NORGESTION

Mergers Alliance

Global Cleantech

Sector Report 2012

www.mergers-alliance.com

Contents

Report

About the report

This sector report was edited by Andre Johnston of the Mergers Alliance central team. To compile our findings we conducted interviews with our sector experts from each member firm within the Mergers Alliance partnership. We also surveyed owners and senior executives within cleantech sector organisations and private equity investors worldwide.

For more information on this report please contact Andre Johnston, Mergers Alliance Research Manager.

Andre Johnston
Mergers Alliance
+44 207 881 2967
andrejohnston@mergers-alliance.com

Deal Focus

Within each country's Deal Focus we review merger and acquisition (M&A) activity, focusing on key deals and trends within the cleantech sector. Cleantech is a shortened form of clean technologies. We define cleantech as those activities relating to renewable power generation: Wind farms, solar, hydro, waste to energy, geothermal, biogas, biomass and tidal. Our report also includes transactions relating to energy efficiency and resource management: Recycling, air & environment management, energy infrastructure, water treatment / conservation. We have included tables of recent transactions where the target company is located in the country under review.

Additionally, we provide an overview of the cleantech sector as a whole, highlighting the market structure as well as commenting on the key trends and the factors influencing M&A. We provide our own insight on how we think the market might play out over the coming 18 months and attempt to identify key investment opportunities. We also provide a summary of two government policies from each country that we believe has, or will, influence M&A activity in cleantech.

Key terminology: PV (Photovoltaic), GW (Gigawatt), MW (Megawatt), KW (Kilowatt), Mwh (Megawatt hour), kWh (Kilowatt hour)

Introduction

Whilst the major economies of the world continue to navigate a difficult credit environment and weaker growth prospects, the cleantech industry remains somewhat unique in that it continues to develop strongly in almost all countries. As you will see from our sector experts across the world whilst each country may be at different points in their development trajectory, prospects in almost all are compelling.

This development is being driven by the need for governments to tackle climate change on a multi-lateral basis and ensure security of energy supply for their populations and industries over the long term. Legislation and attractive fiscal incentives are key to much of the recent growth and in most countries these levers will drive investment for decades to come.

You will find in our report a great deal of market-leading insight into the key issues facing the sector in 2011 and beyond: how the industry needs to operate on a global basis, why geographical comparative strengths are focusing investment in each country and how broad state initiatives and targets are ensuring that transactions get done. Our work also highlights the key developments in different cleantech sectors and how this is shaping the M&A strategies of mid-cap companies, global corporates and the private equity industry alike.

As the global recovery takes hold, we at Mergers Alliance are ideally placed to help you. Whether you seek growth through acquisition, wish to restructure or realise value in your business, our international advisors are in a unique position to help you. Our member firms have a prominent position in boardrooms across the world and are renowned for delivering award winning partner-led advisory service with seamless international cooperation.

We hope you enjoy reading our report and welcome any thoughts or additions you might like to contribute.

Andy Currie
Chairman of Mergers Alliance
Managing Partner of Catalyst Corporate Finance LLP
+ 44 207 881 2960
andycurrie@catalystcf.co.uk

Report Highlights

We at Mergers Alliance believe the main factors to shape M&A in the cleantech sector over the next three years will be:

The "globality" of cleantech

The deployment of technology and capital (both corporate and institutional) in cleantech has had a distinctly international flavour since the industry's inception. Nonetheless, there has been a slight reduction in cross-border activity over the past 18 months which can be largely attributed to ongoing global economic concerns and contracting government support. This trend should reverse as balance sheets strengthen and as investors start looking for targets in developing economies with strong macro fundamentals and robust support mechanisms. We expect interest to stretch beyond the BRIC countries to include nascent cleantech markets with high-growth potential such as South Africa and Poland.

Countries to capitalise on their comparative advantage

Each country will capitalise on their comparative natural strengths; the UK with offshore wind, South Africa with solar, Sweden with biomass. Equally, countries such as the Netherlands with its water industry and Germany and Japan with their manufacturing capabilities will be looking to entrench and further develop their respective competitive advantages.

Scope of private equity interest broad

Unlike in many industries, private equity investors have been involved across the whole financing cycle from pre-revenue venture finance, through traditional MBO's, to investing into large-scale generating assets. It should be noted that there was a slight increase in investments into more mature businesses which have clearer paths to exit.

Our research shows that PE/VC investment in 2010 increased by 19% compared to 2009 and 2011 is set to achieve similar growth numbers. We expect this number to continue to increase over the coming years due to the emergence of a growing number of specialist PE funds that focus exclusively on cleantech. Interestingly within PE circles, the definition of cleantech has been broadened to include sectors such as water, waste management and industrial process efficiency.

Government targets impacting cleantech

Renewable targets are driving cleantech sector development. One of the more sweeping initiatives is the EU's 20-20-20 directive. It mandates a change in energy consumption and efficiency habits and for renewables to constitute 20% of energy generation by 2020. China's Renewable Energy Law aims for 15% renewable energy usage by 2020. South Africa, whose domestic cleantech industry is currently almost nonexistent, is targeting an ambitious 37% by 2030. Such initiatives will underpin investment decisions and help ensure deals get completed, even in the face of global economic uncertainty.

Specific policies having direct affect on M&A

Certain legislative and fiscal policies are directly affecting the volume of M&A transactions. The National Biodiesel Program in Brazil, which mandates a 5% biodiesel blend in diesel, has triggered a number of deals, the recently implemented feed-in-tariffs in the UK was the catalyst behind some of the most notable transactions in the UK. Conversely, regressive policies have also been the driving force behind a string of deals; the reductions in photovoltaic subsidies in Italy being a good case in point.

We should see a new round of incentives, particularly from countries with healthy current account surpluses, as they attempt to emerge from the renewables arms race endowed with a healthy green portfolio.

The impact of Fukushima

The nuclear renaissance has seemingly slowed as a result of the Great East Japan earthquake creating conditions for the meltdown of nuclear reactors in Fukushima. It is clear now that Fukushima has had a substantive effect on the policies of both governments and energy conglomerates. The biggest news was arguably Germany's decision to shut down all of its nuclear power plants by 2022. Just weeks after the Japan earthquake nuclear energy giant EDF bought out the remaining shares it does not already own of its renewable energy subsidiary EDF Energies Nouvelles; a possible indication that the disaster is influencing corporate decision making.

Sector focus

Solar's future uncertain

In Europe the solar industry is facing somewhat of a mini-crisis due to increased competition from Asia, overcapacity and a significant reduction in government support. This is especially apparent in Italy, Spain, France and Germany. We expect heightened M&A activity as European companies look to expand their geographical reach in an effort to maintain the same growth they have become accustomed to domestically.

M&A in the solar sector was characterised by three factors:

- Overcapacity and market saturation has led firms, who are looking to lock in higher margins, to focus on improving efficiency, specifically through materials innovation and light management technologies.
- A decrease in state support, mostly in Europe, has diminished the business viability of many solar players. Reduced feed-in-tariffs in particular have caused financial difficulties for smaller firms. There was a marked increase in major solar firms entering non-EU markets.
- Cash heavy Asian firms acquiring foreign companies as they aim to achieve technological autonomy as well as technological parity.

Wind energy: The surge continues

The past 18 months saw a record number of M&A transactions in wind. Importantly, there was a decline in the average purchase price of running wind plants. This was partially due to project developers disposing of their already built wind farms to secure capital to finance their future/current wind developments.

Installations grew in all the major markets, albeit at a more modest pace compared to 2009. China experienced the largest growth (48% of the new total wind installations over the past year took place in China). The UK lead the way in offshore installations thanks to multi-billion dollar investments into the sector. We expect Germany and China to also emerge as important bastions of offshore wind over the coming years.

Chinese wind turbine firms are emerging to become highly competitive across the globe thanks to improving technology and lower overheads. It is now home to four of the world's top ten wind turbine firms. Nonetheless, we expect European turbine players to continue to excel internationally especially in regions such as Latin America where they can leverage their financial resources and industry experience.

Waste management transforms

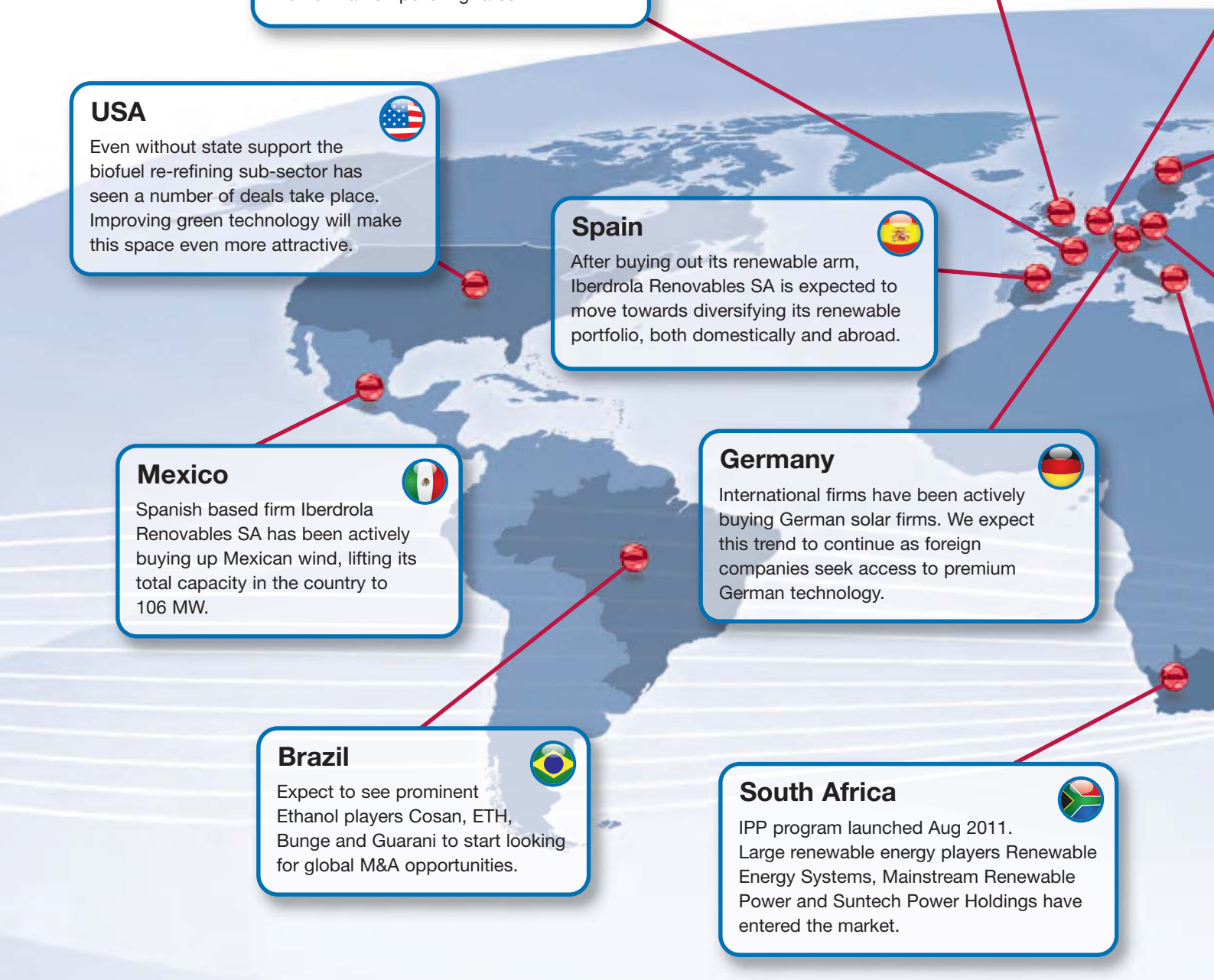
We expect investment flow into the waste management industry to accelerate which should result in a rise in M&A activity. Market optimism in this sector can be attributed to the increasing attractiveness of vertical integration, legislative and fiscal incentives and the push for ever rising recycling rates in developed nations. Consolidation is driving M&A in the more traditional collection and processing sectors which includes acquiring advanced material recycling facilities (MRF's). Investment is also being channelled into energy from waste whether advanced thermal plants or anaerobic digestion.

Certain cleantech sectors viable without state support

Thanks to reduced costs, innovation and logistical maneuvering, a number of sub-sectors in certain countries have emerged to become economically viable without the helping hand of government. These include wind power in Brazil, re-refining in the USA and the water treatment industry across a number of regions.

Country Highlights

Mergers Alliance partners highlight some interesting observations.



UK

The rise in landfill taxes and recycling targets continues to stimulate M&A activity by overseas and domestic buyers in the waste sector.

France

M&A volumes in biomass will increase as both large strategic buyers and industry newcomers look to capitalise on the new tax on polluting rates.

USA

Even without state support the biofuel re-refining sub-sector has seen a number of deals take place. Improving green technology will make this space even more attractive.

Spain

After buying out its renewable arm, Iberdrola Renovables SA is expected to move towards diversifying its renewable portfolio, both domestically and abroad.

Mexico

Spanish based firm Iberdrola Renovables SA has been actively buying up Mexican wind, lifting its total capacity in the country to 106 MW.

Germany

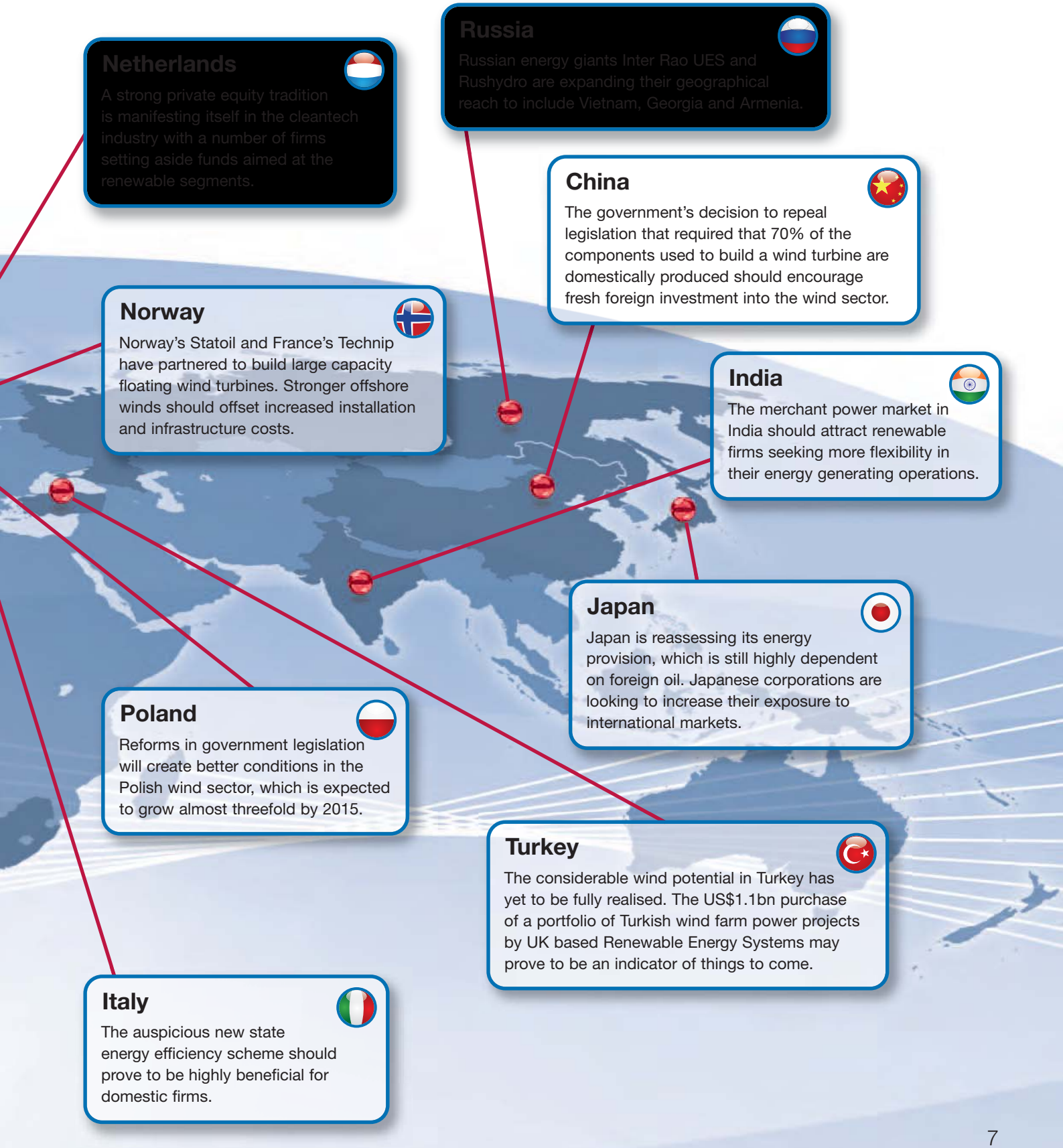
International firms have been actively buying German solar firms. We expect this trend to continue as foreign companies seek access to premium German technology.

Brazil

Expect to see prominent Ethanol players Cosan, ETH, Bunge and Guarani to start looking for global M&A opportunities.

South Africa

IPP program launched Aug 2011. Large renewable energy players Renewable Energy Systems, Mainstream Renewable Power and Suntech Power Holdings have entered the market.



Russia

Russian energy giants Inter Rao UES and Rushydro are expanding their geographical reach to include Vietnam, Georgia and Armenia.

Netherlands

A strong private equity tradition is manifesting itself in the cleantech industry with a number of firms setting aside funds aimed at the renewable segments.

China

The government's decision to repeal legislation that required that 70% of the components used to build a wind turbine are domestically produced should encourage fresh foreign investment into the wind sector.

Norway

Norway's Statoil and France's Technip have partnered to build large capacity floating wind turbines. Stronger offshore winds should offset increased installation and infrastructure costs.

India

The merchant power market in India should attract renewable firms seeking more flexibility in their energy generating operations.

Japan

Japan is reassessing its energy provision, which is still highly dependent on foreign oil. Japanese corporations are looking to increase their exposure to international markets.

Poland

Reforms in government legislation will create better conditions in the Polish wind sector, which is expected to grow almost threefold by 2015.

Turkey

The considerable wind potential in Turkey has yet to be fully realised. The US$1.1bn purchase of a portfolio of Turkish wind farm power projects by UK based Renewable Energy Systems may prove to be an indicator of things to come.

Italy

The auspicious new state energy efficiency scheme should prove to be highly beneficial for domestic firms.

Brazil

Capital City: Brasília **Population:** 198,739,269
Area: 8,511,965 sq km **Time zone:** GMT -3

"While consolidation in the ethanol sector dominated cleantech activity over the past several years, and with more still to come, M&A transactions involving large wind players are beginning to occur, as independent players become large enough to attract strategic acquirers or in order to gain more scale in the face of challenging IPO prospects."

Derek Gallo, Broadspan

Macro growth driving clean tech M&A

Brazilian GDP growth remains strong, at 7.4% in 2010 and 4.1% expected for 2011, which has encouraged consolidation and also attracted international strategic investors seeking high growth markets. The need for investment in energy generation to produce this growth has attracted foreign operators and investors with experience in the renewable energy sectors. Relatively high interest rates leave many smaller companies vulnerable to larger players endowed with both lower costs of capital and the corporate guarantees required during construction in project finance structures.

The cleantech industry in Brazil has historically been dominated by biofuel, specifically ethanol and more recently a growing biodiesel programme, as well as renewable generation which includes hydro and more recently biomass (e.g. sugar cane cogeneration) and onshore wind farms. Hydro represents 68% of installed capacity and 87% of the electric energy generation in the country.

Renewable energy generation and biofuels are expanding at a rapid pace, driven by Brazil's economic growth and the success of government programmes that have pushed for the proliferation of biodiesel and wind. Although the ethanol sector has experienced a lot of consolidation in recent times, the market is still relatively fragmented so expert further consolidation. Wind energy, which accounts for 0.5% of the electric generation, is predicted to reach 4.3% by 2013. Biomass energy, including sugarcane residues, wood and charcoal, represents around 30% of the country's energy matrix.

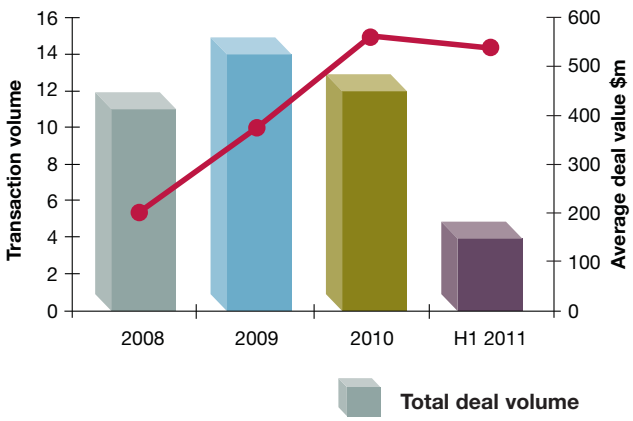
M&A activity settling after expansive growth

M&A activity in the Brazilian cleantech market boomed in 2009 and although there was a slight contraction in 2010, total volume and average deal value has remained fairly constant over the past four years. In April 2011 local integrated player CPFL Energia acquired financial investor-backed Jantus SL for US$960m. The deal involved four wind farms with a 210 MW wind farm project and a portfolio of 732 MW certified projects that are eligible for participation in the energy auctions. CPFL is now in talks with ERSA, a large independent player that is backed by various private equity funds and banks.

In the middle market, Brazilian private equity firm Stratus acquired a 40% stake in Amyris Brasil, a unit of US-based Amyris Biotechnologies for US$54m. Stratus' strategy is to support Amyris' plans to transform sugarcane into renewable feedstock, at an industrial scale, for the domestic production of chemicals by 2014.

The National Biodiesel Program, which mandates a 5% biodiesel blend in diesel, was the impetus behind a number of M&A deals. For example, the merger of Brasil Ecodiesel and a Spanish owned agribusiness firm demonstrated the attraction of a vertically integrated production model. Petrobras also strengthened its position in the sector with the acquisition of a 50% stake in a greenfield biodiesel plant. By and large, however, most of the recent M&A activity emanated from the ethanol sector, accounting for about half of all deals.

M&A activity



Source: Capital IQ, Mergermarket

Market forces drive wind expansion

A number of the smaller firms that have developed wind farms have lacked the balance sheet strength needed to obtain long term financing from BNDES (Brazilian Development Bank), forcing them to sell to larger players. Furthermore, the emergence of medium sized independent players has attracted attention from the larger strategic companies requiring scale to enter the segment.

Even without any tariff subsidies, Brazil has huge potential for wind energy usage as capacity factors range from 36-55%. Importantly, the 2004 PROINFA subsidies -see inset- are no longer necessary as construction costs have come down to approximately US$2.5m per MW. The fact that the market alone can sustain the Brazilian wind sector has alerted investors looking for viable business propositions.

Biodiesel: An industry waiting for government support

Despite a spate of recent deals, the biodiesel sector will likely remain somewhat stagnant until the government releases a new regulatory framework elevating the minimum share of biodiesel in the diesel blend. Independent producers might be sold to players with crushing facilities and agricultural operations to guarantee a steady supply of oil.

Cross-border opportunities in wind and ethanol

Although there are a handful of dedicated private equity and venture capital funds that have invested in recycling, biomass generation, and water treatment, there is still a distinct lack of involvement in the market. The solar thermal and energy efficiency sub-sectors have still not fully matured, mainly due to the high cost of capital in Brazil. Wind and ethanol will continue to dominate the M&A landscape.

Due to their prominence in the ethanol industry look for Brazilian firms such as Cosan, ETH, Guarani or Bunge to begin searching for opportunities abroad whilst we also expect to see an inflow of M&A in the Brazilian wind space.

Recent transactions

Date	Target	Description	Acquirer	Deal Value (US$m)
Apr 11	Jantus SL	Wind farms	CPFL	960
Apr 11	ERSA	Wind / small hydro / biomass	CPFL	n/d
Mar 11	Cavo Saneamento	Waste Management	Estre Ambiental	375
Dec 10	ETH Bioenergia	Biofuel	Petroleo Brasiliero S	1,760
Sep 10	Omega Energia	Small Hydro Plants	Warburg Pincus and Tarpon	215
Aug 10	Biooleo Industrial	Biodiesel	Petrobras Biocombustiveis	10
Feb 10	Amyris Brasil	Celulosic Ethanol	Stratus	54
Nov 09	Brenco	Ethanol	ETH Bioenergia	n/d
Oct 09	Santelisa Bioenergia	Sugar / Ethanol	Louis Dreyfus Commodities	630
Aug 09	Energimp	Wind Farms	CEMIG	115

Government support

PROINFA:

- The Incentive Program for Alternative Energy Sources, otherwise known as the PROINFA Programme, was promulgated in 2002 to stimulate renewable energy generation by providing government (through Eletrobras) Power Purchase Agreements.
- The sector that benefited the most was the wind energy sector, which jumped from 22 to 414 MW of installed capacity from 2002 to 2007.
- Because the programme has been targeted at small independent producers who do not have the financial strength to secure long term financing from local development banks, many of the recipients have been forced to sell their projects to larger players therefore stimulating overall M&A activity.

National Biodiesel Program:

- The programme requires the mandatory use of a biodiesel blend in diesel. It started with a 2% blend in 2008, which increased to 4% in July 2009 and then to 5% in January 2010. There are plans to reach a 20% mandatory blend in 2020. The programme has been the driver behind a number of M&A deals.

Deal Focus

Mexico

Capital City: Mexico City **Population:** 111,211,789
Area: 1,972,550 sq km **Time zone:** GMT -6

"The need for alternative sources of energy has accelerated in recent times due to a reduction in oil reserves. The government has been increasingly active in supporting the sector through various initiatives, which has attracted foreign companies to invest in Mexican cleantech, with wind power especially favoured."

Luis Garcia, Sinergia Capital

Diminishing oil reserves driving cleantech

Mexican GDP grew at 5.5% in 2010, its fastest rate of growth for ten years. A sharp rise in manufacturing was the main attributing factor. Despite fast growth, inflation has actually dropped to 3.8%, down from 4.4% in 2010. Growth, however, is putting a strain on energy requirements.

One of the most important macroeconomic drivers of Mexican cleantech in recent years has been Mexico's dwindling oil reserves. Oil reserves have fallen nearly 50% since 2000. Although the state has made attempts to finesse its way out of its reliance on fossil fuels and nuclear energy, the renewables industry has been relatively slow to get off the ground. Despite this, industry analysts look upon Mexico's cleantech potential with great sanguinity. In a regulatory and institutional context, Mexico is much more favourable to M&A in renewable energy than it was just two years ago.

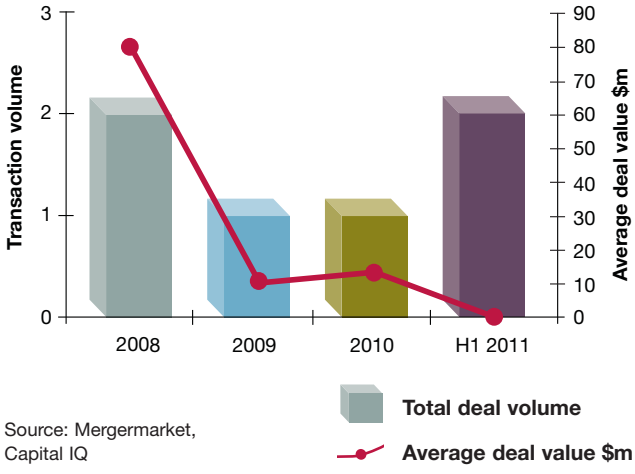
Spanish interest

Total volume in cleantech has been relatively low over the past 18 months. Underlying this has been the monopolised ownership of the electricity sector as well as the reduced government support in the industry up until recently. The bulk of the deals completed have been in wind power.

In early 2011 Spanish based firm Iberdrola Renovables' SA purchased the Mexican Bill Nee Stipa wind farm from Gamsea Corporación Tecnológica. This was Iberdrola Renvables's second operational wind farm purchase in Mexico, lifting its overall capacity to 106 MW. The deal was in line with Iberdrola's strategy of extending its Latin American coverage and establishing growth in countries with increasingly favourable regulatory frameworks.

In late 2010 Spanish oil and gas giants Repsol joined forces with one of Mexico's biggest conglomerates KUO to establish KUOSOL, a company dedicated to the production of bio-energy. The new company will be headquartered in Mexico and its main operations will be the industrial scale cultivation of the jatropha plant. It is hoped that the biofuel crop will generate 16 MW per year for consumption.

M&A activity



Source: Mergermarket, Capital IQ

Large foreign involvement in wind power

Mexico has the potential to equal, if not surpass Brazil as the dominant wind player in Latin America. The logistical demands of such an endeavour will mean progress will be gradual. Nonetheless, in the short term we expect escalating government support mechanisms to encourage foreign players.

In July 2011 Canon Power Group, a US based renewable energy firm, announced its intention to invest US$2.5bn into the Mexican wind market. The sizable investment will comprise of three wind farms located in Zacatecas, Baja California and Quintana Roo for a combined power output of 312 MW and will bring total installed wind capacity in Mexico to over 1 GW.

Siemens made its first foray into the Latin American wind market by supplying 70 wind turbines to Mexican wind power firm Grupo Soluciones en Energias Renovables. The turbines will be installed in the Tamaulipas region of Mexico and will supply over 160 MW. The cost of the order totalled US$270m and marked one the largest investments by a Mexican firm into the wind energy market to date.

Small-scale moves into solar

There has not been much interest in solar to date, primarily due to the prohibitively high costs of solar panels relative to other technologies. No major large-scale projects are planned; however companies such as Abengoa, a Spanish conglomerate with significant operations in renewable energy, are starting to make incremental encroachments into the Mexican photovoltaic (PV) space. This is certainly a sub-sector waiting to be exploited by foreign firms that possess lower costs of production, especially considering Mexico has the third largest solar potential in the world.

The industry waits for firmer government intervention

Although policies, initiatives and subsidies have progressed over recent years, the state still offers more monetary and legislative support to the fossil fuel industries. The aforementioned dwindling oils reserves should reverse this over time. We expect M&A in cleantech to increase once the synergy between what the market can offer and what the state can offer reaches a suitable equilibrium.

Recent transactions

Date	Target	Description	Acquirer	Deal Value (US$m)
Apr 11	Eolia Revovables	Portfolio of two Wind Farms	EDF Energy Mexico (Spain)	n/d
Jan 11	Bill Nee Stipa Wind Farm	Wind Energy	Iberdrola Renovables SA (Spain)	n/d
Oct 10	Repsol	Bio-energy	KUO (Spain)	Joint Venture
Jul 10	Baja Aquafarms	Sustainable Farming	Lions Gate Lighting (Canada)	17
Feb 09	Promotora Ambiental	Recycling Services	Double V Holding SA	11
Dec 08	Gamesa	Wind Energy	Iberdrola Renovables SA (Spain)	100
Jul 08	Earth Tech Mexican Holdings	Waste Water Treatment	Mitsui & Co (Japan)	55

Government support

Energy Transition Fund

- In 2009 the state enacted the Energy Transition Fund in an effort to promote green energy start-ups and to help facilitate the flow of capital and resources into renewable projects.
- Over the course of three years, starting in 2009, 3bn pesos (US$240m) will have been spent to help support the renewable sectors. Although the fund has so far created more favourable business parameters, it is questionable whether it has helped boost M&A activity.

Fonaga Verde

- In 2010 in support of sustainability projects and renewable energy, the Mexican government opened up a guarantee fund called Fonaga Verde.
- The start-up and operation costs of the fund will be 200m pesos (US$16m). The fund will have around 2.5bn pesos (US$200m) to finance sustainable projects in the agriculture, forestry and fishery industries.

USA

Capital City: Washington, D.C. **Population:** 307,212,123
Area: 9,826,630 sq km **Time zone:** GMT -5

"The US cleantech market outlook seems to be marching bravely ahead in the face of a largely uncertain outlook. Industry growth and valuations have been exceptional over the past 12 months, as investors are betting that renewable energy incentives will not fall victim to Washington's recent enthusiasm for spending discipline."

Ted Kinsman, Headwaters MB

Cleantech marches on

The US cleantech market continues to defy gravity with a potentially record setting year in store. Although political and economic storm clouds loom, most sectors within cleantech have seen robust investment activity. Cleantech transaction volumes in the United States for H1 2011 increased by 25.9% on a pro-rata basis. This growth, plus the 16.9% jump in average deal values, illustrates the improving outlook in the industry.

Renewable energy is quickly becoming a factor in the overall US power generation stack. For the first time, renewable electricity production within the US is greater than nuclear power production by 5.6%.

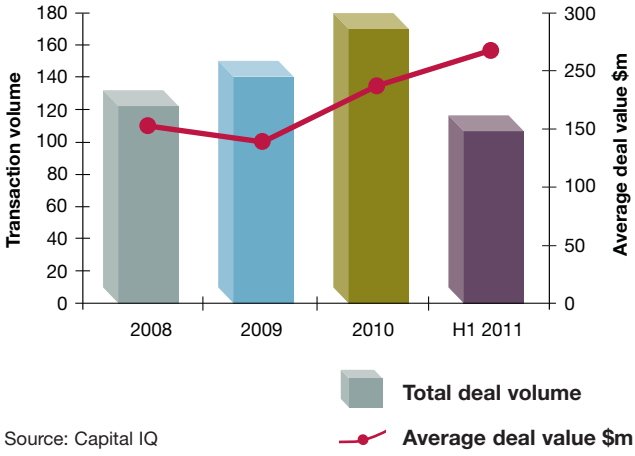
Multiple deals in upward trending solar sector

Four of the five largest project fundings that occurred in 2010 were made in the US, including; HSBC and BNP Paribas' loan to Abengoa Solar's CSP plant and NRG Solar's investment in Sunpower's 250 MW project. Assuming government support does not follow in the footsteps of European markets there is no reason to believe that this growth will not continue in the US.

The US also led the world in solar venture capital investment in Q2 2011, having invested 78.2% of the US$353.5m invested globally. Improving technology for solar manufacturers is increasingly valuable as the industry struggles to rapidly decrease costs. The first round of price reductions in the solar industry stemmed from outsourcing to developing countries, vertically integrating, and streamlining manufacturing. With most of these achievable gains realised, the solar industry is keenly focused on improving efficiency through technological advances.

One particularly interesting technology investment was DuPont's recent purchase of Innovalight. Innovalight produces silicon ink for printing onto multi crystalline panels to increase panel efficiency by 1-2%. This acquisition highlights an emerging thesis within the industry that manufacturing efficiency gains are approaching diminishing returns. Solar manufacturers now must begin to look at materials innovation and light management technologies.

M&A activity



Source: Capital IQ

Political compromise should safeguard cleantech

While the cleantech industry is expanding and valuations are increasing, trouble is brewing. Budget deficits are causing the public to plead for a balanced budget, and cleantech earmarks may fall victim to cost cutting efforts. Without government incentives, cleantech growth will slow. However, these incentives may be able to avoid the chopping block for two reasons: First, the incentives are indirectly funded, and second, there is substantial state level involvement. Tax code incentives such as Production

Tax Credits ("PTCs") -see inset- should be safeguarded because Republicans have been focused on reducing government spending rather than on increasing taxes.

Wind power growth slows

Wind power installations continue to grow, albeit the pace is slowing to a 40.3% growth rate. Projects that are being financed all have pertinent agreements with investment grade credit entities. These agreements include the power purchase agreement ("PPA"), engineer, procure, construct ("EPC") contract, and long-term O&M agreement. PPAs continue to be the most elusive. The intermittent power generation which occurs primarily during non-peak hours reduces utility demand for the projects.

In M&A markets, acquisitions are occurring at 8.5% to 9% unleveraged after-tax yields. These yields are slightly higher than solar projects because wind power debt is more expensive due to the higher variability in production. For example, Northwestern Energy, an investor owned utility, agreed to purchase a 40 MW Compass Wind project for US$77.8m, or US$1.95m per MW.

Investors take note of the waste oil sector

Out of the fever for green investment opportunities comes the resurgence of the waste oil re-refining industry; a process that takes used lubricant oil and re-refines it into virgin-quality base oil for reuse. Re-refining has been around since the mid 1900s but the processes were often as dirty as the waste oil itself. Today, green technological improvements combined with increasing demand for sustainable products have propelled the re-refining industry to new levels.

The sub-sector is active with multiple deals despite the absence of government incentives. Heritage Crystal Clean obtained a US$20m construction financing from Bank of America to start construction on its 1,950 barrel per day plant. Further, the sale of the 1,000 barrel per day Heartland Oil plant to Warren Distribution provides the lubricant blender a steady supply of high quality lubricant that is increasingly in demand from eco friendly consumers. Not only is this a green industry, but it is also quite profitable for re-refiners without the need for government subsidies.

Recent transactions

Date	Target	Description	Acquirer	Deal Value (US$m)
Jul 11	Innovalight	Silicon ink solar technology	DuPont	n/d
Apr 11	Compass Wind	40 MW wind farm	NorthWestern Energy	78
Apr 11	CH Energy Group	19 MW New York State biomass plant	ReEnergy	n/d
Apr 11	Lincoln Renewable Energy	10 MW solar project in New Jersey	Macquarie Energy	41
Apr 11	Primestar Solar	Thin film solar technology	General Electric	n/d
Mar 11	Heritage Crystal Clean	1,950 barrel per day waste oil re-refinery	Bank of America	20
Feb 11	Bowersock Mills & Power Company	Hydropower	RGA and Waddell & Reed	24
Feb 11	SunRay Renewable Energy	Solar power developer	SunPower Corporation	277
Nov 10	Mt Poso Cogeneration	Biomass fuel	DTE Energy Services	40
Sep 10	Marubeni Sustainable	Biomass operator	Korea East-West Power (South Korea)	44

Government support

Federal Production Tax Credit (PTC)

- The PTC is a per kWh tax credit for electricity generated by stipulated energy sources. The rates are US$0.022 kWh for utility scale wind, solar, geothermal, closed-loop biomass and US$0.011 kWh for hydropower, open-loop biomass, landfill gas and marine renewables.
- Originally initiated in 1992, the federal PTC has been revised and expanded several times since.

Renewable Energy Certificates (REC's)

- The REC's mandate typically requires 20-25% of a state's energy to be generated from renewable sources.
- State REC's will drive up cleantech demand, especially as they ratchet up as the 2020 and 2025 deadlines draw near. So far 29 states have adopted REC's.

China

Capital City: Beijing
Area: 9,596,960 sq km
Population: 1,338,612,968
Time zone: GMT +8

"Chinese cleantech firms, as with their conventional manufacturing counterparts in the past, have recognised the need to partake in technology transfer through M&A if they want to deliver the best and most cost effective products to their local customers."

Zachary Tsai, Catalyst Corporate Finance

Macro strength protects cleantech industry

China managed to emerge from the global economic downturn almost unscathed as overall growth continued unabated throughout the cycle. Unlike many Western economies, China's economic robustness meant the cleantech sector was relatively insulated from external pressures. With its vast foreign reserves the Chinese have the monetary capacity to truly allow the renewable industries to continue to drive its industrial expansion whilst reducing its reliance on conventional forms of energy.

Indeed, China's investment into cleantech has come on leaps and bounds over the past several years, catching many Western observers by surprise. It has now reached a point where it has become a global leader across certain sub-sectors of renewable energy with regards to production and installations of PV and wind.

Large and mid-market deals evident

Mid-market deals in solar and wastewater treatment made up most of the M&A over the past three years. Recent deals included the purchase of Jinzhou Huachang Photovoltaic Technology, a Chinese based manufacturer of silicon solar cells, by Solargiga Energy Holdings, a Hong Kong based firm engaged in the production of silicon solar wafers, for US$208m.

GCL-Poly Energy Holdings Limited acquired China based polysilicon producer and one of the world's leading solar wafer suppliers Jiangsu Zhongeng Technology Development for US$3.4bn in what was one of the largest cleantech deals of 2009.

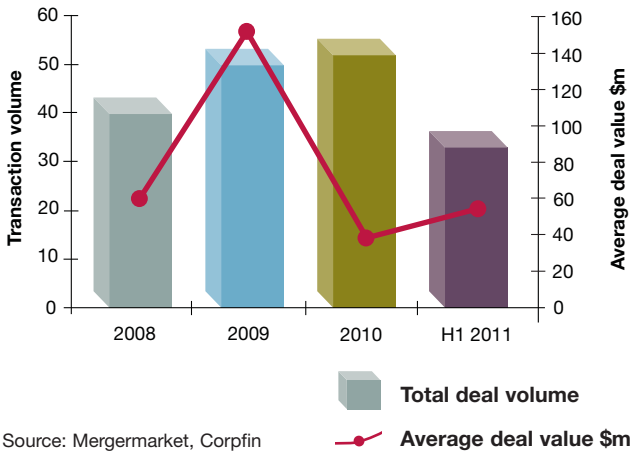
Opportunities for investors in the established wind sector

2010 saw China surpass the US to become the world's largest wind energy producers. Their total output now stands at 43 GW compared to 40 GW of the United States. It has been projected that it will rise sharply again by the end of 2011 to 55 GW

This rapid expansion has been largely due to generous government subsidies and China's panoptic approach to renewable installations. Moreover, vast coastlines and an accommodating climate, along with lower costs of capital goods, gives China a distinct comparative advantage in the wind power game. It is now home to four of the top ten wind turbine firms in the world in terms of market volume: Sinovel, Goldwind, Dongfang and United Power.

Interestingly for investors, state legislation that required that 70% of the components used to build a wind turbine are domestically produced has been repealed. This was done to attract more foreign investment and technological know-how to the wind turbine industry. Accordingly, this should be a good opportunity for international firms to begin engaging in M&A more aggressively to secure some of the lucrative Chinese wind market.

M&A activity



Source: Mergermarket, Corpfin

Technological spillover

Chinese firms are not shying away from using their financial clout to appropriate foreign technological expertise. Elkem, a Norwegian firm heavily involved in solar technology, was acquired by China's National Bluestar for US$2bn. This should provide National Bluestar with the technology spillover necessary to effectively compete in the PV market. The magnitude of this deal was another indicator that Chinese firms are seeking technology internalisation in the cleantech sector. Look for outbound M&A to continue to be influenced along these lines.

Warren Buffet invests in the Chinese green car market

In 2008 American multibillionaire investor Warren Buffet acquired a US$232m stake in Chinese rechargeable battery firm BYD Co. The Chinese firm's main appeal to Buffet is its electric car subsidiary BYD Automobile and the development of automotive battery technologies. Buffets 10% stake illustrates the attractiveness of investing into the world's largest car market and what will be (if predictions hold) the world's largest manufacturers of electric cars by 2019.

Key features to look out for

Looking ahead, one of the major challenges facing China's cleantech industry is the shortage of capacity in its grid system. Connectivity issues between renewable energy production and the end user have not been resolved. As mentioned, China leads the way in total installed wind capacity, however, only 73% of installed capacity is grid connected.

This could be an opening for tech savvy foreign firms to tap into this section of the market to help alleviate the disconnect. Although the state will assist in distributing new smart grid technologies, the market should look to lessen and indeed capitalise on the inevitable lag between need and implementation through the deployment and use of better technology and more cost effective measures.

China should remain a compelling target for inbound M&A, especially in wind power. With wind making up only 1.18% of total energy generation those looking to outpace the already speedy Chinese economy could do worse than breaking into this bourgeoning sector.

Recent transactions

Date	Target	Description	Acquirer	Deal Value (US$m)
July 11	Shunda Holdings	Renewable energy developer	Furbon Life Insurance (Taiwan)	12
Jun 11	Changzhou Yijing Light and Power	Silicon crystal rod manufacture	Haitong Food Group (Hong Kong)	436
May 11	Golden Idea Bio-Engineering	Wastewater	Sino Kingdom Intl Investments	12
Jan 11	Giga-World Industry	Solar/Wind	Tech Pro Technology (Hong Kong)	41
Jan 11	Wanxiang Electric	Energy efficiency	Ener1, Inc. (USA)	n/d
Nov 10	Jinzhou Huachang	Silicon solar cells	Solargiga Energy (Hong Kong)	108
Sep 10	GE Energy (Shenyang)	Wind energy	Harbin Electric Machinery	24
Aug 10	Hanwha SolarOn	Solar	Hanwha Chemical (South Korea)	370
Feb 10	JD Holdings Inc	Clean technology service provider	Northern Light Venture Capital (USA)	15
Jun 09	Wu Ling Power Corporation	Hydro	China Power Intl (Hong Kong)	653

Government support

Renewable Energy Law

- The 2005 Renewable Energy Law is an all encompassing legislative act designed to ensure the steady development of renewable energy, to protect the environment and to guarantee a certain amount of energy autonomy.
- Underpinning the law is to have renewable energy constitute 15% of its total energy generation output. Its framework includes feed-in-tariffs and a cost sharing scheme that flattens the cost of electricity generation.
- The 2005 law was updated in early 2010 to include further provisions in an effort to resolve teething problems that arose during China's cleantech proliferation.

The Golden Sun Initiative

- In 2009 Chinese policy makers rolled out a 50% subsidy on solar projects above 500 MW. The Golden Sun initiative will subsidise half the building costs which includes initial grid connection and general energy distribution infrastructure.
- There has been an increase in Chinese solar investment although M&A in this sub-sector has not been particularly impacted. The initiative is expected to end in 2012-13.

India

Capital City: New Delhi **Population:** 1,166,079,217
Area: 3,287,590 sq km **Time zone:** GMT +5:30

"Most investors are aware that the value-conscious consumer in India is unlikely to pay high premiums for goods and services tagged 'clean' for quite some time. There is a belief that clean energy projects are not sustainable without government support. Considerable support by the state and transfer of proven technology from overseas will be needed to help boost the Indian cleantech industry."

Karan Gupta, Singhi Advisors

Economy in transition

Economic reforms over two decades have helped India become one of the world's largest and fastest growing economies. Integration into the global economy and the ongoing liberalisation of India's regulatory and legislative frameworks have enabled M&A activity to flourish over the last few years and has attracted a number of foreign cleantech players into the market.

Globally, India is currently placed fifth in total renewable capacity. Excluding large hydro, India's installed capacity of renewable energy stands at 18.7 GW and accounts for 11% of total capacity. Although wind is currently far and away the biggest renewable contributor (11 GW), solar energy is being heavily advocated by the state and a target of 20 GW of total installed capacity by 2022 has been set to meet its growing energy demands. Ultimately, policy makers aim to have renewables constitute 30% of total electricity capacity in addition to large-scale hydro by 2032.

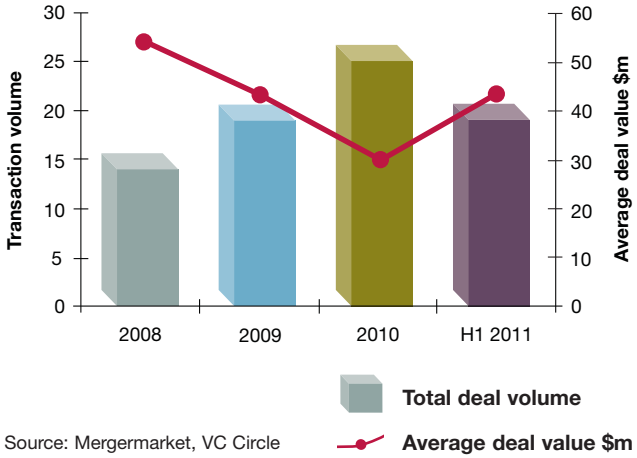
Large private equity involvement

Transaction volumes in cleantech have continued along the same upward trajectory for a number of years now. Indian transaction volumes are up heavily on a pro-rata basis for the current year.

Private equity investments, both domestic and foreign, have played a large role in helping grow the Indian cleantech industry. In January 2011 US based private equity players Argonaut Ventures, New Silk Route and Bessemer Ventures acquired a majority stake in solar power company Kiran Energy Solar for US$50m. Kiran has several power purchase agreements (PPA) already in place; a 20 MW PPA with Gujarat Urja Vikas Nigam and a 5 MW PPA under the 20 GW Solar Mission state target. The investment will help Kiran achieve its goal of owning a portfolio totalling 200 MW capacity in three years.

There has been a large amount of domestic private equity directed at the water industries. India Value Fund Advisors agreed to invest US$19.3m in UEM India, a company that provides water/wastewater treatment and disposal services to the New Delhi locality. Peepul Capital agreed to acquire an undisclosed stake in Chennai based Aqua Designs India. Both transactions will allow the companies to diversify and increase the scale of their water operations.

M&A activity



Source: Mergermarket, VC Circle

M&A strategies

Cleantech deals usually follow two patterns; either strategically acquiring to adopt new business models (renewable power plants, component construction) or acquiring to procure new technologies. The majority of deals fall into the former category, especially from private equity firms who have typically invested in companies that are fundamentally sound and have positive EBITDA. Early stage pre-revenue start-ups, offering an innovative concept tend to be less attractive.

India's USP

One of the most unique aspects about Indian renewable energy is the existence of a lively merchant power market. Unlike conventional power plants, that are built and operated by a regulated utility body (designed to serve the customer), merchant power plants are funded by investors and any electricity generated is traded on an energy spot market. Plants are therefore not tied down to long term contracts.

Tariffs are determined purely by market forces rather than through PPA's. Total merchant capacity is expected to be 23 GW by 2015. Ultimately, through this process, barriers to entering the power generation industry in India are reduced relative to other developing countries.

Opportunities in water

Water and wastewater recycling facilitates are increasingly under pressure to keep up with growing demand. Domestically manufactured equipment tends to be cheaper than imported equivalents. What local firms lack are the design technologies and industry expertise to develop larger scale wastewater treatment plants.

To bridge the gap, Indian policy makers have amended foreign direct investment legislation to allow 100% investment into local wastewater treatment plants. This is an opportunity for companies with the requisite technical aptitude to enter the market worth an estimated US$4bn and growing at 15% annually.

Recent transactions

Date	Target	Description	Acquirer	Deal Value (US$m)
May 11	Gondwana Engineers Ltd.	Wastewater	Doshion Veolia Water Solutions	10.5
Mar 11	NSL Renewable Power	Renewable energy projects	International Finance Corp (USA)	20
Jan 11	Kiran Energy Solar Power	Development of photovoltaic	New Silk Route Bessemer (USA)	50
Jan 11	Clearwater Ltd.	Wastewater treatment	Technofab Engineering Ltd.	n/d
Dec 10	Titan Energy	Solar PV	IFCI Venture	6.8
Oct 10	Auro Mira Energy	Renewable - Hydro, Biomass	Aureos South Asia Fund	21
Aug 10	Moser Baer Projects	Solar PV	Blackstone Group (USA)	300
Jul 10	UEM India	Wastewater treatment	India Value Fund Advisors	19.3
Jun 10	Nandha Energy Limited	Biomass power plant	Clenergen Corporation (USA)	14
Jan 10	DLF Wind Power	Wind power	GDF Suez SA (France)	203

Government support

State Electricity Regulatory Commissions Mandates

- In 2003 the various State Electricity Regulatory Commissions (SERC's) were mandated to promote renewable energy. The SERC's are autonomous, statutory commissions. As of 2009, all the states in India except Arunachal Pradesh, Nagaland and Sikkim have a SERC.
- The principle SERC provision to date has been the renewable purchase obligations initiative. It requires distribution companies to source up to 10% of their power from renewables.
- Other SERC provisions include feed-in-tariffs and fiscal incentives, such as accelerated depreciation, and tax breaks/holidays.

Solar Generation Based Incentive

- In 2008 the Ministry of New and Renewable Energy (MNRE) launched a generation based incentive. The subsidy scheme provides a generation based incentive of 12 rupees (US$0.28) for electricity generated from Solar PV and 10 rupees (US$0.23) for electricity generated from solar thermal.
- A capacity cap of 10 MW is placed on each state and a maximum capacity of 5 MW per developer. The electricity is sold to state-owned utilities. The fiscal incentive will run until 2018.

Japan

Capital City: Tokyo
Area: 377,944 sq km
Population: 127,420,000
Time zone: GMT +9

"Japanese corporations will look to acquire overseas companies to accelerate the development of new low cost renewable energy technologies for Japan and its global markets."

Owen Hultman, IBS Yamaichi Securities

Deal malaise

Domestic deal activity and average deal value involving local targets in cleantech has seen a year on year decline since 2009 as both mid-size and large Japanese companies shift their strategic focus to overseas markets, especially Asia and the BRICS but also the traditional markets of Europe and North America. A number of factors are driving this trend including the attraction of high growth markets in the developing world and shrinking domestic demand due to a declining and ageing population in Japan.

The vast majority of the deals have been domestic such as IDEX Co's acquisition of Shinsei, a solar power generation services company, and the sale of clean energy distributor Windtech Tahara to Electric Power Dvlp.

Seeking international exposure

Japanese trading companies are actively seeking renewable energy-independent power production opportunities abroad. Itochu, Marubeni, Sojitz, Mitsubishi, and Sumitomo are all investing in solar and wind farms in Europe and the Americas as well as the developers and systems integrators of these renewable energy projects.

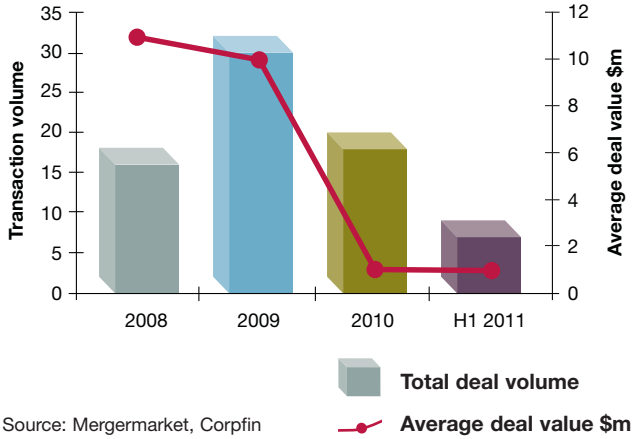
Recently, Mitsubishi acquired an equity stake in the Spanish solar thermal energy company Acciona Thermosolar SL. Sharp, a major developer and manufacturer of solar panels, is also interested in acquiring solar farms in order to expand the scope of its solar business and recently acquired Recurrent Energy, a US based solar energy independent power producer and developer of solar farms.

Nuclear will continue to play an important role

About 96% of the energy resources supplied in Japan are imported from abroad with oil accounting for 47% of total supply, down from 77% in 1973. In order to reduce its high dependence on foreign energy sources and fossil fuels (84% of supply) the Japanese government and corporations have made increasing efforts to develop renewable energy resources and energy efficient technologies.

Japan is the third largest player in nuclear power behind the US and France with 53 nuclear plants. Despite the disaster of the Great East Japan earthquake creating conditions for the meltdown of nuclear reactors in Fukushima, nuclear power will continue to be an important source of energy for Japan, generating about 26% of the supply of electricity.

M&A activity



Source: Mergermarket, Corpfin

Expertise across the sub-sectors

The Japanese electronics industry was an early entrant to the solar energy sector and remains a global player in the production of solar panels and equipment with Sharp, Kyocera, Panasonic/Sanyo, Mitsubishi and Kaneka all being major suppliers of PV solar panels.

While Japan may not be the lowest cost manufacturer of solar PV panels, Japanese companies are leading the development of new technologies and materials to boost the efficiency of solar cells.

Chemical companies such as Kaneka, Kuraray, Mitsubishi Chemical and Asahi Kasei are actively developing new materials for solar panel films and encapsulants and as such we expect Japan to continue to hold a large influence on new solar PV technologies.

Energy management and smart grids are segments in which Japanese corporations are becoming stronger through M&A (Toshiba/Landis Gyr AG). Indeed, one area the Fukushima shutdown did highlight was the pressing need to invest in efficient energy management.

In transportation, Toyota and Nissan have made major developments in the commercialisation of hybrid gas and electric auto engines using nickel-metal hydride and lithium-ion battery technology from Panasonic and GS Yuasa.

Changing shape of the Japanese cleantech industry

The Japanese government is developing new regulations and policies as they attempt to successfully navigate this precarious post earthquake period. We expect the more favourable government policies to stimulate cleantech M&A over the medium term especially in solar.

In the private sector, Japanese corporations are, with the assistance of government, taking action to accelerate the development of renewable energy sources and energy efficient technologies by investing in cleantech energy related businesses both domestically and abroad. The rationale for deals by Japanese acquirers is technology transfer, lower cost overseas production and global distribution. Japanese companies will be targeting a broad range of investments from new breakthrough technologies in equipment and materials to the steady long-term income from investments in independent power producers.

Recent transactions

Date	Target	Description	Acquirer	Deal Value (US$m)
May 11	Shinsei	Solar power generation panels	IDEX Co	n/d
Mar 11	Kokuho System	Photovoltaic construction	Vitec Co	n/d
Mar 11	Yamanaka EP Corp	Solar, optical fiber	Ceradyne (USA)	n/d
Feb 11	First Energy Service	Energy conservation services	Nihon Techno Co	6
Dec 10	Ecosystem Japan	Solar energy installation services	Itochu	n/d
Sep 10	Torishima Pump	Wind power	Konica Minolta	n/d
May 10	Ishii Hyoki Co	Solar battery wafers	Excel Solar Battery Wafer	19
May 10	Zephyr Corp	Wind-solar and water power	INCJ	11
May 10	Excel Inc-Solar Battery	Solar battery wafers	Ishii Hyoki	19
Mar 09	Futamata Furyoku	Operates wind-power generators	EOS Engineer	33

Government support

Solar Feed-in-Tariff

- In 2010 Tokyo Electric Power Company was mandated to purchase electricity generated by household solar power systems.
- The 2011 rate is JPY 42 kWh (US$0.51 kWh) down from JPY 48 kWh (US$0.58 kWh) in 2010. Decreasing costs of solar panels was the underlying reason behind the tariff price drop.

Home Solar Energy Systems

- Japanese policy makers are encouraging the public to use solar energy and have offered subsidies for households and businesses that purchase solar electric power systems.
- The prime minister recently said he would like to see 10 million Japanese households have solar power systems installed in their homes over the coming years.
- The subsidy will be up to JPY 480,000 (US$5.800) for the purchase of solar power systems.

Capital City: Pretoria (exec.) **Population:** 49,052,489
Area: 1,219,912 sq km **Time zone:** GMT +2

South Africa

"With a superb solar resource and a vibrant and innovative industrial sector, M&A opportunities in South African cleantech will be through the merging of independent power producers in the renewable energy sector."

Dudley Baylis, Bridge Capital Advisors

Government to support job growth and alleviate power requirements

There are certainly reasons to be optimistic about the general state of the South African economy after it experienced a positive response to the global economic crisis and has seen inflation decline to a much more palatable level. It does however need to stimulate the creation of five million jobs as high unemployment remains a problem. It is hoped that the renewable energy sectors will go someway in supplying some of these jobs.

Furthermore, 20 GW of renewable power capacity needs to be built if South Africa is to meet its power requirements and its global renewable commitments. Manufacturing competitiveness alone is unlikely to create significant incentives for large international investment in the renewable component manufacturing space. It will be the government incentives and local content programmes that will encourage investment and open up opportunities in manufacturing.

The massive power capacity building programme will require huge foreign investment, and much of this may come in the form of the acquisitions of local generating assets or developers with sector specific knowledge as well as political sway.

Big players entering the market

There have been relatively few M&A transactions in South African cleantech to date. This will change with the launch in August 2011 of the Independent Power Producer Procurement Program (IPPP) which seeks to procure 3,875 MW of power from predominantly solar and wind.

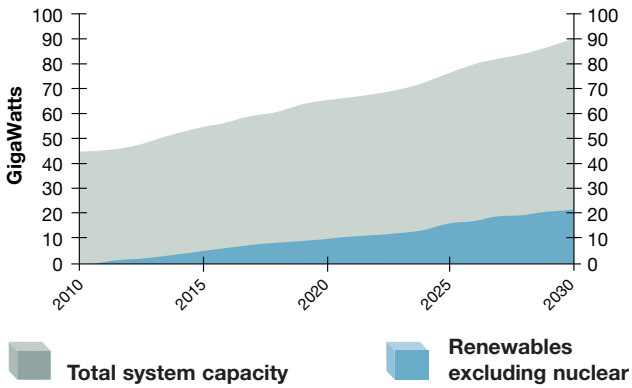
In January 2010 Renewable Energy Systems (RES) made its first investment into the South African renewable market. The UK based energy project developer acquired a portfolio of wind power projects with an estimated installed capacity totalling 300 MW. RES has identified South Africa as a high growth renewable market and an area where solar and wind resources are abundant. According to industry sources RES is likely to step up its presence in South Africa in the coming years.

Ireland based Mainstream Renewable Power (MRP) entered into a joint venture agreement with Genesis Eco-Energy, a South African wind project operator, to develop an initial 500 MW of wind energy by 2014. It is projected that the capital expenditure will total US$1.2bn over five years. From MRP's perspective the significant investment was made on the back of the untapped upside potential in wind in the region and the expectation of a coherent and persistent government support programme.

Large international presence in renewables

Virtually every major international renewable energy systems vendor and project developer has a presence of some form in South Africa with some small manufacturing capacity established, particularly in solar water heating, heat pumps and similar sectors. The industry is very fragmented with over 1,000 companies providing a variety of clean energy related services to a population of 55 million. Around 70 technology vending companies are vying for inclusion in the IPPPP programme, each hoping to supply three to ten projects. Over 270 project developers have registered for the IPPP.

Electrical Energy Capacity Forecast, South Africa



Photovoltaic vs concentrated solar power

South Africa has among the best solar resource in the world and is in the process of trying to establish a very large solar park with the support of the Clinton Climate Initiative. PV -ground and roof mounted- offers, in our view, the largest sector opportunity in the medium to long term, with wind filling the gap in the interim. It is likely that the utility scale PV generation sector will come to be dominated by five to six players, with projects being clustered into eight to ten large-scale independent power producers each with between 2-5 GW of power capacity.

With the forecast rate of increase in local energy prices and declines in the cost of PV installations, it is likely that PV will dominate the solar sector. Although concentrated solar power (CSP) has promise because of its ability to store energy through high temperature storage, we believe that energy storage systems appropriate for PV will become ubiquitous in the next decade rapidly eroding this advantage. We do not foresee CSP achieving the cost reduction rates experienced in PV, and combined with the ease of installation of PV, we think that this will give PV an extended competitive advantage over CSP. There will be opportunities for CSP, however we think this is likely to be limited to a maximum of 1-2 GW.

Factors to shape the industry

The energy generation sector, currently monopolised by state utility giant Eskom, is in the process of being deregulated. Eskom will most likely fill the role of owner and manager of the national grid -which requires national competence in order to accommodate the large-scale adoption of solar energy, particularly if it is widely distributed.

Looking ahead the keys factors driving the development of the cleantech sector will be the added forms of energy generation needed to accommodate South Africa's power requirements, jobs creation and the provision of modern affordable energy to the 15 million people who are without it. These factors along South Africa's almost unlimited solar resource will shape the industry for the foreseeable future.

Recent transactions

Date	Target	Description	Acquirer	Deal Value (US$m)
Mar 11	Lyanda Power Technologies	Business and renewable services	Norconsult (Scandinavia)	n/d
Jan 10	Portfolio of wind farm projects	Wind power	Renewable Energy Systems (UK)	n/d
Apr 09	Genesis Eco-Energy	Wind power	Mainstream Renewable Power (Ire)	n/d
Nov 08	Bio Therm Energy	Renewable enrgy developer	Denham Capital Management (USA)	150
Aug 08	EnviroServ Waste Management	Waste treatment and recycling	Black Economic Empowerment	238

Government support

IPPP

- The feed-in-tariff programme promulgated in March 2009 has been replaced by the IPPP program with a rush of offshore project developers hoping to participate in the 3,875 MW of guaranteed tariff projects.
- A significant component of the IPPPP is the requirement of local development and participation which is anticipated to aid the development of over 18 GW of mostly wind and solar power in the next 20 years. This is expected to showcase South Africa as a leader in the United Nations Framework Convention on Climate Change negotiations which will take place in South Africa in December 2011.

IRP2010

- IRP2010 indicates the most significant shift in energy policy thinking. Renewable energy (excluding nuclear) is now projected to make up 37% of new generation capacity by 2030, approximately 8 GW in each of wind and solar.
- M&A opportunities will likely be enhanced as there will be a significant amount of offshore capital requirements.

Turkey

Capital City: Ankara
Area: 783,562 sq km
Population: 73,722,988
Time zone: GMT +3

"The Turkish cleantech sector, supported by strong fundamentals, government support and a resilient banking industry, continues to build on its momentum. Strategic investors are targeting Turkey to capitalise on the market dynamics and to establish long term partnerships with domestic strongholds."

Can Atacik, Daruma Corporate Finance

Healthy economy despite high inflation

Although inflation has surged in recent times Turkey has realised solid and steady growth over the past eight years thanks to the strong macroeconomic policies that were put in place following Turkey's own financial crisis in 2001. This has been complemented by a single party government that has actively tried to promote private sector growth. A relative decline in investment opportunities and macroeconomic fundamentals in other emerging markets has further accelerated equity and debt flow into Turkey energising the M&A market. It is expected that these main drivers will continue to fuel Turkish cleantech M&A.

Active hydro market

Turkish M&A volume in cleantech has been relatively low in recent years. Baring a few large deals, average deal value has hovered around the mid-market range. The majority of transactions have been cross-border with some of the most noteworthy transactions being in hydropower.

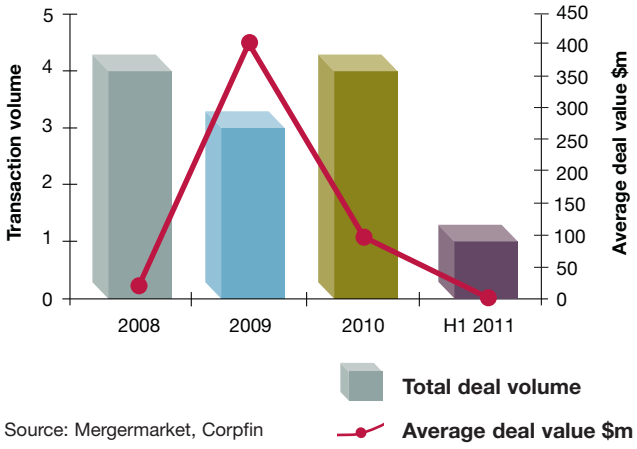
Deals included the US$380m acquisition of Turknon-MNG, a Turkey based electricity generation company firm with operations in the construction and maintenance of hydropower plants, by Energo PRO of the Czech Republic. Turnkon-MNG was previously owned by holding firm Turkon Holding AS and conglomerate MNG Holding AS. The Turkish hydro market also saw Norwegian renewable energy giants Statkraft AS acquire a 95% stake in Yesil Enrji, a Turkish hydropower operator, for US$126m. These deals highlight the attractiveness of participating in an established yet growing Turkish hydro industry.

A notable deal outside of the hydro space was the purchase of a large portfolio of Turkish wind power projects for US$1.1bn by Renewable Energy Systems (RES), a subsidiary of UK based construction firm Sir Robert McAlpine. The wind power projects will amount to 500 MW and will expand RES' exposure to emerging, fast growing renewable markets.

Rapid growth in wind

According to a study by the European Commission, Turkey has the second highest potential for wind energy generation in Europe after the UK. The state owned national grid company TEIAS has already begun upgrading its distribution infrastructure in an effort to connect 15 GW of wind farms. Indeed, analysis suggests that Turkey's wind power capacity looks set to grow at around 30% annually until 2014, easily outpacing overall renewable energy capacity growth.

M&A activity



Source: Mergermarket, Corpfin

Geothermal sectors emergence

Starting from a low position, the geothermal sector is starting to live up to its potential. Several domestic strategic investors, such as BM Muhendislik, have begun locating suitable well locations and some have already completed their drilling activities. The state mining authority (MTA) owns a number of fields that have been confirmed as suitable for the construction of power plants.

Transfer of Operating Rights (TORs) are underway for these plants with construction and energy firm Celikler Holding being one of the biggest acquirer's of TORs, buying enough for a potential 45 MW field. Only a small portion of these have been offered to the market thus far, however, it is expected that a new round of privatisations will take place in the near future.

Consolidation and IPOs to drive M&A market

The consolidation trend in the renewable energy sector, particularly in hydro and wind, will continue over the near term. A number of funds, actively involved in cleantech, are accumulating assets or helping strategic investors accumulate assets with the intention of an exit in the next few years, most likely to either larger strategic investors or through IPOs. With the introduction of the new solar feed-in-tariffs and a lack of affordable technology from Europe and the US, we believe there will be an increase in inbound interest in local technology companies and domestic production facilities by Western firms.

Recent transactions

Date	Target	Description	Acquirer	Deal Value (US$m)
Feb 11	Anel Energy	Hydroelectric power	Kioto Photovoltaics (Austria)	n/d
Oct 10	Cooper Island	Steel dust recycling plant	Befesa Medio Ambiente, SA (Spain)	10
Sep 10	Dogal Elektrik Uretim A.S.	Hydroelectric power plants	Hamza Dogan	12
Apr 10	Turkon-MNG	Hydropower plants	Energo PRO A.S. (Czech Republic)	380
Apr 10	ABK Elektrik Uretim	Wind farm management	Undisclosed bidder	n/d
Oct 09	Turkish Wind Power Projects	Wind farms	Renewable Energy Systems (UK)	1,100
Jun 09	Yesil Enerji AS	Hydropower	Statkraft AS (Norway)	126
Dec 08	Polat Energy Industry & Trade Inc	Developer of wind energy	EDF Energies Nouvelles SA (France)	n/d
Jul 08	Bares Elektrik Uretim AS	Wind energy company	Italgen SpA (Italy)	51
Mar 08	Demrad Dokum	Photovoltaic installation	EDF Energies Nouvelles (France)	n/d

Government support

Amendment to Law on Renewable Resource Utilization

- The amendment to the 2008 law changed the set ten year guaranteed feed-in-tariff price of US$0.07-0.08 for energy supplied from renewable sources to provide differing rates for different sources. The new rates are US$0.133 kWh for solar, plant-burning biomass and gas produced by organic waste, US$0.105 kWh for geothermal and US$0.073 kWh for hydro and wind.
- The amendment also added incentives for plants sourcing equipment or components from domestic suppliers. The dynamic pricing system should help maintain steady investment flows into the Turkish cleantech industry.

Changes in the energy market operational structure

- Based on the government's recent strategy paper, policy makers have made changes to the renewable market operating system.
- The most significant changes are the creation of an energy spot market and a more transparent pricing structure in the energy trading market.