THE ENERGY INDUSTRY TIMES

November 2011 • Volume 4 • No 9 • Published monthly • ISSN 1757-7365 www.teitimes.com

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Indecision on climate change affecting investment

The IFC's Rachel Kyte is calling for "pragmatic action" on climate finance

Private investors are hoping that the upcoming negotiations in Durban will deliver clear details on future climate change policy. **Junior Isles**

The current uncertainty surrounding the shape of any future climate change agreement is having a negative impact on investment in the sector.

Ahead of climate change negotiations at the 17th meeting of the Conference of the Parties (COP17) in Durban, South Africa, beginning at the end of this month, Christiana Figueres, the executive secretary of the UN Framework Convention on Climate Change (UNFCCC) said a legally-binding post-2012 climate agreement is achievable but not this year.

"I certainly think that a legally-binding agreement is achievable, but that is not what governments are moving toward in Durban," she said.

Instead, Figueres said, governments will be looking at the possibility of a second commitment period of the Kyoto Protocol – the first expires at the end of 2012 – as well as elaborating on new emissions reduction targets made under the auspices of the UNFCCC. Then, she said, they could look at "how they would start a process toward a comprehensive agreement that they would work on over the next years".

Some argue that deliberating over the future of the Kyoto Protocol has caused the private sector to abandon climate financing.

In its draft report to COP, the Clean Development Mechanism (CDM) Executive Board says that delaying the decision on a second Kyoto Protocol commitment period is damaging confidence in the CDM.

In preparation for Durban, 285 investors managing $20 trillion in assets produced a 'global investor statement on climate change', setting out recommendations for "investment-grade climate change and clean energy policy".

The investors, mobilised by the US-based Investor Network on Climate Risk, the European Institutional Investors Group on Climate Change and the Investors Group on Climate Change in Australia and New Zealand said: "Current levels of investments in low-carbon technology and infrastructure are substantially lower than the $500 billion per year deemed necessary by the International Energy Agency (IEA)."

While the messages in the statement are similar to previous years, this year's statement is accompanied by a report, commissioned by the three groups and the UN Environment Programme Finance Initiative, which seeks to provide more "granular

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UK CCS proponents remain positive

UK proponents of carbon capture and storage (CCS) remain positive despite the scrapping of the proposed project at Longannet.

The project, which was to be supported by £1 billion in funding from the British government, was to be the first of four demonstration projects being planned as part of a government competition.

The Longannet power station in Scotland has a capacity of 2400 MW and is Britain's second-largest coal-fired power plant. Secretary of State for Energy and Climate Change Chris Huhne said the CCS project would not go ahead due to the particular cost of piping the CO_2 over large distances.

Huhne, however, reiterated the government's commitment to developing the technology. "CCS is a key technology for the UK's long term energy strategy. A billion pounds is enough to demonstrate this vital new technology in the UK, but it's got to be spent in the most effective way.

"Despite everyone working extremely hard, we've not been able to reach a satisfactory deal for a project at Longannet at this time, so we've taken the decision to pursue alternative projects."

The government is now looking at implementing CCS at the Peterhead gas fired power station owned by Scottish and Southern Electricity (SSE), a subsidiary of Spanish utility, Iberdrola.

Some industry experts say the decision to scrap the Longannet project by no means signals the end of the technology in the UK.

Professor Dermot Roddy Science City Professor of Energy at Newcastle University, in the UK commented: "Government support funding for the first CCS plant is secure, and money raised through Electricity Market Reform (EMR) along with EU funding will be used to support the next three. The references to Peterhead suggest that the [technology] competition field is open again since that project is not post-combustion capture: it is based on reforming natural gas to hydrogen and CO_2 followed by pre-combustion capture."

Huhne said: "From the negotiations and the FEED studies for Longannet we learned an amazing amount about how to do CCS and we are much further advanced in the process of getting a genuine deployment of commercial scale CCS plant. We've had a clear expression of interest from SSE about their Peterhead project and a view that we can do that clearly within budget. I'm determined that we will lose no time over this to do just that.

"That may mean aligning what we do with the European Commission's timetable for the New Entrant Reserve. Those projects have to be up and running by 2016, which would be neatly in line with the UK timescale for the switch to contracts for difference for low-carbon generation at the back-end of the decade. It would mean CCS is a runner."

In early October a report from the Global CCS Institute said the world is likely to have 20 large-scale CCS projects operating by 2020. The institute has identified eight large-scale integrated projects already operating and a further six under construction.

This, however, is far fewer than the 100 projects the IEA says will be needed by 2020 to cut greenhouse gas emissions by 50 per cent by 2050 compared to 2005 levels.

The Institute also notes that since its report last year, 11 large-scale integrated projects have been put on hold or cancelled – eight in the US and three in Europe. This was mainly because they were deemed uneconomic.

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detail" on what appropriate climate policy might look like.

The World Bank also issued a warning on the need for action on climate finance. Rachel Kyte, Director, Environment and Social Development Department at the International Finance Corporation, part of the World Bank, warned of a "desert" emerging between funds already allocated in 'fast-start' climate finance, such as the Clean Technology Fund, and the beginning of operations of the planned Green Climate Fund (GCF).

"There's an urgent need for pragmatic action on climate finance in the run up to the Durban talks and just after," she said. "It's crucial if we want to keep the negotiations on track."

Negotiators are hopeful that the rules setting out how the GCF will operate will be agreed in Durban. This fund is intended to channel the $100 billion a year by 2020 that governments pledged to developing countries at the 2009 Copenhagen climate talks.

Former climate change chief Yvo de Boer, now a global advisor on climate change and sustainability at accountancy firm KPMG, has little faith in the GCF process. Speaking at a UN Environment Programme Finance Initiative event in Washington, DC he said: "One of the things that really appals me in the climate change process at the moment is around climate finance."

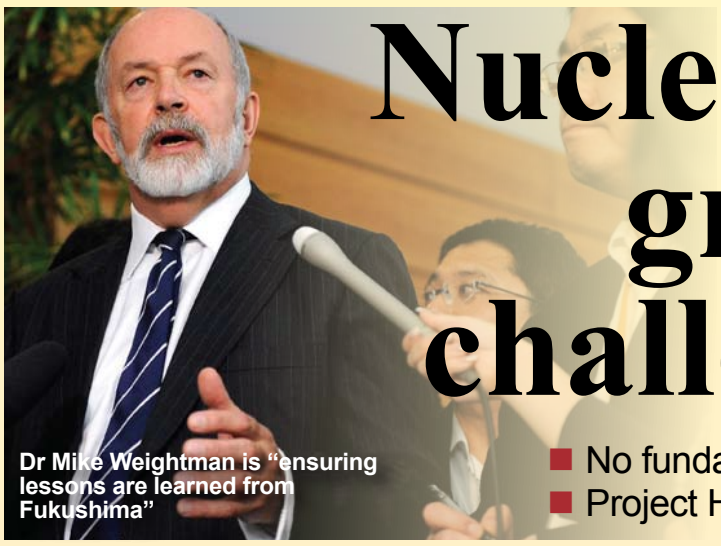
He added: "The GCF is going to be governed by a bunch of climate change negotiators, rather than by a lot of people that understand economics. The whole debate is around grant-based finance, instead of about how you catalyse significant funding, and basically the approach is to keep the private sector out rather than to make this a consortia of public and private financing."

This blending of public and private finance would create a more effective stream of funding, he said.

■ Speaking at the conclusion of a two-day meeting with international energy ministers and business leaders in Paris last month, senior officials from the International Energy Agency said energy demand is expected to grow by a third by 2035, most of it in developing countries – where "dirty" fuels are most common.

Martin Ferguson, Australia's Minister of Resources and Energy who was chairing the IEA meeting said: "It's not for us to deny them [their right for energy], but to invent clean technology at the lowest possible cost, and share it with them." Investment in carbon capture and storage (CCS) and renewable energy is important, he said.

Ferguson: investment in CCS and renewable energy is important



Dr Mike Weightman is "ensuring lessons are learned from Fukushima"

Nuclear safety gets green light but challenges remain

- No fundamental safety weaknesses in UK nuclear industry
- Project Horizon consortium seeks cash injection

Junior Isles

A report on the lessons from the Fukushima disaster in Japan has stated there are no reasons for the UK to halt its planned nuclear power programme. Yet despite the findings, the programme still faces substantial challenges especially in terms of financing.

The UK government asked Dr Mike Weightman, Chief Inspector of Nuclear Installations and Executive Head of the Office for Nuclear Regulation, to examine the accident in Japan with the aim of identifying any implications for Britain's ambition to build up to 12 new reactors at eight sites.

The report was published in interim form on 18 May and contained 26 recommendations for the British nuclear industry. Since then, Dr Weightman has drawn on national and international expert opinion, and led a fact-finding mission to Japan in June – including a visit to the Fukushima Daiichi plant – to compile a thorough analysis of the evidence that has emerged to date.

An analysis of the accident reveals no fundamental safety weaknesses in the UK's nuclear industry but concludes that by learning lessons it can be made even safer.

Dr Weightman commented: "I remain confident that our UK nuclear facilities have no fundamental safety weaknesses. The Office for Nuclear Regulation already requires protection of nuclear sites against the worst-case scenarios that are predictable for the UK. But we are not complacent. Our philosophy is one of continuous improvement… We will ensure lessons are learned from Fukushima. Action has already been taken in many cases, with work under way to further enhance safety at UK sites."

Despite the findings, however, the UK will face a huge challenge in financing the new nuclear build programme.

This was underlined late last month when a German consortium planning to build plants in the UK announced that it was negotiating a cash injection of up to €5 billion (£4.3 billion) in exchange for a 25 per cent stake.

The Project Horizon consortium, formed by E.On and RWE, is evaluating rival offers to provide reactor designs for the plants from Japan's Toshiba, which owns Westinghouse, and Areva of France.

According to reports, the proposal for an equity stake would reduce E.On and RWE's exposure to projects. Energy utilities are weighing the risk of UK plans falling behind schedule or even the possibility of a future British government reducing its support for the programme.

A cash injection would also help the finances of the two utilities, which are facing mounting costs as a result of Germany's decision to phase out nuclear power.

The cost burden of nuclear was also highlighted by Britain's Energy Secretary Chris Huhne, who said Britain is still paying for nuclear-generated electricity consumed a generation ago because of the hidden costs of an industry reared on the expectation of public subsidies.

He told the Royal Society in London that the nuclear industry and the government should show that they have learned from their past mistakes if they are to retain public support for a renaissance in nuclear power.

Half of the budget of the Department for Energy and Climate Change goes on cleaning up Britain's legacy of nuclear waste, which includes the world's largest stockpile of civil plutonium waste.

"That is £2 billion a year, year in and year out, that we are continuing to pay for electricity that was consumed in the 1950s, 1960s and 1970s on a false prospectus," Huhne told the Society. "The nuclear industry was like an expense-account dinner: everybody ordering the most expensive items on the menu because someone else was paying the bill."

■ The China Nuclear Energy Association has said that the Fukushima Daiichi nuclear disaster has had limited impact on China's appetite for nuclear power as domestically developed technology is advanced, efficient and safe.

The government-backed organisation that represents 297 member companies said Japan's nuclear accident has helped raise safety levels and improve precautionary awareness in the industry.

Finland undeterred by nuclear delays

More delays at the Olkiluoto nuclear plant

Finland is to build its third nuclear plant despite delays and cost overruns in the construction of a reactor at Olkiluoto.

Finnish nuclear power consortium Fennovoima says that it will build a new nuclear power plant at Pyhajoki on the northwest coast of Finland.

The project will cost €4-6 billion ($5.3-8 billion) to build. Construction of the reactor will begin in 2015 and it will enter operation in 2020. The plant supplier will be chosen in 2012-2013.

The new nuclear power plant will be Finland's third nuclear power plant, and sixth nuclear reactor.

Finnish utility TVO says the completion of the country's fifth nuclear reactor at the Olkiluoto 3 (OL3) site will be further delayed and the company does not expect it to go online until 2014.

TVO says the Areva-Siemens consortium responsible for its construction has informed it of delays in the development of the plant's instrumentation and control system. Also, piping and electrical installation have taken longer than estimated.

This is the sixth delay announced for the project, plagued by faulty materials and planning problems since construction began in 2005. It was supposed to be online by 2009.

To ensure the successful execution of the final phases of the project, the Areva-Siemens consortium and its Finnish customer TVO jointly endorsed in August 2011 the establishment of a shared process to consolidate the OL3 completion schedule. This consolidation process will be completed by the end of the year.

Jean-Pierre Mouroux, director of the OL3 project, underlines that "to carry out proper systems testing for such a facility, total cooperation with the customer is required. At this stage, as the project transitions from construction completion to commissioning and operation of systems, it is expected that TVO assumes a growing role in the successful finalisation of the plant."

The project is now 80 per cent complete – including finalisation of civil engineering work with the completion of the outer dome and the full installation of the four primary cooling systems.

International solar thermal association formed

The development of solar thermal power generation looks set to benefit from the formation of a new industry association. The industry associations representing the solar thermal electricity industry in Europe, Australia and South Africa have come together to form the World Solar Thermal Electricity Association – STELAWorld.

Through its member bodies, STELAWorld aims to promote data and information exchange from industry, research agencies, academic institutions and government bodies around the world relating to solar thermal power generation.

Solar thermal electricity bodies in the US, Spain, India, MENA region and Asia will also be approached to join the new international body. Organisations in the US and Spain have already indicated support for the initiative.

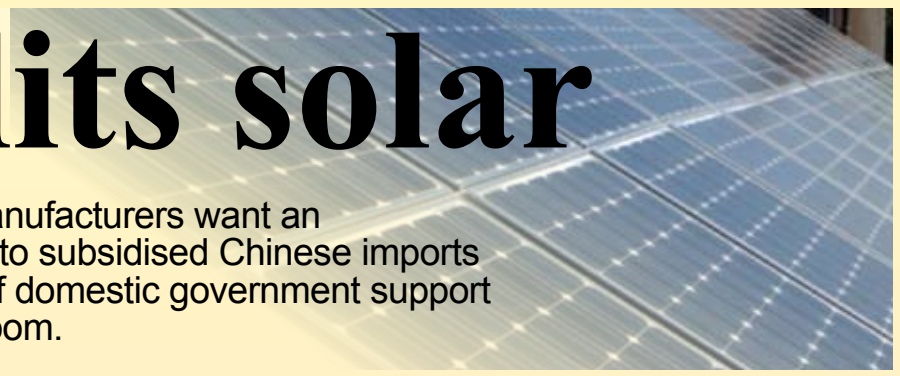
"Solar thermal electricity generation is tremendously important to the development of the global economy in the low-carbon world ahead," said Mr. Pancho Ndebele, Chairman of SASTELA (South Africa).

"It is the most versatile form of renewable energy available to the world, providing secure, 100 per cent carbon-free solar power that can be stored and released when it is most needed. It can underpin job creation, industrialisation and localisation in many of the world's poorest and most populous regions."

Dr. Luis Crespo, President of ESTELA (Europe) said: "Solar thermal power helps our electricity systems integrate greater amounts of other, more intermittent renewable energy, such as wind and photovoltaic power, by being able to store energy and release it as electricity when it is most valuable."

He added: "Solar thermal electricity can greatly reduce, and over time eliminate, the need for fossil fuel backup for intermittent renewables."

Trade war splits solar industry



Solar panel manufacturers want an investigation into subsidised Chinese imports as the expiry of domestic government support programmes loom.

Siân Crampsie

A group of solar panel manufacturers in the USA are seeking to protect their businesses from a glut of cheap imports from China.

SolarWorld Group, together with six other firms, have filed an action against alleged unfair trade practices by Chinese solar firms. It is one of the largest unfair competition petitions against China in the USA, and the first of its kind in the renewable energy field worldwide.

The action has split the US solar industry, which is struggling with falling prices for photovoltaic (PV) panels as well as policy uncertainty.

The end of September saw the end of the US government's clean energy loan guarantee programme, which has dished out around $40 billion in loans and guarantees to renewable energy projects over the last two years, including $13.6 billion to back 17 solar energy projects.

Meanwhile the Chinese government is continuing to provide "massive subsidies" to its solar energy industry, allowing firms to effectively sell solar cells and panels at dumped prices in the US market in order to secure market share, says SolarWorld.

"China has no cost advantages – not even through very low wages," said Gordon Brinser, President of the US subsidiary SolarWorld Industries America Inc. "In the case of high-tech products like solar power modules and solar cells, the share of labour costs is very low. In our case, for example, it is below ten per cent.

"The Chinese industry's ability to offer dumping prices is solely attributable to massive subsidies by the Chinese State Banks and the Chinese government."

US companies importing panels and components from China are reluctant to start a trade war with China. The Solar Energy Industries Association (SEIA) said in a statement that global trade in solar products had been good for the USA "by expanding export opportunities for domestic manufacturers, creating jobs and driving down costs to consumers". Its president and CEO, Rhone Resch, said: "If it appears that trade obligations are not being met, solar companies – whether foreign or domestic – have the right to request an investigation into alleged unfair trade practices.

"These allegations must be thoroughly examined and, if unlawful trade practices are found, action to remedy those practices should be taken. In turn, parties accused of unfair trade practices also have the right to defend themselves in the process of these investigations."

Chinese firms have increased their share of the US solar market from eight to 45 per cent since 2008. Meanwhile the average retail price of solar PV modules has fallen from $3.61/W a year ago to $2.65/W last month, according to Solarbuzz, a consultancy, and is expected to fall further next year.

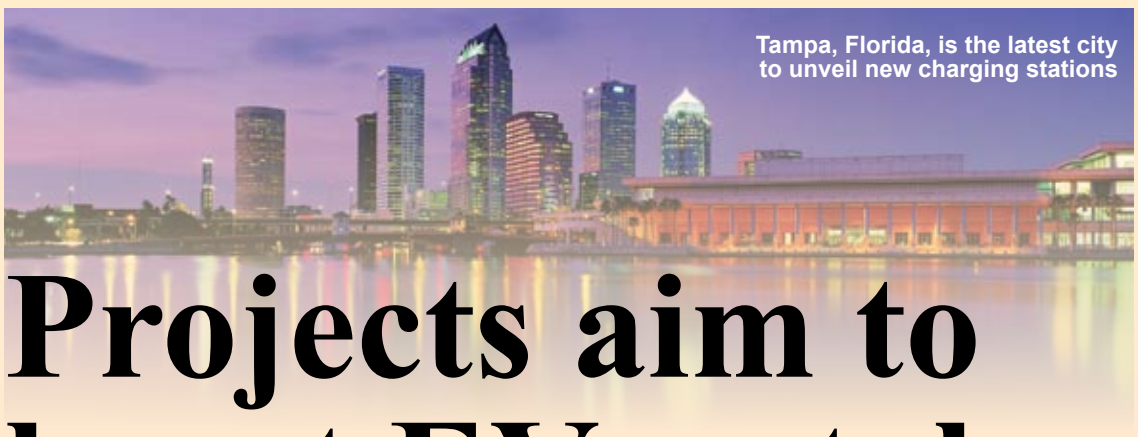
Falling PV panel prices have led to a number of high-profile bankruptcies such as Solyndra, Evergreen Solar and SpectraWatt. Solyndra's collapse brought scrutiny to the government's loan guarantee programme because the company had received a $528 million federal loan.

Companies that failed to meet the September 30 deadline for the loan guarantee programme will miss out on the federal funding programme that was conceived under the USA's 2009 federal stimulus package. These include SolarCity, which wanted government backing for its planned $1 billion project to install solar panels on military housing in 33 US states.

SolarCity says that it will move ahead with a scaled-down version of the project, raising capital without the backing of a government loan guarantee.

Other hurdles faced by the US solar industry is the expiry of a US Treasury programme that enables businesses to obtain cash grants in lieu of tax credits. This programme helped the US solar industry to grow by 67 per cent in 2010, says SEIA. To date it has awarded 2657 grants totalling some $1.18 billion for solar projects.

In 2010 alone, China spent about $33 billion on loans to the solar sector, according to US officials.



Tampa, Florida, is the latest city to unveil new charging stations

Projects aim to boost EV uptake

A number of cities around the USA are installing electric vehicle (EV) charging infrastructure as the industry gears up for growth.

Tampa, Florida in October became the latest city to unveil new charging stations, while several charging points are to be installed at convenience stores across central Pennsylvania.

Utilities in Indiana are also looking to provide incentives for early adopters of EVs.

Tampa is one of seven cities in the USA benefiting from a US Department of Energy (DOE) grant designed to support the installation of charging stations in public car parks.

The project in Pennsylvania is being implemented by a partnership of convenience store company, Sheetz, and 350Green, a developer of EV charging networks.

Establishing charging points in convenient locations near to homes and workplaces is viewed as essential to overcoming "range anxiety" and boosting the uptake of EVs, says 350Green.

"Sheetz has made their stores a destination as well as a convenient place to refuel. Making charging part of the convenience store experience shows you don't need to sacrifice anything to own a cleaner car," said Mariana Gerzanych, CEO of 350Green. "Expanding the charging infrastructure beyond homes and public garages through partnerships like this one is making electric vehicle ownership a realistic option for millions of people."

Other hurdles that the EV industry has to overcome include the costs of purchasing an EV and installing charging points at home.

In Indiana, the Northern Indiana Public Service Co. has filed an application with state regulators to provide incentives such as free off-peak charging at home for three years. It also wants to set up ten renewable energy-powered public charging points.

Meanwhile, manufacturers are moving forward with technology developments in the EV field.

GE Energy Industrial Solutions has announced a partnership with Inovateus Solar to build solar carports with EV chargers at facilities such as office buildings, universities and sports complexes.

GE is also partnering with Nissan to research ways for electric vehicles such as Nissan's Leaf to connect with homes and electric grids.

FITs under scrutiny

Ontario's renewable energy feed-in tariff (FIT) is to continue following a victory by the Liberal Party in provincial elections in October.

The province's FIT scheme was the first comprehensive guaranteed pricing system for renewable energy in North America and is a key part of plans to phase out coal-fired power generation in Ontario.

The Progressive Conservative party had vowed to cancel the FIT programme if they won the election and there was concern that they could even revoke existing FIT contracts.

Scrutiny of FITs in Ontario in the run-up to the recent elections is likely to trigger a review of the scheme, however, according to some market observers. This could lead to a number of changes being made to the scheme, including a reduction of tariffs paid, the setting of digression rates or the incorporation of generation targets.

Storage devices compensated

- Final FERC rule issued
- Flywheel plant failure

A new rule issued by the US Federal Energy Regulatory Commission (FERC) will help to improve the operational performance and efficiency of the country's transmission system.

FERC has issued a final rule that will compensate providers of frequency regulation services, which correct deviations in grid frequency and balance on transmission lines with neighbouring systems.

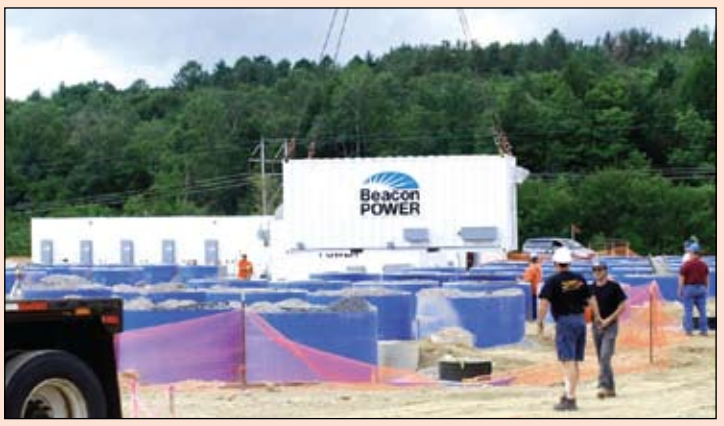
The move has been praised by the Electricity Storage Association (ESA), which said that the rule would begin to set the structure for fast-responding resources to be paid for actual performance.

"We applaud FERC for its pro-active approach to ensuring that markets are just and reasonable for new fast-ramping storage resources," said Brad Roberts, Executive Director of ESA. "This rule lays the groundwork for significant revenue enhancement in the electricity markets for these advanced resource technologies."

"We have shovel-ready energy storage projects along with associated potential jobs that have been waiting for financial commitments from investors," said Judith Judson of Beacon Power and Chair person of the ESA Advocacy Council. "With this final rule, we hope to see a much greater willingness by the private sector to support these new technologies."

Last month Beacon Power's pioneering flywheel energy storage plant in New York state suffered a blow with the failure of a second flywheel at the site.

One of the 200 flywheels at the 20 MW Stephentown plant failed in July, just days after the site's official opening. The failures were caused by flawed early production runs of the carbon fibre material used in the manufacture of the flywheels, says Beacon.



Beacon Power's pioneering flywheel energy storage plant

China wind power market set for shake-up

A slowdown in China's wind power market looks set to hit turbine manufacturers. **Syed Ali**


China's wind power market has slowed partly due to low quality turbines

Experts are predicting wind power installations in China will fall by 20 per cent this year, a slowdown that is expected to hit the turbine manufacturing industry.

Tightening government regulations and bottlenecks in the electricity grid has seen the country's wind power installations expand by just 2.6 per cent this year, and that growth is expected to turn negative by the end of the year. China has lagged behind the rest of the world, which has seen global wind installations grow by 15 per cent during the first half of this year.

The slowdown is already beginning to squeeze out manufacturers. Germany's Repower told the *Financial Times* that it planned to end wind turbine production in the country by selling its majority stake in a turbine factory in Inner Mongolia.

Referring to plummeting prices as turbine manufacturing capacity has outstripped demand, Wolfgang Jussen, Repower's China Chief Executive said: "We're not going to keep doing business in China when we have to make heavy losses just to install turbines."

China has more than 60 turbine manufacturers and executives say this will fall to just 10-12 after the downturn.

Jens Olsen, CEO at Nordex said he expects China's market to consolidate at around 18 GW per year for the next few years. Others put the figure at about 14 GW.

Olsen said: "We are really in a situation where something has to happen. The question is, which suppliers are those 18 GW going to come from?"

But in spite of the question marks, Nordex last month officially launched its 2.5 MW Gamma generation wind turbines on the Chinese and Asian market.

One reason for the slowdown in China is that Beijing is cracking down on low quality turbines after a number of blackouts caused by wind farm surges.

The new Nordex turbine is designed for all wind classes and climatic regions in compliance with international grid codes and national standards in China. The company said the quality meets international standards and is fully in line with the 18 national regulations for wind turbine technology effective from November 1 this year in China.

■ The Chinese government will invest Yuan 2 trillion ($313 billion) in its green economy and low-carbon development in the next five years, cutting 16 per cent of per-unit GDP energy consumption compared to 2010, an official from China's top economic planner said last month.

Australia climate policy right for investment

Following the recent passing of its carbon tax bill, Australia looks set to attract clean technology investment, **writes Junior Isles**


Julia Gillard says government's plans justified

Following the passing of legislation in Australia's House of Representatives to introduce a carbon tax, the Investor Group on Climate Change (IGCC) has indicated that the country's policy on carbon emissions will attract investment in the clean tech sector.

The IGCC, a body of 285 investors across the globe with about $20 trillion dollars of assets, outlined the urgent need for "clear, credible and long-term policy frameworks that incentivise investments in low-carbon technologies".

The IGCC's Australian representative, Frank Pegan, said in its report that those nations that had "clear and credible climate policies" would attract investment.

"As and when governments around the world show leadership and reduce policy risk around climate change for investors, the investment flows will follow," he said.

The report also backed the Australian federal government's decision to provide direct loans and grants for new clean energy projects to supplement the carbon pricing scheme, saying that "it had the benefit of allowing industry to gain confidence with the monitoring, reporting and trading elements of the scheme."

The report also backed the Australian federal government's decision to provide direct loans and grants for new clean energy projects to supplement the carbon pricing scheme, saying that "it had the benefit of allowing industry to gain confidence with the monitoring, reporting and trading elements of the scheme."

Australian Prime Minister Julia Gillard welcomed the report saying that it justified the government's plan to put a price on carbon.

"This investor group sees the economic opportunities right here in Australia," she told reporters in Canberra. "That interest... is telling us the story of what a clean energy future can look like."

The controversial tax has seen Gillard come under fire; the package of carbon pricing bills only passed the House of Representatives by a narrow margin of 74-72. It will go to the Senate this month where it will pass with the support of the Green Party, which has an alliance with the ruling Labour Party. The legislation will introduce a carbon tax of $24 a tonne starting from July 1, 2012. The tax is set to increase by 2.5 per cent each year before switching to an Emissions Trading Scheme in 2015.

According to the Australian Coal Association (ACA), the carbon tax will cost coalmines $17.7 billion over the next 10 years.

The opposition party has vowed to repeal the tax, which it says will be the dominant issue at elections in 2013.

Philippines leans toward coal


Coal-fired generation is favoured in the Philippines

The Philippines is revisiting the idea of converting its mothballed Bataan nuclear power plant (BNPP) into a coal-fired facility.

According to Energy Secretary Jose Rene D. Almendras, conversion of the 630 MW BNPP into a coal-fired facility has become a feasible option based on the initial findings of a study being conducted by the Department of Science and Technology.

"The study is leaning toward more [on using] coal than natural gas because it's difficult to convert the plant to run on natural gas.

The question is, is it going to be more expensive to convert it or to build a new plant? We will wait for the full results of the studies… then we will ask companies if they will be interested in bidding for the possible conversion project," Almendras said.

Earlier studies claimed that the conversion of the nuclear facility, mothballed in 1986, into a gas- or coal-fired facility was technically feasible but not economically viable. Previous estimates put the cost of the rehabilitation at $1 billion.

Napocor president Froilan A. Tampinco said: "Let's invite a new study that will determine if present technologies are now better than what we had before.

Previous studies stressed that the conversion of BNPP would be much more expensive than building a new facility because the parts and equipment of the mothballed facility were mostly outdated and its turbine generators have low output efficiencies compared to the newer models."

The government's desire to convert the plant to coal highlights its continuing drive to build more coal fired power generation.

Almendras has stressed the need for new coal-fired facilities in Luzon, given the expected increases in the demand for electricity over the next few years. He said baseload plants will not only ensure supply, but will also help stabilise electricity prices as Luzon will no longer have to use expensive electricity from peaking plants.

US-based AES Corp. recently said it is pushing through with the $1 billion expansion of its 600 MW Masinloc coal-fired power plant and was expecting to conclude the bidding of the engineering, procurement and construction (EPC) contract for the project before the end of November.

Meanwhile at the end of September, Marubeni and Aboitiz Power (APC) agreed to build a $700 million, 400 MW power plant within the Pagbilao complex.

In a separate announcement, APC said it was set for the construction of its 300 MW coal-fired facility in Davao. The project would reduce Mindanao's heavy reliance on hydropower

Korea enters Pakistan power market

A consortium of companies from South Korea is to build a new hydropower project in Pakistan to help ease the ongoing power shortages. The project, which will receive a $97 million loan from the Asian Development Bank, represents the first investment in the country's power sector by Korean companies.

The plant will be built by Star Hydro Power, which is jointly owned by Korea Water Resources Corporation, along with Daewoo Engineering and Construction Company and Sambu Construction Company.

The 147 MW run-of-the-river Patrind hydropower plant, between the Kunhar and Jhelum rivers near Muzaffarabad, will go into operation in 2016.

Power shortfall in Pakistan recently touched a record 7000 MW, sparking riots in the country. The crisis has seen several areas left with almost no electricity, with reports of up to 5-7 hours of continuous load-shedding.

Green tax on government agenda

A guideline recently issued by the State Council regarding China's environmental protection efforts suggests that the possibility of a "green tax" is now officially on the government's agenda.

The State Council said the country will "actively promote reforms in environment-related taxes" and "conduct research regarding the collection of an environmental tax." It also said the government would include environmental protection in its annual budget and gradually increase investment in the sector during the country's 12th Five-Year Plan period (2011-2015)

Commenting on the possibility of a new green tax, Zhang Peisen, a researcher with the State Administration of Taxation said the creation of a new environmental tax would be complicated, as it will have to take into account the relationships that already exist between the country's existing taxes.

"There is not yet a specific environmental tax in China. However, if all environment-related taxes are counted under that category, we do have some items, such as the resource tax and consumption tax," Zhang told *Xinhua* news agency.

Calls for an environmental tax have grown in recent years, as the country's rapid development has taken a heavy toll on its resources and the environment.

Experts said the creation of an environmental tax would be a step forward in regulating the use of resources and energy, which would help efforts to protect the environment.

Bai Jingming, an official from the Ministry of Finance (MOF) said: "The biggest difference between the environmental tax and environment-related taxes is that the former has a wider tax base. If implemented, it will provide another channel to raise funds for environmental protection and help foster a long-term and steady fund-raising mechanism."

Companies operating in industries such as steel, oil and cement will be hit hardest by the environmental tax but Liu Shangxi, another official from the MOF, said most companies will not immediately experience a significant change.

"The environmental tax is mostly a replacement of the previous pollution discharge fees, so producers will not feel much of a difference," he said, adding that the tax is likely to expand in the long-run, which may eventually affect these companies.

He reiterated that the creation of an environmental tax is not simply an addition of a new tax, noting that China will first clear up the relationships between the new item and the existing environment-related taxes.

"We still have to work out the details," Shangxi said.

Fukushima meltdown could have been avoided

The chief of the French atomic energy commission has said that Japan may have been able to avoid the nuclear disaster at the Fukushima Daiichi power plant if it acted more quickly to pour seawater to cool the reactors after they lost their cooling functions in the wake of the March 11 earthquake and tsunami.

Using seawater for emergency cooling of one of the reactor cores did not begin until March 12. Bernard Bigot, the chairman of the French Alternative Energies and Atomic Energy Commission said: "There was a need to inject seawater from outside within six to 12 hours... and I think it was physically possible to avoid [the accident], although I can say this only now."

Speaking during a question and answer session after delivering a speech in Tokyo, Bigot also emphasised the need to make preparations on the assumption that an extreme situation may happen, and vowed his country would never allow an accident involving the release of radiation outside its nuclear power plants.

In the latest work schedule to contain the nuclear crisis at the Fukushima Daiichi power plant, the government and Tokyo Electric Power Co. stipulated that they will seek to achieve cold shutdown by the end of this year, as earlier stated by government officials.

Avoidable disaster? The Fukushima Daiichi power plant in Japan

At the end of September Tepco said the temperature at the bottom of the No. 2 reactor pressure vessel at the plant fell below 100ºC – a key condition in achieving cold shutdown.

As a result of the disaster, Japan is reviewing an energy plan that will likely see it reduce its reliance on nuclear power. Last month the science ministry said it plans to effectively freeze research related to the Monju prototype fast-breeder reactor in Fukui Prefecture by cutting 70 to 80 per cent of its current Yen10 billion ($132 million) budget for the next fiscal year from April.

The ministry, however, plans to request Yen20 billion for maintaining the reactor, roughly the same amount budgeted for the current fiscal year, according to ministry sources.

Leaked report shows cost of low carbon transition

- Investment needs mean higher energy prices
- UK announces further overhauls

Siân Crampsie

Electricity prices in the EU are set to rise as a result of the bloc's shift to a low carbon economy, according to a leaked European Commission report seen by the *Reuters* news agency.

The document sets out a range of scenarios under which the EU could reduce carbon emissions by around 80 per cent by 2050 and in each scenario electricity prices rise until at least 2030.

The leak of the draft 2050 energy roadmap – which is due to be published later this year – has fuelled the continuing debate over energy prices in many EU countries.

Utilities in the UK have come under particular scrutiny in recent months following significant price rises for both electricity and gas, alongside announcements of strong profit margins.

The price rises have forced UK energy market regulator Ofgem to announce proposals for a radical reform of energy tariffs. The country's 'Big Six' energy utilities have also responded to public and political pressure by announcing winter price freezes and requesting that they be referred to the UK's competition authority.

The leaked EU report indicates that energy-related expenditure will reach 15 per cent of households' income in 2030 and 16 per cent in 2050. In its scenario of 'high renewables', where renewable energy accounts for 97 per cent of gross final energy consumption by 2050, electricity prices would continue to rise after 2030.

Environmental groups argue that the cost of renewable energy will fall over time as technology advances are made. They also say that use of renewable energy enhances energy security and reduces exposure to volatile fossil fuel prices.

The draft report shows that even without extra renewable energy investment, energy prices will rise because of the infrastructure upgrades that are needed and the required investment in new nuclear power plants and carbon capture and storage.

In addition to a high renewables scenario, the report examines scenarios with high energy efficiency, delayed carbon capture, low nuclear, and diverse supplies. It suggests average household electricity prices could rise by more than 50 per cent within 20 years under both the low nuclear and high renewables scenarios.

News of likely energy price rises is hard to swallow – for householders and politicians alike – at the best of times, but difficult economic times make the leaked report even more unpalatable. Political support and public enthusiasm for green policies could, therefore, waver, derailing the EU's clean energy goals.

According to Ofgem, energy bills for the average UK household has doubled in the last five years to £1345/year. This drastic increase and the complexity of the market has damaged consumer confidence in supplier behaviour, says the regulator.

Ofgem's Chief Executive Alistair Buchanan said: "When consumers face energy bills at around £1345 they must have complete confidence that this price is set by companies competing in a fully competitive market. At the moment that is not the case.

"That is why a radical break with the past is needed. Suppliers have told Ofgem they want to restore confidence in the industry and now they have the chance to do so."

UK utility SSE broke the mold last month by announcing that it would auction all of its electricity supplies and purchase all of its electricity demand in the day-ahead market. It said that the move would "significantly improve the liquidity, depth and credibility of the market, and assist in the creation of a robust and tangible pricing index".

The move could also help new suppliers enter and compete in the market, which is currently dominated six large utilities.

Swiss vote in favour of nuclear ban

Chernobyl aftermath: still "firmly in our memories"

Lawmakers in Switzerland have called for the creation of an energy policy that is not reliant on nuclear power and that encourages the use of renewable energy and energy efficiency measures.

The Council of States, the upper house of the Swiss parliament, voted overwhelmingly in favour of the proposals, which also call for a ban on the construction of new nuclear plants.

The vote was the latest development in proposals to phase out the use of nuclear power in Switzerland that were introduced in May. The upper house is, however, in favour of continuing training and research into nuclear energy.

The move was welcomed by environmental organisations, including Green Cross International. "With the aftermaths of Chernobyl and Fukushima firmly in our memories, we commend the Swiss initiative and we hope the move by the Upper House will be endorsed by the government and that Switzerland will lead the way in Europe and the world in the transition to green energy," said Alexander Likhotal, President of Green Cross International, the environmental and security NGO founded by former Russian President Mikhail Gorbachev.

Switzerland's lower house voted in favour of banning the construction of new nuclear plants following the accident at the Fukushima Daiichi nuclear plant on March 11.

The proposed legislation will now return to the lower house for a new debate and vote.

Renewable subsidies under review in UK

- Ocean energy technologies get increased support
- Funding cut for wind

Wind cuts: offshore and onshore wind will see subsidy reductions

The UK government has reiterated its support for the renewable energy industry as it reviews the level of subsidies paid out to different technologies.

The publication of a consultation document reviewing the country's Renewables Obligation system has been generally welcomed by the renewable energy industry, not just because it provides some degree of certainty over policy, but because funding for certain sectors of the industry looks set to be increased.

The industry is less pleased, however, about a possible review of feed-in tariffs (FITs) paid to small solar installations.

The UK's Renewables Obligation is a green certificate scheme designed to incentivise the deployment of renewable energy technologies in the UK. Different technologies receive different levels of support and these 'bandings' are being reviewed for the first time.

The government is proposing an increase in support for wave and tidal energy projects alongside small cuts in support for onshore and offshore wind. Support for biomass is focused on cheaper transitional technologies such as conversion from coal to biomass.

"The Renewables Obligation reinforces our commitment to renewables, and it provides what developers most need: a stable framework as we look ahead to the Electricity Market Reform," said Energy Minister Chris Huhne.

"Where new technologies desperately need help to reach the market – where they can be scaled up significantly while bringing down costs over time – we are raising support.

"Where investors are on the cusp, we will give them the short-term impetus they need. Where market costs are coming down – in onshore wind, for example – we're consulting on reducing the subsidy."

The consultation on banding levels for Renewables Obligation Certificates (ROCs) proposes lowering the amount of support that onshore wind generators will receive from 1 ROC/MWh to 0.9 of a ROC. For offshore wind, the support level would be reduced from 2 ROCs to 1.9 ROCs from April 2015, and to 1.8 ROCs in April 2016. Wave and tidal projects will receive 5 ROCs, with no overall cap.

Per Hornung Pedersen, Chief Executive of Pelamis Wave Power, said that the proposed banding for ROCs was "a major boost for the wave energy industry" which is "on the cusp of making wave energy a commercial reality".

He added that the changes would bring renewed certainty to the market and allow the industry to accelerate its plans.

The Renewable Energy Association expressed some concerns about falling support for wind power because it could threaten deployment of wind turbines and the momentum that the industry has built up.

Separately, the government is also considering revising FITs paid to solar installations at the commercial and domestic level because of the dramatic fall in the price of photovoltaic panels in recent months.

Earlier this year the UK government cut FIT support for large-scale solar installations in order to protect funding for smaller-scale installations.

IEA urges end to fossil fuel subsidies

The IEA hopes a new inventory will provide transparency to the complex world of fossil fuel subsidies, says **Siân Crampsie**

Subsidies supporting the production and consumption of fossil fuels in OECD countries continue to hamper economic development and investment in clean energy sources, says the International Energy Agency (IEA).

The Paris-based agency has reiterated its call for fossil fuel subsidies to be phased out and for G20 governments to stick to a 2009 agreement calling for an end to subsidies.

In a separate move, it has also called for governments to do more to reduce energy poverty, and to achieve universal access to electricity by 2030.

The IEA estimates that globally, fossil fuel subsidies amounted to $409 billion in 2010, almost $110 billion higher than in 2009. IEA analysis shows that the removal of subsidies would raise national revenues and reduce greenhouse gas emissions, says the IEA, which for the first time has compiled an inventory of fossil fuel subsidy mechanisms in use.

"As they look for policy responses to the worst economic crisis of our lifetimes, phasing out subsidies is an obvious way to help governments meet their economic, environmental and social goals," said OECD Secretary-General Angel Gurria. "For this to succeed, we need well-targeted, transparent and time-bound programmes to assist poor households and energy workers who might be adversely affected in the short-term."

Many countries around the world use production subsidies and tax breaks to support energy production, and some subsidise energy consumption in order to reduce costs for consumers.

Removal of subsidies can therefore be politically difficult, and financially painful for consumers, but the IEA believes that these are short-term consequences. It says that subsidies often fail to meet their objectives and instead encourage wasteful energy use, contribute to price volatility and create barriers to the uptake of clean energy sources.

The IEA says that its new inventory should assist governments in understanding the nature and scale of their policies supporting fossil fuels. The inventory currently covers 24 countries that account for around 95 per cent of the OECD's total primary energy supply, showing detailed information on over 250 mechanisms that support fossil fuel production and use.

The inventory shows that 54 per cent of fossil fuel support went to the petroleum sector. It also shows that support in Germany for the hard coal mining sector is falling and should be eliminated by 2018, while France has phased out support for its coal industry altogether. Other countries have also taken steps to reduce subsidies.

"While this is an encouraging start, much work remains to be done in order to realise the full extent of benefits. It is crucial that countries follow through on their commitments by implementing reforms that are well-designed and durable," said IEA Executive Director Maria van der Hoeven.

The IEA also says that funding to overcome energy poverty around the world needs to increase fivefold and should be matched by faster reforms in order to achieve universal access to modern energy by 2030.

The energy agency says that over 1.3 billion people, or 20 per cent of the global population, lack access to electricity. More than 95 per cent of these are either in sub-Saharan Africa or developing Asia.

"Eradicating energy poverty is a moral imperative. Now it is just a question of mustering the political will," said van der Hoeven. "In too many countries today, children cannot do their homework because they have no light. Food cannot be kept because there is no electricity. In short, modern society cannot function."

IEA analysis shows that investments of $48 billion/year are needed to provide universal access to energy by 2030. This compares to $9.1 billion that was invested globally in 2009 in extending access to modern energy.

The IEA's report on energy poverty was welcomed by GVEP International, a development charity that advocates accelerated access to modern energy. It said that access to funding at a local level and building the capacity of small businesses would be crucial for success.

BP adds new pipeline to the Southern Corridor mix

Harry Sachinis: can "transport Azerbaijani gas to southeastern Europe by 2013"

- Pipeline bids submitted
- BP offers cost-effective solution

Competition between consortia bidding to bring gas from Azerbaijan to Europe through new supply routes has intensified with reports that British oil firm BP is planning its own 1300 km pipeline route.

Last month the State Oil Company of the Azerbaijan Republic (SOCAR) received offers from competing pipeline development groups for gas from the Shah Deniz gas fields.

The development groups – Nabucco, the Turkey-Greece-Italy Interconnector (IGTI) and the Trans Adriatic Pipeline (TAP) – all want to gain access to Azerbaijan's gas to breathe life into their pipeline projects. BP's apparent new proposal could shake things up as it appears to be a low-cost solution to getting Azeri gas to Europe.

The Nabucco route is favoured by the European Commission, which is desperate to reduce dependency on Russian gas, but involves construction of a 3863 km pipeline at a cost of around $8 billion. Its annual capacity would be 31 billion m^3 (bcm), compared with the 10 bcm available from the Shah Deniz field.

IGTI says that its solution is optimal for gas exports to Europe because it will be ready as early as 2013.

The project involves the upgrade of the existing Turkey-Greece interconnector and the construction of pipelines from Greece to Italy and Greece to Bulgaria.

"Not only can we transport Azerbaijani gas to the rest of Southeastern Europe as early as 2013, but the volume of 10 bcm of gas that Shah Deniz 2 intends to initially export to Europe fits perfectly within the ITGI system's design capacity," said Harry Sachinis, Chairman and CEO of DEPA, the Public Gas Corporation of Greece.

"ITGI is the most technically advanced project and this enables us to have a high degree of certainty in the cost estimates for the project," continued Sachinis. "ITGI's focus is to help Azerbaijan and the Shah Deniz 2 consortium maximise revenues by selling gas to the nearest markets in South Eastern Europe, Italy and beyond."

BP's plan envisages a pipeline geared specifically to the commercial interests of the Shah Deniz consortium, in which it is a major player. The proposed pipeline would start in western Turkey and run through Bulgaria and Romania to Hungary's eastern frontier, and would be around one-third the length of Nabucco.

Its capacity would fit with the 10 bcm of gas that Azerbaijan could supply, but could be expanded if necessary.

Saudis seek the sun

Beginning of a new solar era in Saudi Arabia

The inauguration of Saudi Arabia's first solar power plant marks the beginning of a new era in the country, says President of the Saudi Electricity Company (SEC), Ali Saleh Al-Barrak.

The 500 kW plant is part of a plan by SEC to introduce clean energy and reduce the use of fossil fuels. It was developed by Showa Shell, which will own and operate it for 15 years before transferring the assets to SEC.

The plant is located on Farasan Island, 50 km off the southwest coast of Saudi Arabia. It will save the transfer of the equivalent of 28 000 barrels of diesel fuel to the island.

Rapidly growing electricity demand has created a need for a major investment programme by SEC to boost generating and transmission capacity across the country.

In October SEC signed a $1.44 billion contract to expand the capacity of the PP10 combined cycle power plant by 1200 MW to 2240 MW.

SEC is planning to invest around $80 billion to increase power generation capacity by 30 000 MW by 2018.

Royal Dutch Shell owns one-third of Showa Shell, while Saudi Aramco holds about 15 per cent.

Minsk, Moscow sign nuclear deal

Russian firm Atomstroyexport is to build Belarus' first nuclear power plant after the two nations signed a contract last month.

Atomstroyexport will build two reactors with a combined generating capacity of 2400 MW near the town of Ostrovets in the western region of Grodno. The contract is thought to be worth $9.4 billion.

The contract signing follows a preliminary intergovernmental agreement signed by Minsk and Moscow in March. The first unit will be operational in 2017 and the second in 2018.

Atomstroyexport to build Belarus first nuclear plant

Sinovel files AMSC counterclaim


Legal storm: AMSC and Sinovel are in dispute

Sinovel has responded to lawsuits filed against it by American Superconductor Corp. (AMSC) by launching a $125 million counterclaim against its former supplier.

The Chinese wind turbine manufacturer says that AMSC breached contracts for the supply of goods and that the American firm should pay it Yuan799 million in compensation.

It has acknowledged that it owes AMSC Yuan430 million for goods delivered, but has asked an arbitration commission in Beijing to dismiss claims brought by AMSC. It wants AMSC to pay for its legal fees and other costs associated with the arbitration process.

In September AMSC filed five lawsuits and arbitration proceedings against Sinovel – once its largest client and China's largest wind turbine manufacturer.

The two firms had a number of long-term supply contracts in place but AMSC alleges that Sinovel breached some of the contractual terms and illegally obtained and used its intellectual property rights.

AMSC says that Sinovel owes it $250 million for deliveries made and contracted components that have not been delivered.

It believes that Sinovel illegally used its software to upgrade its 1.5 MW wind turbines in the field to meet proposed Chinese grid codes and to potentially allow the use of core electrical components from other manufacturers.

Sinovel says that components supplied by AMSC did not comply with the terms of the contract, and that AMSC failed to honour maintenance and service agreements.

Relations between the two firms broke down in April of this year. Business with Sinovel accounted for around 70 per cent of AMSC's revenues last year and the US firm recently announced a re-branding and restructuring exercise aimed at creating a "more diversified and sustainable" company.

AMSC last month launched a new corporate identity and said that it had "taken actions to streamline and strengthen its business".

"We have created a flatter, leaner organisation that is more nimble and flexible to emerging opportunities; aligned our business to better serve the wind and grid markets; and refined our strategic priorities to capitalise on our near- and long-term opportunities," said AMSC President and CEO Daniel McGahn.

AMSC's business formerly was structured around technologies but it now has aligned its business by end market – specifically the wind turbine and grid systems markets.

Fluor backs small reactors

- NuScale freed from SEC receivership
- B&W mPower prepares for test phase


Oregon State University: birthplace of the NuScale reactor

Siân Crampsie

US firm NuScale Power LLC is hoping that $30 million of investment from Fluor Corporation will help it to bring its small modular reactor technology to market quickly.

Fluor has purchased shares in NuScale and has become the firm's majority shareholder. The two companies have also signed a deal giving Fluor exclusive rights to provide engineering and construction services to future NuScale projects.

NuScale's modular, scalable light water reactor nuclear power unit design was conceived between 2000 and 2003 at Oregon State University with the help of funding from the US Department of Energy (DOE). The deal gives Fluor a foothold in the emerging small reactor technology market and will give NuScale the backing of a major player in the global nuclear energy industry and allow it to move forward with the regulatory approval process on its reactor design.

Fluor bought NuScale shares that had been held in receivership by the US Securities and Exchange Commission following a fraud case involving a former investor.

"Fluor's history of accomplishment and success in the nuclear industry combined with NuScale's innovative and safe nuclear technology will provide our customers with a very very competitive option," said John Hopkins, Fluor Corporation's group executive for Corporate Development and New Ventures.

Regulator concerns over Duke and Progress merger

Federal and state officials are concerned that two proposed mergers between utilities will stifle competition and hurt consumers.

Two key utility merger deals in the USA have faltered over concerns voiced by regulators over their impacts on consumers.

Duke Energy and Progress Energy have been forced to respond to federal regulators who say that their planned merger will hurt competition in the wholesale energy market in the Carolinas, while Exelon and Constellation Energy have filed a rebuttal in response to concerns raised by Maryland regulators over their proposed merger.

The Federal Energy Regulatory Commission (FERC) has approved the Duke-Progress merger but said it had found "significant" failures in tests of the combined company's market power. It wants the companies to reduce their grip on the market by taking mitigation measures such as selling power plants.

Duke and Progress have until the end of November to propose mitigation measures.

Exelon and Constellation maintain that their proposed merger will benefit customers, in spite of concerns raised by state officials in Maryland that the merged company would have too much market power and that the deal would put jobs at risk.

The two companies have already allayed fears expressed by PJM, a regional transmission network operator, about the effects of the merger on the market, by agreeing to sell three coal-fired power plants in Maryland.

French firm EDF, which owns half of Constellation's nuclear fleet, has also objected to the deal.

It says the merger would have a negative impact on its relationship with Constellation and could hurt consumers in Maryland.

Exelon and Constellation have taken further measures to address concerns raised by state regulators, including proposing a series of corporate governance measures that will ensure that Baltimore Gas & Electric remains locally managed. However, it says that some conditions proposed by other parties are "unnecessary" and could "adversely impact" the transaction.

The deal requires approval from the Maryland Public Service Commission (PSC), FERC, the Nuclear Regulatory Commission and the New York State PSC.

A shareholder vote on the deal is planned for this month.

Duke's proposed merger with Progress Energy would create the largest electric utility in the USA, with more than 7.1 million customers in six states and the largest regulated nuclear fleet in the country.

Japanese panel urges tough measures

Tokyo Electric Power Company (Tepco) is being urged to take drastic cost-cutting measures in order to help meet compensation payment obligations following the disaster at the Fukushima nuclear power plant in March.

An expert panel in Japan believes that the utility should cut costs by twice as much as envisioned in the company's plans and suggests that Tepco's electricity prices may have been historically high because of the firm's business costs.

The panel was established by the Japanese government to study Tepco's finances and has advised that it should cut 7400 staff, or 14 per cent of its total workforce. It says that Tepco is highly likely to suffer a capital shortage even if it raises electricity process by ten per cent.

Tepco owes compensation payments of Yen3-4 trillion ($40-53 billion), and will also need several trillion yen to demolish nuclear reactors at Fukushima Daiichi.

It wants to increase electricity rates by as much as 15 per cent as well as restart nuclear reactors but is facing public and political opposition to both.

Tenders, Bids & Contracts

Americas

E.On places Anacacho order

E.On Climate & Renewables has placed an order with Vestas for the delivery and commissioning of 55 wind turbines for the Anacacho wind project in Texas, USA.

Vestas will supply its V100-1.8MW turbine for the project, which is expected to be completed in late 2012.

The contract also includes a five-year service and maintenance agreement.

Mitsubishi to support California renewables

Mitsubishi Corp is to build two natural gas-fired power plants in the US state of California that will support the integration of renewable energy to the grid.

The two plants will have a combined capacity of 1000 MW and cost $1.16 billion to build. They will be designed to be highly flexible to operate so that they can respond quickly to the variable output of wind and solar energy plants.

Mitsubishi is to build the 200 MW Mariposa power plant in Alameda County and the 800 MW Sentinel power plant in Riverside County. Mariposa will supply electricity to Pacific Gas and Electric when it comes on-line in July 2012, while the Sentinel plant will start operating in August 2013, supplying electricity to Southern California Edison.

Gemma signs EPC contract

Argan subsidiary Gemma Power Systems (GPS) has signed an engineering, procurement and construction (EPC) contract to design and build a biomass fired power plant in Texas, USA.

East Texas Electric Cooperative has awarded GPS the $165 million contract, which will see GPS design and build the 49.9 MW power plant near Woodville.

GPS has received a limited release to start critical planning and early engineering activities. Full release is expected no later than spring 2012, says the company.

Vestas to build Ontario projects

Danish wind turbine manufacturer Vestas has received an order for 99 V90-1.8MW turbines for two wind energy projects in southwestern Ontario, Canada.

The contracts have been awarded under Ontario's feed-in tariff programme, which offers electricity producers stable prices for energy generated by renewable sources such as wind.

The contracts include delivery and commissioning along with five-year service and maintenance agreements. Delivery for both projects is scheduled for the second half of 2012 and commissioning expected by late 2012.

Alstom opens Brazil lab

Alstom Grid has opened a new 800 kV test laboratory for the testing and production of power transformers at its factory in Canoas, Brazil.

The €24 million facility extends the capabilities of Alstom Grid's Canoas factory to be able to design, manufacture and test AC and HVDC transformers up to 800 kV, the highest DC voltage level in operation today. First tests will support the production of converter transformers for the longest transmission line HVDC project in the world, Rio Madeira.

Calpine boosts geothermal output

Calpine Corp. is to build two new geothermal power plants in California with a combined output of 98 MW.

The $700 million proposed projects have yet to receive approvals but would be the first new generating units at the Geysers field in Sonoma County for 22 years.

The first planned unit could start operating in 2014.

First Wind orders Siemens wind turbines

US wind energy company First Wind has finalised an agreement to buy 30 Siemens SWT-2.3-101 wind turbines for a proposed 69 MW project in Oahu, Hawaii.

The 2.3 MW wind turbines will be installed at the Kawailoa wind farm on Oahu's north shore. Construction is due to start in late 2011.

Asia-Pacific

Isolux Corsán wins Bangladesh contract

Isolux Corsán has reinforced its presence in Asia with the award of a contract for the construction of a 340 MW combined cycle power plant in Siddhirganj, Bangladesh.

Electricity Generation Company of Bangladesh awarded Isolux Corsán the $335 million contract, which is part of the Bangladesh Energy Development Plan, a government initiative aimed at full electrification of the country by 2020.

Isolux Corsán will build the new plant over a 30-month period.

Nordex leads Pakistan wind market

Nordex has cemented its position as the market leader in Pakistan's wind energy market by signing contracts to supply wind turbines to five new projects.

The German wind turbine manufacturer is to supply each of the five projects with 20 of its N100/2500 units, giving a combined total output of 250 MW. The projects are subject to final approval by the Pakistan government and funding, says Nordex.

The five projects will be built in Sindh Province and will be built between 2011 and 2013.

BHEL awards GIS contract

Areva T&D India's transmission business, now a part of Alstom Grid, has been awarded a contract by Bharat Heavy Electricals Limited (BHEL) for a gas insulated substation (GIS) package. The contract covers manufacturing, engineering and installation of 11 bays of 420 kV GIS for BHEL's hydropower project at Rampur, Himachal Pradesh.

The GIS substations will incorporate highly reliable spring operating mechanisms and be delivered from Areva T&D's Ultra High Voltage Switchgear factory at Paddapai, India.

Vogt supplies Thai HRSGs

Black & Veatch has given Vogt Power limited notice to proceed to supply the heat recovery steam generators (HRSGs) and associated equipment for two major new combined cycle power plants being built in Thailand.

Vogt Power will design and deliver two unfired, three-pressure level HRSGs with reheat for both the Wang Noi block 4 power plant and the Chana block 2 power plant. Both plants are owned and operated by Thai utility EGAT. The HRSGs will operate behind Siemens SGT5-4000F gas turbines.

Hyundai, Daewoo win Bangladesh contract

The government of Bangladesh has awarded the contract for the construction of a 225 MW gas fired combined cycle power plant at Ashuganj to a South Korean consortium.

Hyundai Engineering Co and Daewoo International Corporation will build the new power plant, which will boost Bangladesh's baseload power capacity.

The plant will be operational by the end of 2013.

Emerson automates China plants

China Resources Power Holdings Company has awarded Emerson Process Management a contract to supply and install the control systems for two new 1000 MW ultra-supercritical power plants under construction in Hubei Province, China.

Emerson will install its Ovation system at the new units at Puqi power plant, which currently consists of two 600 MW coal-fired units.

Emerson will supply a total of 64 redundant Ovation controllers and 23 workstations. An Ovation system at each unit will perform data acquisition as well as monitor and control the boiler and turbine.

Europe

MW power wins Valio order

Metso-Wärtsilä joint venture MW Power has won an order to supply the steam boiler for a milk processing plant in Finland owned by Valio.

Under the contract, MW Power is to supply a bubbling fluidised bed boiler capable of generating 140 GWh/annum of steam. The delivery will also include installation, commissioning and supply of an automation system.

The plant will be fuelled by wood chips and peat, and will generate all the steam and heat needed for the processing plant.

Astrel wins Sellafield contract

An alliance of engineering firms has won a substantial nuclear decommissioning contract at Calder Hall, in Sellafield, UK.

Hertel, Jacobs Engineering Group and Studsvik formed a joint venture called the Astrel Alliance and secured the competitive tender for the work, which includes removal of all steelwork and pipework from two of the heat exchangers on the site.

Work started in August 2011 and is scheduled to take one year.

National Grid appoints John Wood for CCS study

UK firm National Grid has selected John Wood Group to carry out a study on the development options for underground carbon dioxide (CO_2) storage in the UK sector of the southern North Sea.

Wood Group will design concepts for offshore surface facilities as well as generate schedules and cost estimates for offshore pipeline and subsea facilities.

Spain boosts EV infrastructure

Spanish airports operator AENA has awarded a contract to supply and operate electric vehicle charging infrastructure in four airports to GE Energy and Endesa.

AENA is implementing a strategy to use electric vehicles for some of its fleets of airside vehicles at its airports in Barcelona, Madrid, Palma and Lanzarote. GE Energy's Industrial Solutions business is to provide 53 of its DuraStation electric vehicle chargers.

The DuraStations enable faster charging by integrating higher voltages and currents that require specialised equipment and connectors. They will be incorporated into the airports' energy management infrastructure and vehicles will be charged on off-peak overnight electricity tariffs.

The three-year pilot programme will enable AENA to assess the feasibility of replacing its entire fleet of airport vehicles with electric alternatives.

Jädraås windfarm financing complete

Private equity fund manager Platina Partners LLP and Swedish onshore wind developer Arise Windpower AB, have completed Sweden's largest ever wind project financing, the €336 million Jädraås windfarm.

The 200 MW project will be built in two phases and will be one of the largest onshore windfarms in Europe.

The investment in Jädraås will be made by Platina Energy III Limited Partners in conjunction with Arise Windpower AB. Debt financing was led by DNBNor, with additional funding from Skandinaviska Enskilda Banken and the Danish government-backed EKF. The development will utilise 66 of Vestas' V112-3.0MW turbines.

The project will benefit from Sweden's green certificate programme and is expected to be operational in early 2013.

International

Wärtsilä secures Turkey order

Turkish independent power producer Yesilyurt Enerji Elektrik Uretim A.S. has placed an order with Wärtsilä for a new power plant to supply electricity to a steel mill on Turkey's Black Sea coast.

The plant will feature eight 18-cylinder Wärtsilä 50SG engines running on natural gas plus a steam turbine. Running in combined cycle mode, the new plant will produce an output of 160 MW. It will start operating in October 2012 and will sell any excess energy produced to the grid.

Nigeria orders 13E2

Alstom has been awarded a contract worth approximately €40 million by the Ministry of Power of the Rivers State government of Nigeria to supply a 160 MW GT13E2 gas turbine for the second phase of the Afam power plant in Port Harcourt.

Alstom is already supplying one GT13E2 turbine to the project under a contract that was awarded in 2010 and together the contracts will boost Nigeria's power supplies by 300 MW.

Rwanda exploits Lake Kivu methane

KivuWatt Ltd has placed an order with Wärtsilä to supply a new power plant to Rwanda that will use methane gas as a fuel.

The plant will be powered by 20-cylinder Wärtsilä 34SG gas-powered engines and have an electrical output of 25 MW. The methane will be derived from Lake Kivu and this will be one of the first times that this type of gas has been used in a power plant of this size.

Currently two smaller power plants are operating using methane from Lake Kivu, which could in future expand the capacity of the new plant by 75 MW.

The perils of policy paralysis

All is not well in the key segments of the power sector in India, including thermal, nuclear and the solar power sectors. The country is being challenged by both domestic and international pressures to meet the twin objectives of rapid and cost-effective delivery of energy to its burgeoning energy hungry population.
Vishvjeet Kanwarpal

With its urban population forecasted to grow to over 500 million over the next 10 years, India's infrastructure investment requirement is projected to exceed $1 trillion over the next five years. These are promising projections that attract both investors and industry. However, the world is facing a strong double-dip recession and India and China, the champions of economic hope are facing their own set of challenges.

India needs to turbo-charge its policy initiatives in the power and energy sectors if it is to achieve its economic target of 9 per cent growth. Revised economic growth projections are already suggesting growth in the range of 7 per cent.

But for once, India cannot be singled out for suffering from "policy paralysis". Globally, countries are struggling to find solutions to the economic and financial problems.

In India, just as considerable power capacity was projected to be commissioned, a recent report by CRISIL suggests that the continued poor financial health of the State Electricity Boards (SEBs) and privatised distribution companies may spell risk for some of the key lenders to the power sector. These include Power Finance Corporation (PFC), Rural Electrification Corporation (REC) and a host of large domestic financial institutions.

The primary drivers of risk to the power sector include high levels of system losses and debt. In addition, the power sector is facing its greatest challenge from the coal shortage and coal price hikes, both domestic and international. The increased reliance on imported coal and associated high price of coal has delivered a severe blow to the generation and distribution sectors.

Both energy shortage and cost of power generation have shot up putting tremendous pressure on distribution companies as well as consumers. With severe inflationary pressures, the challenge for the regulators, who are being urged to increase consumer tariffs, is enormous.

The power and coal mining sectors in India are plagued by environmental concerns, restrictions and public interest litigation. These forces effectively reduce the supply of domestic coal into the power sector and increases India's dependence on imported coal from Indonesia and Australia.

An estimated 43 000 MW of competitively bid power capacity is under construction, of which 13 000 MW is projected to be based on imported coal. A new mining law in Indonesia enables an annual alignment of Indonesian coal prices with international rates. This will directly impact the cost of power generation of Indian independent power producers (IPPs) rendering them uncompetitive. This risk then further impacts both consumers and lenders to the power sector.

It is imperative to accelerate the domestic coal sector reforms so that India's power sector is not constrained. The policy initiatives that have focused on 'ultra-mega power projects' relying on imported coal as well as e-auction of coal need to be revisited. Simply increasing e-auctioning of coal in a supply constrained environment has resulted in greater price pressures on the power sector which in turn has resulted in increased cost of power generation.

Additionally, permitting captive mines to sell surplus coal at market prices or linking the price of domestic coal to imported coal may have a serious negative impact on the coal and power sectors. India needs to balance the need to provide competitively priced coal while still retaining the commercial production incentives for the private sector.

Kanwarpal: policy paralysis is jeopardising India's trillion-dollar investment potential

Coal supply to power projects has emerged as one of the major challenges as an estimated 25 000 MW of thermal power capacity (present and near term new projects) is stranded without adequate coal supply arrangements.

Acknowledging these challenges along with the environmental impacts of coal, India is putting a greater emphasis on low carbon technologies such as nuclear and renewables.

India has a nuclear power capacity of over 4780 MW and plans to have an installed nuclear power capacity of 20 000 MW by 2020. By the year 2032, India plans to have over 63 000 MW of nuclear power capacity installed. Its plans to generate 25 per cent of its electricity from nuclear power by 2050 appear extremely ambitious.

> "The cooperation between India and international civilian nuclear players has been growing"

Following the 123-Agreement between India and the United States in 2008, which ended India's "nuclear winter", the US, France, UK, Canada, Japan and Russia signed agreements at various levels with India to develop nuclear power plants in the country or to supply it with nuclear equipment, fuel, technology or expertise.

Since then the cooperation between India and the international civilian nuclear players has been growing.

India and Kazakhstan entered an agreement on April 16, 2011, that included construction and operation of atomic power plants, exploration and joint mining of uranium, exchange of scientific and research information and a legal framework for supply of fuel. India and South Korea signed a nuclear agreement on July 25, 2011, which enables South Korea to bid for nuclear power plant construction in India.

However, the new-found optimism in the nuclear industry has been fundamentally impacted by the 'Fukushima fallout'.

Key nuclear dependent countries such as the US, UK, Japan, and France are rethinking the nuclear equation. Many nuclear powers are all re-evaluating the role of nuclear power in their domestic energy equation. India is no exception.

The India-US civilian nuclear agreement may take longer than originally projected, to be fully implemented. The civilian nuclear agreement between New Delhi and Tokyo stands delayed. Strong protests against the Jaitapur nuclear power project are raising questions about the India-France nuclear plans. Protests in Tamil Nadu have all but halted the development of the Koodankulam nuclear power plant in cooperation with the Russians.

'Not in my backyard' (NIMBY) public protests against nuclear power plants are gathering momentum in several states where projects were proposed or planned. These include Maharashtra, Andhra Pradesh, Tamil Nadu, Gujarat, Madhya Pradesh, Haryana and West Bengal among others.

What is clear is that while everyone wants power, they do not want it generated in their state.

Unlike nuclear, fortunately solar – a key part of the renewables drive – will receive less public opposition.

India's theoretical solar power potential is estimated at a potential 700-2100 GW. This can theoretically meet all of India's current and future power requirements for quite some time.

Under the Jawaharlal Nehru National Solar Mission (JNNSM) the solar power plans for India were divided into three phases. Phase I, up to 2012/2013, was to enable the establishment of 1100 MW of capacity. Phase II, from 2013 to 2017, was to enable 3000-10 000 MW and Phase III, from 2017 to 2022, was to include a total overall capacity of 20 000 MW.

As part of Phase I, 1000 MW grid connected solar power was to be purchased by NTPC Vidyut Vyapar Nigam (NVVN). The tariff was fixed by the Central Electricity Regulatory Commission (CERC), which would annually review the tariff. NVVN was to bundle an equivalent amount of thermal power capacity. SEBs and state utilities could meet their Renewable Purchase Obligation (RPO) by purchase of this solar power. Solar specific RPO was to start with 0.25 per cent in the first phase, increasing to 3 per cent by 2022.

However, the reality of the solar programme implementation has been sobering. Policy directives reduced the photovoltaic (PV) project size for Phase I (Initial Plan) to 5 MW instead of the much larger assets planned by several IPP and power players. This resulted in many players exiting the solar sector due to a lack of "critical mass" being offered.

This in addition to the power purchase mechanism involving NVVN instead of a state purchase obligation and the competitive tariff stipulation by the CERC, led many players to realise that solar power was not a guaranteed or direct government subsidy. Indeed, only serious players with a long term outlook would find it a viable investment option.

A new regulation came into effect in April this year, which places restrictions on imported solar panels. Foreign solar panel manufacturers in effect could benefit from the Indian Solar Mission, provided they established local manufacturing plants in India through joint ventures. Given that most of the Indian solar industry is already based on technology joint ventures, it essentially acts as a protectionist mechanism for incumbent players.

Other solar power policy challenges before India include cost of power and grid parity target schedules, land scarcity, project scalability, resource constraints for the domestic solar industry, clearances as well as tax and duty structure.

Depressed international demand due to global economic slowdown and increased competition from China and Taiwan, have further resulted in an attempt to protect the domestic industry via policy initiatives.

Most importantly, the domestic solar industry will face the substantial problem of budget allocation towards solar power. Where major European solar markets such as Italy, Spain and Germany have drastically revised their ongoing support subsidy and support for the solar sector, Indian policymakers are not far behind in reviewing the 20 000 MW target.

The perils of policy paralysis have increased further with the popular anti-corruption drive which has further halted approvals and clearances for large projects and plans out of fear that bureaucrats and politicians may come under scrutiny and be penalised.

The woes of the Indian power sector were best exemplified by the Supreme Court of India's recent hearing on a public suit regarding the power crisis in Delhi. The court directed the two top distribution companies including BSES Rajdhani and BSES Yamuna to pay interim amounts to Damodar Valley Corporation (DVC), one of the leading state power generation companies of India, to avoid it discontinuing power supply to the National Capital.

DVC submitted to the court that 60 per cent of the power price being charged was the price of coal and non-receipt of payment could render the generator financially sick. BSES submitted that it was not in a position to pay due to the heavy losses incurred by it in the distribution circles of the National Capital of Delhi.

If India is unable to overcome the policy paralysis and act from a vantage of holistic vision and farsighted action, its trillion-dollar investment potential may remain unrealised for a while longer.

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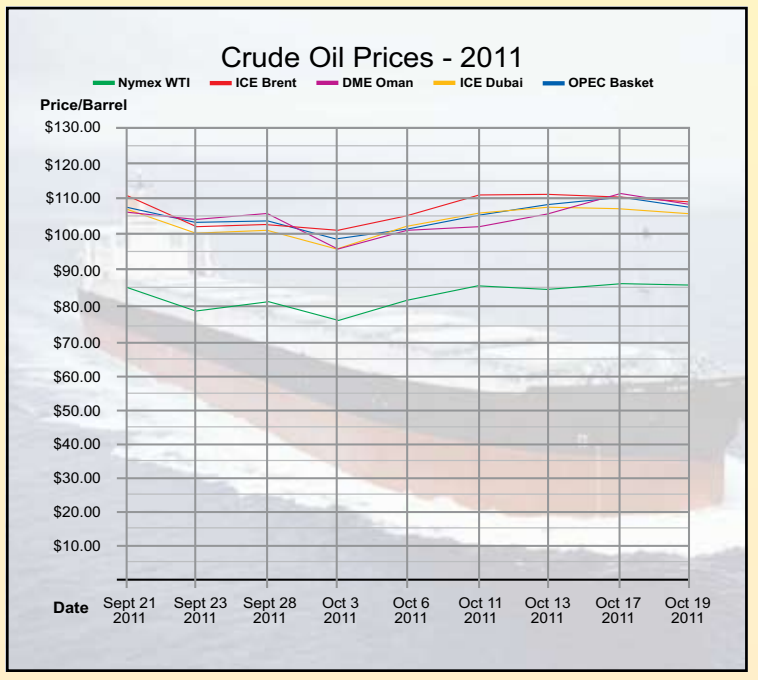
Oil

Demand growth continues to slip over economic concerns



- Global GDP growth seen at 3.9 per cent in 2012
- Calls to rein-in production "may be premature"

David Gregory

The price of West Texas Intermediate (WTI) crude oil returned to the mid-$80/b range during the later days of October while Brent was priced in the neighbourhood of $110/b. Concern over Europe's sovereign debt crisis prevented strong gains in oil prices despite the fact the world average crude oil price as determined by the US Energy Information Administration (EIA) is some $25/b above what it was a year ago.

In its October *Oil Market Report*, the Paris-based International Energy Agency (IEA) revised downward its global oil demand forecast by 50 000 b/d for 2011 and by 210 000 b/d for 2012 due to lower than expected third quarter readings from OECD countries and a downward adjustment to global GDP growth assumptions. "Global GDP growth is now seen at 3.8 per cent in 2011 and 3.9 per cent in 2012 with significant downside risks," the IEA said in the report. It estimated that demand would average 89.2 million b/d in 2011 (up by 1 million b/d over 2010) and that 2012 demand would average 90.5 million b/d (up by 1.3 million b/d).

The IEA reported that global oil supply fell by 0.3 million b/d to 88.7 million b/d in September from August, while Opec crude oil supply declined to 30.15 million b/d during September with lower production from Saudi Arabia and Nigeria with the resumption of supplies from Libya.

In mid-October, Libya was producing around 350 000 b/d, compared with the 1.4 million b/d it had averaged prior to the start of the civil war in February. The agency said in its report that Libya's return to the global market may have already set in motion a "rebalancing of production flows for several Opec member countries." Led by Saudi Arabia, several Opec members stepped in to make up for the loss of Libyan crude by boosting their own production by around 1.1 million b/d.

But calls by Opec members Iran, Iraq and Venezuela to rein-in production now that Libyan crude is coming back on-stream "may be premature," the IEA said. "The group's output is still running 300 000 b/d below the pre Libyan crisis levels of 30.5 million b/d from January 2011," the IEA said, adding: "Moreover, despite increased output by several Opec members and the IEA's Libyan Collection Action [the release of strategic stocks], demand has continued to run ahead of supply by an average 0.6 million so far in 2011. Crude oil stocks in the OECD Europe and Pacific are holding well below the five-year average."

Speaking in London in early October, Opec Secretary General Abdullah al-Badri said the organisation considered the market to be in balance, despite price declines in mid-September and early October. Mr. Badri told the *Oil & Money* conference that Opec no longer regarded the $75-85/b price target that some members like Saudi Arabia had endorsed during the depths of the recession as viable.

"We were talking $75-85/b," he said, according to *Platts*, "and that was not really adopted by Opec. It was really an idea that maybe $75-85/b is a fair price… What we said four to five years ago is not really valid any more."

Analysts have argued that high crude oil prices have interfered with the global economic recovery.

In its own monthly report, Opec forecast that global oil consumption would decline during 2011 and 2012 because of the "economic downturn." The Opec October report said it expected oil demand growth during 2011 to average 880 000 b/d, down by 180 000 b/d from its previous demand growth forecast of 1.06 million b/d. It predicted that global demand for crude would average 87.99 million b/d in 2011.

It also reduced its demand growth forecast for 2012 by 250 000 b/d from its previous estimate, putting demand for crude at 89.01 million b/d for the year.

Meanwhile, the conclusion of a two-day IEA Governing Board meeting in Paris over October 18-19 warned that threats to global energy security come unexpectedly and in many forms.

The agency said that since it last met in October 2009, the world had "witnessed events such as the Deepwater Horizon incident in the Gulf of Mexico, events in part of the Middle East and North Africa as well as the Fukushima Daiichi accident in Japan.

"Coupled with growing economic uncertainty and rising CO_2, they remind us that threats to energy security, the global economy and the environment can come in many forms and unexpectedly. In today's highy interconnected world, no one country can safeguard its energy security alone."

Gas

Mozambique discoveries raise east Africa energy prospects

An announcement by Italy's Eni of a major natural gas find offshore Mozambique has raised East Africa's profile as a possible important energy exporter in the years ahead.

Mark Goetz

On October 20, Italian energy company Eni announced the biggest natural gas discovery in its history at the Mamba South-1 well in the Area 4 Block in waters near the Tanzanian border. Eni said its first exploration well in the block had encountered 212 metres of continuous gas pay in high-quality Oligocene sands and said that the "impressive discovery" could lead to reserves at the site being estimated at around 15 trillion ft^3 (tcf), or 425 billion m^3 (bcm).

Paolo Scaroni, CEO of Eni, told the media that his company would continue to develop the field and that first gas may appear by 2016. Scaroni said Eni planned to build a LNG facility in Mozambique that could include as many as three liquefaction trains. "Mozambique is very well placed to serve the Pacific market – India, China, Thailand – which is the region where consumption of gas is growing most rapidly and prices are highest," the *Financial Times* quoted him as saying.

The Mamba South-1 well is located 40 km off the Cabo Delgado coast. Four more wells are to be drilled in the area over the next 18 months. Eni said the discovery would add 2 billion barrels of oil equivalent to its reserves and account for the production of the equivalent to 300 000 barrels daily.

"The outstanding volume of natural gas discovered will lead to a large scale gas development with a combination of both export to regional and international markets through LNG and supply to the domestic market," Eni said in a statement, adding: "This will support the industrial and economic growth of the country."

Eni is operator of Area 4 with a 70 per cent interest. Partners include Portugal's Galp Energia, South Korea's Kogas and Mozambique's state-owned ENH, each with 10 per cent.

Mozambique is one of Africa's poorest countries and continues to recover from a lengthy civil war that ended in 1992 and destroyed most of its infrastructure.

Currently there is little demand for natural gas as most electricity is supplied by hydro and coal, but the recent discovery of natural gas lends to the potential rise of industrial enterprises in Mozambique, as well as Tanzania, Madagascar and Kenya, where offshore exploration is also being carried out. A pipeline to carry natural gas from Mozambique's Pande and Temane onshore gas fields to South Africa has been proposed.

Several weeks prior to Eni announced the Mambo South-1 discovery, US operator Anadarko estimated its discoveries in Mozambique's offshore Area 1 in the Rovuma Basin at 280 bcm. Anadarko had said in August that its Barquentine-2 appraisal well had encountered some 70 metres of gas in the Windjammer/Barquentine field on Area 1.

Anadarko acquired the block as a result of Mozambique's second bidding round in 2006. The Houston-based firm and its partners are due to make a final investment decision on Mozambique LNG in 2013, a 30 million tons/year LNG project based on gas discoveries in Area 1.

The project would begin with an initial 10 million tons/year capacity plant drawing on gas from the Windjammer/Barquentine field. The investment for the first phase of the project is put at $14 billion.

Anadarko holds 36 per cent of the Area 1, while Japan's Mitsui & Co. hold 20 per cent, Bharat Petroleum Corporation and Videocon of India each hold 10 per cent, ENH holds 15 per cent and Dublin-based Cove Energy holds 8.5 per cent.

The success of exploration work offshore Mozambique has attracted the attention of the major oil companies. Reuters quoted Bob Daniels, Senior Vice President, Worldwide Exploration at Anadarko as saying that the company's successful drilling programme "continues to expand the already world class resource potential of this frontier basin."

Anadarko and Cove are also involved in exploration work offshore Tanzania where several major oil companies have farmed-in to existing licenses and where plans are also being drawn up for LNG export.

Shedding light on the impact of solar PV in Europe

The solar photovoltaic (PV) market has seen rapid growth in Europe. **Marc Daube** and **Edmund Phillips** explore some of the potential consequences of the rapid growth in solar capacity on Europe's power markets.

According to figures from the European Photovoltaic Industry Association, total installed solar PV capacity reached 40 GW globally last year. This has the potential to generate sufficient electricity for more than 10 million households. The total was reached after 17 GW of new capacity was added during the year, of which the EU accounted for more than 13 GW.

This rapid growth in Europe is largely attributable to Germany, which is pushing for aggressive carbon reduction targets far beyond EU commitments. The latest revisions to Germany's energy strategy sets a minimum requirement of 35 per cent of renewable energy in electricity supply by 2020, 50 per cent by 2030, and 80 per cent by 2050. In comparison, EU targets do not extend beyond 2020.

Other countries have also seen significant growth in 2010: the Czech Republic experienced a burst of some 1.5 GW and Italy passed 7 GW of total installed solar PV capacity from almost 250 000 systems. Meanwhile, France installed over 700 MW and Spain added a substantial 370 MW. Nevertheless, with a total of 18 GW of installed capacity, Germany continues to lead Europe and the rest of the world on solar power.

The sheer scale that solar PV capacity is now attaining in Germany is a positive stride forward in the decarbonisation of Europe's power sector. As new capacity continues to be added, however, it is inevitable that the characteristics of solar PV will begin to have an effect on the power market.

Investment in solar PV is often driven by government-set subsidies in the form of Feed-in-Tariffs (FiTs). These offer payments for every kWh of electricity produced, usually on a sliding scale linked to capacity. Despite progress, solar PV remains an expensive generation technology and in order to incentivise investment, the level of subsidy has to be set much higher than for other competing forms of renewable energy such as wind. Setting this level successfully, so as to achieve the growth rates desired, has to-date been a task with which governments have struggled.

Attractive rates guaranteed over a 20 to 25-year period offered under many European support schemes have sparked national booms in solar PV installation that have surpassed all expectations, and eclipsed growth in other forms of renewables. According to the European Photovoltaic Industry Association (EPIA), solar PV was the leading renewable energy technology in 2010 in terms of new capacity growth in Europe.

Such rapid uptake of these subsidy programmes has forced a larger than expected burden on governments and consumers. It is now widely accepted that the subsidy levels set initially were too generous, and governments have looked to reduce the cost of support by cutting subsidies and introducing programmes of 'degression'.

These are programmed, periodical, steps down in tariff levels, often as a function of the number of new installations in a year. They are designed to avoid over-subsidisation and encourage innovation.

In Germany last year, rates were reduced by 13 per cent for rooftop systems, 12 per cent for open-space systems and eight per cent for surfaces designated for land use change.

Further reductions were subsequently voted in. However, Germany's decision to quit nuclear power by 2022 following the nuclear accident at Fukushima in Japan, has forced the country to refocus its efforts on renewables, and the original programme of degression was retained.

Other markets in Europe are also reviewing their subsidy levels, with France having suspended approval for new solar energy projects for three months earlier this year in order to study potential subsidy cuts and measures to limit growth, while Italy is reviewing its incentives policy for a number of renewables, not just solar.

Meanwhile, in March 2011 the UK government confirmed deep cuts to the level of incentives available to solar PV installations with capacity greater than 50 kW, following a fast track review of its FiT programme.

The review of the scheme was launched in response to evidence suggesting that larger solar PV projects would be deployed much more quickly than originally expected, taking a greater share of the sum allocated to the scheme. This threatened to divert support away from small-scale projects developed by individuals, householders, organisations and communities.

As an illustration of the financial constraint, the UK Department of Energy and Climate Change (DECC) estimated that the cost of subsidy to a 5 MW solar PV scheme amounts to about £1.3 million ($2 million) per year. Supporting 20 such large-scale installations would cost the same each year as supporting smaller PV installations for more than 25 000 households.

However such cuts or degression steps can have the consequence of driving more installations in the short term as investors look to beat the rate cuts. Developers in the UK raced to commission large projects before an August 1, 2011 deadline, when DECC's cuts came into effect.

> "Germany's aggressive stance on the sector may force change in the energy policy of surrounding markets"

The changing level of government subsidies and the consequent effect on the rate of investment means there is considerable uncertainty surrounding the growth of solar PV capacity moving forward.

At a low level, the impact of solar PV installations on the power market is not significant. However, once installed capacity begins reaching the level now observed in Germany, the consequences for the wholesale power market become more apparent. For thermal investors in particular, the increasing penetration of solar PV exacerbates two types of risk: wholesale market price risk especially during peak hours; and operational risk due to increased uncertainty in net demand.

After the initial investment in equipment, solar generation is effectively a free source of power generation, because it costs very little to operate the solar panel. Since solar generation is remunerated through mechanisms outside the wholesale market, it suppresses the price in that market. As solar generation increases, a greater share of the cost of power generation is paid for outside the wholesale market and therefore the wholesale price becomes increasingly unrepresentative of the overall cost of electricity generation.

Moreover, the rapid growth of solar PV capacity has an impact on the operation of conventional thermal plants. The large amount of solar generation in Germany is likely to displace conventional thermal plant, in particular during peak hours in the summer.

This could lead to significantly lower overall load factors for thermal plants during the summer in comparison to levels that may have been anticipated when the plants were constructed. Additionally the distributed nature of solar PV installations makes it difficult for the industry to assess its full impact on the level and profile of consumption of electricity from the grid.

The suppression of wholesale prices and the uncertainly in net demand patterns caused by growing solar PV capacity represents a significant weakening of the investment signal for flexible thermal generation. Such capacity will be required to offset the intermittency of renewable generation and maintain security of supply, and market arrangements will need to evolve to ensure the investment required to deliver it.

This issue will not be isolated to Germany. Market coupling and interconnection means power markets in Europe are becoming increasingly interdependent Therefore, Germany's size and location means it is becoming more influential in setting prices in northwest Europe as a whole.

As the wholesale price in Germany is suppressed by the increasing deployment of renewables, prices in the surrounding markets will also be exposed to this downward pressure on prices. Therefore the signal for investment in thermal capacity in these markets will be weakened, just as in Germany.

Furthermore markets where renewable projects are exposed to the wholesale price, for example those operating a green certificate system, will become less attractive to investors. Governments in these countries may need to introduce additional support mechanisms for renewables in order to generate the investment required to meet EU targets.

In conclusion, the inconsistency of ambition for renewables across the governments of northwest Europe and the different ways of subsidising these generation technologies is at odds with an increasingly unified market for electricity in the region.

Germany's aggressive stance on the sector, typified by its soaring solar PV capacity, may force change in the energy policy of surrounding markets. It may necessitate that support for renewable generation is given increasingly outside of the wholesale market, at the risk of further distorting the investment signal for thermal plant.

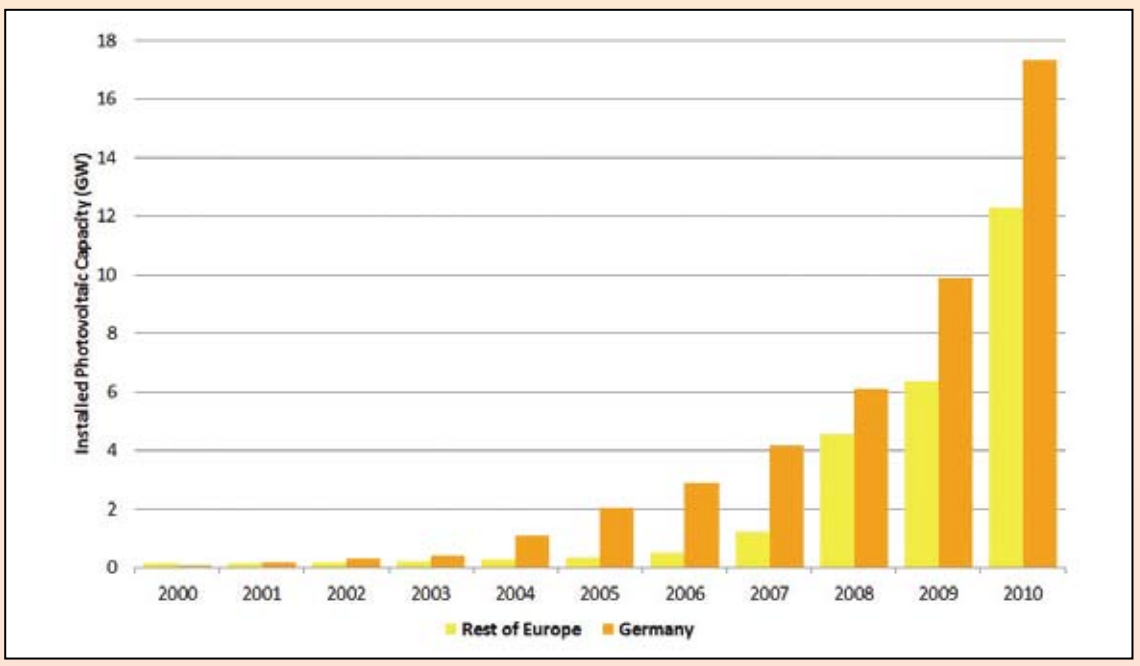
Consequently, it may introduce the need for such intervention for thermal generation investment as well, both in these markets and in Germany. This would probably be achieved through a form of capacity payment.

Indeed, in anticipation of increasing renewables penetration, a consultation on capacity payments is already under way in the UK, and support for gas-fired plant has been suggested in Germany as well.

Ultimately, the divergence of Germany's energy policy from those of its neighbours may force Europe as a whole away from market-set prices, and onto a path where governments play a greater role in determining the future energy mix. This would lead to a world where a greater proportion of risk is born by the consumer rather than the market.

Marc Daube and Edmund Phillips are consultants at Redpoint Energy, a specialist energy consultancy advising on investments, strategy and regulation across Europe's liberalised power, gas and carbon markets.

Installed solar capacity in Germany vs the rest of Europe



Keeping data under lock and key

As Europe moves towards complete smart metering roll-out by 2022, **Junior Isles** hears why privacy and security remain high on the agenda.

A number of European countries are at varying stages of rolling out smart meters, in line with the EU's Third Energy Package, which mandates that member countries must achieve 80 per cent roll-out by 2020.

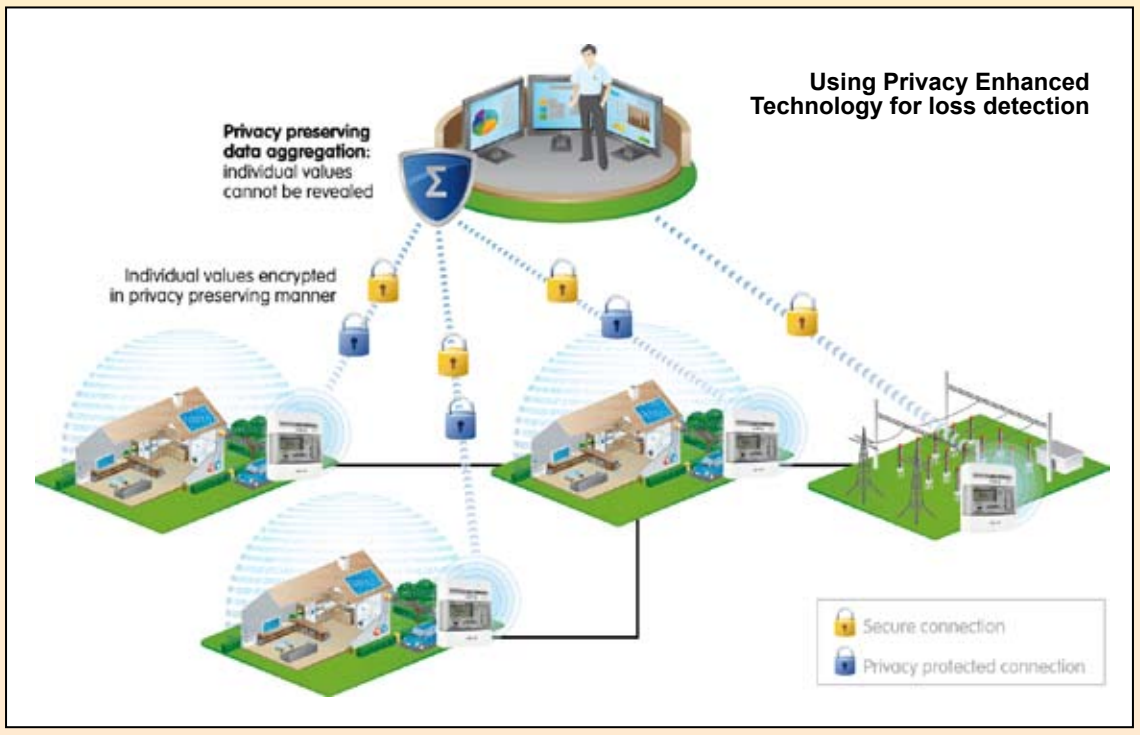
Having made a business case based on 'non-technical losses' i.e. energy theft, Italy has completed its programme. Sweden has also finished its implementation, as a result of its energy companies needing to make monthly automatic meter readings (AMR). Finland's programme is at an advanced stage, Denmark has deployed smart meters across 50 per cent of its market and Norway has mandated the roll-out of smart meters across the country by the end of 2016. France Spain and the United Kingdom are also making progress. Germany is among the last of the countries to move as it continues to finalise details prior to beginning roll-out.

The Netherlands, however, is an interesting case that highlights one of the key issues that continues to cause concern in the industry. In 2007, the Dutch government proposed that all of the country's seven million households should have a smart meter by 2013, as part of a national energy reduction plan. It began a so-called priority roll-out, whereby new and rebuilt properties would have smart meters. It was expected that this priority rollout would transition into a mass roll-out.

However the programme was halted in 2009 after consumer groups raised concerns about privacy.

Kim Nørgaard, Vice President of sales and marketing, Elster Integrated Solutions International and Elster Electricity International commented: "Utilities were suddenly able to see each consumer's load profile. They could see people's energy usage behaviour. Although a lot more information can be gained through credit cards, it is offered voluntarily since you choose to have a credit card. But the issue here was that the government was attempting to make smart metering mandatory for the consumer."

Most consumers are familiar with the problem surrounding privacy and the passing on of customer data. The constant barrage of unwanted phone calls and marketing literature received from unknown companies and organisations is commonplace.



Yet if smart grids are to become a reality, data is needed generated from load profiles in order to monitor and control the network as more renewables and distributed generating sources come on to the grid.

Viewing such data, however, could compromise the individual's privacy. Elster gives the analogy of a cinema showing an age-restricted film. The cinema has no interest in a customer's exact age, but needs to ensure that each customer is legally old enough to view the film. The only reason why more information is revealed is a shortcoming in the method used to prove an individual's legal age, which usually involves showing a document of identification that includes name and date of birth.

Similarly, for the smart grid most cases for grid maintenance do not need individual customer data – an aggregate of the data based on a number of customers is sufficient. In many instances, the only reason why individual data is collected is that the aggregated data cannot be measured directly. The easiest way to get to the data that is truly required, i.e. the aggregates, is to collect and combine individual data.

Privacy enhancing technologies make it possible to make data anonymous, allowing a utility to aggregate and use load profiles for an area without seeing the load profiles for an individual house. Elster says the ability to "grey-out" what the utility does not need to see is at the cutting-edge of privacy technology. A technology known as homomorphic encryption puts a layer between where the data comes from and the utility.

Although privacy is an important factor, the issue of data security could be much more serious. Nørgaard speculated: "Any chain is only as strong as the weakest link. There have been discussions on whether someone could switch off electricity supply to an area if they are able to access the communication between the smart meter and a utility's back-end system."

As different countries discuss standards for communications, a major issue is the impact of interoperability. A working group has been formed within the EU to address the issue. The need for meters from various manufacturers to communicate across different


Nørgaard: Any chain is only as strong as the weakest link

communications platforms increases the potential of external data tampering. "What is being discussed at the moment is how to safeguard the data flow – whether to use synchronous or asynchronous techniques," noted Nørgaard.

The technologies aimed at secure communications each have pros and cons. Symmetric encryption is the simplest technique and does not need powerful computers. However, it suffers with scalability in that it relies on the pre-sharing of data keys, which are difficult to keep secure.

Nørgaard explained: "Think of it as sharing a house key. I share it with you and you then share it with someone else and so on. This is not very secure, ultimately it could end up with someone who should not have it."

Asymmetric encryption is more complex and requires complex computing. It needs a special data key infrastructure on a national or EU-wide basis and one of its challenges is how to keep data keys safe.

However, it has the advantage that there is no sharing of data keys. "This means it scales very well," said Nørgaard.

The Smart Metering Expert Group within the EU is now recommending a mixture of the two technologies. To avoid the need for complex computing in the meter, encryption is initiated with an asymmetric key. A random symmetric key is then generated and communication is continued with a symmetric key.

Various trials are currently underway across Europe. Nørgaard expects that although the EU will not adopt a single standard on smart meter communications, most countries are likely follow the same framework on encryption and security. "Specifications are still ongoing but I don't think countries will go further than what is being recommended by the expert groups. They are likely to share the same key handling methodology across the different communication standards.

The good news is security and privacy-enhancing technologies exist. They just need to be implemented for this particular application," he concluded.

So although the industry may still have a little way to go, at least consumers can rest assured that work is progressing to make sure that their private information stays private and data will be as secure as technology allows.

British Gas smart metering roll-out

The importance of privacy and security was highlighted in a recent UK tie-up between Elster and British Gas.

At the end of September the two companies signed a Letter of Intent, moving Elster forward as a preferred provider of smart meters to British Gas, subject to contract. Elster is to provide British Gas with 'dual protocol WAN' AS330 electricity meters and BK-G4E gas meters, to support initial smart metering roll-outs in 2012 and 2013. All UK homes are expected to be fitted with a smart meter by 2019.

According to the Energy Saving Trust, smart meters can help households save up to 10 per cent on their bills – a saving of £105 ($166) a year. Smart meters and energy displays will mean customers will only pay for the energy they use and will no longer get estimated bills.

British Gas selected Elster following a competitive evaluation of several potential vendors to identify an additional qualified supplier for its smart metering deployment. Elster joins Landis + Gyr as a qualified smart metering supplier for British Gas, providing 'dual protocol WAN' solutions.

Elster designed its innovative BK-G4E and AS330 meters specifically to support tailored solutions for utilities working to comply with the European directive for smart gas and electricity metering. The meters comply with the latest industry standards for data privacy and security and provide customers with the latest technology to protect against fraud and tampering.

"Elster has been collaborating with regulators and other innovative companies, like British Gas, to define the smart grid standards for the UK and Europe, and to deliver flexible solutions that will meet the needs of customers today and in the future," said Frank Hyldmar, executive vice president, Elster Electricity International.

Dean Keeling, managing director of British Gas smart homes said: "Elster has worked closely with us to support the success of our smart metering roll-out and their secure, reliable and interoperable dual fuel, 'dual protocol WAN' solution provides us with further capacity in our supply chain."

Junior Isles

Hit for six?

In 1968, the legendary Sir Garfield Sobers became the first man to hit six sixes in a single over. As probably the greatest all-rounder the cricket world has ever seen, his supremacy and captaincy of the West Indies team in the 1960s laid the foundation for what would be the start of the Windies' dominance on the world cricket stage throughout the 1970s, 80s and mid 90s.

Talk of dominance and sixes – in a game where fair play is expected – cannot help one but think of the current furore surrounding UK energy prices. According to UK regulator Ofgem, net margins for the 'big six' energy companies, which dominate the UK market, have increased significantly over the last year.

A report by Ofgem states that the estimated net margin on supplying a standard tariff, dual fuel customer is £125 for the year from October 2011 – a figure that will go higher still when the last supplier's price rise is implemented this month [November]. The £125 net margin figure for October represents an increase of £110 since Ofgem's June report.

Following heavy criticism over high retail energy prices, which has seen utilities lose public trust, the big six may now themselves be hit for six following the announcement by Scottish and Southern Energy (SSE) that it will sell all of its electricity into the day-ahead wholesale market. The move could herald the biggest change for nearly a decade in the UK's electricity market.

SSE's plan goes further than Ofgem's proposed partial reform, which would force utilities to auction 20 per cent of their electricity by 2013. There is a dispute between Ofgem and the energy industry over whether energy bills respond faster to rising costs than falling costs. Under the current system, Ofgem said there was "some" evidence to the hypothesis that retail energy prices shoot up like rockets but fall like feathers.

Utilities currently sell power to their customers directly from their own power stations. Only a relatively small surplus is traded on the spot market. The day-ahead market handles only about 40 GWh out of a generated daily total of about 1050 GWh. By contrast, markets in Germany and Scandinavia's Nordpool clear between 500 and 750 GWh daily.

SSE's decision will create a huge increase in the amount of electricity that is openly traded. As the country's second-largest electricity generator, last year it generated over 47 500 GWh of electricity, which represents around 15 per cent of UK demand.

> "Even if utilities decide to trade all of their output in the day-ahead market… it still may not alter prices much"

The company said it would auction 25 per cent of its electricity by the end of November and 100 per cent by the end of March next year. Ian Marchant, Chief Executive of SSE said he had hoped to begin auctioning almost immediately but instead would phase it in order to avoid "swamping the exchange".

Whether the move will lower the energy bills of consumers – who have seen household energy prices more than double in the last seven years – is debatable.

Prices are ultimately dictated by the balance between supply and demand, and the need for significant investment in new generation as well as replacement of old generating capacity will be the ultimate driver.

Even if utilities do decide to trade all of their output in the day-ahead market, or a portion as proposed by Ofgem, it still may not alter prices much.

Jayesh Parmar, an energy expert at Baringa Partners, said: "It should improve liquidity in the day-ahead market without removing liquidity in the forward market. While it should improve price transparency, it will not take away [price] volatility."

Centrica, the owner of British Gas, said: "If all power was traded on a day-ahead basis as SSE proposes, that may well increase volatility in electricity prices. If so, this could actually exacerbate the risks for suppliers and could lead to more price volatility for customers."

The UK's move in 2005 to the current arrangement means the market has lost the benchmark wholesale price that the old pool delivered and there are challenges in demonstrating that the market is keeping prices as low as possible for consumers.

Some argue that a shake-up will make it easier for new suppliers to enter the market, which will in turn drive prices down. As the big utilities supply 99 per cent of the energy consumed by households, independent suppliers must currently buy their electricity on a relatively illiquid market – a situation that has kept new entrants out.

On the surface, the move by SSE is a welcome development but it does not magically remove the challenges of new entrants establishing a retail business.

Parmar believes there will be problems in attempting to increase retail competition for a number of reasons. He said: "Incoming entrants, particularly on the retail side, will still suffer from the fact that they don't have a natural hedge within the portfolio. There are a number of big players operating both upstream and downstream but new entrants have no presence in the upstream side. So their challenge will still be the long term procurement of the commodity with which to serve and grow the retail side of the business."

It is too early to say whether the move by SSE will boost the number of new entrants and much will depend on the detail attached to its implementation. First Utility, a small supplier, is sceptical about SSE's plans. Darren Braham, the company's Chief Financial Officer said it "looks purely cosmetic", as long-term contracts, rather than day-ahead liquidity, are needed.

There will still be questions on how SSE's move will impact price transparency and volatility, and how deep the market will be. The answers to these questions will determine whether new players decide to enter the market.

Parmar believes that if other utilities follow SSE's lead, this will make the market more tempting to new entrants. He said: "More power will be available to new entrants and people interested in buying from the day-ahead market."

He noted, however, that this does not remove the risk to a new business establishing itself purely on the basis of supplying customers from the market. Market participation is therefore likely to be limited to just the supply side.

"The generation side remains an issue of scale and new entrants have found it hard to manage the risks of procuring the commodity at the right price for supply to potential customers," explained Parmar.

Co-op Energy said SSE's move was a step in the right direction but added: "More volume is only part of the solution for small suppliers such as Co-op Energy and others looking to gain entry into the market. In order for this to be an effective move, contracts need to be of the right duration, not just one day ahead and of the right shape, to match the profile of domestic consumption."

Whether SSE's move starts the ball rolling remains to be seen. Marchant told the *Financial Times* he expected "one or two of his competitors to follow suit by Christmas". But it is not a given that they will.

If all the big six traded their entire output into the day-ahead market, they could still manage upstream and downstream risk through the forward markets.

However, it still presents them with the challenge of optimisation of their business. Parmar explained: "Fundamentally, one optimisation challenge would potentially be replaced with two or three. There would still be the overall optimisation of the business in terms of matching supply and demand, how to price the commodity, how to manage generation profiles etc. But this would then be separated down into subsidiary optimisations or risk management around each of the generation and the retail side. This process of restructuring the business into these separate components will be complex and not easily implemented."

Energy companies are known for their conservatism and any move to destabilise an established order that seems to be working well for them will likely be viewed with scepticism. In the end it may come down to how much an effect political pressure and bad publicity has on those at the top.

Accusations of a lack of fair play can be effective, and at the moment many argue that the behaviour of the big six is just not cricket.