

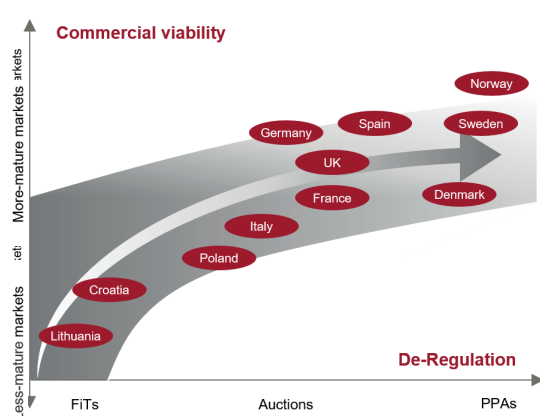
Maturing renewable energy markets offer an incremental opportunity set

Historically, the typical risk profile of renewable energy investments has been determined to a high degree of regulation, intended to eliminate price risk through fixed feed-in tariff systems and volume risk through embedded priority to dispatch mechanisms. Together with the subsidy-like character of tariffs, this has been a major driver in the tremendous development of the European renewable energy investment market over the last 20 years. It moved renewable energy investments away from its niche presence within the infrastructure space and into the focus of the broader investment community as a stand-alone asset allocation.

But as markets have evolved and technology has matured, such support regimes have decreased in importance. In recent years, as the commercial viability of projects increased, several markets across Europe have started to de-regulate. Higher investor confidence and declining investment cost have reduced subsidy requirements as renewables to pick up momentum on their way to grid parity. As a result, governments initiated the run-down of regulatory frameworks and reduced embedded financial support.

This development triggers a question over the change of the overall opportunity set of renewable energy assets and its value and risk drivers. Unquestioned for the last 20 years have been inherent value drivers such as technology and resource risks. But there are also new aspects coming into play which have previously not been at the forefront of renewable energy investors' minds.

Chart 1: Markets on route to de-regulation



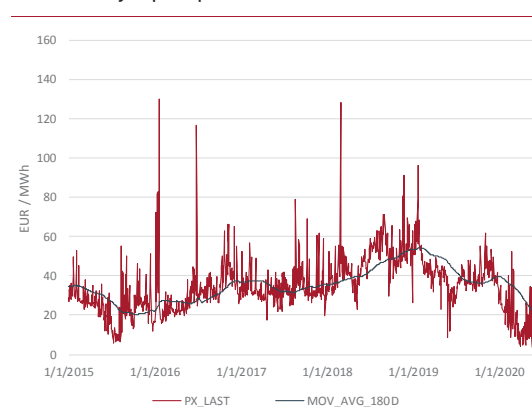
Is it about more or just other risks?

With continuing deregulation, value drivers have been evolving. Off-take price can be used as an example: as with any other producer of services, goods or commodities, price volatility was and will always be present. In the past, projects were hedged by way of fixed feed-in price regimes as part of the regulatory environment. With the fading support from such regulations, price volatility is now a primary value driver.

Therefore, prudent asset management nowadays must include dealing with already present or future off-take price volatility. Investors and managers have the option to either hedge this risk - for example, by buying into revenue swaps providing the energy

generating asset with an availability-based risk profile - or, by contracting the electric output for a fixed price with a private, third party off-taker by signing a power purchase agreement ("PPA"). But as always, hedging comes at a cost. In this case, it is the discount between the market price and the settlement price of the instrument. Moreover, it introduces another inherent risk associated with hedging: counterparty risk. While in the past, this was typically transferred to a governmental body as part of the renewable energy support regime, it has become more complex nowadays. Depending on the private contractor and the contractual features, PPAs can help to mitigate counterparty risk while providing protection from off-take price risk.

Chart 2: Electricity price development
Electricity spot price (Sweden, SE3)



Source: Bloomberg

Alternatively, investors and managers can decide to actively accept price volatility as a value driver of the project; however, the current power price developments across Europe demonstrate the embedded downside risk. Therefore, this risk has to be analysed carefully before being entered. In fact, electricity prices have many different drivers, most of them outside the project's control: the most recent oil crunch or the very strong generation from renewable sources in Scandinavia beginning this year, flooding the market with very cheap electricity, are some examples. All of these events have impacted electricity prices across Europe through a decline in price level in combination with an increase in volatility. In spot markets outside its regulatory safe heaven, renewable energy projects are clearly price-takers. With its significant impact on project cash flows and the overall returns, managing the off-take arrangements and related cash flows in an optimal way, given the investors' risk appetite, is a key element in successful asset management of renewable energy projects.

Case study onshore wind in de-regulated markets

Within one of the most deregulated markets in Europe, a recent project KGAL acquired for one of its funds was a 130MW onshore wind farm. Due to the absence of a feed-in regime, management of the offtake price risk was one of the main focus areas during the project execution. By signing a private-law power purchase agreement with an international blue-chip, investment grade off-taker over the majority of the planned gen-

Chart 3: Case Study onshore wind

Key facts

Location	Sweden
Size	Ca. 130 MW
Revenue scheme	10 year investment grade PPA / Optionality Spot market + EI Certificates
Investment	<ul style="list-style-type: none"> ▪ Ca. €150 m total invest ▪ Thereof: <ul style="list-style-type: none"> - Ca. €70 m Fund invest - Ca. €5 m Co-investment - Ca. €75 m Bank financing
Target IRR	8.0% (net)
Exit	After 3 – 5 years / early operational years
Partner	Reputable Swedish developer which already has executed four Swedish wind transactions with KGAL in the past

eration capacity, the project secured an attractive base layer of revenues at a sales price that is more than 40% above the current 180 days average spot price, thereby securing the economic viability of the investment.

No matter how you call it, you need to manage it

Clearly, the value drivers of renewable energy projects have evolved over the past decade. But it is not about taking additional risk; rather, that risk has changed in nature. While one could argue that the introduction of off-take counterparty risk is an effect of deregulation, and was historically not present in renewable energy projects, others might state that it simply replaces parts of the regulatory risk exposure. No matter how investors analyse this, in-depth understanding and active management of the embedded risk will remain a key element in successful project execution.

With an investment philosophy focussing on broad diversification across proven technologies in combination with a pan-European investment horizon, KGAL's renewable energy portfolios have provided attractive returns over the company's 15 year-plus track record. Diversifying across generation technologies by blending solar, wind and hydropower, and European countries builds the foundation of the portfolios under management to which well identified and prudently selected value drivers are added to enhance the expected returns of renewable energy projects. Selectively accepting merchant power risk, acquiring assets in less mature markets or positioning portfolio assets at different stages of the expected lifetime allows the delivery of enhanced and stable investment returns for investors, within a well-defined risk budget. The know-how of our investment team of more than 50 professionals also enables us to assess the risks associated with project developments and therefore allows for the optimum timing to commit to projects while maximising the risk-adjusted returns under our Core Plus approach.

Michael Ebner, Managing Director at KGAL Investment Management GmbH & Co. KG

