JLL

Renewable Energy Outlook 2017

Technology Sector Insights

Foreword

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Technology Sector Insights

The last 18 months has been a dramatic rollercoaster for the renewables industry. In the UK, the government's early closure of the Renewables Obligation ("RO") with no subsidy mechanism replacement for onshore wind or solar has led to a frenzy of construction activity before the RO window closes.

Onshore Wind – subsidy free world

Future sites will need to be able to seek out alternative support mechanisms, and the combination of corporate PPAs, energy storage, and energy management provides a flight path to economic viability. We are seeing significant activity in PPAs and energy solutions driven by both supply and demand needs to create value.

Offshore Wind – tenders driving value

Across Europe the cost of offshore wind has fallen dramatically, with sites in the Netherlands and Denmark breaking through the €100/MWh price floor, with every expectation that this year's auctions in the UK and Germany will follow a similar trend.

JLL Energy & Infrastructure advisory are at the forefront of the market advising clients on commercial and financial project solutions as the industry restructures in response to geopolitical and regulatory changes. In this update, our experts sketch out their views on onshore wind, offshore wind, solar, bioenergy and reserve power & energy storage. JLL has dedicated sector specialists with deep industry knowledge in each technology.

We look forward to discussing these issues and how they impact your project and portfolio investment.

Kind regards

Dane Wilkins

Onshore Wind

Recent work

- Advising the shareholders of Partnership for Renewables on the disposal of their 660 MW subsidy fee development portfolio.
- Advised TCI Renewables on the disposal of the 47.5MW Broackaghboy grace period project.
- Advised 3i on the disposal of the 26MW Wadlow operational wind farm to the Dutch Infrastructure Fund.
- Advised Equitix on the acquisition of a 16MW operational wind farm from EnergieKontor.
- Advised the shareholders of the Dorenell wind farm on the disposal of their 177MW CfD project to EDF ER.

Market developments

Over the course of 2016, JLL witnessed the continued build out of onshore wind projects eligible for grace periods under the RO. In addition we have seen a number of Contracts for Difference ("CfD") projects transacting at a premium, driven by strong appetite from the market for greater price certainty and enhanced off take counter-party strength.

There has also been increased competition for operating onshore wind assets, with the established UK funds facing stiff competition from new entrant international investors, particularly from the Middle-East and China. Looking ahead, historically low interest rates, a limited number of opportunities and increased understanding of the technology will continue to make onshore wind an attractive and stable long term investment for institutional investors the world over.

In 2017, with recent uplifts in quarterly power price forecasts, we expect to see a number of asset owners re-evaluating their portfolios and executing exit strategies to maximise value and recycle capital. In addition we anticipate increasing appetite for subsidy free onshore wind, packaged through innovative portfolio transaction structures.

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Offshore Wind

Recent work

- Advising an Asian utility on its strategy for entering the European offshore wind market.
- Advising a sovereign wealth fund on its potential acquisition of a UK offshore wind farm.
- Valuation of the Crown Estate's offshore wind portfolio, and development of a model to evaluate life extension of offshore wind assets.
- Advising a European fund on its potential acquisition of a minority share in a Belgian wind farm.
- Providing commercial advice to a North American investor on shareholder arrangements regarding a German offshore wind farm.

Market developments

Depending on your point of view, 2016 was either the year that offshore wind entered full maturity with costs approaching grid parity, or it was the year that those companies with a strategic need to acquire assets decided to bid 'impossible' prices on new concessions. These are just two of the reactions JLL's clients had to the auctions in the Netherlands, the first won by Dong and the second by a Dutch consortium marking Shell's re-entry into the market, and in Denmark, where Vattenfall smashed all previous records with its bid for Kriegers Flak.

Looking ahead – Increasing interest from Asia

With further auctions expected in the UK, France, the Netherlands and Germany, during 2017 the key question is whether these prices will be maintained. Higher prices are to be expected in the UK due to OFTO build, but we still predict winning bids in the £70-80/MWh region and perhaps lower if companies consider winning a CfD as strategically critical.

The appetite of institutional investors to invest in the sector shows no signs of letting up and we expect further sell-downs in 2017, with Asian money particularly interested. Away from Europe, the Eastern USA seaboard made headlines in 2016 and we expect further interest in 2017, although the uncertainty around the new Trump administration is a cause for concern.

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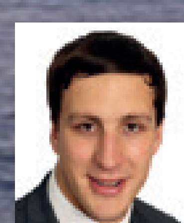

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Solar

Recent work

- Advised British Solar Renewables on the disposal of a 25MW portfolio of solar PV projects under a forward funding agreement to Next Energy.
- Advised Golden Square Energy on the disposal of a 40MW operating solar PV project to Equitix.
- Advised British Solar Renewables on the sale of a 10MW portfolio of Solar PV projects to Solarcentury.
- Advised CTF Solar on the successful acquisition of three consented solar projects with a combined installed capacity of 14MW.
- Providing commercial support to Good Energy in relation to project valuations and a potential equity raise.

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Market developments

In 2016, we saw the build out of the remaining utility scale solar PV developments eligible for subsidy in the UK. Alongside this development activity M&A proved strong with over 3GW of capacity transacted as funds sought to deploy capital before the RO cliff edge.

However, with limited near term development opportunities left in the UK, developers, panel manufacturers and EPCs are expected to trade down assets on balance sheet to free up development capital to exploit new overseas opportunities. Furthermore, with over 7.5GW of utility PV deployed to date in the UK, we anticipate further institutional fund raising in a bid to aggregate substantial 'cash yielding' solar portfolios.

With an eye to 2017, we predict more record solar PPA prices bid as countries keen to meet ambitious climate goals tender for additional capacity. Furthermore in areas of Europe benefiting from high irradiation, coupled with falling panel prices, we expect to see further development and commissioning of merchant developments as recently seen in Italy towards the end of 2016. Also following the success of the Zambian solar tender, we anticipate a number of IFC backed tenders will materialise in sub-Saharan Africa.

Bioenergy

Recent work

- Advised BH Energy Gap by providing commercial support in relation to potential project valuations and selection of suitable equity investors.
- Advising the owner of an operating gasification project in securing an investment partner.
- Provided third party market valuations for a number of farm based AD projects to support acquisitions.
- Valued two operating food waste projects for Bio Group to assist with a proposed disposal.
- Advised Hallwick Energy during the financing of a portfolio of farm based FiT supported AD projects.

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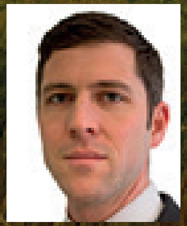

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Market developments

In many ways the bioenergy sector has been less affected by the removal of ROCs than other renewables technologies due to the ability of projects to access additional revenue streams, such as waste gate fees and heat revenues. The diversity of technologies presents developers and investors with a wide range of options in terms of risk and return and size of investment.

Energy from Waste

2015 -16 saw only six non PFI/PPP Energy from Waste projects reach Financial Close, with one of the main reasons for project failure being the lack of bankable waste supply contracts. However we are seeing an increasing number of feedstock providers able and willing to enter into suitable contracts which will be used to unlock projects together with bankable EPC contracts. The majority of these projects are expected to be developed on the basis of no CfD revenue support. However, the 2015 CfD auction highlighted that these projects are competitively placed to bid and such contracts provide potential investor upside scenarios.

Anaerobic Digestion

The majority of projects that have been financed in recent years have done so on the expectation of achieving a refinance or disposal following a short period of operation, so we expect to see the market for secondary investments increase from 2018 onwards. This comment will also apply to portfolios of operational farm based AD projects which were funded through construction by VCT/EIS funds who are now expected to look for an exit from 2017 onwards and therefore provide investors with opportunities for consolidation.

Reserve Power & Energy Storage

Recent work

- Advised Eider Reserve Power on the disposal of a 21MW construction ready gas-fired peaking power project to Triple Point Investment Management LLP.
- Advised Catfoss on the commercial drivers for a 20MW gas-fired peaking power project in receipt of a 15 year T-4 Capacity Market contract.
- Advised Grid Code Power on the key value drivers for a development portfolio of gas-fired peaking power projects.
- Advising a developer on the disposal of a portfolio of utility scale energy storage projects.

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Market developments

Energy Storage

2016 was a pivotal year for grid scale battery storage. The results of National Grid's Enhanced Frequency Response ("EFR") tender (c.200MW of contracts awarded) and Capacity Market auction (c.500MW of new-build contracts awarded) were announced demonstrating the technology's potential in ensuring both the security and stability of UK electricity supply.

Falling costs and rapid technological development will continue and are expected to facilitate the build out of 100MW+ of battery storage projects in 2017 financed on the back of EFR contracts awarded and Capacity Market agreements secured. A number of investment opportunities in utility scale battery storage have already emerged and we expect significant M&A activity in this space over the next 12 months as investors realign their strategic focus.

Reserve Power

Ofgem's embedded benefits review and a government move to enforce air quality rules ensured that 2016 was a tumultuous year for reserve power assets. In a marked reduction from previous auctions only 76MW of new-build diesel secured Capacity Market contracts in late 2016. In contrast small gas fired peaking plant fared much better, securing 1.2GW of new build Capacity Market contracts. This contrasting change in fortunes is an early indicator on future technology winners.

In spite of the regulatory uncertainty created by the Embedded Benefits review, a number of reserve power transactions closed in 2016 and looking ahead we anticipate continued development of gas fired reserve power projects, albeit with a renewed focus on 'quality' assets, which are favourably located and have low operational and capital costs.