular example, the seller has an incentive to sell as long as the IRR from selling the asset exceeds 15%.[3]

Seller and buyer returns for our hypothetical onshore wind farm in France



Source: BNEF, LGIM Research as at 20 November 2022.

2. EDHEC data and LGIM RA research as at 30 January 2023.
3. The analysis described here is meant to illustrate broad project economics using a hypothetical example wind farm. Individual project economics can vary widely depending on location, technology, financing structure and other factors. The figures described above are a product of our modelling and should not be taken as LGIM views of returns for current investment opportunities.

What could go wrong?

Our modelling exercise described above suggests that high energy prices have kept renewable project economics resilient, despite increased capex and windfall taxes. While power prices have declined from record highs achieved in 2022, they remain well above historic averages. Meanwhile, forecasts suggest that prices are expected to remain elevated for the remainder of this decade.[4] At current power price projection levels, many renewable projects in Europe are likely to be able to withstand higher costs of debt and equity, as shown by project LCOE data.

There is an implicit trade-off between investor and developer returns in renewable transactions. Assuming a moderate increase in investor return requirements, this would likely leave developers with returns well above their hurdle rates. This is especially the case for more efficient developers, who are typically able to minimise delays and cost overruns in the development stage.

There are implicit assumptions and limitations, however, to the scope of our analysis.

Project economics will vary across different jurisdictions, especially as EU member states are applying different levels of power price caps. Even within individual countries, generation volumes can vary significantly in different locations.

Our analysis also assumes that the current environment of high power prices prevails for most of the remainder of this decade. A drop in realised power prices – whether due to economic factors or further windfall taxes – would likely have detrimental impacts on returns, even if project capex declines going forward.

At present, developers capture relatively high returns for de-risking renewable projects and selling them on to investors. If investors' required returns rise, developers could decide to keep more projects in-house once operational. In our view, there are limits to how much operational capacity developers can retain. Their corporate cost of capital tends to be high. In our view, retaining operational assets would likely depress return on invested capital and is unlikely to be the most efficient use of the balance sheet. Additionally, retaining more operational capacity would likely mean a smaller future pipeline and losing out market share to competitors.

In short, we believe European renewable project economics remain sound, even with the higher cost of capital. The new macroeconomic environment will, however, require a new equilibrium between developers and investors, along with a policy environment that recognises and addresses obstacles to efficient renewable deployment.

4. Aurora Energy Research, as of January 2023.

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Key risks

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