

## *Alternative thinking 2011*

A look at 10 of the top issues and trends in renewable energy



# Contents

---

Foreword	1
1 Navigating uncertainty: Where next for government and regulators?	2
2 Many companies will be bought this year; is yours one of them?	3
3 Funding: Got any money?	5
4 Taking a long hard look at environmental and social impacts	6
5 Capital programs: Supersize renewable energy	7
6 Moving to clean energy to create new jobs with specialist skill sets	8
7 Oil and gas vs. renewable energy: Friend or foe?	10
8 Engaging consumers to embrace the trilemma	12
9 Large in resources, short on infrastructure	14
10 Development of the supply chain: the weakest link?	15
Where do we go next?	16
Contact an Energy & Resources professional	17

---

# Foreword

## Welcome to the Top 10 Trends and Issues in Renewable Energy report

This is the first year in which the Deloitte Touche Tohmatsu Limited Global Energy and Resources group has published this report which follows others in the series on oil and gas, power and utilities, and mining.

The volatility of the global economy in 2008 and 2009 has given way to a renewed sense of optimism in 2010. While some economies were able to ride out the recent recession, many others suffered severe economic consequences. The question now on everyone's mind now is how likely a sustainable recovery will be?

The answer to this question says a lot about the future of renewable energy.

Prior to the economic crisis, renewable energy – or 'green gold' as it was being referred to then – was developing in an era of very high oil prices. Large wind farms were being installed across Europe, the U.S., China and many other developed and emerging nations, while solar power was on its own upward trajectory with supply chain bottlenecks being one of the common constraining factors across the different technologies. Now, the tide has turned. Many renewable energy projects have stalled or come to a complete stop due to issues ranging from the situation with the global economy, the state of government finances, difficulties in funding, and regulatory uncertainty.

The emergence of shale gas is having an impact on security of supply concerns which to date have been a strong driver for renewable energy, as well as on commodity markets, where the long-term price outlook for oil, gas, electricity and carbon are less certain with a resulting impact on renewable energy investment.

In addition, many renewable energy players are finding funding is harder to come by and where it is available, more expensive or with more onerous terms than they have been used to. In terms of mergers and acquisitions (M&A), renewable energy is currently more of a buyer's market but some unrealistic price expectations remain.

The methodology for developing this report involved in-depth interviews with clients, industry analysts and the most senior energy practitioners from Deloitte member firms. I am most grateful to all of them for offering their insights and experience at a time when their attention was particularly in demand.

The next 12 months will witness many changes in the renewable energy sector. Although many of these changes will bring fresh challenges, it should always be remembered how important a role this sector plays in delivering low carbon energy on a global basis.

In short, while global growth may be cyclical, renewable energy is a critical part of the energy equation.



**Roman Webber**

*Renewable Energy Community of Practice Leader*

Deloitte Touche Tohmatsu Limited

# 1 Navigating uncertainty: Where next for government and regulators?

Although many national economies have begun a rebound from the recent recession, regulatory uncertainty is still a catchphrase being heard in corporate boardrooms around the world. But as some economies begin evaluating their position as they emerge from the global recession, other governments are already contemplating changes to the 'rules of the game,' making it more difficult for investors. This is all the more important for companies seeking to develop long-term projects to bring renewable energy to market. The challenge faced by all governments is to create incentives that offer good returns during the early stages that encouraging increased activity, then rein these back as the industry develops. For this reason, some countries like Chile, Poland, the Czech Republic, South Africa and South Korea, are attracting early interest from a wide range of overseas investors. From an investor's perspective the dynamic can be different: it sometimes pays to be "just too late" – not jumping in too early and holding back from investing until the incentive regime improves – but, it is crucial to them that the incentives they signed up to at the start of the project are there over the duration.

Regulatory uncertainty and changes in government policy have always been a challenging factor in business, but recent decisions in several important renewable energy markets have made the playing field unstable for companies with renewable energy portfolios. The recent financial crisis has left many government balance sheets under pressure, which is coming through in reduced incentives. The emergence of shale gas has changed the dynamics in terms of security of supply and created a different perspective on costs and commodity prices are causing a re-evaluation of policies set in boom times. The mitigation of carbon emissions is also starting to focus towards other areas such as energy efficiency.

Spain's announcement of a wholesale review of its energy policy and arguably 'retrospective' changes to its feed-in-tariff regime, has curtailed investment. There also appears to be near-term regulatory changes in several more mature countries including France, Germany, Italy, the UK and the U.S. where tariff cuts have been announced or incentive renewals delayed or pending. China appears to have deferred its energy stimulus plan, while Australia's policies remain unclear following the hung Parliament. Investors require reasonable assurance that the incentives signed up to at the start of the project, will be there for the duration. The grandfathering of incentives over the life of the project is crucial for continued confidence in the system.

But, it is not just the stability of the system that is important. When looking at the different incentives for renewable energy around the world, there is a wide range – from market mechanisms like carbon credits and renewable obligation certificates (ROCs) to feed-in-tariffs and tax incentives such as production tax credits (PTCs) – and all have their different complexities, strengths and weaknesses. Even when one looks at a single country, many of these mechanisms co-exist. The UK for example, has nearly 30 different low carbon energy incentives. There is a real risk that the plethora of incentive mechanisms serves to confuse investors, detracts from their effectiveness and makes the landscape unnecessarily complex. Governments and regulators should focus on delivering incentives which not only give the political sound bites, but are easy to understand and evaluate.

## Bottom line

This remains a sector underpinned by government subsidies. Continued investment in renewable energy requires clear and concise regulations that remain over the life of the project, stability of incentives, and long-term certainty in the price of carbon. Pressure on government finances, shifting views on energy security and uncertainty over longer-term commodity prices is unlikely to ease in the near-term, leading to questions around the creation and use of renewable energy incentives.

---

**“Government subsidies are the key to providing adequate returns in renewable energy. They help build the market and allow all players to compete. This will create more demand for labor, job skills and education.”**

# 2 Many companies will be bought this year; is yours one of them?

In spite of the continued concerns over the strength and sustainability of the global economic recovery, the flow of mergers and acquisitions (M&A) transactions within the renewable energy sector continues unabated, with only challenges such as access to capital remaining.

As the recession took hold in 2008 and 2009, many lenders reigned back their M&A activities and completely backed away from making risky investments. With financing slowing to a trickle, lenders worked hard to reduce their exposure to the sector, resulting in an almost complete shutdown of the M&A renewable energy market. For most of 2009, governments around the world introduced various stimulus measures, including major injections of capital, which were designed to jump-start renewable energy projects. As a result, there now appears to be increased M&A activity, which is likely to continue over the next 12-18 months.

Despite the fact that many companies are finding it harder to locate adequate capital, global deal volume within the renewable energy sector has recently improved. This may be as a result of investors being forced to rely more on balance sheet financing in order to bring a deal to a successful conclusion.

Perhaps the most important observation to be made over the last six months is the increase of investments in solar compared to wind. In 2009, investments in wind power considerably exceeded those made in solar. Wind and solar have now reversed position; although there is no doubt that together solar and wind will drive deal activity going forward. The challenge now for renewable energy players will be to compete against other forms of energy investment, such as other forms of generation, infrastructure, unconventional gas, liquefied natural gas (LNG) and oil and gas pipelines.

Growth in renewable energy will not continue to increase unless money is readily made available. There is fierce competition to gain access to lending and with available government stimulus packages beginning to wind down, industry players are questioning where the capital will come from. One solution comes from a new wave of companies – particularly from Korea, such as the state-owned Korea Finance Corporation – that seem ready to invest in renewables. Sovereign wealth funds from Asia and the Middle East may also provide some much needed financing in the sector.

One important trend involving current M&A activity is that governments' involvement in certain industries – and renewable energy is one of these – will entail more rigorous scrutiny of the implications of proposed deals. This suggests that renewable energy companies could face an uncertain M&A environment, leading to delays in deal completion and potentially deal cancellation. To prepare for this new deal landscape, companies operating in the renewable energy space should consider the following:

- Stepping up to new demands. The situation in the global marketplace calls for adjustments in how companies approach M&A deals. Firms that regularly make acquisitions are experienced in dealing with the interplay between numerous agencies within the government. They have access to key decision makers and know the rules in areas such as governance, taxation and industry regulation. They are accustomed to the challenges that arise when seeking approval for proposed deals. However, deals in renewable energy are becoming more complex and politically sensitive and will likely require new management skills.

- Clear assumptions. Firms will need to be clear about their assumptions as to how government policy will affect their investments and anticipate circumstances that could help or hinder achievement of their strategic objectives. This is not to say firms are obliged to react to events as they occur. Executives can plan investments in ways that make provision for alternative outcomes – called ‘strategic flexibility’ – while working to move policy in favorable directions. This strategy has implications for the way renewable energy deals are planned, managed and pursued.
- Executive capabilities. Maintaining competitive advantage requires that the executives in charge of M&A strategy and execution have a special set of skills. One theory is that the global marketplace is tilting toward a more politicized marketplace, but it should be noted that much remains uncertain as to how events will play out. Companies may want to allow for the reality that events will unfold differently in different national markets. Consequently, executives directing M&A deals will need to possess political as well as commercial expertise and they will also have to be able to cope with ambiguity and change.

#### Bottom line

Consolidation is inevitable as companies jostle for industrial competitive supremacy by reducing competition, costs and operational overlap, creating new synergies by expanding into new markets. However, current M&A activity will likely remain politicized in the foreseeable future, and those with the right skill set should find it easier to work in the new deal environment.

---

“As renewable energy projects become more politicized, executive skill sets necessary to carry out M&A transactions will require more long-term refinement.”

Jean-Michel Gauthier, Global Leader for Financial Advisory Service,  
Deloitte Touche Tohmatsu Limited



# 3 Funding: Got any money?

Availability of funding has been a key issue for all businesses in recent years and renewable energy is no different. The sector has recently attracted a fair share of equity through venture capital, private equity and sovereign wealth fund investment, as steadying oil prices and the need to cut greenhouse-gas emissions puts the spotlight on the development of renewable energy sources and their potential growth.

While investments continue to be made in traditional renewable energy sources including wind, solar and biofuels, other investment areas such as marine, underground coal gasification and geothermal are maturing to be viable options for green private equity and venture capital investors over the next five years. According to the results of a recent survey conducted by New Energy World Network, energy efficiency, energy storage and smart grids are predicted to offer the best risk-adjusted returns over the next five years.<sup>1</sup>

In relation to public markets, Enel SpA's proposed initial public offering (IPO) for Enel Green Power SpA, its renewable energy subsidiary, could serve as an indicator as to how much investor interest there is in green energy projects as growth returns to the global economy. One estimate expects IPOs in this sector to raise US\$9.6 billion globally this year, more than three times last year's total.<sup>2</sup> In addition, 2Q 2010 results for clean technology venture capital investments in North America, Europe, China and India totaled US\$2.02 billion across 140 companies.<sup>3</sup> This was almost double the amount of 2Q 2009 results which were US\$1.2 billion.<sup>4</sup> As noted in section 1, investment in renewable energy carries with it political and regulatory risk, with many public incentives and government stimulus packages which can drive sector growth, be adapted or withdrawn fairly quickly. Several renewable energy companies had been queuing up for a listing on the Madrid stock exchange in Spain, but regulatory uncertainty has now delayed these IPOs.

On the debt side the funding picture has also improved, but remains susceptible to similar regulatory uncertainty and caution. Project finance in the EMEA (Europe, Middle East and Africa) region has doubled since 2009, with new lenders to this sector aggressively growing market share. In addition, actions by organizations such as the European Investment Bank, which has dedicated funds for investment in renewable energy, have assisted many projects to move forward.<sup>5</sup>

However, while conditions have improved, deals are now taking longer to close and lenders are taking a greater interest in particular areas such as the terms of the power purchase agreements. Refinancing of existing loans can also be a shock for some borrowers as the terms of the original borrowing are no longer on offer.

One remaining question regarding funding is that of scale. For some investors, renewable energy projects still do not offer the required level of scale and therefore suitable level of return, for them to take an interest; particularly where these projects are competing for investment committee attention with other, and often much larger, existing energy infrastructure projects. At the same time, there is a shortfall in the funding required to develop many projects. In the UK for example, utilities do not have sufficient balance sheets by themselves to develop the offshore wind licenses that have been granted and it is not yet clear where this money will come from. This is being recognized by the UK government who has proposed the formation of a Green Investment Bank. The role of this body is yet to be fully defined but a key objective will be ensuring that more funding flows into the sector.

## Bottom line

As market conditions continue to show signs of improvement, new IPO issues and project finance rounds may take longer than usual to close and pricing will be tougher. Given that it is not yet clear where all the future funding for renewable energy investment will come from, these conditions are likely to persist for some time.

---

**“All businesses are under pressure to reduce their energy costs and carbon emissions. This is one of the reasons why non-traditional players such as landowners and industrials are starting to make significant renewable energy investments.”**

**Roman Webber**, Renewable Energy Community of Practice Leader,  
Deloitte Touche Tohmatsu Limited

1 New Energy World Network. Investing in Green Private Equity and Venture Capital Funds: Survey of Institutional Investors 2010. [www.NewEnergyWorldNetwork.com](http://www.NewEnergyWorldNetwork.com)

2 Liam Moloney “Seeing Green in IPOs: Enel Offering of Renewable Energy Unit Will Test Investor Interest.” *Wall Street Journal* April 22, 2010 p.22

3 Cleantech Group LLC and Deloitte. Cleantech Investment Monitor 2Q 2010. [www.cleantech.com](http://www.cleantech.com)

4 “Green Venture Capital Rebounds in Q2 2009 – Cleantech Group, Deloitte.” *ADP Renewable Energy Track* July 5, 2009

5 *Infrastructure Journal*; 18 August 2010, A Greener Britain a la Francaise

# 4 Taking a long hard look at environmental and social impacts

6 Renewable UK and Sustainable Development Commission ([http://www.sd-commission.org.uk/publications/downloads/Wind\\_Energy-NovRev2005.pdf](http://www.sd-commission.org.uk/publications/downloads/Wind_Energy-NovRev2005.pdf))  
See also: <http://www.bwea.com/energy/myths.html>

7 “Extinction Risk from Climate Change.” *Nature* 427, 145-148 (January 8, 2004)

Renewable energy is often heralded as the solution to the world’s climate change and wider environmental concerns. Its sustainability credentials have therefore come under the spotlight in recent years and have not always stood up to public scrutiny.

Sustainability is rising up the boardroom agenda and corporate social responsibility is becoming an increasing issue for all companies. The difference is environmental credentials are a key reason for government subsidies for the industry. Therefore, there is more pressure on renewable energy companies to deliver an effective sustainability agenda.

However, renewable energy is not unique and as with any industry, particularly one which can involve large infrastructure, its construction and operation has both environmental and social consequences. These include questions regarding the carbon benefits of biofuels and accusations that they are contributing to rising food prices and destruction of rainforests; concerns regarding the impact of wind farms and tidal barrages on local biodiversity, as well as the social impact of large hydro projects which can involve relocation of villages, and questions regarding the overall carbon benefit and aesthetics of wind farms; and concentrated solar power projects in the desert requiring desalinated water which is a precious resource for local communities. Most global environmental non-governmental organizations (NGOs) are in favor of the expansion of renewable energy, but wish to see appropriate environmental and social safeguards in place, particularly where this expansion is subsidized by taxpayers.

Global demand for biofuels has risen sharply over the last decade, driven initially by rising oil prices and the desire for greater energy security. Support measures, such as subsidies and tax credits, were implemented in many countries in recognition of the potential of biofuel development in reducing dependence on fossil fuels, increasing farm revenues and offering lower greenhouse gas emissions compared to non-renewable fuel sources.

Concurrent with the growth of biofuel production, skepticism about the positive impact of biofuels began to escalate as concerns regarding the trade-offs between food, feed and fuels began to gain media attention. Furthermore, concerns were raised around the environmental consequences of biofuel production, particularly the indirect land use change which can result in the release of greater carbon emissions overall as high carbon peat forests are converted to cropland and the use of water for irrigation – particularly in the U.S. Various reports and analyses however, have indicated that the right type of biofuels grown in the right way, can offer both environmental and social benefits. Government regulators and bodies, such as the EU Commission, are starting to respond by encouraging safeguards and sustainability standards to ensure their policies are delivering the desired outcomes.

The attitude around the world to wind farms varies considerably, depending on their location and proximity to residential areas. One question often raised relates to the overall carbon benefits they offer. However, studies by Renewable UK and the Sustainable Development Commission have shown that the average wind farm will pay back their energy or carbon debt – from the manufacture of turbines and construction – within three to 10 months of operation.<sup>6</sup> There have also been concerns about the impact of wind farms on bird populations, although one leading scientific journal confirmed that the greatest threat to bird populations is climate change, of which wind power is likely to be an important contributor to mitigation.<sup>7</sup>

## Bottom line

As renewable energy continues to become a larger part of the energy equation, there will be an increasing focus on its sustainability credentials. Companies should undertake thorough environmental and social assessments embedding sustainability into their overall corporate strategy and supply chain in order to preserve their own and the industry’s reputation.

---

“Sustainability needs to be built into the evaluation of all renewable energy projects. The use of scarce energy by current rather than future generations is not just an economic question but also an ethical one.”

Duane Newman, Director, Deloitte South Africa



# 5 Capital programs: Supersize renewable energy

The various renewable energy, carbon reduction and energy efficiency targets set by politicians, translate into many billions of dollars, euros and yuans of capital expenditure over the coming years. Economies of scale offer one answer to rising costs, for example in wind where steel prices and foreign exchange rates have been pushing up development costs.

Just like other large scale capital intensive projects, renewable energy deployment and development demands a diverse skill set. Projects such as building offshore wind, carbon capture and storage (CCS) and solar parks in the desert can all learn from lessons from other industries. Delivery of world class projects to time and on budget requires not only strong engineering and program management skills, but integrated finance, human capital, operations and procurement functions.

Because of the funding challenges and the diverse capabilities involved, many companies choose relevant partners during the design and delivery of major capital programs. In developing capital programs, many companies chose to partner with others. In the UK Round 3 offshore wind tender, all of the nine awards were made to consortia. The DESERTEC concept is supported by a number of financial and industrial players. For many organizations, consortia are a good way to pool resources, enter new markets and spread risk, and can also provide a practical alternative to M&A. But, while a joint venture can be a way to reduce risks, it also can increase stress on the program. Factors vital to a successful joint venture include clarity of purpose with agreed goals for each party; the commitment and softer skills across parties to invest in maintaining the relationship; appropriate mechanisms to give control; visibility over program performance and controls; and importantly, clear and understood exit points for each party.

Deloitte member firm experience shows that there are some common lessons learned that renewable energy organizations need to apply in the delivery of large scale developments, such as:

- **An under-developed finance function.** In successful programs the finance function needs to have the ability to give genuine guidance to all parts of the project throughout the life cycle.
- **The right level of support.** To deliver exceptional performance, decision makers needs to be supported with program controls that give detailed, fast and accurate visibility into the program performance.
- **Operational efficiency.** Despite the cost efficiency of spend on preparing for go live, the transition into operations remains an area vulnerable to under investment and misalignment of stakeholder priorities.
- **Centralized decision-making.** Leaders often struggle to align around common goals. Where there are multiple delivery partners they have to think and act as a single organization.
- **Skill building.** Essential soft skills tend to be under-developed; management and staff need better teaming and engagement skills as much as engineering and project management capability in order to underpin performance.

## Bottom line

Challenges will always be present in these super scale projects, but by heeding lessons learned from other industries, renewable energy companies can reduce the risks and control delivery costs.

---

“In many countries, electricity demand is outstripping supply. Within the next 15 to 20 years, many of these countries could experience service interruption.”

Michael Rath, Energy & Water Leader, Deloitte Australia

# 6 Moving to clean energy to create new jobs with specialist skill sets

Over the last year, global energy consumers experienced a course correction as policy makers became sensitive to cost considerations having becoming entangled in a deep recession. This led many governments to place greater weight to clean energy – whether it comes from the wind, sun, clean coal, natural gas, or nuclear – while acknowledging that these are a bridge to a sustainable and affordable low-carbon energy future. How society moves from green to clean, says a lot about what types of skill sets will be needed and where will they come from.

First and foremost, policymakers around the world have learned that energy policy is intricately linked to the creation of new jobs and development of specialist skills. According to Dr. Joseph Stanislaw, Independent Senior Advisor for Deloitte LLP United States, 'energy policy is climate policy, national security policy, economic policy and employment policy.'<sup>8</sup> Policies that encourage new energy technologies, increase the efficiency of energy currently used and further the refinement of fossil fuel technologies, will likely promote economic growth and in turn stimulate the global economy into creating jobs that require new workers to be retrained and current workers to gain additional skill sets. This has helped create a new debate around energy.

Previous debates were confined to a select few stakeholders such as trade, industry and government decision-makers. Today, new groups of energy users are being heard, and including job unions, corporations of all shapes and sizes and perhaps more importantly, the public. Public demand for clean energy and energy-efficient products has spurred action from both lawmakers and companies.

Jobs in the renewable energy sector have traditionally emphasized the supply side – the manufacturing and installation of wind turbines and solar panels – rather than building skills across the entire supply chain. Manufacturing jobs may provide some short-term relief, but ultimately these may also end up being moved overseas. By contrast, workers with new skill sets on the demand side – those that help reduce and manage energy usage – are likely to be in demand and as such will likely obtain jobs that pay more and be more sustainable.

One of the main criticisms of subsidies for renewable energy is that taxpayers might be paying too much in subsidies for jobs that might soon relocate overseas. Germany and Spain offer a case in point.

Both countries subsidized PV markets to help create new jobs requiring new skill sets and promote local demand. They succeeded for a while; that was until the Chinese were able to achieve economies of scale in the manufacturing process and dominate supply. Now, subsidies in the West help support job retraining programs in the East and those with new skill sets are in high demand. As further evidence, a report from American University's Investigative Reporting Workshop stated that 1,219 of the 1,807 wind turbines funded by the US. stimulus program were manufactured abroad.<sup>9</sup>

While some industry commentators have analyzed the subsidies for manufacturing jobs, others have contemplated those incentives for job retraining programs leading to job creation. As part of the US\$787 billion American Recovery and Reinvestment Act stimulus program, US\$80 billion was allotted for clean energy.<sup>10</sup> Supporters of the Act were hoping to create 3.5 million jobs requiring new skills, many of them green. Although all of the facts are not in, initial jobs created by the stimulus spending on energy totaled roughly 60,000 – out of 300,000 jobs that were created overall by the stimulus Act.<sup>11</sup> According to White House figures, it cost US\$135,294 to retrain and create each new green job.<sup>12</sup> Similar figures are being reported overseas.

8 Infrastructure Journal; 18 August 2010, A Greener Britain a la Francaise.

9 American University School of Communication. Investigative Reporting Workshop. February 8, 2010. <http://investigativereportingworkshop.org/investigations/wind-energy-funds-going-overseas/story/renewable-energy-money-still-going-abroad/>

10 Deloitte Center for Energy Solutions. "Clean Energy 1.0: Moving Beyond Green to Create Sustainable Jobs and a Long-term Energy Strategy." Deloitte United States (Deloitte LLP) June 2010. [www.deloitte.com/energysolutions](http://www.deloitte.com/energysolutions).

11 Ibid.

12 Ibid.

A King Juan Carlos University study in Spain determined that for every green job created, 2.2 others were lost and only one in 10 green jobs became permanent.<sup>13</sup> The study found that green jobs in Spain cost US\$800,000 each to create, thanks to subsidies, higher electricity costs and tax hikes.<sup>14</sup> A report issued from the German think tank Rheinisch-Westfälisches Institut für Wirtschaftsforschung *Economic Impacts from the Promotion of Renewable Energies: The German Experience* concluded that the country's green jobs program appears to have created 278,000 jobs, albeit at a very steep cost of US\$240,000 per position.<sup>15</sup> The management of energy offers a treasure trove of opportunities for workers to be retrained, creating long-term and well-paying jobs. Many of these are likely to come from those people within the world of IT, where forward-looking companies are developing hardware and software applications to help control energy usage.

#### Bottom line

Until now, the notion of green jobs creation was debated to justify a wide array of initiatives, policies and investments. The future needs investment now in training and retraining a new generation of skilled workers to manage energy usage. These are the types of future jobs that will likely be sustainable, well-paying and remain in local markets.

---

“Growing a renewable energy business requires a mix of skills that are in short supply. Companies need to consider how to build up, manage and retain their human capital, particularly where projects may face an uncertain development period.”

Carlos Lloveras, Partner, Deloitte Argentina



13 <http://www.juandemariana.org/pdf/090327-employment-public-aid-renewable.pdf>

14 Ibid.

15 [http://www.instituteforenergyresearch.org/germany/Germany\\_Study\\_-\\_FINAL.pdf](http://www.instituteforenergyresearch.org/germany/Germany_Study_-_FINAL.pdf)

# 7 Oil and gas vs. renewable energy: Friend or foe?



While there are some fundamental differences – there is limited oil and gas experience in shallower waters and of the related soil conditions, as well as different assembly focus onshore/offshore – there are opportunities for engineering and construction companies to get involved in the early stages of renewable energy projects given the expertise they have gained over the last four decades.

The UK Round 3 offshore wind developments will be enormous engineering projects – potentially up to US\$201 billion of capital spend.<sup>16</sup> This is a huge sum of money and there will likely be significant work packages the oil and gas industry can bid for. Other European countries, China, the U.S. and Canada are also starting to build out their offshore wind capabilities. These and other projects would appear to be a complimentary service offering for oil field service companies as several recent examples suggest.

Some see oil and gas and renewable energy as fierce foes – a battle of opposites. In fact, in many ways they are bedfellows. For years global oil field service companies have been at the forefront of fossil fuel development. These companies employ the latest technology, possess well-trained engineers and other personnel and have the expertise in working in inhospitable places – mostly offshore. Is it possible that the skills necessary for fossil fuel development can be used to develop renewable energy?

There are many areas where renewable energy and oil and gas overlap, with new opportunities arising for traditional players. In the near-term for example, it is likely that there will be interplay between offshore oil and gas development and the offshore wind sector.

Oil field service companies possess the financial strength, skill sets and talent that compliment offshore wind projects. They operate in the same work environment as offshore wind, using a large collection of ships, equipment and installers. In addition, the oil and gas industry has spent nearly 40 years perfecting its technologies and skill sets – which include engineering and project management. These skills appear to be readily transferable to wind and marine energy.

Based in La Ciotat, outside Marseilles in Southern France, Bardot Group has traditionally operated as a contractor in the oil and gas sector for several years, manufacturing polymers and composites used in equipment such as rigid and flexible flowlines for the subsea construction sector.<sup>17</sup> According to its chairman, the company has developed a strategy to move further into the engineering, procurement and construction business, as well as the upstream and renewable energy sectors.<sup>18</sup> The company is currently seeking to be awarded the Hermine license for oil and gas drilling near a group of small French islands in the North Atlantic Ocean – the main islands being St. Pierre and Miquelon. There may also be a possibility to negotiate an option within the license's terms and conditions to obtain rights for an offshore wind farm, as well as rights related to tidal and wave power.

Marine safety company Cosalt PLC – a provider of marine safety products for the oil and gas sector – has also identified a market opportunity in the offshore wind sector and is currently studying ways in which it can replicate its skills from the offshore oil and gas to offshore wind.<sup>19</sup>

16 Alasdair Northrop. "Oil and Gas Experience Offers a Head Start." *Scottish Business Insider* July 19, 2010

17 Iain Esau. "Bardot Group Steps Into the Exploration Sector." *Upstream* July 23, 2010 p. 25

18 Ibid.

19 Iain Packham. "Cosalt in Early Talks for Offshore Wind Move." *Dow Jones Newswires* June 29, 2010

In one of the strongest indications yet of oil and gas service company interest in offshore wind, Aberdeen – notable for its oil and gas development – was recently selected as the headquarters for offshore wind, wave and tidal activities by one of the biggest North Sea oil and gas service companies – Technip.<sup>20</sup>

In fact when one looks closer, there are many other similarities and inter-relationships between oil and gas and offshore wind: one is arguably a driver for the other in terms of carbon emissions; many management teams have worked in both sectors; there are also similarities in the legal framework. This is even before one considers the links in other areas such as biofuels. The links are deeper and stronger than one might first expect.

#### Bottom line

Fossil fuel development and implementation of renewable energy technologies require complimentary skill sets and dual purpose technologies. Oil and gas companies will find opportunities in the renewable sector while renewable energy firms may find people and skills from the oil and gas sector. Going forward many oil and gas supply chain companies will think of themselves as energy supply companies which operate in a number of markets.

---

“It’s not going to be oil and gas versus renewable energy, its oil and gas and renewable energy. Given the ever-growing energy hunger of developed and fast-developing countries, renewable energy is only going to supplement oil and gas as an energy source for a long time to come.”

Kalpana Jain, Financial Advisory lead for Energy & Resources, Deloitte India



<sup>20</sup> David Perry. “North Sea Services Firm Picks Aberdeen as Renewables Base.” *The Press and Journal* February 10, 2010 p.7.

# 8 Engaging consumers to embrace the trilemma

While most consumers appear to understand the arguments for increased use of renewable energy due to energy security and combating climate change, it is not yet clear to what extent they have engaged in the debate regarding the third section of this trilemma: the cost of energy to them. The ambitious plans for deployment of renewable energy come with a hefty price tag attached – it is ultimately the consumer who will pay a significant share, either through higher energy bills or through increased taxation. Awareness of this issue is growing according to an annual survey which appears in an issue of *Electric Utility Week*. The survey found that consumers in the New England region of the U.S. overwhelmingly endorsed the development of wind generation.<sup>21</sup> However, when customers were asked the open-ended question: “What is the single most important energy-related issue facing the region today?” they responded overwhelmingly that it is the high price of various forms of energy, including electricity.

The impact on households in terms of future increases in energy bills will depend to a large extent on the communication and uptake that is derived through energy efficiency. It is generally considered that energy savings made by individuals have the potential to be greater than those made by business – which has already reaped much of this reward. So, for energy suppliers, the model for consumer engagement on this aspect is crucial. While many consumers might not be able to currently afford the energy efficiency measures on offer – such as insulation, micro-generation or energy efficient devices – these may be possible with a longer-term supplier contract where these measures are provided as part of the overall agreement. The energy supplier therefore moves from being a product vendor, to being an integrated energy supplier for households. Such a relationship removes disincentives for reducing energy consumption and also drives improvements in customer service, but is only possible where the regulators allow consumers to be tied into longer contracts. In some cases, the consumer will not have a choice. Mandatory standards on sustainable housing, such as the UK Merton Rule and Code for Sustainable Homes prescribe a proportion of renewable energy to be generated on site and that all new homes to be ‘zero carbon’ by 2016.

Several countries have recently rolled out smart grid projects, only to find that consumers were being overbilled and received poor service. To help build consumer confidence and use of the smart grid, a group of energy suppliers in the U.S. recently announced the formation of the Smart Grid Consumer Collaborative (SGCC) which is dedicated to maximizing the value of the grid for consumers.<sup>22</sup> This organization will work to understand consumer needs and preferences, reach out to build awareness and educate consumers about the benefits of the smart grid, and share best practices for consumer engagement and empowerment. A smarter electricity grid will enable governments and energy companies to integrate and optimize more renewable energy, as well as plug-in electric vehicles. It is also likely to increase power reliability and operational efficiencies. But, to make the smart grid a reality, informing and engaging consumers in a way that preserves their data security will be critical.

First hand experience of renewable energy also changes attitudes. Consumers are being encouraged to install solar panels in Canada, the UK and Spain, as these countries become among the fastest growing markets for PV technology in 2010. According to market intelligence group iSuppli, the UK will install PV systems amounting to 96 MW throughout 2010, representing an increase of 1500 percent from 2009, driven by the recently introduced small scale feed-in-tariffs.<sup>23</sup> The next-fastest-growing nation is predicted to be Spain, where PV systems will increase 730 percent by the end of 2010.<sup>24</sup>

21 “Survey Shows New Englanders Favor New Nuclear Power Plants, Wind Farms, Market Competition.” *Electric Utility Week* June 7, 2010

22 “Smart Grid Consumer Collaborative Forms to Foster Consumer Adoption of the Smart Grid.” *Business Wire* March 23, 2010

23 “Home-based Solar Plants Boost the Photovoltaic Market.” *The Independent* August 4, 2010

24 Ibid

Difficulties in obtaining planning permission for renewable energy projects have long been an area of frustration for developers and leads to increased project costs – something no one can currently afford. The cause of this has often been local NIMBY (not-in-my-backyard) opposition. But, this has often been borne out of a fear of change and a lack of appreciation of the benefits that renewable energy can play in local communities. For example, in Germany and the UK, innovative models have been introduced where the local communities effectively co-invest in a local renewable energy project, sharing in the future financial benefits, while at the same time allowing the planning concerns to be dealt with. Such models will play an increasing role in changing behavior, as well as raising awareness.

#### Bottom line

Governments and renewable energy companies need to obtain buy-in from consumers; in particular demonstrating the benefits to them given the potential costs involved. Companies wanting to develop increasing amounts of renewable energy will need to develop new models for secure and longer-term engagement with consumers in their strategies.

---

“Consumer awareness and uptake of global environmental issues will likely spur growth over the next 12 to 18 months.”

Hannes Reinisch, Consulting Manager, Deloitte & Touche Middle East



# 9 Large in resources, short on infrastructure

25 Deloitte interviews, June 17, 2010

26 Ibid

When one looks at renewable electricity, heat and fuel, they all share a common link: they cannot be commercially developed without the proper infrastructure in place to take the energy or fuel from where it is generated or processed to where it is used.

The state of Wyoming in the U.S. has some of the best wind resources in the country and six major interstate transmission projects have been proposed to deliver power from the state to the Southwest and West coasts. However, moving power from dispersed wind farms to the interstate lines will not be easy or cheap. The Wyoming Infrastructure Authority is leading a task force that has developed a conceptual model called a “collector system” to link approximately 15,000 MW of wind projects to the grid. A collector system has the advantage of offering a more efficient way to link multiple projects to the grid rather than having each wind developer build its own tie-in to the system. There are many other examples:

- Transmitting and distributing solar power generated from desert locations, faces the same challenge since very few consumers live in or near the desert.
- In locations where ethanol is increasingly being developed, delivery challenges will need to be overcome. Generally speaking, moving ethanol from the point of production to consumption, can entail a number of companies that are inextricably linked by rail and barge, to blending plants and retail markets. Midstream ethanol distribution infrastructure is currently inadequate and bottlenecks along the way affect timing and delivery.

- Installing district heating schemes requires foresight in urban design. Sweden has been doing this for many years, but retrofitting is difficult and costly.
- As more and more manufacturers introduce electric vehicles (EVs), charging stations will need to be made more readily available if the technology is to take hold among consumers.

Regardless of which renewable energy is being introduced, a number of challenges need to be overcome in respect of the related infrastructure. First, a connection to the user of the energy is critical. Without it, there is no route to market. The question is often who is responsible for the cost of this and the timing of any upgrades required.

Secondly, balancing grid capacity is vital. In the early days of wind power, grids indicated that 15 percent was all they could take; now they are saying 20 to 25 percent.<sup>25</sup> Smart grids need to become a reality rather than a topic for discussion. But, implementing smart grids will require huge capital investment in infrastructure and technology. Third, there is a critical need for new technology to allow for the storage of electricity to deal with intermittency of much renewable generation and reduce bottlenecks. Without the ability to store and transport energy, growth in its use may be severely curtailed. Fourth, multiple connectivity reduces strains on a point to point grid system. This is the idea behind a potential ‘super grid’ connecting offshore wind in England, Scotland, Germany and Norway at an estimated cost of about US\$44 billion.<sup>26</sup>

## Bottom line

Many locations around the world are ideal for the creation of renewable energy; mountainous and flat regions for wind and deserts for solar power. But, getting that energy from where it is produced to the point of consumption will be a major challenge. Local micro and off-grid generation offers part of the solution, but innovative models to improve the transmission, transportation and storage of energy are required.

---

“Most of the existing grid connections need to be upgraded in order to transmit wind electricity, but the speed of upgrading is not keeping pace with wind resource development.”

Bonnie Yi Zhang, Cleantech Leader for Deloitte China



# 10 Development of the supply chain: the weakest link?

For many renewable energy projects the next major challenge is whether the current supply chain is capable of supporting the planned levels of investment. In many countries, the supply chain is underdeveloped and it will have to grow significantly if the targets for energy generation are to be met. This growth will be organic and through M&A and offers opportunities for investors such as venture capital and private equity – who have traditionally preferred investment in downstream technologies rather upstream generation. Canada, the European Union (EU) and China offer an insight into the opportunities.

With the U.S. buying close to half of its wind turbine parts outside of North America from China, among others, a strong market opportunity exists for Canada to become a major supplier. Canada is in a good position to serve U.S. wind developers given that it is risky and expensive for them to import turbine parts from other areas of the world. Market potential is great in wind manufacturing given that a turbine is comprised of roughly 8,000 separate parts and their production requires highly skilled trades and quality manufacturing facilities.<sup>27</sup> Manufacturers are attracted to Canada because of wind energy growth spurred on by the Ontario government's aggressive feed-in-tariffs and requirements in various provinces that a percentage of goods and services for solicited projects come from domestic sources. For Canada to be successful, there needs to be a long-term commitment to renewable energy development that will create certainty for manufacturers, since historically there have been peaks and troughs in demand for wind power because provinces tend to issue related solicitations on a sporadic basis.

Similar developments are occurring in the EU, as the region is counting on a record level of offshore wind construction to reach its 2020 renewables target. This development is expected to take place not just in the UK, but other countries with offshore resource including France, Germany, Belgium, the Netherlands and Denmark. The supply chain is currently delivering around 1GW of installed capacity, but to reach the 2020 projections the EU will have to rise to nearer 10 GW.<sup>28</sup> This translates to potential compound growth of 10 percent per year. Much of this growth will be achieved in ways that have not been invented yet and require investment in skills, research and development (R&D) and technology.

Companies like Siemens, GE and Mitsubishi have recently announced that they will be developing UK facilities dedicated specifically to offshore wind. In developing the supply chain, it is also worth recognizing that it comes with associated risks; continuity of supply, counterparty integrity, sustainability of materials used, and export controls are just some of the areas to get right if the growth potential is to be realized.

One of the major trends in the supply chain arena involves China. As the world's largest cleantech investor since 2009, China is well established as a source of manufacturing prowess. However, a shift is underway – China is not just an investor and exporter, it is also becoming a source of innovation. This shift is driven primarily through several government investments in R&D and innovation incubators.

The Chinese government has several goals in their five-year science and technology plan to reduce China's reliance on foreign technology, increase domestic contributions to technology and the numbers of Chinese workers in the field. China has over 1,600 government-run incubators and science parks – many of these involve cleantech projects.<sup>29</sup> In addition, China is bucking the trend of decline in global patent filings brought on by the global economic crisis. China is now fourth in the world in patent origin in six clean technologies including wind, biomass and clean coal.<sup>30</sup>

## Bottom line

As things stand now, the supply chain is inadequate to reach many nations' 2020 renewable energy targets. Scaling up will not be easy and is dependent on continued availability of subsidies, but should present many opportunities.

---

**“China is already the largest and fastest growing renewable energy economy in the world. Their focus is not just domestic but international, and their impact will be felt everywhere.”**

Jane Allen, Electric Utilities Leader, Deloitte Canada

27 Lisa Wood. “Canada Poised to Become Leading Supplier of Wind Turbines for North America.” *Global Power Report* April 29, 2010

28 BVG Associates, Projected EU and UK offshore installation (2010-2020)

29 Cleantech Group LLC. Cleantech Innovation in China: From “Made in China” to “Created in China.” June 2010

30 Ibid

# Where do we go next?

## A roadmap for the coming 12 to 18 months

In tracking the top 10 trends in the renewable energy sector, it is clear that each issue will affect organizations differently, depending on their business model and where they operate.

## Response strategies for the sector

While the report describes what Deloitte renewable energy practitioners consider to be the current the top 10 trends, they have also considered the issues that will emerge to take center stage on the near term. While the outlook remains strong, the following will play a key role in how rapidly the industry grows.

- The relative cost and political latitude to develop other competing forms of low carbon generation such as nuclear and gas will determine the role for renewable energy in the overall energy mix. For example, Germany's decision to extend the life of its nuclear power fleet signals recognition that renewable energy cannot meet the looming energy gap by itself.
- The pace of development of shale gas may have an impact on energy security concerns as well as potentially representing a relatively efficient energy generation measure in the interim, affecting the overall shape of the energy mix.
- China will continue to play a key role in the sector outside its own borders, driving down costs, investing in projects and supplying key components.

- With COP16 upon us, it is a reminder of how important a role the United Nations Framework Convention on Climate Change (UNFCCC) plays for the sector. The failure of COP15 to extend the Clean Development Mechanism beyond 2012 has adversely affected many renewable energy projects. At the same time, the pledge to seek up to US\$100 billion per annum of additional funding for mitigation and adaptation as well as the positive developments on reducing emissions from deforestation and forest degradation has shifted focus on other ways to mitigate climate change. However, if voluntary and regulated carbon markets can develop as a result, this may help to drive renewable energy in the long-term.

- The extent and shape of the global economic recovery will determine the outlook for commodity prices and government finances, in turn driving the appetite for renewable energy investment.

While some of these areas could realign the drivers for renewable energy, this remains a very exciting time to be in the sector which will continue to grow for some time to come. It is hard to think of a more interesting part of the energy chain to be in.

# Contact an Energy & Resources professional

## Global leadership

Peter Bommel  
Deloitte Touche Tohmatsu Limited  
Global Industry Leader, Energy & Resources  
+31 882 880 935  
pbommel@deloitte.nl

Roman Webber  
Deloitte Touche Tohmatsu Limited  
Renewable Energy Community of Practice, Energy & Resources  
+44 20 7007 1806  
rwebber@deloitte.co.uk

Dick Cooper  
Deloitte Touche Tohmatsu Limited  
Global Consulting Leader, Energy & Resources  
+1 403 261 8115  
dcooper@deloitte.ca

Pat Concessi  
Deloitte Touche Tohmatsu Limited  
Climate Change and Carbon Markets  
Energy & Resources  
+1 416 601 6251  
pconcessi@deloitte.ca

John England  
Deloitte Touche Tohmatsu Limited  
Global Enterprise Risk Services, Energy & Resources  
+ 1 713 982 2556  
jengland@deloitte.com

Jean-Michel Gauthier  
Deloitte Touche Tohmatsu Limited  
Global Financial Advisory Services, Energy & Resources  
+33 1 55 61 69 11  
jgauthier@deloitte.fr

Brad Seltzer  
Deloitte Touche Tohmatsu Limited  
Global Tax, Energy & Resources  
+1 202 220 2050  
bseltzer@deloitte.com

Dominic Young  
Deloitte Touche Tohmatsu Limited  
Global Energy Markets, Energy & Resources  
+1 403 267 1778  
doyoung@deloitte.com

Doug King  
Deloitte Touche Tohmatsu Limited  
Global Accounting Leader, Energy & Resources  
+44 20 7007 0863  
dking@deloitte.co.uk

## Regional Leadership

**North America**  
Greg Aliff  
Deloitte United States (Deloitte LLP)  
+1 703 251 4380  
galiff@deloitte.com

**Europe, Middle East, Africa**  
Jesus Navarro  
Deloitte Spain  
+34 9151 45000  
jenavarro@deloitte.es

**Latin America**  
Ricardo Ruiz  
Deloitte Argentina  
+54 11 4320 4013  
riruiz@deloitte.com

**Asia Pacific**  
Kappei Isomata  
Deloitte Japan  
+81 92 751 0931  
kappei.isomata@tohmatu.co.jp

## Renewable energy professionals

**Deloitte Argentina**  
Carlos Lloveras  
+54 11 43202721  
clloveras@deloitte.com

**Deloitte Australia**  
Chris Leach  
+61 2 9322 7109  
chleach@deloitte.com.au

Michael Rath  
+61 3 96716465  
mrath@deloitte.com.au

**Deloitte Brazil**  
Iara Pasian  
+55 11 5186 1501  
ipasian@deloitte.com

**Deloitte Canada**  
Jane Allen  
+1 416 874 3136  
janallen@deloitte.ca

Valerie Chort  
+1 416 601 6147  
vchort@deloitte.ca

Adriaan Davidse  
+1 416 874 3176  
adavidse@deloitte.ca

John Ruffolo  
+1 416 601 6684  
jruffolo@deloitte.ca

**Deloitte China**  
Bonnie Yi Zhang  
+86 (21) 6141 1815  
byzhang@deloitte.com.cn

**Deloitte India**  
Kalpana Jain  
+91 (0) 124 679 2022  
kajain@deloitte.com

**Deloitte Italy**  
Ciro D. Carluccio  
+39 0636749325  
cdicarluccio@deloitte.it

**Deloitte Middle East**  
Hannes Reinisch  
+971 2 676 0025  
hareinisch@deloitte.com

**Deloitte South Africa**  
Duane Newman  
+27 11 806 5362  
dnewman@deloitte.co.za

**Deloitte Spain**  
Javier Acevedo  
+34 9151 45000  
jacevedo@deloitte.es

Felipe Requejo  
+34 9151 45000  
frequejo@deloitte.es

**Deloitte United Kingdom (Deloitte LLP)**  
Roman Webber  
+44 (0)20 7007 1806  
rwebber@deloitte.co.uk

**Deloitte United States (Deloitte LLP)**  
Pat Condon  
+1 312 486 2402  
pcondon@deloitte.com

Marlene Motyka  
+1 212 436 5605  
mmotyka@deloitte.com

Rebecca Ranich  
+1 202 370 2433  
reranich@deloitte.com

Dr. Joseph Stanislaw

[www.deloitte.com/power](http://www.deloitte.com/power)

#### **About Deloitte**

"Deloitte" is the brand under which tens of thousands of dedicated professionals in independent firms throughout the world collaborate to provide audit, consulting, financial advisory, risk management, and tax services to selected clients. These firms are members of Deloitte Touche Tohmatsu Limited (DTTL), a UK private company limited by guarantee. Each member firm provides services in a particular geographic area and is subject to the laws and professional regulations of the particular country or countries in which it operates. DTTL does not itself provide services to clients. DTTL and each DTTL member firm are separate and distinct legal entities, which cannot obligate each other. DTTL and each DTTL member firm are liable only for their own acts or omissions and not those of each other. Each DTTL member firm is structured differently in accordance with national laws, regulations, customary practice, and other factors, and may secure the provision of professional services in its territory through subsidiaries, affiliates, and/or other entities.

Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee, and its network of member firms, each of which is a legally separate and independent entity. Please see [www.deloitte.com/about](http://www.deloitte.com/about) for a detailed description of the legal structure of Deloitte Touche Tohmatsu Limited and its member firms.

Deloitte provides audit, tax, consulting, and financial advisory services to public and private clients spanning multiple industries. With a globally connected network of member firms in more than 140 countries, Deloitte brings world-class capabilities and deep local expertise to help clients succeed wherever they operate. Deloitte's approximately 170,000 professionals are committed to becoming the standard of excellence.

The Deloitte Touche Tohmatsu Limited (DTTL) Global Energy & Resources group, which includes senior partners from Deloitte member firms around the world, provides comprehensive, integrated solutions to the energy sector. These solutions address the range of challenges facing energy companies as they adapt to changing regulatory environments, to political, economic and market pressure, and to technological development. Deloitte member firms' in-depth expertise in this dynamic sector serves as an indispensable resource for a significant portion of the world's largest energy companies. Deloitte member firms have designed to provide the energy industry with unparalleled service, innovation, and critical thinking.

#### **Disclaimer**

This publication contains general information only, and none of Deloitte Touche Tohmatsu Limited, Deloitte Global Services Limited, Deloitte Global Services Holdings Limited, the Deloitte Touche Tohmatsu Verein, any of their member firms, or any of the foregoing's affiliates (collectively the "Deloitte Network") are, by means of this publication, rendering accounting, business, financial, investment, legal, tax, or other professional advice or services. This publication is not a substitute for such professional advice or services, nor should it be used as a basis for any decision or action that may affect your finances or your business. Before making any decision or taking any action that may affect your finances or your business, you should consult a qualified professional adviser. No entity in the Deloitte Network shall be responsible for any loss whatsoever sustained by any person who relies on this publication.

© 2010 Deloitte Global Services Limited

Designed and produced by The Creative Studio at Deloitte, London. 6170A