


Renewables Deals*

2008 Annual Review

Mergers and acquisitions activity within
the global renewable power market



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Methodology and terminology

Renewables Deals includes analysis of all global renewable power sector deal activity. We define this as all deals relating to power generation by biofuels (incl. biomass, biodiesel and ethanol), solar, wind, hydro, tidal/wave and geothermal sources. We include deals relating to manufacturers and developers of renewable technologies (for example, wind turbine manufacturers and solar technology firms), which we identify in a separate 'technology' category. We exclude deals relating to nuclear power assets, those centred on energy efficiency, and purchases of development rights.

The analysis is based on published transactions from the Dealogic 'M&A Global' database, December 2008 and the John S. Herold Inc. 'M&A database', December 2008. Both datasets have been used to ensure completeness. Where deals appear in both, the data is based on that recorded in the Herold database. For consistency purposes, identical search criteria are used for both datasets. Analysis encompasses announced deals, including those pending financial and legal closure and those which are completed. Deal values are the consideration value announced or reported including any assumption of debt and liabilities. Figures relate to actual stake purchased and are not multiplied up to 100%.

The location of the assets being acquired determines the analysis location. We define Asia Pacific as excluding the Russian Federation, Australia and New Zealand. All presented numbers of deals exclude all of those deals with no reported value. A full list of transactions throughout 2008 is available by visiting the *Renewables Deals* website at www.pwc.com/energy.



Welcome to the first edition of *Renewables Deals*, an annual review by PricewaterhouseCoopers of deal-making in the renewable energy sector. It joins a family

of PwC deals publications – Power Deals, Oil & Gas Deals, Mining Deals – which examine trends and the outlook for M&A activity in the energy, utilities and mining sectors.

The renewable energy sector is an increasingly important arena for deal-making as companies and investors respond to the growing role of renewable sources in meeting global energy demands and the challenge of climate change. Security of supply, energy diversification, technological breakthroughs and climate change regulation all play a part in driving the growth of the sector. 2009 will be a watershed year for the sector with the first year of the Obama presidency and the December 2009 UN Climate Summit in Copenhagen having a vital bearing on the future growth.

This report examines the rationale behind the overall trends and the key individual deals. We also highlight, in a series of deal dialogues throughout the report, some of the critical issues for companies engaging in deal activity within the sector, drawing on our global experience as an adviser to players in major deals in renewable energy markets.

We look back at 2007 and 2008 and ahead to 2009 and beyond. We see a sector that is expanding its boundaries, both in terms of its contribution to energy supply and in terms of the range of players involved. We see a sector where the leading companies are increasingly developing a global footprint. We see a sector that is becoming increasingly interesting to large industrial technology companies from outside the sector.

Looking ahead, the easing of the financial crisis will be key to deal flow. The near-term outlook for deals looks set to continue to be constrained. Set against this, there is a significant build-up of investment and pension funds money seeking to invest in the sector. Clarification of the true extent of the political commitment to clean energy will be a major factor. Technological developments will also play a key part in the shape of the sector, in particular the extent to which costs can come down as a result of technological innovation and economies of scale.

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02 Report highlights

A sizeable sector

Around a quarter of deals in the power sector over the past two years have been for renewable assets or technology. Renewable energy accounts for around a tenth of M&A value in the wider power sector. During 2007 and 2008, 441 renewables deals were announced with reported value totalling US\$70.3bn. Deal activity is being driven by evolving responses to climate change and the long-term requirement to have an increased level of renewable generation, both as a direct response to regulatory requirements and to ease concerns about security of supply in some markets.

Wind and solar stand out

Wind power continues to be the principal focus of deal activity, accounting for the majority of the value (57%) of all renewable energy deal making in 2008. Onshore wind is now a relatively mature technology and dominates sector deal-making. In addition, the focus is moving offshore as evidenced by the appearance of an offshore wind deal in the 2008 top ten deals. There was also a big year-on-year growth in the number and value of solar power deals. These quadrupled in number and more than quadrupled in total value. Indeed, in 2008, solar overtook hydro as the second largest renewables deal category after wind, accounting for 20% of the total renewables deal value.



Companies move up the value chain

There is a growing trend of deals for manufacturing and technology assets higher up the renewables value chain. Between a quarter and a third (29.5%) of all 2008 renewables deals were for such assets – much higher than their 11% share in 2007. In many cases, these are moves by companies who are seeking to secure an end-to-end supply chain footprint. The trend is also being driven by the increasing interest of industrial groups and investment funds seeking to step up their presence in the sector.

Credit crunch bites

The impact of the credit crisis and wider economic downturn impact was felt particularly strongly in the second half of 2008, broadly coinciding with the autumn 2008 intensification of the banking and financial crisis. Although deal numbers held up, the value of deals dropped dramatically in the second half of 2008 compared to the same period in 2007. Total renewables first half year-on-year deal value was down 7% – from US\$13.9bn to US\$12.9bn – but second half deal value shrunk by more than half – from US\$29.5bn to US\$13.9bn – compared with the previous year. In the US, the reduced number of tax equity players has had a significant impact on deal activity.

04 Deal totals: solar begins to shine

Renewable energy now accounts for a significant slice of overall M&A activity in the power sector. Over the past two years, around a quarter of power deals have been for renewable assets or technology and, although deal sizes have been much smaller, renewable energy accounts for around a tenth of M&A value in the sector. Wind power dominates but solar is now also taking an increasingly large slice. Solar stands out as the key growth sector.

During 2007 and 2008, 441 renewables deals were announced with reported value totalling US\$70.3bn. Renewables deal activity is being driven by the long-term requirement to have an increased level of renewable generation in the power sector, as a direct response to climate change policies, regulatory requirements and to ease concerns about security of supply in some markets. The dispute between Russia and Ukraine in early January 2009 provided another jolting reminder of the problem of over-reliance on any single energy source.

Around the world, governments are implementing measures to increase the share of renewables in the power mix. In Europe, for example, the EU Commission has set a target of 20% of final energy consumption to come from renewables by 2020. Meeting these targets will require an even higher percentage of renewable generation in electricity. In Australia, Prime Minister Kevin Rudd has made a similar commitment. In his inauguration address, US President Obama promised to “harness the sun and the winds and the soil to fuel our cars and run our factories” (20 January 2009). More specifically, Obama has pledged to “double the production of alternative energy in the next three years” to “spark the creation of a clean energy economy” (speech at George Mason University, 8 January 2009). Underpinning the forces of regulatory targets and energy security, there is also a growing consumer awareness and appetite for clean power.

Investment in the renewables sector is strongly driven by the nature and extent of the subsidy systems on offer in different jurisdictions. In many countries, feed-in tariffs provide a strong incentive for the development of renewables capacity as they provide more certainty and stability to project cash flows. In countries such as the US, Germany and Spain, there has also been significant tax-driven impetus. In the US, for example, investors can purchase tax credits from renewable energy companies to shelter otherwise taxable profit in other parts of their portfolio. The tax equity subsidy allows the cost of alternative energy to be competitive with fossil fuels. However, in the current economic and financial climate, there has been a sharp reduction in the number of investors seeking to buy tax credits from renewable energy companies.

The renewables sector is highly fragmented with a plethora of small companies. There is, thus, considerable scope for consolidation and deal sizes are relatively small. In 2008, the number of deals rose by 13% but total deal value dropped 38% to US\$26.9bn from US\$43.4bn the previous year (see Figure 1). Average deal value fell 45% from US\$210 million to US\$115 million. The largest number of deals and share of total deal value was in the wind power sector. Wind power assets accounted for US\$15.3bn of deal value in 2008, 57% of all renewables deal value. The average 2008 wind deal value was US\$163 million. There was a big growth in the number and value of solar power deals. These quadrupled in number and more than quadrupled in total value. Average solar deal size also rose – from US\$76.7 million in 2007 to US\$89.3 million in 2008. In 2008, solar overtook hydro as the second largest renewables deal category after wind, accounting for 20% of the total renewables deal value (see Figure 2).

Figure 1: All renewables deals by value (US\$bn) and number of deals

Number	2007 Value	Number	2008 Value	Change in 2008	
				% number	% value
207	US\$43.4bn	234	US\$26.9bn	+13%	-38%

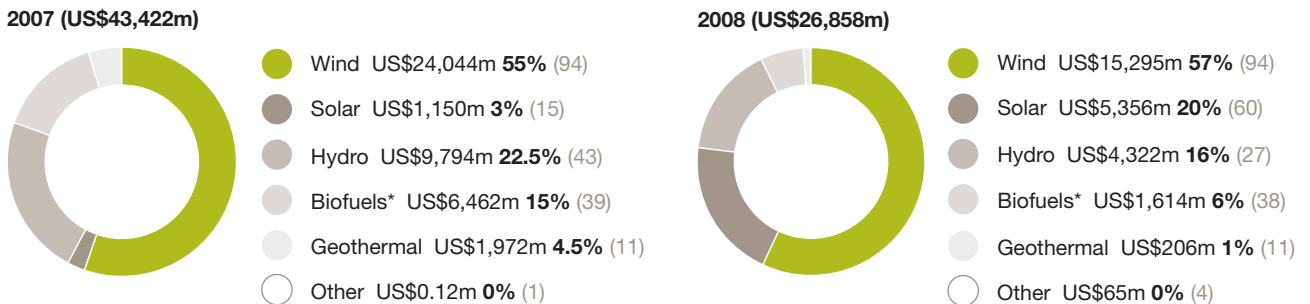
Source: PricewaterhouseCoopers, *Renewables Deals 2008 Annual Review*

A quarterly analysis of renewables deal activity during 2008 (see Figure 3) suggests that the credit crisis and downturn impact was felt particularly strongly in the second half of 2008. Although there was no fall in announcements coinciding with the autumn 2008 intensification of the banking and financial crisis, the value of deals dropped dramatically in the second half of 2008 compared to the same period in 2007. Total renewables first half year-on-year deal value was down 7% – from US\$13.9bn to US\$12.9bn – but second half deal value shrunk by more than half – from US\$29.5bn to US\$13.9bn – compared with the previous year. However, there was less evidence of the credit crunch hitting solar deals – eight of the ten largest solar deals were announced in the second half of the year with seven of them in the last four months.

The impact of the credit crunch on deals was reinforced by uncertainty in many parts of the world over climate change and regulatory policies, falling energy prices and, in the US,

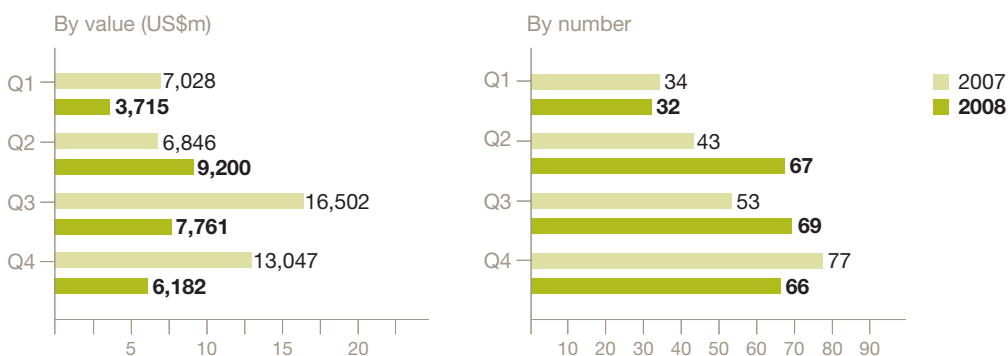
worries about the extension of production tax credits. Carbon prices fell sharply in the second half of 2008 – from around Euro 30 a tonne in the summer to around Euro 15 in December – and the decline continued into 2009. The fall reflects reduced energy demand and, in turn, reduced demand for carbon permits as markets adjust to the contraction of economic growth. Lower energy and carbon prices are having a significant double whammy impact on the market competitiveness of renewable energy compared with fossil fuels. Together with funding constraints, these fed through into depressed renewables deal activity in the second half of 2008. Overall 2008 investment in the sector, as reported by New Energy Finance, is in line with these trends – with a sharp overall slowdown in the second half of the year, wind power being the dominant sector and a significant year on year jump (32%) in total solar investment (New Energy Finance, 2008 - a year of two halves for clean energy investment, January 2009).

Figure 2: **Renewables deals total deal value and percentage share by sector**
(Deal numbers shown in parenthesis)



Source: PricewaterhouseCoopers, *Renewables Deals 2008 Annual Review*
*including biomass, biodiesel and ethanol

Figure 3: **Quarterly tracking of renewables deals by value (US\$m) and number of deals**



Source: PricewaterhouseCoopers, *Renewables Deals 2008 Annual Review*

06 Deal makers: the 2008 players

European deals, seven out of eight of which were for wind assets, dominated the 2008 renewables top ten deals table. The eight European deals provided 81% of the US\$12.5bn top ten total value. The seven wind deals alone accounted for 74% of total top ten value. The top ten table also reflects the trend for companies in the renewables sector to be gradually brought into the fold of the larger power utility companies, acquired by investment funds or taken under the wing of international technology groups.

The sale of a 25% stake in EDP Renováveis, the renewable power arm of Portuguese power group EDP, to institutional investors headed the list of renewables deals in 2008. The EDP float raised US\$2.8bn in the biggest European public offering of the year. Another big deal saw UK-based utility, Scottish and Southern Energy (SSE), acquire Irish-based renewable energy production and development company, Airtricity Holdings, in a deal worth US\$2.1bn. The deal made SSE the largest owner of wind power assets in the UK. The sale followed Airtricity's US\$1.4bn sale in 2007 of much of its US wind power portfolio to German utility company, E.ON.

Two other European renewable power deals topped the US\$1bn mark, both arising from Australia's Babcock & Brown Wind Partners' decision to sell its wind farms portfolio in Europe which allowed the parent investment group to reduce its debt. The two deals outside of Europe in the top ten table were both for hydro power assets. In the largest of them, French-based company GDF-Suez moved to acquire FirstLight Power Enterprises, a US-based owner and operator of a diverse portfolio of predominantly hydro-generation, for US\$1.9bn from Energy Capital Partners, a US-based provider of financing for energy service companies. The deal provided an exit to Energy Capital Partners and enabled GDF-Suez to expand and complement its existing generating assets in New England and eastern Canada. The remaining non-European deal saw Shanghai-listed Sichuan Chuantou Energy announce its plan to acquire a 48% stake in Ertan Hydropower Development Company from its largest shareholder, Sichuan Provincial Investment Group.

Figure 4: **Top Ten – renewables deals 2008**

(Please refer to the Deal places section, pages 8 to 15, for more insights on the listed deals)

No.	Value of transaction (US\$m)	Date announced	Target name	Target nation	Acquirer name	Market segment	Type of purchase
1	2,782	15 May 08	EDP Renováveis SA (25%)	Portugal	Market Purchase	Wind	Operational
2	2,143	04 Jan 08	Airtricity Inc	UK	Scottish and Southern Energy plc	Wind	Operational
3	1,903	02 Sep 08	FirstLight Power Enterprises	United States	GDF-Suez SA	Hydro	Operational
4	1,437	17 Nov 08	Babcock & Brown Wind Partners; Babcock & Brown Limited	Portugal	Magnum Capital Industrial Partners	Wind	Operational
5	1,232	21 Aug 08	Babcock & Brown Wind Partners; Babcock & Brown Limited	Spain	Formento de Construcciones y Contratas SA	Wind	Operational
6	889	02 Jun 08	ersol Solar Energy AG	Germany	The Bosch Group	Solar	Technology
7	769	06 Jun 08	REpower Systems AG (29.9%)	Germany	Suzlon Energy Ltd	Wind	Technology
8	496	03 Nov 08	Greater Gabbard Offshore Winds Limited/ Scottish and Southern Energy plc	UK	npower renewables / RWE Innogy	Wind	Operational
9	436	02 Dec 08	Ertan Hydropower Development Co Ltd (48%)	China	Sichuan Chuantou Energy Co Ltd	Hydro	Operational
10	411	29 Sep 08	Nordex AG (20%)	Germany	Ventus Venture Fund GmbH & Co Beteiligungs KG	Wind	Technology

Source: PricewaterhouseCoopers, *Renewables Deals 2008 Annual Review*, based on published transactions from the Dealogic 'M&A Global' database and the John S. Herold Inc. 'M&A database', December 2008.

The importance of players from outside the sector is highlighted by the fact that only 16% of all 2008 renewables purchases were by alternative energy companies themselves (see Figure 5). The largest category of buyers is power utility companies, who accounted for 32% of total deal value in 2008, followed by infrastructure and other financial investors (28% of deal value). The top ten table also highlights the growing importance of technology acquisitions and the interest of large industrial groups such as German technology conglomerate Bosch who took over photovoltaics producer, ersol, in a US\$889 million deal.

The deal illustrates the push to acquire manufacturing and technology assets higher up the renewables value chain. Indeed, between a quarter and a third (29.5%) of all 2008 renewables deals were for such assets – much higher than their 11% share in 2007 (see Figure 6). In many cases, these are moves by companies who are seeking to secure an end-to-end supply chain footprint or are driven by the desire to consolidate across certain parts of the chain. The largest such example was Suzlon Energy's US\$769 million purchase of German wind turbine manufacturer REpower Systems from French nuclear power generator Areva.

Figure 5: Renewables deals by acquirer type – 2007-2008

	2007				2008			
	Number	Value (US\$m)	% number	% value	Number	Value (US\$m)	% number	% value
Alternative energy	59	5,907	29%	14%	70	4,170	30%	16%
Diversified	7	1,313	3%	3%	12	1,093	5%	4%
Infrastructure/finance	44	7,671	21%	18%	64	7,578	27%	28%
Other	39	6,248	19%	14%	49	5,556	21%	20%
Utility	58	22,283	28%	51%	39	8,461	17%	32%
Total	207	43,422	100%	100%	234	26,858	100%	100%

Source: PricewaterhouseCoopers, *Renewables Deals 2008 Annual Review*

Figure 6: Operational vs technology purchases – 2007-2008

	2007				2008			
	Number	Value (US\$m)	% number	% value	Number	Value (US\$m)	% number	% value
Operational	184	39,384	89%	91%	165	21,546	71%	80%
Technology	23	4,038	11%	9%	69	5,312	29%	20%
Total	207	43,422	100%	100%	234	26,858	100%	100%

Source: PricewaterhouseCoopers, *Renewables Deals 2008 Annual Review*

08 Deal places: a focus on markets worldwide

The focus for renewables deals became increasingly concentrated on Europe during 2007 and 2008. Already accounting for the largest share of deal numbers and value, it was the only region where total deal value increased between 2007 and 2008. While total deal value in the rest of the world fell year on year by 63%, from US\$26.3bn to US\$9.8bn, European total deal value held up at around US\$17bn, increasing the region's share of worldwide renewables deal value to 63% (see Figure 7b).

Elsewhere, North America's share of worldwide renewables volume held broadly level at just under a quarter of worldwide deal value. Indeed, the number of North American deals, at 74, was only just short of the 77 in Europe. However, as we have seen in the top ten table on page 6, Europe was home to many of the largest deals with the result that the average European deal size of US\$221 million far exceeded the US\$85 million in North America. North America's hold on its share of worldwide renewables deal value, despite its falling average and total deal values, was largely at the expense of the Russian Federation and Asia who lost 8% and 12% of worldwide renewables deal value share between them.

Figure 7a : All renewables deals by region

North America	2007	2008	% change
Value of deals (US\$m)	10,395	6,265	-40%
Number of deals	43	74	+72%
Average deal value (US\$m)	242	85	

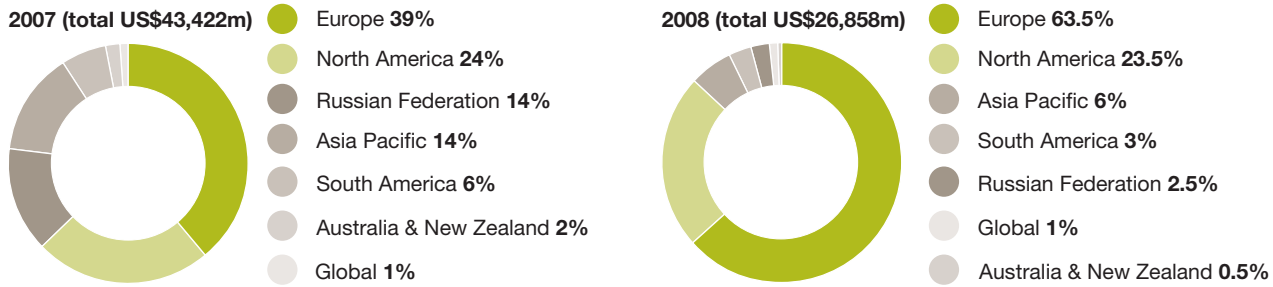
Europe	2007	2008	% change
Value of deals (US\$m)	16,956	17,023	0%
Number of deals	76	77	1%
Average deal value (US\$m)	223	221	

Russia Federation	2007	2008	% change
Value of deals (US\$m)	5,883	633	-89%
Number of deals	12	4	-67%
Average deal value (US\$m)	0.5	0.16	

Global	2007	2008	% change
Value of deals (US\$m)	311	268	-14%
Number of deals	2	5	+150%
Average deal value (US\$m)	156	54	



Figure 7b: Share of all renewables deals by continent by value of transactions – 2007-2008



Source: PricewaterhouseCoopers, *Renewables Deals 2008 Annual Review*

Deal numbers rose everywhere, with the exception of Russia, South America and Africa. In Africa, renewables deal activity has not got off the ground with the exception of a single Moroccan wind farm deal in 2007. The big fall in the Russian Federation reflected a tailing off in the number of deals attributable to the reorganisation of the Unified Energy System (UES) which had contributed 12 hydro deals, worth US\$5.9bn, to deal volume in 2007. In South America, 2007 deal-making had been buoyed by a number of European utility purchases of hydro assets in the region as well as deals by alternative energy companies for bio-diesel and ethanol assets. Both types of purchases tailed off significantly in 2008 as a less favourable economic and funding environment began to take hold.

South America	2007	2008	% change
Value of deals (US\$m)	2,618	832	-68%
Number of deals	19	10	-47%
Average deal value (US\$m)	138	83	

Asia Pacific	2007	2008	% change
Value of deals (US\$m)	6,016	1,656	-72%
Number of deals	43	51	19%
Average deal value (US\$m)	140	32	

Australia & New Zealand	2007	2008	% change
Value of deals (US\$m)	1,017	181	-82%
Number of deals	10	13	30%
Average deal value (US\$m)	102	14	

Africa	2007	2008	% change
Value of deals (US\$m)	59	0	NA
Number of deals	1	0	-100%
Average deal value (US\$m)	59	0	

10 Deal places: Europe

Much of the renewables deal activity in Europe was for assets on the Iberian peninsula. Together, Portugal and Spain accounted for US\$8.1bn of deal value, giving them a 55% share of European deal volume. In particular, just two Portuguese deals added US\$4.2bn to the 2008 totals – the US\$2.8bn float of a 25% stake in EDP Renováveis, the wind power arm of Portuguese power group EDP, and Babcock & Brown's US\$1.4bn disposal of wind farm assets.

The Babcock & Brown sales highlighted the impact of the credit crisis. The company embarked on a series of European wind farm disposals as the parent investment group sought to reduce debt levels. In the first, Spanish infrastructure construction company Formento de Construcciones y Contratas paid US\$1.15bn for the company's wind farms portfolio in Spain. Three months later, in November 2008, the Enersis portfolio of wind farms in Portugal was sold to a consortium of investors led by Magnum Capital for US\$1.45bn. A second notable Spanish wind power deal saw RWE subsidiary, RWE Innogy Holdings, through its Spanish subsidiary Agrupación Energías Renovables, acquire wind power operator Urvasco Energia in a deal worth US\$394 million. However, the bulk of deals in Spain, 10 out of a total of 12 transactions, were for solar assets, headed by a US\$394 million purchase of Gamesa Solar by private equity firm First Reserve Corporation.

Solar power deals accounted for 30% of all European renewables deals and 20% of total deal value in 2008 (see Figure 8). Spanish deals took the lion's share of European solar deal value – US\$2.1bn of the US\$3.5bn total. German assets accounted for the bulk of solar deals outside Spain, headed by Bosch's US\$889 million purchase of ersol (see page 7). Other deals included two purchases, totalling US\$116.5 million, by Danish renewable energy company, Renewagy, of solar energy parks in various locations in Germany.

However, it is wind power that dominates the European renewables deals tables, more so than any other major region, accounting for 60% of total European renewables deal value. The largest number of wind power deals took place in the UK (seven deals), Denmark (six deals) and Germany (five deals). However, the big deals for the EDP and Babcock & Brown wind power assets ensured Portugal took the largest slice of wind power deal value, at US\$4.2bn. This compares with US\$3.2bn of wind power transactions in the UK, headed by Scottish and Southern Energy's US\$2.1bn purchase of Airtricity (see page 6), and US\$1.4bn of wind power deals in Germany, led by Suzlon Energy's US\$0.8bn million purchase of turbine manufacturer REpower Systems (see page 7). The six Danish wind power deals were for smaller amounts, totalling US\$500 million.

Figure 8: Europe renewables deals by sector – 2008

	By value (US\$m)	% share of total Europe deal value	Number of deals	% share of total Europe deal number
Biofuels	77	0%	4	5%
Hydro	275	2%	3	4%
Solar	3,463	20%	23	30%
Wave/tidal power	0	0%	1	1%
Wind	13,208	78%	46	60%
Total	17,023	100%	77	100%

Source: PricewaterhouseCoopers, *Renewables Deals 2008 Annual Review*

Among European utility companies, as well as the moves by Scottish and Southern, GDF-Suez and RWE (see opposite and page 6), 2008 saw considerable activity by Vattenfall. The Swedish power company was one of the most active renewables bidders with three separate purchases of UK wind power assets, totalling US\$374 million. Iberdrola was also active as it moved up the value chain to secure ownership of wind power construction assets in Greece.

Figure 9: Europe renewables deals by country – 2008

	By value (US\$m)	% share of total Europe deal value
Portugal	4,236	24.9%
Spain	3,800	22.3%
UK	3,185	18.7%
Germany	2,578	15.1%
Italy	854	5.0%
Czech Republic	666	3.9%
Greece	641	3.8%
France	325	1.9%
Denmark	224	1.3%
Sweden	196	1.2%
Finland	175	1.0%
Norway	53	0.3%
Romania	44	0.3%
Georgia	25	0.1%
Belgium	19	0.1%
Total	17,023	100%

Source: PricewaterhouseCoopers, *Renewables Deals 2008 Annual Review*

PwC deal dialogue:



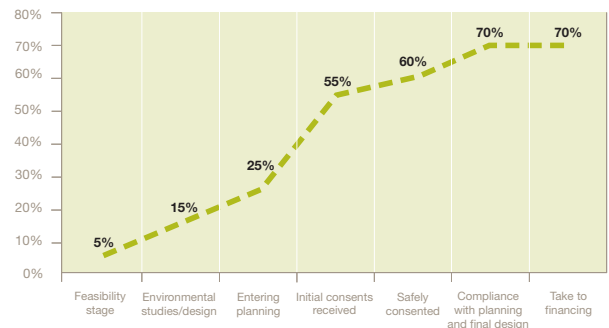
Valuing renewable energy development assets

Valuation of operating assets in markets with strong levels of transaction activity can be supplemented by transparent benchmarks but understanding the value of assets at different stages of the development life cycle is more challenging. It is an issue that is important for renewable energy asset investors and developers alike.

The chart below provides our analysis of the value of a UK wind farm at different stages of its development life cycle, expressed as a percentage of the operational value of the asset. We look at seven stages from initial feasibility to preparation for financing. The most significant driver of value is achieving initial consents, at which point the asset is worth about 55% of the expected value of an operational asset.

This value reflects the risks associated with getting a site through all stages of consent, a process which can take over three years to complete. There are many developers whose business model is based on managing the development risks and selling on to larger organisations with the financial capacity to take the project through detailed design, financing and construction. There is evidence that these larger organisations are less willing to pay for early stage development pipelines.

Value of a UK wind farm
Implied discount to operational asset equity multiples



PricewaterhouseCoopers has a team of valuation specialists, who can support valuation work for a wide range of renewables assets, both operational and development assets. We conduct valuations for a range of purposes, including transaction support, purchase price allocations, employee incentive schemes and fair value considerations.



12 Deal places: North America

In contrast to Europe, North America renewables deal value was spread more evenly across four segments – hydro, wind, solar and biofuels. Hydro power accounted for the largest total North American deal value in 2008 but this was almost entirely attributable to one deal – GDF-Suez’s US\$1.9bn purchase of FirstLight Power Enterprises (see page 6). The highest incidence of deal activity focused on wind, solar and biofuel assets which, together, comprised 81% of all North American renewables deals.

The biofuel sector delivered the largest number of North American renewables transactions – with 22 deals totalling US\$1.1bn. Of these, 20 were in the US and the remaining two were small Canadian biomass transactions. The US accounted for 70% of all 2008 biofuel deal value worldwide. Nearly four-fifths (79%) of the value of US biofuel transactions came from nine ethanol deals totalling US\$889 million. Seven US biomass deals contributed US\$99 million or 9% of total US biofuel deal value. The remaining four deals in this segment were for biodiesel assets. The largest US biofuel deal was the US\$330 million merger announcement between Green Plains Renewable Energy and VBV. The merger created a vertically-integrated ethanol company with a reported 330 million gallons per year (mgy) of ethanol capacity. In a similar-sized transaction, private equity firm First Reserve Corporation invested US\$300 million in Osage Bio Energy to fund the construction of four ethanol and protein feed production facilities, primarily in the southeastern USA.

After hydro power, wind and solar power delivered the highest value deal segments, accounting for US\$1.4bn and US\$1.3bn of deal value respectively (see Figure 10). The 20 North American wind power deals were split evenly number-wise between the US and Canada but the majority (US\$977 million) of the US\$1.4bn total wind power deal value was in the US. The largest deal was the US\$325 million acquisition by ArcLight Capital, and its portfolio company Terra-Gen Power, of the Tehachapi wind farm project in California from Australian investment group Allco Finance.

Within the US, California is a key area for renewable energy development, having set a 20% requirement for renewable energy by 2010 and a recommended target of 33% by 2020. The circa 3100MW ArcLight wind development project is described by the company as one of the largest wind development projects in the world and the largest single wind development in the US under one controlling entity. The second largest US wind power transaction of 2008 saw Horizon Wind Energy, which became a fully-owned US subsidiary of EDP Renováveis in the largest 2007 US renewables deal, secure US\$265 million of investment from a consortium of institutional equity investors – JPM Capital Corporation, New York Life Insurance Company and New York Life Insurance and Annuity Corporation – for its portfolio of wind farm projects. Horizon describes itself as the fourth largest wind energy producer in the world with wind projects across North America.

Figure 10: North America renewables deals by sector – 2008

	By value (US\$m)	% share of total North America deal value	Number of deals	% share of total North America deal number
Biofuels	1,126	18%	22	30%
Geothermal	108	2%	6	8%
Hydro	2,314	37%	6	8%
Solar	1,256	20%	18	24%
Wave/Tidal Power	34	1%	2	3%
Wind	1,426	23%	20	27%
Total	6,265	100%	74	100%

Source: PricewaterhouseCoopers, *Renewables Deals 2008 Annual Review*

The 18 North American solar deals were for smaller sums, headed by four unrelated funding and infrastructure deals worth between US\$100 and US\$140 million. A fifth deal – a US\$100 million purchase by NTR, an Irish conglomerate with interests in renewable energy and waste management, of a 51% interest in solar equipment manufacturer Stirling Energy Systems – was notable for being one of three deals by NTR which together totalled US\$310 million in 2008, making NTR one of the most active bidders in 2008 as it develops a diverse portfolio of renewables assets.

Figure 11: North America renewables deals by country – 2008

	By value (US\$m)	% share of total North America deal value
United States	5,383	85.9%
Canada	862	13.7%
Mexico	21	0.4%
Total	6,265	100%

Source: PricewaterhouseCoopers, *Renewables Deals 2008 Annual Review*

PwC deal dialogue:



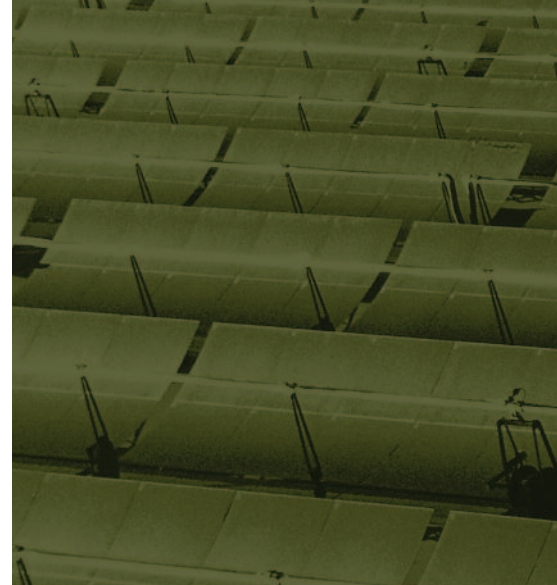
Applying the IFRS definition of a business in renewable energy acquisitions

When acquiring a renewable energy project the acquirer has to apply purchase accounting according to IFRS 3 (or FAS 141(R) if reporting under US GAAP) if the acquired project fulfils the standard's definition of a business. This is easier for a project that is operating and creating revenues (business) or is still in the feasibility study phase (assets) but, in the renewable energy sector, there are many stages in between the two where this is not so clear.

A business, according to IFRS 3 and FAS 141(R), is an integrated set of activities and assets conducted and managed for the purpose of providing a return to investors or lower costs directly and proportionately to policy-holders or participants. A business usually consists of inputs, processes applied to those inputs, and resulting outputs that are, or will be, used to generate revenues.

Companies need to have an understanding of what a business in the sense of IFRS 3 and FAS 141(R) is as opposed to a group of assets. Purchase accounting involves determining the fair values of all acquired assets and assumed liabilities, recognition of deferred taxes and accounting for goodwill. This exercise is considerably more complex than the accounting for the acquisition of a group of assets.

PricewaterhouseCoopers has the knowledge and experience in the definition of a business according to the accounting standards. Our experts can also assist in the asset identification and fair value exercise throughout the purchase accounting process.



14 Deal places: Asia Pacific

Asia Pacific's year-on-year renewables deal activity increased with deal numbers rising 21% from 53 in 2007 to 64 in 2008. However, the region's share of worldwide renewables deals fell dramatically – from 16% to 6.5% – as transactions became more concentrated on smaller deal values. In 2007, there were five US\$500 million plus deals in the region but in 2008 all deals were below this threshold. Average renewables deal value plummeted 81% from US\$133 million in 2007 to US\$29 million in 2008.

The vast majority of Asia Pacific renewables deals in 2007 centred on wind, solar and hydro power. Together, these three sectors accounted for 86% of all Asia Pacific deals and 90.5% of the regional deal total of US\$1.8bn. Twenty-four of the region's 64 deals were technology and equipment manufacturing acquisitions as companies moved up the value chain to secure or invest in wind and solar production capacity. The total value of such technology deals was US\$498 million – 27% of all Asia Pacific renewables deal value. Half of the deals were for targets in China, highlighting the importance of Chinese renewable energy manufacturing and technological capability. Indeed, China accounted for 62.6% of total Asia Pacific renewables deal value, with two deals for hydro power assets, worth a combined US\$614 million, heading the list.

Figure 12: Asia Pacific renewables deals by sector – 2008

	By value (US\$m)	% share of total Asia Pacific deal value	Number of deals	% share of total Asia Pacific deal number
Biofuels	76	4%	4	6%
Geothermal	98	5%	5	8%
Hydro	836	45.5%	13	20%
Solar	487	26.5%	17	27%
Wind	340	19%	25	39%
Total	1,837	100%	64	100%

Source: PricewaterhouseCoopers, *Renewables Deals 2008 Annual Review*

The hiatus in regional renewables deal value was partly attributable to the financial climate and partly attributable to a 'wait and see' attitude as companies and investors paused to await the next moves in environmental regulation. In Australia, for example, deal value shrunk to a tenth of its 2007 level as the industry sought greater clarity on the development of a national incentive renewables scheme to replace state-level schemes and also awaited the content of the Australian government's proposed emissions trading scheme. Uncertainty on both these fronts made deal valuation very difficult if not impossible. As policy initiatives and the long-term regulatory outlook becomes clearer, the climate for renewables deal-making will improve and, subject to constraints on accessing capital being overcome, deal momentum is likely to pick up.

Figure 13: Asia Pacific renewables deals by country – 2008

	By value (US\$m)	% share of total Asia Pacific deal value
China	1,149	62.6%
Australia	151	8.2%
India	134	7.3%
Philippines	118	6.4%
South Korea	111	6.1%
Malaysia	50	2.7%
New Zealand	29	1.6%
Indonesia	26	1.4%
Hong Kong	20	1.1%
Japan	19	1.1%
Laos	14	0.8%
Taiwan	13	0.7%
Singapore	0.6	0.0%
Thailand	0.7	0.0%
Rest of Asia	1.7	0.0%
Total	1,837	100%

Source: PricewaterhouseCoopers, *Renewables Deals 2008 Annual Review*

PwC deal dialogue:



The impact of incentives on greenfield vs acquisition growth strategies

The classic question of whether to pursue a greenfield or an acquisition route to new country growth is made more complex in the renewable energy sector by the array of different incentives and grants. These vary from country to country and, sometimes, within countries and affect the greenfield vs acquisition paths in different ways. A solar energy company, interested in setting up operations in Australia for example, needs to understand the pros and cons of both strategies, particularly in the context of Australian grants and government assistance for research and development (R&D) activities, a strategic ongoing part of its business.

Greenfield

A distinct advantage of setting up a new operation in Australia, in particular in those circumstances where the solar company has not had a presence in Australia over the past 10 years, is the opportunity to claim an immediate 175% deduction for any R&D activities performed in developing new solar technology. Intellectual Property (IP) rights can remain in the offshore parent company and a contract R&D services arrangement can be put in place with the new Australian subsidiary. Government grant assistance for the development of new solar technology is also potentially available, with the release of a new pool of AUS\$500m currently available to Australian resident companies. Companies need to note, however, that if grant assistance is provided, concessional R&D tax concession treatment may be clawed back under Australian tax law.

Acquisition

Upon acquiring an Australian company, there is an opportunity to claim a 125% deduction for any R&D activities performed in developing the technology acquired. Further, any IP rights acquired may attract accelerated deductibility under the R&D tax provisions of Australian tax law. As above, government grant assistance for the further development of new solar technology is also potentially available. If grant assistance is provided, concessional R&D tax concession treatment may be clawed back.

PricewaterhouseCoopers is able to assist companies in assessing the implications of each route to growth and maximising the benefits that can accrue from both.

16 Looking ahead

The coming year will be a watershed one for a sector whose growth is heavily determined by subsidy and the content of environmental regulation. Falling energy and carbon prices are casting doubt on the viability of some renewable energy schemes. However, governments have a chance to set a more certain framework for the industry. The first year of the Obama presidency, the direction of travel in the run-up to the December 2009 UN Climate Summit in Copenhagen and the outcome of those talks will all have a vital bearing on the outlook for the renewable energy sector. The political will of heads of government for a new climate treaty and the extent of their ambition for clean energy will set the context for the sector for many years.

The current information on energy policy coming from Washington augurs well for US activity in the sector. One important development, in the US and in many countries across the globe, will be to put the subsidy and incentive framework for the industry on a more certain and long-term footing. Timescales and coverage are currently fragmented in many countries with a resulting complex patchwork of provisions. In the US, for example, the current principal subsidy incentive for renewable energy, the production tax credit, has been somewhat stop-start. It has expired, or been set to expire, five times before being reinstated and was due to finish again at the end of 2008. In addition, different states have different requirements in respect of renewable portfolio standards – the minimum amount of power that should come from renewable sources. This has led to calls for a national renewable portfolio standard.

The direction of travel is towards an increased proportion of renewable energy in the overall mix. Having the support mechanisms in place will be important. However, these alone will not be sufficient to meet challenging CO₂ reduction commitments. Renewable energy projects often face considerable planning obstacles and, in many locations, grid infrastructure is lacking. There is a role for governments, in planning reform and improving grid access, and for residents and consumers, in embracing green energy, to facilitate the achievement of renewable energy targets.

Like other sectors, the easing of the financial crisis will be key to deal flow. The near-term outlook for deals looks set to continue to be constrained, especially as the true extent of the political commitment to clean energy is unlikely to be fully clear until later in the year at the earliest. Set against this, there is a significant build-up of investment and pension funds money seeking to invest in the sector. In addition, many utility companies are moving to increase the volume of renewable generation in their portfolios. This is a trend that has been the case in Europe for some time but is now becoming evident in other countries, such as Australia, as companies respond to changing climate legislation. The ability to attract capital, both debt and equity, is critical to US future activity. Any firming of political commitment at a global level is likely to reinforce this trend.

Technological developments will play a key part in the shape of the sector, in particular the extent of government incentives for development and the extent to which costs can come down as a result of technological innovation and economies of scale. This is especially the case with solar power. The solar sector is at a stage which is akin to wind power some years back, as it attracts interest from large industrial groups such as evidenced by the 2008 Bosch ersol deal. Such players offer the potential to drive through economies of scale. In addition, clean power offers them an attractive diversification opportunity with the added benefit, in some cases, of being complementary to the greening of their existing activities in other industries such as automotive. Elsewhere in the renewables sector, geothermal technologies, while not fully commercial at present, offer future potential as a base load generation option.

The emergence of worldwide players will come not just from the increasing involvement of large diversified players such as GE and Bosch. Already we are seeing companies from utility company origins, such as Iberdrola Renewables and EDP Renováveis, as well as renewable sector players, such as Suzlon Energy, building an increasingly global presence. The existence of many countries with a relatively undeveloped renewables capacity but ripe potential offers such companies, and other global players, significant international expansion opportunities. Underlying all these trends are the fundamental imperatives of capitalisation and consolidation which are set to continue to be a driving force for deals over the coming years.

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