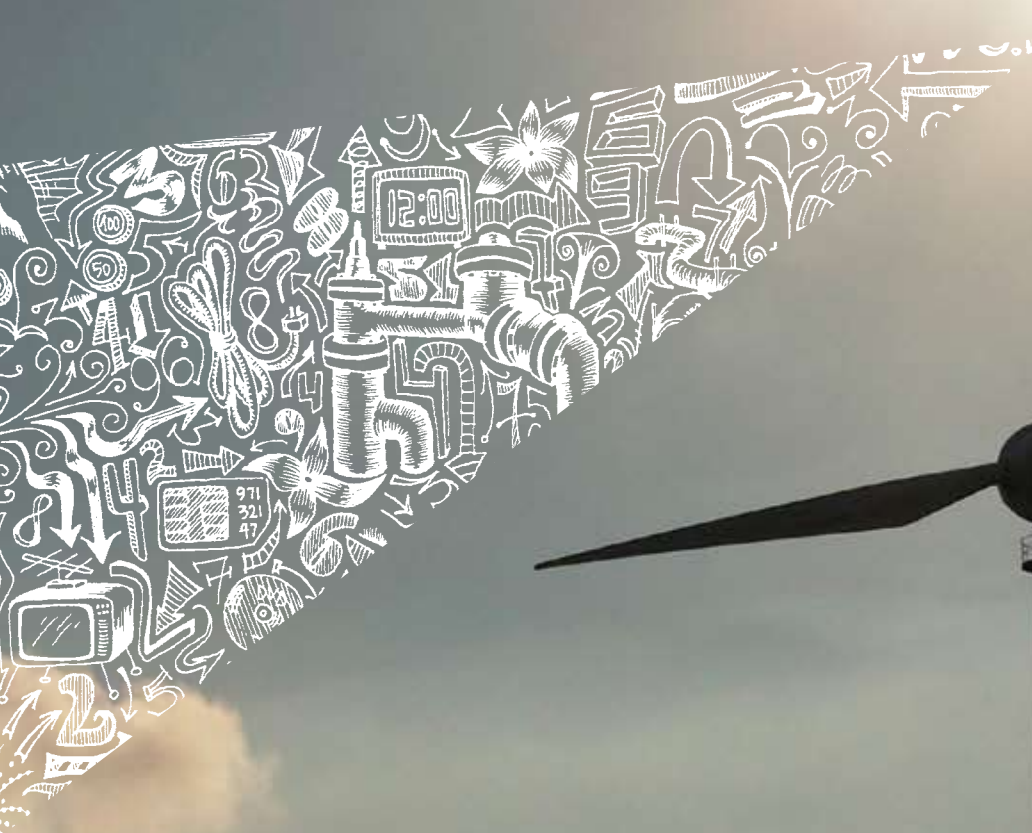


Valuing cleantech investments

Insights from the renewables market





Recommendations for cleantech valuation

- ▶ Cleantech is a growth sector for investment requiring substantial amounts of capital.
- ▶ Investment cases should be stress tested.
- ▶ Policy risk should be incorporated into valuations.
- ▶ Utilise value accretion curve analysis when valuing pre-development assets.
- ▶ Undertake formal valuations to support investment cases.

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Introduction

The growth of renewables within the energy mix

One of the most notable developments within the international energy industry over recent years has been the increasing number and size of corporate investments in the clean technology (cleantech) sector. While this increased level of activity has been evident in many technologies, one area which has seen particularly pronounced growth is that of renewable energy. The increasing scale of renewable energy investments has been evident at almost every stage in the asset life cycle, from the projects entering the planning and construction phase through to the ever larger transactions involving these assets once they have become operational.

The reasons behind this rapid growth are complex and vary from technology to technology and country to country, depending upon the relative attractiveness of various subsectors to investors in the context of their capital agenda. The renewables sector is extremely diverse and includes a range of technologies which make use of feedstocks ranging from wind, waste and water through to sunlight and biocrops to generate outputs in the form of biofuels and heat, as well as electricity. Furthermore, while some of these technologies are relatively mature and require little in the way of economic subsidy, others are still at their development or demonstration stage and will require additional support before they reach technological maturity, or will realize economies of scale from full commercialization.

Terminology

There are a number of terms used to describe different aspects of the energy industry. In this paper, the following definitions apply:

Cleantech	A diverse range of innovative products and services that optimize the use of natural resources or reduces the negative environmental impact of their use while creating value by lowering costs, improving efficiency or providing superior performance.
Renewable energy	Energy generated from natural resources which are naturally replenished, including: sunlight, wind, rain, tides, geothermal heat and biofuels (although these are sometimes instead classified as alternative energy).
Clean energy	As for renewable energy, plus digital energy, green buildings, waste, carbon markets, fuel cells, transportation, carbon capture and storage (CCS), power storage, hydrogen and services and support).

Growth drivers

Several fundamental factors are driving a worldwide transformation in the way that natural resources, including energy and water, are produced, distributed, stored, managed and consumed:

- ▶ Continuous growth in world population
- ▶ Increasing consumption power of the expanding middle class in emerging markets
- ▶ Growing scarcity of natural resources around the globe
- ▶ Need to ensure energy security
- ▶ Business response to climate change
- ▶ Rising energy and commodity prices

Experts anticipate that this transformation to a more resource-efficient and lower carbon-consumed economy will have the magnitude of a new industrial and technology revolution. Cleantech, which includes renewable energy, represents the technological and business model innovation that will enable this massive transformation.

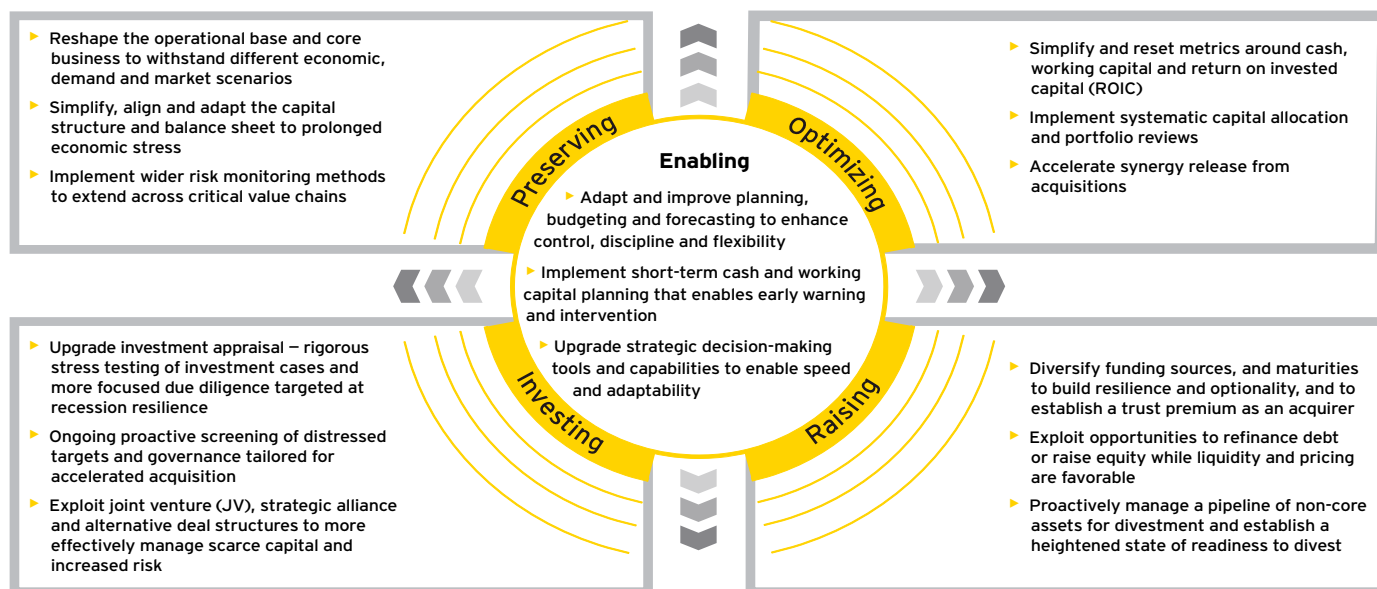
A global Ernst & Young survey¹ of more than 300 companies with a minimum of US\$1 billion in revenues indicates that the rate of corporate cleantech adoption is accelerating. The survey showed that the key corporate objectives in cleantech adoption are:

- ▶ Improving operations and reducing costs through efficiency gains
- ▶ Pursuing new revenue opportunities
- ▶ Responding to climate change
- ▶ Achieving sustainability goals
- ▶ Reducing dependency on fossil fuels
- ▶ Complying with current and anticipated regulations

Investors' responses to these circumstances will therefore vary by geography and subsector, according to their own agenda for capital management and growth. This may involve preserving their existing capital by reshaping their operational base to match the global shift away from fossil fuels, seeking out attractive new investment opportunities and structures, or optimizing the returns from limited available capital across a balanced portfolio of assets (please refer to figure 1 for our analysis of the capital agenda influences relevant to an investor's renewable energy investments). The attractiveness of particular projects to them at any given point in time will therefore depend upon a number of factors, including their strategic and tactical objectives.

¹ *Cleantech Matters*, a global study on cleantech adoption, partnership and acquisitions. The study was conducted with *Forbes Insights* based on an online survey of more than 300 corporations with at least US\$1 billion in sales and 10 in-depth interviews with F100 corporate executives. The study was completed in September 2009.

Figure 1: The capital agenda



Also, it is clear that the availability of government support is critical to the success of renewable energy projects. As motioned above, this can be provided for a range of different reasons. For example, Brazil's use of ethanol derived from native sugar cane as a substitute for petrol in the 1970s was primarily driven by concerns regarding the security of their imported oil supply, rather than any environmental agenda. Another example is the global response to the climate change challenge which is driven by the United Nations Framework Convention on Climate Change. Meanwhile, the United States of America (USA), although it has not yet signed up to legally binding carbon emission reductions, is nevertheless one of the most attractive countries in the world in which to make renewable investments, thanks largely to a range of government incentives for research, development and adoption of renewable energy driven by a complex blend of energy security concerns, a culture of technological innovation and the need to create jobs.

While the specific factors driving any particular renewable investment agenda may vary, there are, nonetheless, a number of general trends which are common across all technologies and all countries. For example, making significant and successful investments in the renewable sector is, for certain types of players, becoming a key factor in supporting corporate innovation, growth and success. However, the increasing pace of renewable development, supported by ever shifting government support regimes, means that all project stakeholders continually need to refine their investment positions in order to maximise value, and their returns to shareholders.

In this complex environment, it is therefore increasingly vital that businesses fully understand the valuation issues and considerations to be taken account of in determining the value of the renewable assets that they are planning to develop, or buy, or sell.

Objectives of this paper

Against this backdrop, the purpose of this paper is to explore some of the strategic themes, valuation issues and investment decisions faced by the cleantech community, as highlighted by an analysis of market data pertaining to the renewable sector. Specifically, it aims to provide insight into:

- ▶ The international renewables market, both in terms of its recent growth and transaction activity
- ▶ Current and likely future trends in renewable technology investments
- ▶ The various roles which renewable investments can play as part of an investor's capital agenda
- ▶ The various methodologies which may be used to assign values to renewable investments
- ▶ Typical current market valuation multiples for renewable companies
- ▶ Factors that need to be considered by investors when attempting to derive an appropriate valuation for a renewable project



The characteristics of growth

Sector-wide activity levels

The level of market activity in the renewable sector can be quantified and assessed in various ways. However, whether this is done by considering total investment levels or the number and size of transactions after allowing for the effects of the current recession, the long-term trend shows sustained and significant growth.

According to Bloomberg New Energy Finance (BNEF), the total new financial investment in clean energy in 2009 was US\$162 billion, having seen a decline of only 6% from the record year of 2008 with US\$173 billion. As an indication of activity in the clean energy sector, Figure 2 presents corporate on corporate M&A activity in clean energy on a yearly basis from the year 2000 to 2009.

It is clear that M&A deal values have shown significant growth and peaked in 2007, with a total deal value of \$US23.7 billion. Overall growth over this period is from US\$605 million in 2000 to US\$9.4 billion in 2009. The implied compound annual growth rate (CAGR) over this period is 36% which is well in excess of growth in global M&A activity over all sectors of 8% for the period 1989 to 2008. The fall in the number of deals from 2007 to 2009 is not considered indicative of the overall long-term trend, being largely the result of the economic conditions and scarcity of investment capital which have led to a general decline in M&A activity across

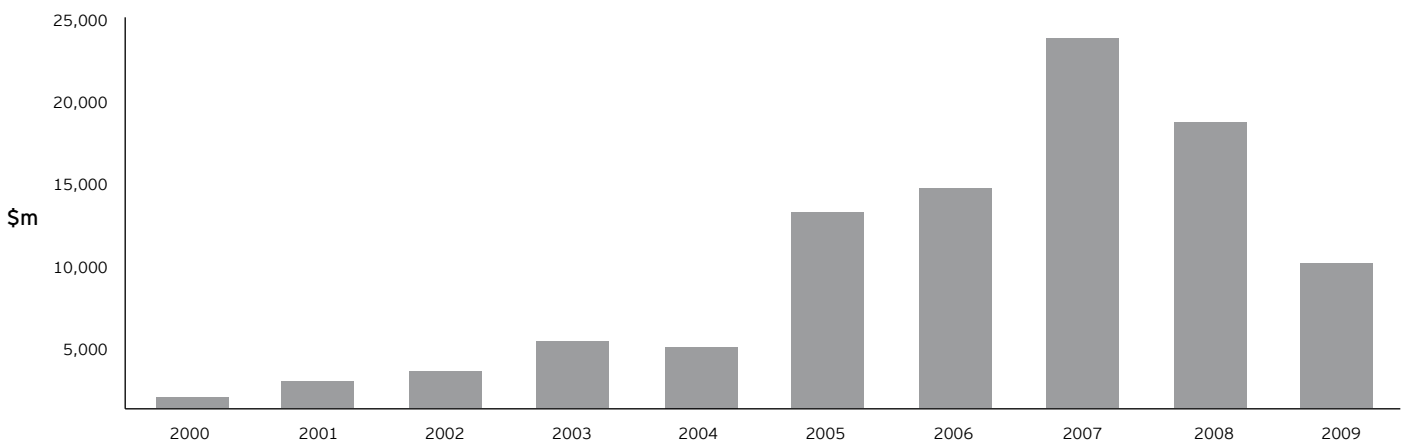
the wider economy.

Acquisitions of renewable projects (wind, biofuels, biomass and waste, geothermal, mini-hydro, marine and solar sectors only) have also displayed rapid growth, with a CAGR in deal value of 68% over the period 2000 to 2009. A broadly similar pattern to corporate M&A activity is noted here, with total deal activity by value reaching a peak in 2008 at US\$24.5 billion, and then falling back slightly in 2009 to US\$21.8 billion.

These levels of overall growth may be attributed to a number of factors including the maturing of renewable technologies, falling costs and favorable subsidies, which have resulted in significant levels of primary investment and secondary market activity. Meanwhile, the strong and stable cash flows these investments generate mean that they have continued to be attractive throughout the recent recession, when investors have increasingly been focusing upon cash return metrics to optimize their use of capital, and there has only been a relatively small decline in activity compared with other sectors.

Renewable M&A activity has grown at a CAGR of 36% since year 2000

Figure 2: Corporate on corporate M&A activity in clean energy. Private equity – buy-out deals and clean energy asset acquisitions are excluded



Sources: Bloomberg New Energy Finance and Ernst & Young analysis

Technology focus

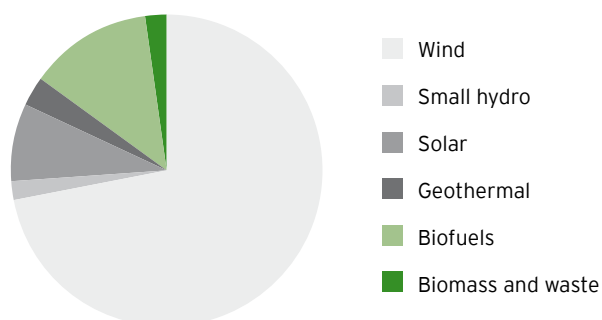
To provide an insight into the technologies which investors are focusing on, Table 1 presents the composition by technology focus for clean energy acquisitions from 2007 to 2009 and Figure 3 presents the data graphically for 2009.

Table 1: Technology focus of acquisitions of clean energy projects (wind, biofuels, biomass and waste, geothermal, small-hydro and solar sectors only)

Acquisitions of clean energy projects, by total value of deals			
Asset type	2007	2008	2009
Wind	75%	54%	72%
Small Hydro	18%	22%	2%
Solar	3%	10%	8%
Geothermal	2%	7%	3%
Biofuels	2%	6%	13%
Biomass and Waste	0%	1%	2%

Sources: Bloomberg New Energy Finance and Ernst & Young analysis

Figure 3: Percentage split by technology of clean energy project acquisitions in 2009



Sources: Bloomberg New Energy Finance and Ernst & Young analysis

Wind technology is attractive from an M&A perspective given its relative maturity combined with proven technology and low O&M costs

Table 1 and Figure 3 clearly demonstrate that wind is the current technology of choice for buyers of clean energy projects. This is mainly due to its relative maturity, combined with its proven technology and relatively low operating and maintenance (O&M) costs. However, both solar technology and biofuels typically show steady growth over this period, the former being due to a combination of favorable tariffs and falling costs, and the latter to various subsidy regimes and other government initiatives.

Corporate M&A activity in clean energy presents a similar trend. Table 2 shows the split of technology from corporate on corporate M&A activity from 2007 to 2009 and Figure 4 presents the data graphically for 2009.

Table 2: Percentage split by corporate technology of M&A activity in clean technology

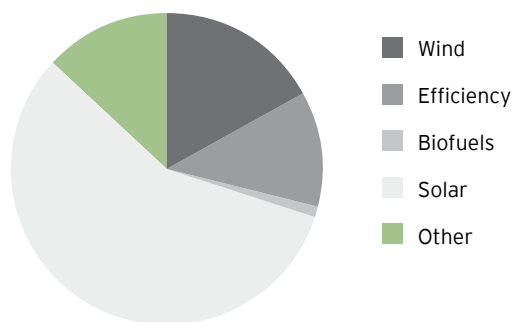
Corporate M&A in clean technology, by total value of deals			
Asset type	2007	2008	2009
Wind	47%	55%	17%
Efficiency ¹	18%	1%	1%
Biofuels	15%	12%	12%
Solar	9%	28%	57%
Other ²	11%	4%	13%

1. 'Efficiency' includes digital energy, green buildings, transportation and supply side

2. 'Other' technology includes small hydro, biomass and waste, carbon markets, fuel cells, geothermal

Sources: Bloomberg New Energy Finance and Ernst & Young analysis

Figure 4: Percentage split by technology of M&A activity in clean technology in 2009



Sources: Bloomberg New Energy Finance and Ernst & Young analysis

Summary and future prospects

From both sets of analysis above, it is clear that wind is currently the dominant technology, with biofuels and solar also becoming increasingly significant. The rising levels of activity in solar was partly due to the one-off effects of the very attractive Spanish solar tariff in 2008, which was subsequently reduced due to higher than expected build capacities and the resulting subsidy costs. Similar (although lesser) effects can be expected year on year as incentives for each country and technology change, and the limited available capital is attracted to niches which offer the most attractive returns. Thus, for example, the attractive solar tariffs in Italy and the UK are likely to partially mitigate the reductions in Spain, while the current higher UK tariffs for offshore wind have already produced confirmation that previously marginal sites will now definitely be developed, helping to maintain the overall dominance of wind power.

It is evident that the 10-year period to 2009 has seen a very significant overall expansion in the levels of investment and transaction activity in the clean energy sectors, with rates of growth significantly in excess of global "all sector" rates as investors allocate investment capital to the creation of portfolios in this developing market.

The financial crisis and global energy price volatility will drive companies to be more selective in their renewable energy investment decisions

However, looking to the future, it should be noted that a number of very real challenges are likely to impact levels of investment in the short and medium term. Firstly, the recession has resulted in a tightening of lending criteria and decreasing availability of debt, as capital raising becomes increasingly difficult and available capital is allocated across portfolios. In order to proceed, projects may need a greater level of equity participation resulting in the dilution of equity returns. Furthermore, with generally lower global energy prices even mature and relatively economic clean technologies such as onshore wind are now less financially attractive relative to conventional technologies. The extent to which government subsidies may be revised to help maintain rates of growth is far from certain. In this environment, while the prospects for the medium- and longer-term future of the industry remain promising, the immediate future is likely to be challenging as we fully recover from the global financial crisis although the core drivers have remained solid.



Factors which influence investment attractiveness

A complex landscape

The attractiveness of cleantech investments is dependent upon a number of factors, including the country in which they are made and the technology selected. However, the structure, market positioning and capital agenda of each investor impacts on the attractiveness of any particular opportunity to them. It is therefore not easy to make generalizations common to all investors which reflect how they behave in the marketplace in which they operate. However, to help illustrate the various dynamics at work and the ways in which they may interact with each other, some specific examples are considered below.

Utilities

During the early development of renewable technologies within the UK, the majority of wind projects were small scale, funded by equity from a project developer and sold their output to one of the large utilities under the terms of a power purchase agreement. The UK Renewables Obligation required these utilities to either generate a prescribed percentage of the electricity they supplied from renewable sources, or to instead pay a contribution to a 'buy-out' fund (which was distributed to providers of renewable electricity). To a large extent, it was more economically advantageous for utilities to meet their obligations by a combination of power purchase agreements and buy-out fund payments than to invest directly in wind farms, and thus they did not take significant positions in the sector.

Utilities aggressively seeking to generate significant portfolios of renewable assets within a short space of time

Pre-development projects, i.e., in the 'pipeline,' have attracted significant values in recent transactions

However, with the increasing target levels of renewable energy generation now agreed under the European Union Renewables Directive, this situation has changed significantly. The Directive, published in January 2008, requires member countries to commit to an agreed share of energy generation from renewable sources

with the aim that the EU as a whole will generate at least 20% of total energy from renewable sources by 2020. Utility companies have entered the market quite aggressively, seeking to generate significant portfolios of assets within a short space of time. The requirement to develop market positions rapidly, combined with the limited volumes that can be generated organically from their own pipelines, i.e., those projects still in development phase. This has resulted in a great deal of consolidation activity in the marketplace in recent years, and some very sizeable transactions – with a significant proportion of the transaction value sometimes being attributed to the target's own development pipeline.

A more recent development is that, even with their 'big balance sheets,' utilities are unwilling to commit the high levels of investment capital required for major projects such as the London Array. As a result, a number of joint venture structures and other strategic alliances are increasingly emerging, as they look to share the risks involved, and manage their scarce capital.

Biofuels

The *Gallagher Report*² has questioned the environmental sustainability of existing biofuel technologies and the anticipated 'gold rush' to buy up existing biofuel plant did not happen

The biofuels market, on the other hand, has seen rather more mixed fortunes. This is a sector which is naturally attractive to oil and gas operators, given their high exposure to the transport sector and their need to maintain a presence in emerging low-carbon technologies. One of the key UK drivers for such change was expected to be the Road Transport Fuel Obligation. This originally seemed likely to create a significant market for existing 'first generation' biofuels plant, even though many of these had encountered significant technological problems during development and were still not fully operational. However, the *Gallagher Report* questioned the environmental sustainability of existing technologies. Government ambitions for biofuels seem likely to be significantly scaled back until commercially viable 'second generation' technologies become available. The anticipated 'gold rush' to buy up existing plant has therefore simply not happened, and activity remains depressed.

2. The Gallagher Review of the indirect effects of biofuels production, published in July 2008 by the Renewable Fuels Agency, available at www.renewablefuelsagency.org

Solar

One final example is provided by the solar photovoltaic (PV) industry in Spain. In order to stimulate the local market, a very attractive Spanish solar PV feed-in tariff regime was set up in 2007. This was highly successful in attracting both local and overseas investors, in the form of equity providers, banks and infrastructure funds. This resulted in build levels significantly exceeding the targets set and concerns about the overall cost of the subsidy, resulting in the support regime being considerably scaled back in 2008. This gave rise to a flurry of development activity aimed at securing the higher tariff before the deadline expired, and then a high level of interest in secondary transactions, as investors who had missed out on the 'development' phase sought to establish positions by acquisition, but in a market with very few willing sellers.

Summary

It is potentially misleading to make broad generalizations in an industry as wide, as diverse and as dynamic as the cleantech sector. However, the examples above illustrate the wide range of factors that may influence the valuation of a renewables project, depending upon the investor's capital agenda, the technology and the country in question. Furthermore, understanding these valuations is clearly increasingly important, at a time when investors move forward from their current positions after the industry's early growth phase towards a promising, but uncertain, future.



Valuation methodologies

The need for robust valuations

In the current economic environment, investors are increasingly focusing upon upgrading their investment appraisal processes and rigorously stress testing projects before committing investment capital. Given the large amounts of investment in the cleantech sector and the significant level of transaction activity, being able to value portfolios of assets and renewable companies in a consistent and robust manner has therefore never been more important, and specialist knowledge and skills are often required.

Valuations of assets and companies can be required for a whole range of different purposes, including:

- ▶ For commercial purposes, to determine the price for an acquisition or disposal, or to support a major investment decision
- ▶ For financial reporting purposes, e.g., the allocation of the acquisition price between tangible and intangible assets (known as purchase price allocation) and establishing the fair market value of fund investments for portfolio reporting purposes
- ▶ Within a regulatory context, for determining if an agreed transaction price is 'fair' and 'reasonable'
- ▶ For tax authorities, when entities are transferred between different tax jurisdictions or for transfer pricing purposes as part of a business restructuring program
- ▶ Within the context of a dispute or litigation

Normally, more than one approach will need to be considered in order to arrive at a supportable valuation range

Often the basis of value can be different depending on the purpose of the valuation being performed. Normally, more than one approach will need to be considered in order to arrive at a supportable valuation range.

In the following sections, we explain each of the three approaches in turn and discuss some of the valuation challenges specific to the cleantech sector.

Income approach

The income approach focuses on the income-producing capability of the business or asset. This approach assumes that the value is measured by the present worth of the net economic benefit to be received over the asset's life. The methodology usually adopted is the discounted cash flow methodology (DCF). This approach, and the financial models which are required to support it, are becoming increasingly important given the current focus upon cash metrics in the optimization of capital investments.

A financial model is developed to generate cash flows using input assumptions for capital and operating expenditure, feedstock costs, feed-in tariff or electricity price, governmental policy support, output utilization and taxation. The resulting cash flows are then discounted at a rate which reflects the overall risk of the project. It is critically important that cash flow analysis is underpinned by robust financial models.

For fully operational renewable projects, 100% of the projected cash flows are included in the valuation. However, pipeline renewable projects, i.e., those projects still in development phase, present a more complex problem, as the realization of these cash flows depends upon planning consent etc. One potential solution is to risk weight the cash-flows depending upon the development stage of the asset in question. As the project moves through the various stages, value accumulates over time following a 'value accretion curve.'

The risk profile of a project changes significantly as each of the various stages is completed, and large increases in the value of the project can occur as certain key milestones are passed

The value accretion curve for a wind farm will vary according to project and location – specific factors, such as the wind resource of the location, the planning approvals process and the level of government subsidies that apply in the relevant country. However, an important common factor is that the risk profile of a project changes significantly as each of the various stages is completed, and that large increases in the value of the project can occur as

certain key milestones are passed. For this reason, significant value can be generated by taking a project through some or all parts of the development stage and then exiting or refinancing the asset.

For other clean technologies, the value accretion curves would generally have the same overall shape, but could potentially differ significantly in detail. For example, compared with wind farms, a biodiesel plant would typically have significant technology risk associated with it, while obtaining planning permission would generally be less of a concern. Therefore, selecting a strong technology provider and finalizing sound technical designs could add significant value to a project.

Variations of the income approach, including 'excess earnings' and 'relief from royalty' methods, are commonly used to value intangible assets of this nature

In particular circumstances, for example, purchase price allocation and tax transfer pricing, it may be necessary to value the intangible component of the business. Within the cleantech sector, potential intangible assets include permits (e.g., land lease agreements), favorable or unfavorable contracts including power purchase agreements and pre-feasibility stage assets. Variations of the income approach including 'excess earnings' and 'relief from royalty' methods are commonly used to value intangible assets of this nature.

Market approach

The market approach measures value based on the current pricing statistics for assets and companies similar to those being analyzed.

A market-based value is normally determined by making comparisons with actual third-party acquisitions of comparable assets/companies and with the performance of quoted comparable companies. The ratio of the price paid (or current share price) per megawatt (MW) installed, is one key valuation metric for the renewable sector, but other common measures include the price paid (or share price) per unit of earnings (price earnings 'PE' ratio) and the ratios of the enterprise value (EV) to either sales, earnings

before interest and tax (EBIT), or earnings before interest, tax, depreciation and amortization (EBITDA).

One of the key challenges within any new developing sector, such as cleantech, is the availability of comparable transactions and companies. While for wind farms, there is quite a lot of transaction data to analyze, this is not the case for some of the other technologies. In addition, for many companies, cleantech only forms a small proportion of the overall business and so the observed multiples for these companies may not be representative of cleantech businesses.

While the EUR/MW ratio is an important metric, it does suffer from a significant weakness: it does not reflect the fact that many transactions include portfolios of assets at various stages of development (i.e., pipeline projects). One way of addressing this issue is to define a number of progressive development stages to the portfolio and then assign a relative weighting of 'MW equivalent' for each of these. For example, one MW of fully operational installed capacity is one 'MW equivalent,' while one MW of capacity pre construction is only a part of one 'MW equivalent.' In practice, however, the application of this approach may be restricted by the limited extent of publicly available data regarding the assets involved in comparable transactions.

Cost approach

This approach relies upon the principle of substitution, which proposes that a prudent investor will pay no more to acquire an asset or business than the cost incurred in replacing it with a new identical unit. It can be seen as possibly a minimum value.

Account would need to be taken of the cost of direct replacement and also the greenfield cost of providing identical capacity. Any significant movements in materials and construction costs would also affect replacement cost estimates, as would construction period price fluctuations, and related interest charges during construction.

Bearing in mind that the physical existence of a working asset is the first barrier to entry for a prospective market participant, the cost approach is likely to be an important consideration in any valuation of a cleantech asset or business.

Recent market trends

Drawing upon the methodologies described above, and general observations from the preceding sections, it is interesting to see what inferences can be drawn from a review of some recent market transactions.

Key data for a selection of the most recent and significant renewable transactions are set out in Table 3.

Table 3: A selection of recent renewable M&A transactions

Target/asset	Acquirer	% acq.	Date	Asset
SWS Natural Resources	Bord Gais Energy Supply (100%)	100%	Dec-09	Wind
Solel Solar Systems Ltd	Siemens AG	100%	Nov-09	Solar
Essent N.V.	RWE	100%	Sep-09	Wind
PPL Corporation (hydro business)	Black Bear Hydro Partners	100%	Jul-09	Hydro
Yesil Energy A.S.	Statkraft Group (95%)	100%	Jun-09	Hydro
REpower Systems AG	Suzlon Energy Ltd (22.5%)	23%	Jun-09	Wind
OptiSolar Inc	First Solar	100%	May-09	Solar
Chinese assets (Roaring 40s Renewable Energy Pty Ltd)	CLP Holdings Limited	100%	May-09	Wind
Greater Gabbard wind farm asset	Npower Renewables	50%	Nov-08	Wind
AMEC Wind Energy	Vattenfall AB (100%)	100%	Oct-08	Wind
Energis	Magnum Capital Industrial Partners	100%	Oct-08	Wind
Hydros Srl (60% stake)	SEL (Società Elettrica Altoatesina)	60%	Oct-08	Hydro
Catamount Energy Corporation	Duke Energy Corp (100%)	100%	Sep-08	Wind
Firstlight Power Enterprises	GDF Suez	100%	Sep-08	Hydro
BBWP (Spanish assets)	FCC	100%	Aug-08	Solar
M & A Rinnovabili	Atel Holding (Aare Tessin) (30%)	30%	Aug-08	Wind/Other
Fotowatio S.L	GE Financial Services	32%	Jul-08	Solar
Air Energy SA	ENECO Energie	100%	Jul-08	Wind
ErSol Solar Energy AG	Robert Bosch GmbH	50%	Jun-08	Solar
EDP Renovavies	IPO	25%	May-08	Wind
Gamesa Solar	First Reserve Corp	100%	Apr-08	Solar
Airtricity	Scottish & Southern Energy	100%	Feb-08	Wind
Trinergy	International Power	100%	Aug-07	Wind

Source: Publicly available data

Observations that arise from this data include that:

- ▶ Transactions predominately involve wind and solar technology.
- ▶ Wind is attracting the largest investments (predominately from large utilities and finance/infrastructure companies), e.g., the acquisition of part of Essent N.V by RWE in February 2009 for €9.2 billion.
- ▶ There has been some consolidation in the industry with large utility and renewable energy companies deploying significant capital to acquire stakes in renewable energy players (such as Scottish & Southern Energy acquiring Airtricity in early 2008 and Suzlon buying a 23% stake in REPower in June 2009).
- ▶ Private equity and infrastructure investors such as Magnum Capital Industrial Partners and First Reserve Corporation are securing investments in solar and wind energy assets.

In addition, Table 4 below sets out a market multiples analysis comparing European companies which specialize solely in the supply of renewable energy with those that predominantly supply energy derived from 'traditional' sources (such as gas and coal).

Table 4: Multiple analysis

	EV/Sales				EV/EBITDA				EV/EBIT				PE Multiple			
	2007	2008	2009	2010	2007	2008	2009	2010	2007	2008	2009	2010	2007	2008	2009	2010
Traditional energy – company																
E.ON	1.4x	1.1x	1.1x	1.1x	7.7x	7.1x	7.1x	6.8x	10.3x	9.7x	9.6x	9.4x	10.4x	10.3x	10.4x	10.4x
EDF	2.3x	2.1x	2.0x	1.8x	8.8x	9.0x	7.8x	7.2x	13.9x	14.6x	13.6x	12.4x	10.2x	18.2x	21.1x	18.8x
GDF Suez	1.4x	1.2x	1.2x	1.2x	8.5x	7.6x	7.1x	6.5x	13.0x	11.9x	11.8x	10.6x	13.7x	15.1x	9.1x	8.5x
Edison International	1.7x	1.6x	1.7x	1.6x	6.0x	5.7x	6.1x	5.5x	8.8x	8.6x	9.9x	8.8x	10.6x	9.6x	11.8x	10.8x
RWE	1.2x	1.1x	1.0x	0.9x	6.5x	6.3x	5.9x	5.3x	9.0x	7.6x	7.5x	6.8x	14.9x	11.4x	11.1x	10.1x
Iberdrola	4.0x	2.8x	2.7x	2.6x	12.7x	11.0x	10.2x	9.5x	19.0x	16.5x	14.9x	14.3x	17.0x	15.7x	13.4x	13.0x
Scottish & Southern	1.4x	1.1x	0.6x	0.8x	14.3x	11.4x	9.9x	9.0x	15.1x	14.1x	12.4x	10.9x	13.7x	12.6x	11.6x	11.3x
NTPC	7.0x	6.1x	5.4x	4.8x	17.7x	20.3x	18.1x	16.2x	21.2x	25.1x	22.3x	20.7x	27.6x	25.5x	23.1x	21.5x
Exelon	2.3x	2.3x	2.4x	2.4x	6.4x	6.4x	6.5x	6.7x	8.2x	8.5x	8.7x	9.3x	11.1x	11.7x	12.2x	13.0x
Duke	2.9x	2.8x	2.9x	2.7x	8.2x	8.1x	8.0x	7.2x	13.3x	12.8x	12.4x	11.1x	14.1x	14.5x	14.5x	13.1x
Enel SpA	2.6x	1.8x	1.8x	1.7x	11.2x	7.8x	7.2x	7.0x	16.0x	11.7x	10.5x	10.5x	10.0x	9.1x	9.1x	9.1x
Median	2.3x	1.8x	1.8x	1.7x	8.5x	7.8x	7.2x	7.0x	13.3x	11.9x	11.8x	10.6x	13.7x	12.6x	11.8x	11.3x
Average	2.6x	2.2x	2.1x	2.0x	9.8x	9.2x	8.5x	7.9x	13.4x	12.8x	12.1x	11.3x	13.9x	14.0x	13.4x	12.7x
Renewable energy specialists – company																
Nordex AG	0.9x	0.6x	0.5x	0.5x	24.4x	8.1x	11.4x	8.1x	15.8x	10.1x	17.2x	11.7x	30.7x	14.8x	30.6x	20.7x
Gamesa Corp. Tech. S.A.	1.0x	0.9x	1.0x	0.9x	6.8x	6.4x	7.7x	7.0x	12.7x	15.3x	15.1x	12.6x	13.1x	18.6x	21.0x	17.1x
Suzlon	3.5x	2.1x	1.1x	1.3x	20.3x	14.7x	10.0x	15.9x	23.1x	17.3x	12.6x	24.6x	15.5x	11.4x	11.8x	nm
Vestas Wind	1.8x	1.4x	1.2x	1.2x	15.0x	10.9x	8.7x	8.5x	19.7x	13.1x	11.1x	11.2x	25.1x	16.0x	16.1x	15.6x
Iberdrola Renovables	16.6x	7.8x	7.2x	5.9x	28.0x	13.3x	11.9x	9.7x	45.5x	22.2x	21.8x	17.4x	nm	37.1x	38.0x	30.8x
Terna Energy S.A.	9.7x	8.0x	8.4x	7.2x	21.8x	14.3x	19.8x	15.0x	31.1x	18.2x	25.5x	19.6x	53.5x	19.7x	24.3x	22.8x
Solarworld AG	2.5x	2.0x	1.8x	1.4x	7.3x	5.3x	7.4x	6.6x	8.9x	7.0x	10.3x	10.2x	14.4x	11.9x	16.2x	16.2x
Median	2.5x	2.0x	1.2x	1.3x	20.3x	10.9x	10.0x	8.5x	19.7x	15.3x	15.1x	12.6x	20.3x	16.0x	21.0x	18.9x
Average	5.1x	3.2x	3.0x	2.6x	17.7x	10.4x	11.0x	10.1x	22.4x	14.7x	16.2x	15.3x	25.4x	18.5x	22.6x	20.5x

Source: Ernst & Young analysis
nm - not meaningful

Where:

EV = enterprise value

EBIT = earnings before interest and tax

EBITDA = earnings before interest, tax, depreciation and amortization

PE = share price vs. earnings multiple



From a review of this data, the following observations can be made:

- ▶ The average implied 2009 sales multiple (EV/sales) of the selected renewable energy specialists (3.0x) is higher than the average implied 2009 sales multiples of the selected traditional energy companies (2.1x).
- ▶ Both the average 2009 EV/EBITDA and EV/EBIT multiples of the selected renewable energy companies are higher than the corresponding multiples for the traditional energy companies.
- ▶ The average implied 2009 PE multiple for the renewable energy specialists is over 50% larger than that of the traditional energy companies.
- ▶ The average forecast 2010 EV/sales, EV/EBITDA, EV/EBIT and PE multiples are higher for the renewable energy specialists compared with the traditional energy companies.

These trends have a number of implications for the sector, but the following can be considered most relevant for the cleantech investor:

- ▶ The market currently believes that the potential for future growth in the renewable energy arena is greater than in the traditional energy sector.
- ▶ The valuations of the renewable energy specialists are likely to be affected by a significant number of pipeline projects which are not currently impacting revenues or profits.
- ▶ There is increasing corporate and retail demand for 'green energy,' which is equating to strong sales growth for the renewable energy specialists (subject to levels of local government support).
- ▶ Margins are improving as costs fall due to improvements and developments in renewable technologies, such as photovoltaic (PV) for solar, turbines for wind and fluidized bed for biomass.
- ▶ Some of the transactions in recent years may have been driven by strategic considerations, rather than valuations based upon project fundamentals.

Factors to consider when deriving a valuation for a project

Deriving a robust and supportable valuation for a renewable project is a complex process, which needs to draw upon a range of valuation techniques and also recognize the wide range of factors that may be relevant to the project in question

What is clearly evident is that deriving a robust and supportable valuation for a renewable project is a complex process, which needs to draw upon a range of valuation techniques and recognize the wide range of factors that may be relevant to the project in question. These factors include the technology and country in which the project will be undertaken and the stage of development of the project, in addition to the acquirer's capital agenda, strategic objectives, risk appetite, and overall strategic fit.

Based upon our experience, when sufficiently detailed forecasts are available, the most appropriate primary approach is typically the 'income approach' using the DCF methodology. This would generally involve:

- ▶ The development of robust financial models incorporating projected capital and operating cash flows, discounting, terminal value calculation, inflation and exchange rate adjustments as required
- ▶ A collaborative approach to defining value accretion curves
- ▶ Allocating individual projects to the various stages in the development cycle

- ▶ Sense checking the forecasts which the valuation is to be based upon:
 - ▶ Are the capital cost assumptions realistic given uncertainties regarding the turbine market, steel costs, etc?
 - ▶ Are the electricity price assumptions supportable?
 - ▶ Are the utilization figures realistic?
- ▶ Considering whether the discount rate adopted appropriately reflects the market risk to which the project is exposed (e.g., merchant electricity pricing vs. fixed feed-in tariff)
- ▶ Ensuring an overall consistency of approach

We would typically recommend that the 'market approach' is used as a cross check, including:

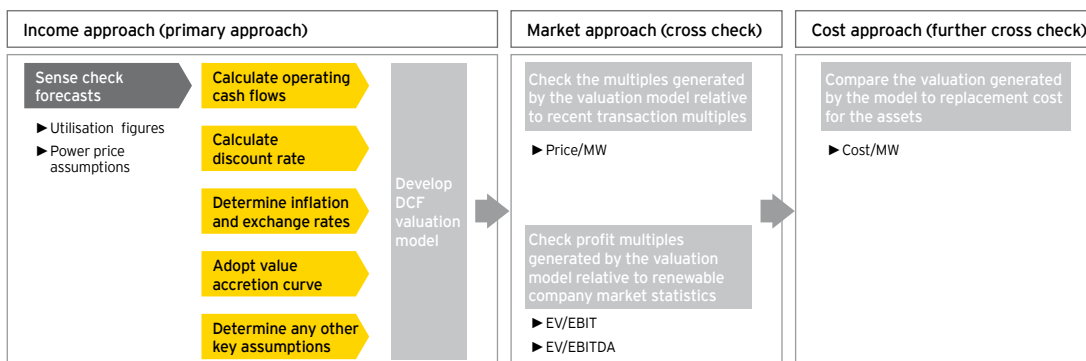
- ▶ Checking that EUR/MW multiple comparisons support the income-based valuation
- ▶ Comparing EV/EBIT and EV/EBITDA figures for the portfolio with renewable company market statistics

Finally, the 'cost approach' can often be usefully employed as a final sense check, by determining the premium in the price over and above cost of development. Any purchaser must then decide if the premium above cost is justifiable given the risks surrounding the project and their strategic and tactical objectives.

The valuation process should be performed, not only at the time of acquisition, but also on a periodic basis. This will support management's decision-making process around acquisitions, disposals, investment and the general shape of their renewable portfolio.

Management should embed the valuation process into its strategic planning, internal management, investment decision-making and the company's capital management process – issues that are all within the company's overall capital agenda of optimizing, raising, investing and preserving capital.

Figure 5 - Factors to consider in valuing a renewable project



Concluding comments



The following observations can be drawn from our analysis:

- ▶ The global renewable sector, both in terms of transactions and investment, has witnessed significant growth driven, among other things, by the global imperative for a low-carbon agenda.
- ▶ Renewable investments have a significant role to play in the capital agenda of many corporates, whether in the raising of new capital or in preserving, investing or optimizing their existing capital.
- ▶ Wind and solar currently represent highly active renewable segments from a technology perspective.
- ▶ Renewable specialists typically exhibit higher market multiples (e.g., PE and EBITDA multiples) compared with more traditional energy companies, partly driven by the market's belief in the continued growth potential of the sector.
- ▶ Income, market and cost-based valuation approaches can all be drawn upon depending on the context and purpose of the valuation and also the availability of forecasts.
- ▶ The wide range of technologies and countries in which cleantech projects are undertaken means that undertaking a valuation is a complex process, in which a number of approaches need to be considered, with specialist knowledge and skills often being required.

There are a number of implications for the valuation process within the cleantech sector going forward, as follows:

- ▶ Cleantech is a growth sector for investment requiring substantial amounts of capital. Future investment in the cleantech sector will be huge, but heavily scrutinized. The ability to robustly value portfolios of assets and cleantech companies has never been more important.
- ▶ Investment cases should be stress tested. Future investment decisions will face significant challenges. Scarce capital will only be allocated to projects which can demonstrate robust stress testing against critical factors, including uncertain construction costs and volatile energy prices.
- ▶ Policy risk should be incorporated into valuations. To attract investment, governments need to establish attractive and stable policy mechanisms.
- ▶ Utilise value accretion curve analysis when valuing pre-development assets. Valuation of pre-development renewable projects (e.g., pipeline projects) is particularly complex. Sophisticated solutions such as value accretion curve analysis should be considered.
- ▶ Undertake formal valuations to support investment cases. Corporate success will be dependent upon making well-informed investment decisions. Robust and timely evaluation of investment targets, in the context of investor's wider capital agenda, will therefore be critical.

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