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US wind industry threatened by tax credit withdrawal

Martha Wyrsch urged an extension of the Production Tax Credit

With the withdrawal of a tax credit, the US wind industry is looking at a dramatic slowdown in 2013. **Junior Isles**

The withdrawal of a tax credit for wind power production at the end of the year could result in massive layoffs and a delay or abandoning of projects.

The move is expected to have major ramifications in states such as Illinois, where 13 892 MW of wind projects are awaiting connection to the grid. Illinois, which benefits from strong midwestern winds, is home to more than 150 companies that support the wind industry. At least 67 of those companies make turbines or components for wind farms.

The wind power credit provides a 2.2 per cent tax credit for the purchasers of wind turbines. Vestas officials have been seeking a multi-year extension of the tax credit as a way to ensure future sales, but Congress has been authorising the credit year to year. It is estimated to cost the treasury about $3.5 billion a year.

It was thought there would be little opposition to continuing the tax credit and the decision by a House and Senate conference committee to leave the tax bill out came as a surprise.

The outcome left a Colorado congressional delegation scrambling for a new strategy – along with a new legislative vehicle to carry the wind power credit on behalf of Vestas American Wind Technology, which has four wind turbine plants in Colorado.

In December Martha Wyrsch, president of Vestas American Wind Technology, Inc., gave testimony to the U.S. Senate Finance Subcommittee on Energy, Natural Resources & Infrastructure to urge an immediate extension of the Production Tax Credit (PTC).

"An extension of the PTC is necessary for the continued employment of the 80 000 people working in the U.S. wind industry," said Wyrsch.

"Wind energy has grown dramatically in the past several years, creating a manufacturing renaissance in the US, and the PTC has been a significant driver in that growth. The jobs at stake, which include 20 000 people in the US wind industry's manufacturing sector and technical jobs throughout rural America, are skilled-labour positions with competitive wages and medical and retirement benefits."

Wyrsch warned that if the PTC is not extended, hundreds wind industry suppliers in the US employing

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Path cleared for offshore wind

The completion of a study examining how offshore wind development would affect the US Mid-Atlantic Coast essentially clears the way for wind farm lease sales off the coasts of Delaware, Maryland, New Jersey and Virginia.

A recent study by the Interior Department concludes that it threatens "no significant environmental and socio-economic impacts" and says lease sales could begin by the end of this year.

"Offshore wind holds incredible potential for our country, and we're moving full-steam ahead to accelerate the siting, leasing and construction of new projects," Interior Secretary Ken Salazar said in a statement.

On top of unveiling the environmental assessment, the department also formally asked wind power companies to specify which tracts they might want to lease.

Unlike Europe, which is experiencing huge growth in offshore wind installations, especially in the UK, the US has made no progress in establishing offshore projects. It expects this to change soon. Cape Wind – a 420 MW project with 130 turbines in Massachusetts' Nantucket Sound – has already received federal approval, and construction could begin this year.

Meanwhile, construction of a smaller project in Rhode Island – Deepwater Wind's 30 MW Block Island project – is planned to begin in 2013 or 2014. Other companies, including Apex Wind Energy and Fisherman's Energy, are also jockeying for space on the Mid-Atlantic Coast.

Salazar announced the results of the study under President Obama's "all-of-the-above" energy strategy, outlined during January's State of the Union address. "When it comes to powering our nation's homes, businesses and economy, we need to take an all-of-the-above approach to safely and responsibly developing our domestic energy resources," Salazar said. Obama's plan involves 10 GW of offshore wind generating capacity by 2020, and 54 GW by 2030.

Bureau of Ocean Energy Management (BOEM) Director Tommy Beaudreau said at the beginning of February: "We are moving toward commercial-scale offshore wind energy leasing in the mid-Atlantic and adding the necessary tools to offer those leases.

"We considered public input and conducted a thorough analysis to ensure future projects are sited in the right places, where the wind energy potential is significant and where environmental effects and conflicts with other uses can be minimised and managed."

Since the new environmental study was broad, he said the BOEM will conduct further site- and project-specific analysis before issuing permits.

Deputy Interior Secretary David Hayes described the Mid-Atlantic as a "sweet spot" for tapping offshore winds and called the latest announcement an early step in building "a world-class offshore wind industry".

This was echoed by the American Wind Energy Association, which called the move "a significant milestone in efforts to launch a vital new American offshore wind industry".

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thousands of people also would be affected. That warning was drafted into a delegation letter that was sent to the House and Senate conferees in January.

There is still a possibility the extension for wind power tax credits could come through as a stand-alone bill or tied to other legislation.

Reacting to the setback, Democratic Sen. Michael Bennet drafted a wind power amendment he wants the Senate to attach to a transportation bill that is currently pending in the House.

Sen. Mark Udall, also a Democrat, drafted a letter to both Democratic and Republican leaders in the Senate, urging them to support a vote on the wind power amendment when the transportation bill arrives.

However, Washington insiders say it is unlikely that anything will

Udall: urging support for wind power amendment

happen before the election in November.

By then, the wind industry says it will be too late to avoid massive layoffs and project delays since wind projects slated for 2013 should be moving down the supply chain now.

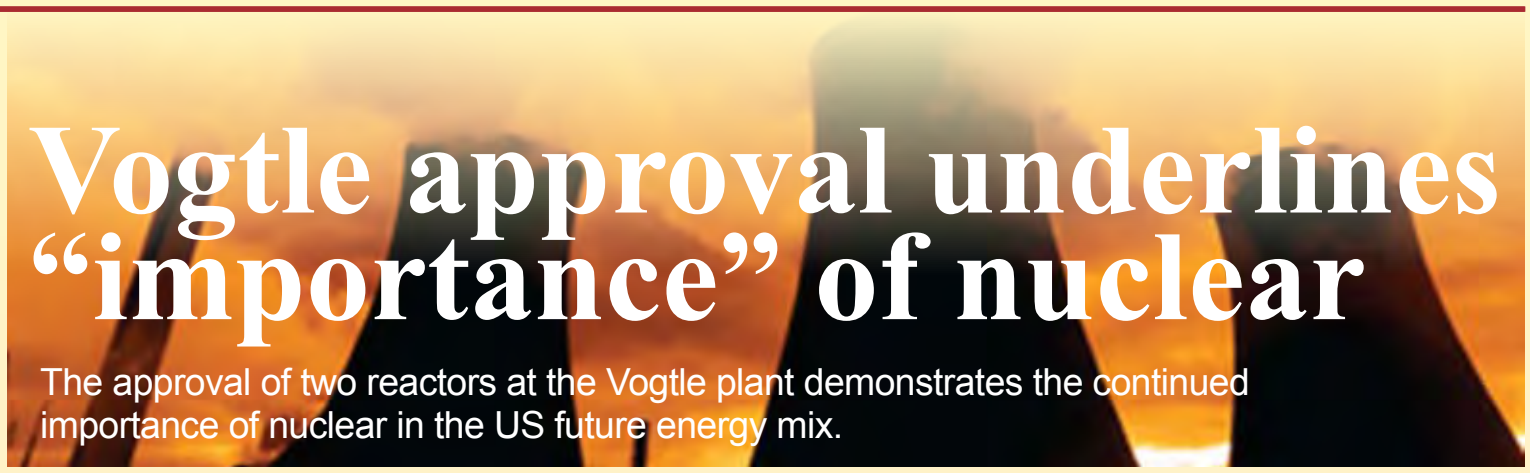
"The development cycle for wind power begins more than a year in advance of operation," Wyrsch said in December. "Many of our customers have already announced they will not place orders for any new turbines until the PTC is extended. The industry needs predictable, long-term tax and energy policies to ensure continued investment."

The tax credit does not expire until the end of this year but in order for developers to receive it, they must have their turbines up and running before the end of the year.

The looming deadline may see 2012 become a bumper year for wind power as developers race to complete projects. However, few projects are slated for 2013. Developers say they either pushed projects back to 2012, or stalled those slated for 2013 because of the uncertainty over the tax credit.

Industry consultants say new capacity is likely to return to lows the country has not seen since 2004. Competition from cheap natural gas and weak demand for power as the economic recovery struggles to recover will contribute to the bleak outlook for 2013.

"We simply have not seen that strong demand for new power generation," said Daniel Shreve, director and partner of MAKE Consulting, a US wind energy consultancy. "In the last four to five years, despite the fact that you haven't seen tremendous load growth, new power generation is being added. Reserve margins have grown. We're oversubscribed."



Vogtle approval underlines "importance" of nuclear

The approval of two reactors at the Vogtle plant demonstrates the continued importance of nuclear in the US future energy mix.

Junior Isles

US Department of Energy Secretary Dr. Steven Chu says that nuclear power will continue to be an important part of the energy mix in the United States and around the world.

Following the approval of two new reactors at Vogtle – the first in the US in 30 years – Chu told workers at Southern Company subsidiary Georgia Power's Plant Vogtle that nuclear power is "an important part" of President Obama's energy blueprint.

Secretary Chu said: "In his State of the Union address, President Obama outlined a blueprint for an American economy that is built to last and develops every available source of American energy. Nuclear power is an important part of that blueprint. The work being done in Georgia and at research organisations like Oak Ridge National Laboratory is helping restore American leadership in the global race for the nuclear energy jobs of tomorrow."

Last month the Nuclear Regulatory Commission issued the Combined Construction and Operating License (COL) for Plant Vogtle units 3 and 4, the first such license for a US nuclear plant.

Commenting on the approval, Georgia Power's CEO W. Paul Bowers said: "Not only will the addition of units 3 and 4 provide our customers with clean, safe, reliable and affordable electricity, but this project is putting people to work. The Vogtle investment is expected to create 25 000 direct and indirect jobs, including 4000 to 5000 jobs on site during peak construction, and 800 permanent jobs once the units are in operation."

Georgia Power expects Unit 3 to begin operating in 2016 and Unit 4 in 2017. Southern Nuclear, a subsidiary of Southern Company, will operate the two new 1100 MW Westinghouse AP1000 units for Georgia Power and co-owners Oglethorpe Power Corporation, the Municipal Electric Authority of Georgia and Dalton Utilities. Georgia Power owns 45.7 per cent of the new units, with a certified cost of $6.1 billion.

US regulators approved plans to build the plant despite objections from the Nuclear Regulatory Commission chairman, who cited safety concerns resulting from Japan's 2011 Fukushima disaster.

NRC Chairman Gregory Jaczko said: "I cannot support issuing this license as if Fukushima never happened. I believe it requires some type of binding commitment that the Fukushima enhancements that are currently projected and currently planned to be made would be made before the operation of the facility."

Nuclear industry officials say they expect five new reactors to enter service by 2020 – Southern's two Vogtle reactors, two at Summer in South Carolina and one at Watts Bar in Tennessee, to be built by the federally owned Tennessee Valley Authority.

At the beginning of February, TVA said the Watts Bar unit was behind schedule and that costs would "significantly exceed" a previous building cost estimate of $2.5 billion. Some organisations are concerned that there will also be cost overruns at Vogtle, claiming that Southern Company is keeping US taxpayers in the dark by covering up details of 12 sizeable construction "change order" requests that are expected to add major delays and cost overruns.

The groups are calling on the DOE to insist on full disclosure of the Vogtle delays and cost overruns before the federal agency moves ahead with a $8.33 billion taxpayer-backed federal loan guarantee that has been offered to Southern and its partners as an incentive. Thomas Fanning, Southern Co.'s chief executive Officer said he expects the DOE to finalise the loan in the second quarter of 2012.

■ The Next Generation Nuclear Plant (NGNP) Industry Alliance LLC in the US has selected Areva's prismatic core, 625 MW thermal, steam cycle modular high temperature gas-cooled reactor (SC-HTGR), AREVA's HTGR Generation IV reactor, as the reactor design concept to provide high temperature process steam for industrial applications and electricity production.

ETS debate escalates

A debate is brewing in Brussels about how to fix the European Emissions Trading Scheme (ETS), Europe's main tool for cutting carbon dioxide emissions.

One side of the debate is calling for the European Commission to step in and prop up prices, while the other is against intervention.

In one of the strongest public statements to date, last month Johannes Teyssen, CEO of German energy group E.On, stunned an audience in Brussels when he proclaimed the market was broken.

"Ladies and gentlemen, let's talk real: the ETS is bust, it's dead," he said. The call from Teyssen to "start fixing the ETS" comes after EU carbon prices tumbled to a four-year low in January because of the economic crisis and concerns that planned new energy efficiency measures will further curb demand for emission permits.

"Does the price give any signal for new investments? No. None," Teyssen said. "I don't know a single person in the world that would invest a dime based on ETS signals."

Teyssen and a coalition of companies that have invested in low carbon technologies such as carbon capture and storage (CCS) have done so under the assumption that carbon prices would exceed €30 per tonne. Currently it is less than €10/tonne.

Teyssen: "start fixing the ETS"

Teyssen and the coalition of companies want the introduction of a minimum price to give investors greater certainty.

"Fix it or abate it," Teyssen said during the conference on the *Energy Roadmap 2050*, a strategy paper by the European Commission to map the way to low-carbon goals in the energy industry.

"Don't continue to deliver Sunday speeches on this great backbone of energy transformation which is not even an efficient means to collect taxes anymore," he said. "If you look at national budgets, what the governments expected in 2013, money is gone. Not even the money collection happens anymore."

However, steelmakers and other heavy industries argue that if the system was created to introduce market incentives, meddling with prices undermines the fundamental reasoning behind it. Some see it as moving the goalposts. Trevor Sikorski, director of carbon markets at Barclays Capital told the *Financial Times*: "Low prices are not indicative of a broken market anymore than high prices." He pointed to the dramatic swing in oil prices over the last decade.

The Commission is considering a plan to set aside millions of permits to help stabilise prices. "To preserve this truly European and cost-effective policy tool, we have to consider, and are considering how to strengthen the ETS," said Connie Hedegaard the EU Climate Commissioner.

The carbon cap-and-trade programme can "co-exist" with rules to boost energy efficiency and the commission is following closely a debate in the European Parliament on the draft energy savings law, she told the conference.

Pakistan and China mull nuclear deal

The Pakistan Atomic Energy Commission (PAEC) says it is in the final stage of negotiations with China for a deal to set up at least six nuclear power plants at different sites to be commissioned by 2023.

Under the proposed deal, four plants would be set up in Karachi, Pakistan's largest city and the capital of Singh province, one would be at Sukkur in the interior of Sindh, and at least one more would be at Chashma in southern Punjab province, the *Associated Press (AP)* reported.

According to *AP* a PAEC official said: "We have firm plans to set up additional nuclear power plants with total capacity of 4345 MW by 2023.

The reports follow an earlier caution by Germany on the risks of nuclear power generation. Dr Tilo Klinner, Consul General of the Federal Republic of Germany, advised Pakistan to avoid pursuing nuclear power generation as it has both security and other environmental threats.

"A lot of risk is involved in electricity generation from nuclear technology. Not only security threat is involved, but the nuclear waste is also a big problem," he said at a meeting with members of the Karachi Chamber of Commerce and Industry (KCCI).

The German consul general was replying to KCCI President Mian Abrar Ahmed's proposal that Germany should support Pakistan towards advancement of civil nuclear use. Dr Klinner admitted that energy is the biggest issue in Pakistan, which caused immense damage to the country's economy.

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Mexico launches renewables initiative

A group of senior figures from Mexico's private sector, civil society and academia have launched a new initiative that aims to boost the uptake of renewable energy in the country.

The Mexican Initiative for Renewable Energy (IMERE) was unveiled in Mexico City last month and includes a number of proposals and goals for both the private sector and government to consider, including the setting of ambitious targets for renewable energy.

It wants easier access to the electric power grid for renewable energy generators and has called for fossil fuel subsidies to be removed, with government spending shifted towards the development of renewables.

Although it believes that the government needs to set favourable policies for renewable energy, it also wants the private sector to take the initiative.

The backers of IMERE say that Mexico's wind energy sector is an obvious choice for investors because of the country's abundant wind resources. They warn that greenhouse gas emissions could rise by 230 per cent by 2050 because of the country's dependence on fossil fuels.

In abundance: wind is the obvious choice for cutting greenhouse gas emissions

China faces import tariffs

The trade dispute between China and the USA heats up as the US government's investigation draws to a conclusion.

Siân Crampsie

Chinese solar panel firms could face tariffs on goods exported to the USA after the US Commerce Department made a preliminary determination in a trade war triggered last year by US solar firm SolarWorld.

The Commerce Department's International Trade Administration (ITA) believes that Chinese firms are receiving illegal subsidies on solar products exported to the USA and says that it has "reasonable basis to believe or suspect" that the allegations made by SolarWorld are valid.

The preliminary determination is the first step in the ITA's judgement process but must be confirmed by the US International Trade Commission before becoming effective. It was welcomed by the Coalition for American Solar Manufacturing, a trade group led by SolarWorld.

"After several years of massive imports of illegally subsidised and dumped Chinese solar products, the US solar manufacturing industry and its workers greatly appreciate the Department of Commerce's finding that importers of Chinese products have mounted a massive surge in product to evade accountability to US and international trade law," said Gordon Brinser, president of SolarWorld Industries America Inc. "We filed these trade cases as a key step to rekindle growth in America's renewable energy manufacturing and jobs.

"SolarWorld and CASM believe that free trade is free of illegal governmental intervention. Robust and legal international competition, not predatory pricing that relies on massive and improper subsidies, will produce the best products and sustainable price declines over the long term."

If the ITA's determination is confirmed, tariffs would be imposed on all imports of solar goods from China, a move that could protect US manufacturers but lead to higher prices.

The Coalition for Affordable Solar Energy (CASE), a group set up to voice opposition to SolarWorld's complaint, says that tariffs on Chinese goods would result in major job losses in the US solar sector as well as a deterioration of US-China relations.

China has already launched its own investigation into the subsidies and supporting policies provided for US renewable energy tech firms exporting to China. It is likely to result in tariffs on US goods if SolarWorld wins its case.

China's investigation covers solar, hydropower and wind energy equipment.

Last month the dispute was thrown into the limelight when Chinese Vice President Xi Jinping visited the US and met with President Barack Obama. A group of 45 CEOs from solar energy companies across the USA urged President Obama to negotiate with China over the trade war and "to discuss the mutual benefits of renewable energy development".

According to a report commissioned by CASE, a 100 per cent tariff on imported solar PV cells and modules from China would result in 50 000 net job losses in the USA over the next three years. Retaliatory tariffs placed on US exports of polysilicon to China would put nearly 11 000 more US jobs at risk, it says.

The ITA is due to reach a final decision on the countervailing and anti-dumping allegations in March. Countervailing and anti-dumping tariffs could be imposed retrospectively to December 2011, says the agency.

EIA forecasts fall in coal generation

- Gas, renewables rise
- 33 GW of coal closure forecast

The share of coal in the US power generation mix is forecast to fall to below 40 per cent over the next 25 years because of increasingly stringent environmental regulations and competition from cheap natural gas.

The US Energy Information Administration (EIA) says that the share of natural gas, renewable energy and nuclear energy in power generation will rise, but that coal's share could fall from nearly 50 per cent to 39 per cent in 2035.

The findings were published in an early release of the EIA's *2012 Annual Energy Outlook* and are in line with current trends in the USA's natural gas industry and the coal-fired power generation sector, where utilities are preparing to close power generation units in order to keep in line with new regulations.

The report shows that US natural gas production will continue to grow over the next 25 years, exceeding consumption early in the next decade. Demand for natural gas in electricity generation will grow from 7.4 trillion cubic feet (tcf) in 2010 to 8.9 tcf in 2035, EIA said.

"A portion of the growth is attributable to the retirement of 33 GW of coal-fired capacity over the projection period," says the report, which also says that renewable energy consumption in the electric power sector is projected to grow from 1.4 quadrillion Btu in 2010 to 3.4 quadrillion Btu in 2035, with biomass accounting for 30 per cent of the growth and wind 44 per cent.

Consumption of solar energy grows the fastest, but starting from a small base it will account for only a small share of the total in 2035, EIA said. The report is a positive sign for the renewable energy sector, which is facing an uncertain outlook in the USA.

A recent analysis of the wind sector by the Global Wind Energy Council (GWEC) shows that countries in Latin America, Africa and Asia are driving market growth, rather than OECD countries.

Partnership drives wind turbine innovation

A new public-private partnership is aiming to help the USA to attain its target of sourcing 20 per cent of its electricity needs from wind energy by 2030.

The US Department of Energy's National Renewable Energy Laboratory (NREL) has created a partnership with wind turbine firm Gamesa to study and test a variety of components and systems for the next generation of wind turbines.

The two organisations say they expect to focus on innovations that will enhance the capabilities and performance of advanced wind systems and believe that such partnerships will help to ensure continued momentum in the US wind energy sector.

Their work will focus on three key areas: developing new wind turbine components and rotors for the US market; researching and testing the performance of new control strategies; and devising models that will help advance the development of offshore wind in US coastal waters, and will help to reduce technical risks.

Using Gamesa's G97 Class IIIA 2.0 MW wind turbine model, NREL and Gamesa researchers will study the behaviour of systems and how new designs, products or equipment can affect performance. This unit is specifically designed for low-wind sites, a segment that is expected to play a key role in onshore wind energy development in the US.

Future generation: Gamesa will study test systems for the next generation of turbines

NTPC ruling throws lifeline to flagging five-year plan

- Court ruling kick-starts equipment orders
- Conventional power targets may be cut

Syed Ali

National Thermal Power Company (NTPC) Ltd. is preparing to place orders for power generation equipment worth as much as INR220 billion ($4.45 billion) after the state-run company won a court order against a lawsuit challenging its tendering process. The ruling is welcome news for the country's faltering plan to add 100 000 MW from conventional generating capacity under the 12th Five-Year Plan.

A Supreme Court ruling in February upheld NTPC's decision to disqualify the local unit of Italian boiler-maker Ansaldo Caldaie S.p.A from bidding for technical reasons. This clears the way for NTPC to place equipment orders for nine power projects totalling 5940 MW of capacity.

NTPC, India's largest power producer by installed base, plans to double its generation capacity to about 66 GW by March 2017. But, it has been facing several hurdles in its growth plans.

Chairman Arup Roy Choudhury told a news conference: "Litigations are also an issue which hurts our expansion plans." Apart from frequent litigations related to power equipment contracts, Choudhury said shortage of fuel is another issue hindering its projects. NTPC's projects with about 16 GW of capacity, most of them upcoming, are stranded due to coal shortages.

Choudhury said he is hopeful that the government's recent move to ask coal miner Coal India Ltd. to sign long-term fuel-supply agreements with some operational and various upcoming power projects, will reduce the uncertainty on fuel. Indian power producers are also facing gas shortages due to a decline in local natural gas output.

In early February, the government said it might lower its power capacity addition target for the 12th Plan (2012-2017) by as much as 25 000 MW, making it even less likely that the country's long-standing electricity shortage will end any time soon.

The target for conventional sources may be cut from 100 000 MW to 75 000 MW due to chronic fuel shortages and resistance to land acquisition.

According to reports citing an unnamed government official, a final target will be fixed following discussions between the ministries of power, coal and the Planning Commission. "The Planning Commission will take a final view after taking everything into consideration," the official was quoted as saying.

Power minister Sushilkumar Shinde confirmed that the earlier capacity addition target was being revisited due to fuel availability issues. "A final number is yet to be fixed," he said.

India, primarily dependent on coal for power generation, is facing its worst coal shortage. Power generators account for 78 per cent of the total domestic coal consumption. Over 55 per cent of the installed generating capacity of 186 654 MW is fuelled by coal and much of the proposed addition of 100 000MW was also expected to be coal-based.

Similarly, gas-based capacity is also being scaled down due to declining production from Reliance Industries Ltd's D6 block in the Krishna-Godavari basin, India's largest gas reservoir.

"We're now looking at around 75 000 MW from conventional sources of energy such as coal, gas, nuclear and hydro. In addition, captive power and other sources would add to a total of around 93 000 MW," said the official.

India has a poor track record in adding power generating capacity. It is set to miss a revised target of 62 374 MW and will only add around 52 000 MW by the end of March. The original target was 78 577 MW. In the five years to 2007, it added 20 950 MW of capacity, against a target of 41 110 MW.

Japan, US eye cooperation post-Fukushima

Japan and the United States are considering establishing a bilateral standing council of high-ranking government officials to promote cooperation in the field of nuclear energy.

Officials from both governments said joint studies on reprocessing technology for spent nuclear fuel and measures to reinforce the safety of nuclear power plants are expected to be among the core issues to be taken up by the council.

The two governments began considering establishing the council based on a letter sent to Japan late last year by US Deputy Secretary of Energy Daniel Poneman, in which he called for a new mechanism for bilateral dialogue on nuclear cooperation in the wake of the nuclear crisis at the Fukushima Daiichi power plant.

A Japanese official said the move was prompted by criticism of Japan's initial handling of the crisis, which saw a US proposal for support at the start of the crisis passed around the Japanese government, with no clarity as to who was in charge.

Last month it was revealed that the Fukushima No. 2 reactor was near meltdown after being hit by the tsunami caused by a massive earthquake on March 11, 2011.

Plant chief Naohiro Masuda, in charge of plant operations since the crisis, told reporters in Japan, "the No. 2 plant almost suffered the same fate as No. 1 [which led to a severe crisis]".

Poneman: new mechanism for bilateral dialogue

The Fukushima prefectural government conducted an on-site inspection at the No. 2 reactor in February and repeated a request to Tokyo Electric Power Co (Tepco) to decommission the facility. Masuda did not elaborate but said: "At the moment, I can only say we'll maintain a state of cold shutdown."

The plant was declared stable in December last year but at the beginning of February it was reported that leaks of radioactive water have become more frequent.

The problem underlines the continuing challenges facing Tepco as it attempts to keep the plant under control.

■ The government recently said it will provide an additional Yen 689.4 billion ($8.5 billion) to Tepco to cover massive compensation payments related to the accident at the power plant. The decision will raise the total amount of financial aid so far provided by the state-backed Nuclear Damage Liability Facilitation Fund to more than Yen1.5 trillion.

Australia 2020 renewable energy target at risk

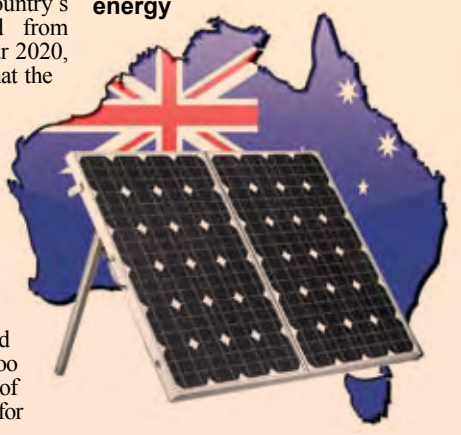
Low wholesale electricity pricing, coupled with the low pricing of Renewable Energy Credits (RECs) places Australia at risk of missing its renewable energy target, according to a new market update from carbon analytics research firm, RepuTex.

Australia's renewable energy target calls for 20 per cent of the country's electricity to be generated from renewable sources by the year 2020, however RepuTex forecasts that the actual figure is likely to be between 16 and 17 per cent.

RepuTex's analysis points to the reality that a number of currently scheduled projects are likely to be delayed as a result of subdued prices within the Australian renewable energy market, with wholesale electricity prices and renewable incentives presently too low to facilitate the level of investment in the sector needed for Australia to meet the 20 per cent target.

RepuTex projects pricing will remain at similarly subdued levels over the short to medium term, even allowing for the introduction of carbon pricing.

Renewables only likely to account for 16-17 per cent energy



Philippines awarding renewables contracts

Philippine Energy Secretary Jose Rene D. Almendras says the government is continuing to award renewable energy (RE) service contracts to deserving project proponents, with the total number of approvals reaching 268 as of January 9 this year.

"We have been coming out with renewable energy contracts. We're pushing for it. Except that, we chose not to make public the list of the proponents for now as they still need to go through various clearances from the local government units and they need to secure other permits like the Environmental Compliance Certificate," Almendras said.

Based on documents from the Department of Energy (DOE), the 268 existing contracts have the potential to generate some 4763 MW. Hydropower projects made up the bulk of the approvals with 133 contracts, followed by wind projects with 52 contracts.

At the end of the first half of last year, some 236 RE contracts had been signed since the DOE started awarding them in 2009.

Since last year, however, the DOE has been cancelling contracts in an effort to weed out those that were not able to comply with their work commitments.

Almendras said the cancellation of non-performing was still ongoing. "There are a lot of service contracts that are not moving. We are sending letters to those that are not complying with their work commitments – they need to explain [the situation] to us. If the excuse is acceptable, we will agree on a new schedule. If not, the contract will be revoked," he warned.

Meanwhile, data from the DOE further showed that the number of pending applications for RE contracts has been halved to 222 from the previous year's count of 406 applications.

Almendras said that the DOE would push through with the development of local renewable energy sources, as this would help reduce the country's heavy dependence on imported energy sources.

Under the government's National Renewable Energy Plan, the DOE plans to increase RE-based power capacity from the current 5369 MW to as much as 15 236 MW by 2030.

PLN to bid for Singapore exports

- Bid will be opened in 2013 for power delivery in 2017
- Auction for Java-Sumatra link to start 3Q 2012

The Batam subsidiary of state electricity company PLN says it has received an invitation to bid for a contract to supply power to Singapore's Energy Market Authority (EMA).

PLN will be competing with a Malaysian power utility that also received an offer to bid on the tender, which will be opened in 2013 for delivery in 2017.

Dadan Koerniadipoera, the president director of PLN subsidiary PT Pelayanan Listrik Batam (PLN Batam), said the company had an excellent chance to win the tender, given its competitive advantage over its potential Malaysian competitor. He said in addition to gas, Indonesia also has coal to produce the electricity. "We are going to export electricity to Singapore. As of now, we only export raw materials to that country," he said.

Dadan added: "We expect support from all relevant stakeholders so that we, as the ones who have all the needed resources, will not be defeated by another country, whose supply of raw materials depends on us. We hope we are going to be able to export electricity to Singapore. We will do our best to win."

PLN Batam technical director Fahmi El Amruzi said that the company would establish a separate power plant to supply electricity to Singapore so there would be no disruptions to the existing plants that served Batam and Bintan, Riau Islands. According to a preliminary feasibility study, it would cost Rp12 trillion ($1.34 billion) to build a 1000 MW plant that would be used for this purpose.

PLN Batam currently can produce 314 MW against a maximum demand of 264 MW, leaving it with a 50 MW reserve. With electricity supply in Batam growing at 12.1 per cent a year, PLN Batam's is currently building a 2x55 MW Tanjung Kasam coal-fired power plant (PLTU), which comes online in June.

Fahmi said: "[The] electricity surplus will be distributed through the power grid to Bintan Island. We will supply electricity to Bintan at a cheaper price compared to Batam. As for Singapore, we will build a separate power plant.

"The Malaysian power plant uses coal that is supplied from Indonesia. Numerically, we are going to be more competitive than that country," he added.

Meanwhile, PLN said it plans to begin an auction on a planned undersea cable project that will connect Sumatra and Java. The auction on the 3000 MW link, which would span 700 km from Bangko Tengah, South Sumatra to Bogor, West Java, will be conducted in the third quarter of this year, PLN Construction Director Nasri Sebayang said.

The project is expected to commence in 2013 and be finished in February 2016. Costing about $2 billion, the project would mostly be financed by a $1.7 billion from Japan International Cooperation Agency (JICA). "The remaining funds would be provided by PLN's internal cash," Nasri said.

Ratchaburi reconsidering Koh Kong

Ratchaburi Electricity Generating Holding, of Thailand, is conducting a feasibility study on whether to invest in an 1800 MW coal-fired power plant in Koh Kong, western Cambodia, after the project was frozen during the conflict between Cambodia and Thailand.

Ratchaburi chief executive officer Noppol Milinthanggoon said it was reviewing the study to construct the plant if the Cambodian government opens it up to investment again, which is likely.

Ratchaburi together with Electricity Generating and Italian Power, a subsidiary of Italian-Thai Development, conducted a feasibility study for a 3660 MW coal-fired power plant in Koh Kong in 2008. The project was frozen mainly because of the border conflict between the two countries.

Ratchaburi's renewed interest in the Koh Kong project comes amid uncertainty over the plan to construct a 4000 MW power plant in Dawei. The Burmese government recently announced that it would halt the project, saying that it wanted to study the environmental impact before it proceeded.

Meanwhile, Ratchaburi is still hopeful that the coal-fired power plant in Burma's Dawei, on which it is jointly conducting a feasibility study with Italian-Thai Development, will not be scrapped.

Ratchaburi has earmarked some Baht8 billion ($263.5 million) for investments this year, of which roughly Baht3 billion will go for new projects and mergers and acquisitions.

Eyes on coal: Ratchaburi is still hopeful that its plans will not be scrapped

Germany accelerates FITs cuts

Concerns over investor confidence in the renewable energy sector deepen as Germany becomes the latest country to alter its subsidy scheme.

Siân Crampsie

Uncertainty surrounding government support for renewable energy in Europe continued last month after the German government announced controversial changes to its pioneering feed-in tariff (FIT) scheme.

Environment Minister Norbert Roettgen has unveiled a scheme to accelerate planned cuts to the level of support given to solar photovoltaic (PV) projects through FITs. The announcement has prompted protests in Germany from the solar industry, which is concerned about the impact of the new policy on businesses and investor confidence.

Germany's announcement follows similar moves made recently by Spain, which has imposed a freeze on renewable energy subsidies, and the UK, which is currently embroiled in a legal battle over its plans to cut solar energy FITs.

Estonia has also announced proposals to make retroactive cuts to its renewable energy support schemes.

The German government has given the solar industry little notice of its plans because it is applying a one-off cut to subsidies this month [March]. Monthly tariff reductions will begin in May, while the maximum size of PV plant that can receive a tariff has been cut.

The changes are necessary in order to curb the 'boom' that the current subsidy scheme has created and to keep subsidies in line with the falling costs of technology, said Roettgen.

Germany has installed 7.5 GW of PV capacity per year over the last two years and the government expects that the new rates will reduce this to 2.5-3 GW in 2012 and 2013.

The initial cut proposed for March would be around 20-30 per cent and would be followed by monthly cuts of €0.15/kWh. Installations over 10 MW in size will no longer be eligible for FITs.

The drastic scale of the cuts has angered the solar industry, which, as *TEITimes* went to press, was hoping for changes to be made to the proposals as they went through parliament. Some political parties are opposed to the plans, while others have called for deeper cuts.

The debate over renewable energy support schemes has also continued in the UK, where the government has lodged an appeal against a court ruling that said that plans to cut FITs for solar PV installations were unlawful.

Like Germany, the UK government believes that the rate of PV system installation is currently unsustainable and should be tempered by reductions to FIT levels. However three organisations – Friends of the Earth, Solarcentury and HomeSun – successfully challenged the government's plans in court at the end of last year.

They believe that the government's plans to cut solar FITs would harm the UK's growing solar industry, and argued that the plans were premature and unplanned and did not give the solar industry enough time to adjust.

There are concerns across Europe that the constant changes being made to renewable energy support mechanisms will cause long-term harm to the industry as a whole, with investors now viewing government policy as a key risk.

Only Iberdrola, the Spanish energy group and one of the world's largest renewable energy companies, has come out in favour of the changes.

Ignacio Galán, chairman of Iberdrola, said in an interview with the *Financial Times* last month that Spain's subsidy freeze was a sensible move that would help to curb the country's €24 billion 'tariff deficit'.

"It makes no sense," Galán told the newspaper. "Spain is installing the most expensive technologies in Europe instead of looking for those which are cheapest," he said.

In the UK, further proposed changes to the Renewables Obligation (RO), the country's main renewable energy support mechanism, have prompted Drax to scrap plans for a new dedicated biomass-fired power plant.

While the company, which is the UK's largest coal fired power generator, says that it will go ahead with a £50 million investment to increase co-firing, it has decided not to go ahead with development of the proposed 290 MW Selby power station because the government is likely to cut RO support for such plants from 2016.

The UK government is currently reviewing levels of RO support for all renewable energy technologies and is due to publish its findings in the coming weeks.

RO support for co-firing biomass is likely to remain the same, but more support would be available for 'enhanced' co-firing, i.e., 15 per cent biomass or more, under government proposals.

Meanwhile, the government has proposed a slight cut in RO support for dedicated biomass power plants from 2016.

■ RWE npower is assessing the damage to its biomass-fired power station in Tilbury, UK, after a fire broke out in a fuel handling area on 27 February. The company reported that no one was hurt in the incident.

France, UK enhance cooperation

France and the UK have asserted their support for a nuclear future by signing an agreement on energy cooperation that will enhance industrial ties between the two countries.

The agreement has highlighted the similarities between the countries, with the UK preparing to embark on a new nuclear build campaign and France examining its options for both new build and life extension in its own nuclear energy sector.

The deal also contains a number of commercial deals involving Areva, EDF, Rolls-Royce and other companies that will help to secure jobs as well as much needed energy sector investment in both countries.

"The agreement between Britain and France to work together on civil nuclear energy secures their stronger commitment towards building safer, secure next generation plants," said Frost & Sullivan analyst Neha Vikash.

"It also paves the way for EDF and other utilities to secure funding, and supply chain agreements for the eight sites across the UK, earmarked for new nuclear capacity. France, already building its European Pressurised Reactor (EPR) at Flammanville, also has another EPR in the pipeline at Penly."

Last month France's Energy 2050 Commission said that the country could not afford to close its nuclear reactors for administrative reasons, and that it should extend the life of its reactors as long as it is safe to do so.

Around 22 of the country's 58 nuclear reactors will hit the 40-year mark within the next decade and the government is examining its options for securing electricity supplies.

Up to 16 GW of new nuclear capacity is planned for the UK.

Included in the cooperation agreement is a deal between Rolls-Royce and Areva to extend their global cooperation. It also calls for Rolls-Royce to supply Areva with £100 million worth of equipment and technical and engineering services for the first EPR reactor in the UK, planned to be built at Hinkley Point by EDF.

Areva also signed a memorandum of understanding with EDF relating to the delivery of the nuclear steam supply system and all central instrumentation and control systems for the Hinkley Point C project.

Japanese start Malaga smart city demo

Mitsubishi Corporation, Mitsubishi Heavy Industries (MHI) and Hitachi Ltd. are to install smart grid technology in the Spanish city of Malaga in a bid to demonstrate the use of electric vehicles (EVs).

The three companies are embarking on a 'smart city' demonstration project that will use advanced energy and IT technologies to investigate how EVs can be integrated into the electric grid. The project is being conducted under the Japan Spain Innovation Programme and is due to run until 2016.

In the project, Mitsubishi Heavy Industries will supply 200 EVs, in-vehicle units and high-speed EV chargers, and Hitachi will provide the demand-side management system, which is coupled with ICT platforms, high-speed EV chargers and the power management system.

Trading house Mitsubishi will create a package integrating business elements and services and study options for global expansion, while verifying the commercial viability of solutions business.

■ New research from Frost & Sullivan indicates that the smart meter market in Europe is set to grow from $318.4 million in 2010 to $1.93 billion in 2017 – a compound annual growth rate (CAGR) of 29.3 per cent. Growth in the market is being driven by legislation and renewable energy uptake. Competition between vendors is likely to increase in the next few years, with companies from China and other parts of Asia entering the market.

Plugging into Malaga: a 'smart city' project will investigate how EVs can be integrated into the grid

UNEP calls for sustainable energy boost in Africa

Replacing traditional fuels with small-scale renewable energy systems is a cost-effective means of improving access to energy in rural Africa, according to a new report.

Siân Crampsie

The United Nations Environment Programme has called on governments in Africa to open up their energy sectors to private sector investment in order to unlock the region's massive renewable energy potential.

In a new report examining the barriers to investing in clean energy in sub-Saharan Africa, UNEP says that the provision of modern energy services through renewable energy development would lift millions of people out of poverty and help the continent to realise its development potential.

The report was released last month in Nairobi, Kenya, to mark the Africa launch of the United Nations Year of Sustainable Energy for All, an initiative that is aiming to boost levels of access to clean, modern and efficient energy sources around the world.

UN Under-Secretary-General and UNEP Executive Director Achim Steiner said that access to sustainable energy should be a priority for governments and policymakers in the run-up to the Rio+20 summit in Brazil later this year.

"Accelerating and scaling-up sustainable energy for all will be key to realising a transition to a low carbon, resource efficient 'inclusive' Green Economy," said Steiner. "Some 1.3 billion people worldwide have no access to electricity – and 45 per cent of those live in Africa.

"Yet the Continent has abundant renewable resources that, with the right kind of public policies in place, can unlock a new development future and light up the lives and the livelihoods of millions of people."

Only between two and five per cent of people in rural sub-Sahara are connected to the electricity grid and currently rely on traditional fuels for household energy needs. Using renewable energy in the form of mini-wind, bio-energy and solar systems would be an effective way of improving energy access, says UNEP.

According to the report, Africa needs to install around 7000 MW of generating capacity per year in order to meet growing energy demand. While much of this could be harnessed by tapping Africa's renewable energy resources, barriers to investment are preventing development.

Major barriers to investment include the relatively high cost of renewable energy compared with traditional forms of energy, structural inadequacies of energy markets in sub-Saharan Africa, and the political, regulatory and commercial risks in many sub-Saharan countries.

But the report shows that a number of countries have significant renewable energy potential – including Cape Verde, Madagascar, Sudan and Chad – while countries such as Kenya and Uganda have already implemented dedicated renewable energy policies. Development in these countries would bring opportunities for both improving energy security and creating regional markets, says UNEP.

UNEP believes that cost barriers could be overcome by the implementation of policy incentives such as feed-in tariffs. Kenya introduced a feed-in tariff scheme in 2008 that has incentivised 1300 MW of new capacity, while Uganda has developed an institutional infrastructure for managing the Clean Development Mechanism.

UNEP is also urging governments to reform their energy sectors to improve access for new energy producers and encourage innovation. The risks associated with investment in sub-Saharan Africa can be reduced by increased use of risk mitigation measures already in place.

Countries in sub-Saharan Africa will also benefit from earlier developments in industrialised countries, says UNEP. "Industrialised countries must accelerate the transition to low emission technologies. Developing countries, many of them growing rapidly and at large scale, have the opportunity to leapfrog conventional energy options and move directly to cleaner energy alternatives that will enhance economic and social development," said Kandeh Yumkella, Director-General of the United Nations Industrial Development Organisation (UNIDO) and Chair of UN Energy.

Jordan selects reactor site

Nuclear ambitions: Jordan has taken a major step forward

The Jordan Atomic Energy Commission (JAEC) has selected a preferred site for the country's first nuclear power plant, marking a major step forward in its nuclear energy programme.

JAEC has selected a site in Mafraq governate, 40 km northeast of the capital, Amman, and has sent its decision to the government for approval. It is hoping to be able to start an environmental impact assessment as soon as the site is finalised, according to local reports.

Residents in Mafraq are reported to have protested against the site selection.

JAEC wants construction of the reactor to start in 2013. It has short-listed reactor designs from three vendors – the Atmea-1 from Areva-MHI, the AECL EC6, and the AES-92 from Atomstroyexport – and is also seeking strategic investors for the 1000 MW project.

JAEC is expected to make a decision on bids early this year and sign an EPC contract in mid-2012.

Slovakia aims to enhance energy security

Slovakia has made energy security a top priority and is planning to improve regional energy integration in order to reduce its reliance on energy imports from Russia, says the IEA.

The Paris-based energy agency has published a review of Slovak energy policies, praising the country for making improvements in energy efficiency but warning of the perils of poor energy security.

Energy security is a top priority says Van der Hoeven

"Energy security is a top priority in the Slovak Republic's energy policy agenda," said IEA Executive Director Maria van der Hoeven. "Enhancing regional co-operation, particularly in the development of gas and electricity interconnections, is an essential step towards meeting the dual policy objectives of enhancing energy security and market competition."

Slovakia has already coupled its electricity market with the Czech Republic and supports the development of a new gas pipeline linking planned LNG terminals in Croatia and Poland. The country currently imports virtually all of its crude oil and gas from Russia and suffered severe supply disruptions in 2009 during a dispute between Russia and Ukraine.

The IEA says that in spite of great improvements in energy efficiency, the Slovak Republic remains a greenhouse gas-intensive economy by OECD standards. "The country must continue to implement policies that ease the transition to a low-carbon economy," Van der Hoeven said, indicating that nuclear power and renewable energy could play crucial roles in the Slovak Republic's efforts to decarbonise its electricity production.

South Korea continues talks in Turkey

South Korea is hoping to play a part in Turkey's nuclear programme

South Korea is still hoping to play a part in Turkey's nuclear development programme.

South Korean Knowledge Economy Minister Hong Suk-woo said in Ankara last month that talks between the two countries on the construction of a nuclear power plant at Sinop could continue this year.

South Korean firm Kepco held talks on the project in 2010 but an agreement with Turkey's EUAS foundered over electricity sales guarantees. Japan then entered talks, but pulled out last year following the Fukushima disaster.

French firms Areva, EDF and GDF Suez have also expressed their interest in building nuclear capacity at Sinop on the Black Sea.

South Korea and Turkey are keen to enhance trade and are likely to sign a free trade agreement this year, according to reports. South Korean firm SK Group last month signed a memorandum of understanding with EUAS to refurbish a four-unit thermal power plant in Afsin-Elbistan, Turkey.

Turkey's first nuclear power plant is to be built by Russian firm Rosatom at Akkuyu near the port of Mersin.

ABB boosts South African solar

The development of a new concentrating solar power (CSP) plant in South Africa will help the country to boost its renewable energy capacity and diversify its energy mix, say its developers.

Independent power producer FG Emvelo and ABB have signed an agreement to build the plant at Karoshoek Solar Valley in Northern Cape province. It will be built on a 340 km^2 site recently acquired by FG Emvelo, a joint venture between Germany's FG.de and Johannesburg-based Emvelo Projects.

The new plant will use linear Fresnel technology supplied by Novatec Solar, a German company in which ABB recently acquired a 35 per cent stake. The technology reduces the need for land and water compared with other CSP technologies.

Karoshoek Solar Valley

Siemens backs tidal technologies

SeaGen array of marine turbines

Siân Crampsie

Siemens says its renewable energy business has taken "an important step forward" with the acquisition of Marine Current Turbines (MCT), a UK-based tidal power systems firm.

The German energy firm already owns 45 per cent of MCT and it has announced plans to buy the remainder of the shares in the company, which is currently demonstrating its technology in Ireland.

The move indicates Siemens' confidence in MCT's products and in the future of tidal power in general.

"We will continue to drive the commercialisation of this promising technology which harvests energy from highly predictable tidal streams," said Ted Scheidegger, CEO of the Solar & Hydro Division of Siemens Energy. "Our target is to secure a leading position in this future business."

MCT's SeaGen tidal generators are based on axial turbines that harvest energy from tidal streams. It has been operating a 1.2 MW commercial-scale demonstration project in Strangford Lough, Northern Ireland, since 2008 and has larger projects in the pipeline.

According to Siemens, the demand for reliable marine current power generation systems will increase as global carbon reduction commitments increase. It is expecting double-digit annual growth rates for the sector up to 2020 and says that the global potential for tidal power generation is around 800 TWh per year.

MCT's Strangford Lough demonstration has so far fed more than 3 GWh of electricity into the grid. It is planning an 8 MW project in Kyle Rhea, Scotland, and a 10 MW project in Algelsey, Wales.

The Angelsey Skerries project is backed by RWE npower renewables. In February MCT launched the project information prospectuses for this and the Kyle Rhea project and praised the UK government's plans to support tidal energy schemes by awarding them 5 ROCs (renewables obligation certificates) per MWh.

- Siemens has opened a new manufacturing plant in Goa, India, producing network automation components. The company will initially manufacture products such as test switches and over-current protection devices for the Indian market, later expanding it to serve the global market.

Vestas results make bleak reading

- Results prompt board shake-up
- Project delays continue

Chairman Bent Erik Carlsen will not seek re-election

Vestas has warned of a continued tough trading environment for wind turbine manufacturers as it reported its first loss since 2005.

The Danish wind turbine manufacturer has suffered in the last 12 months from problems at its production facilities, project postponements as well as the adverse economic conditions. Its annual results were worse than expected, prompting the resignation of its Chief Financial Officer and a further board shake-up.

Vestas reported an operating loss for 2011 of €60 million, down from a profit of €310 million in 2010. Revenues were €5836 million, down from €6920 million in 2010.

It is expecting an improvement in revenues for 2012 and retains a healthy order backlog of 9552 MW, its highest level ever.

Vestas is the world's largest wind turbine maker and had originally forecast full year revenues of €7 billion and an EBIT margin of seven per cent. Trading conditions forced the company to issue two profit warnings over the course of 2011 and margins for 2011 were reported as -0.7 per cent, below the expected 0 per cent.

Last year also saw Vestas announce over 2000 redundancies in an attempt to shave costs. The company says that further redundancies should be expected at its US factories if the production tax credit scheme is not renewed.

Over the course of the year Vestas was forced to postpone deliveries worth around €1.2 billion of business because projects were delayed. It also experienced commissioning problems at a generator factory, the company said.

In spite of strong competition from other wind turbine manufacturers, Vestas retains a 25 per cent share of the global wind turbine market. In 2011 it took firm and unconditional orders of 7397 MW with a value of €7.3 billion.

It expects revenues in 2012 to reach €6500-8000 million but warned that project delays due to factors such as delayed grid connections and bad weather could again affect its business this year.

Chairman of the Board Bent Erik Carlsen and Vice-Chairman Torsten Erik Rasmussen have announced that they will not seek re-election to their posts at Vestas' annual meeting this month.

Shell shifts to shale oil for profits

The sharp downturn in natural gas prices in the USA has caused oil giant Shell to post disappointing fourth quarter results and announce a change in its growth strategy.

Shell said its fourth-quarter earnings on a current cost of supplies (CCS) basis, a measure that strips out the losses or gains from oil and gas inventory, were $6.45 billion, up 13 per cent on the same period the year before. CCS earnings rose 18 per cent to $4.85 billion, slightly lower than analysts' forecasts.

"Our fourth quarter results were impacted by a sharp downturn in industry refining margins and North American natural gas prices," commented Shell's Chief Executive Officer, Peter Voser. "The global economy and energy markets are likely to see continued high volatility."

The company said that it would shift its focus from North American shale gas to more profitable tight oil ventures. The drop in natural gas prices in the region – caused by an oversupply of gas resulting from the shale gas 'boom' – has already caused several companies to cut production.

Shell says it will refocus on liquid-rich shales containing oil rather than gas. The company has already targeted fields in North America as well as Oman, Germany and Argentina for production.

GDF strong in difficult climate

- Revenues rise, profits fall
- International markets underpin results

GDF Suez says it is on track to meet operational targets after posting a rise in revenues in its annual results for 2011.

The France-based utility's annual results for 2011 show that strong performances from its activities in Asia, Latin America and North America as well as from its LNG activities helped it to maintain its financial strength in spite of the economic conditions.

However the company set cautious targets for 2012 due to economic uncertainties, but reaffirmed the operational targets set for the next three to four years. It has also announced plans to reorganise its energy operations in Europe.

Company revenues for 2011 stood at €90.7 billion, up from €84.5 billion the previous year. Core earnings before interest, tax, depreciation and amortisation (EBITDA) rose 9.5 per cent to €16.5 billion last year.

Net profits fell to €4 billion from €4.6 billion in 2010, partly due to mild weather conditions and a tariff freeze in France.

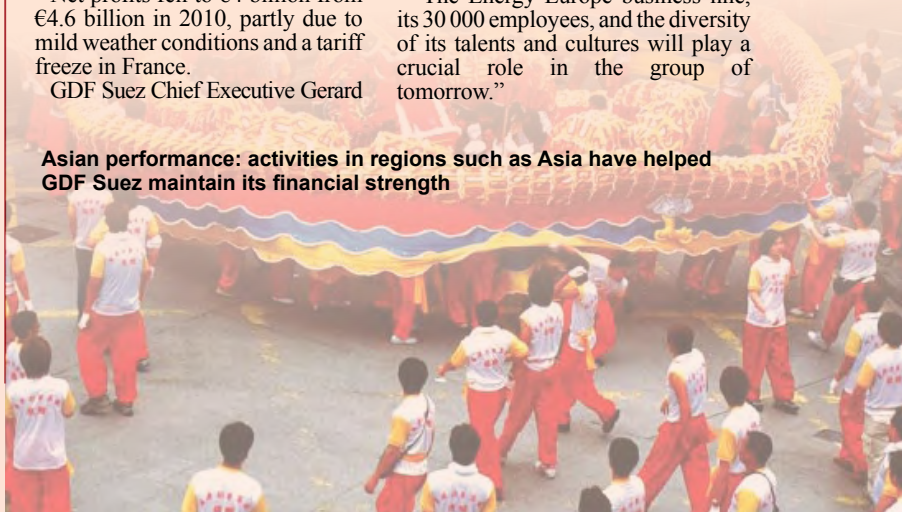
GDF Suez Chief Executive Gerard Mestrallet said he is "confident" the company has the right strategy "to address the coming challenges of the world economy successfully and to deliver sustained growth with focus on profitability in the coming years", according to a statement.

GDF Suez has set targets for increasing its installed power generating capacity to 150 GW by 2016, with 90 GW outside Europe, and to increase its installed renewable energy capacity by 50 per cent above 2009 levels by 2015.

In Europe, GDF Suez is planning to merge its gas supply, power production, energy management and trading, and energy sales and marketing functions into a single group business line in order to adapt to changing market conditions.

"The ambitious international growth of GDF Suez does not exclude expansion in Europe, its home base, which remains at the heart of the group's strategy," said Mestrallet.

"The Energy Europe business line, its 30 000 employees, and the diversity of its talents and cultures will play a crucial role in the group of tomorrow."



Asian performance: activities in regions such as Asia have helped GDF Suez maintain its financial strength

Americas

Hydro One replaces substations

Canadian transmission utility Hydro One Networks has placed an order with ABB for the supply of substation equipment to replace an ageing installation on its Ontario network.

Under the contract, ABB will supply an indoor gas-insulated switchgear substation, an outdoor switchyard with air-insulated switchgear and associated transmission infrastructure.

The new substations will connect the existing Portlands Energy Center generation station and enhance grid reliability in the Toronto area.

ABB's scope of supply includes 115 kV gas-insulated and air-insulated switchgear, surge arresters, transformers, and cables.

As part of the turnkey contract, ABB is responsible for the system studies, design, engineering, supply and installation of the substations, including civil works.

The project is scheduled for completion by 2013.

Toshiba wins US contract

Toshiba Corp says that it has signed a deal with Fluor Enterprises to supply the steam turbine and generator for a new natural gas fired combined cycle power plant in Texas, USA.

The new power plant will replace the Thomas C. Ferguson power plant and is expected to come on line in 2014.

Areva selected for CSP booster

Tuscon Electric Power (TEP) is to partner with Areva Solar on an innovative project to boost the output of a dual fuel power station in Arizona, USA, using concentrated solar power (CSP) technology.

Areva is to install its Compact Linear Fresnel Reflector solar steam generators at the H. Wilson Sundt power plant to boost its capacity by 5 MW. The project is part of TEP's plans to increase its solar power capacity by 200 MW by the end of 2014.

Construction of the Sundt Solar Boost is scheduled to begin in the spring of 2012, and the project is expected to be operational by early 2013.

Asia-Pacific

Gasification demonstration planned for China

Pratt & Whitney Rocketdyne has signed a negotiation framework agreement with two energy industry leaders to design, construct and operate a commercial-scale advanced gasification demonstration plant in China's central eastern Henan Province.

Under the framework, Zhongyuan Da Hua Group Company Ltd. and East China Engineering Science & Technology Company will share development costs for construction and operation of a demonstration plant with Pratt & Whitney Rocketdyne, subject to the terms of a formal agreement currently being negotiated between the parties.

Malaysia selects CCGT bidders

The Malaysian Energy Commission has unveiled a list of 47 prospective bidders for the development of new combined cycle power plants in the country.

The commission said on its website that the names of the prospective bidders were subject to further verification process. The prospective bidders, it said, would soon be invited to submit pre-qualification as sole developer or as a consortium.

The tender is part of efforts in Malaysia to bring new generating capacity on line by 2016 as first-generation power purchase agreements expired. Firms bidding for the contracts include TNB, Tanjong Energy Holdings, YTL Power, Sime Darby Energy, Marubeni, Samsung C&T, Siemens Project Ventures and Mitsubishi Corp.

Alstom, HydroChina team up

Alstom and HydroChina Huadong Engineering Corporation have concluded a contract with Electricity of Vietnam (EVN) to provide hydropower equipment and technical services for the Song Bung 4 power station.

Under the €18 million contract Alstom and HydroChina will provide two 78 MW mixed flow hydro turbine generator units and associated electromechanical equipment. The contract also covers equipment design, production, installation and debugging.

Europe

Lunds Energi selects FW boiler

Swedish energy supplier Lunds Energi has awarded a contract for the design, supply and erection of a biomass-fired boiler island of a new combined heat and power (CHP) plant to Foster Wheeler.

Foster Wheeler will design and supply the steam generator and auxiliary equipment, and will carry out the erection and commissioning of the boiler island. The steam generator will be designed to burn 100 per cent bio fuel with up to 50 per cent demolition wood.

Lunds Energi is building the CHP plant to replace existing old equipment operating on fossil fuels.

Energinet.dk awards Little Bell contract

Energinet.dk has selected ABB to supply a high voltage submarine and underground cable for the Little Bell Strait in Denmark.

The cable project is part of a government initiative to replace high voltage overhead lines in environmentally sensitive areas with underground and submarine cables. When completed in 2013, this cable system will be the most powerful three-core alternating current submarine power cable in the world.

ABB will supply single-core 420 kV underground cables with a total length of 30 km and two, three-core 420 kV submarine cables with a total length of 15 km.

The three-core 420 kV submarine cable will be laid instead of three separate single-core cables to reduce costs and reduce the cable's footprint so that it has a lower impact on the seabed. ABB will manufacture the submarine cable in a single continuous length, without factory joints.

Nordex turbines for Barbers

German wind turbine manufacturer Nordex is to build a 30 MW wind farm in Catalonia, Spain, using 12 of its N90/2500 wind turbine units.

The contract is based on a framework agreement signed by Nordex and Eolia Ronovables, the developer of the project. Eolia's co-investor is Elecnor Group. Nordex will install the first turbines in April and the wind farm will be operational by the summer of 2012.

MW power wins Tampere contract

Metso-Wärtsilä joint venture MW Power is to supply a pellet-fired heating plant to Tampereen Energiantuotanto Oy in the city of Tampere, Finland.

The delivery will comprise a full-scope turnkey boiler plant solution, including all the necessary equipment and commissioning. The plant will be Finland's largest pellet-fired plant, based on a technological solution that is the first of its kind in Finland.

The heating plant will be used as a peak load and backup plant and will replace some of the capacity of existing oil- and gas-fuelled power plants. The plant will be fired with wood pellets and its heat input will be around 33 MW.

Offshore substation awarded to Alstom JV

A joint venture between Alstom Grid and SIAG Nordseewerke GmbH has been awarded a turnkey contract by Nordsee Offshore MEG 1 to deliver an offshore substation in the German North Sea.

Nordsee Offshore is a subsidiary of Windreich AG and is building the 400 MW MEG1 offshore wind farm. Alstom Grid and SIAG Nordseewerke will supply and install a 33/155 kV floating offshore substation that connects the wind farm to the German high voltage network.

The wind farm is scheduled to start operating by the end of 2014.

International

Solaer to build Israel plant

Spain's Solaer has announced that the authorities in Israel have approved its plans to build a grid-connected 35 MW solar power plant in the municipality of Ramat Hovav.

Solaer subsidiary Sol Proyecto is to lease 48.5 ha of land, on which will be built the largest solar power array in Israel.

Ormat wins Kenya tender

Ormat International is to build a well-head geothermal power plant in Kenya after winning an international tender for the 6 MW project.

The company has been awarded a contract for the design, manufacturing, procurement, construction and commissioning of the project by Geothermal Development Company (GDC), a firm set up by the Kenyan government to accelerate the development of geothermal resources. It will develop the project on a build-own-transfer basis in the Menengai geothermal field.

FCVS contract for Cern GE secures Turkey contract

Akenerji has awarded GE Energy a contract to supply equipment and services to a major new combined cycle plant under development in Turkey.

The Turkish firm is building the 900 MW Egemer Elektrik Uretim A.S.-Erzin gas-fired power plant, which will generate around 2.6 per cent of Turkey's electricity needs when it starts up in late 2014. GE will supply two Frame 9FB gas turbines and three generators.

GE has also secured a 12-year service agreement that covers the equipment for planned and unplanned maintenance services.

Siemens to supply Saudi project

Siemens is to supply key components for the Qurayyah combined cycle power plant in Saudi Arabia after it was awarded a more than $1 billion contract by Samsung E&T.

The 4000 MW plant will be one of the largest power plants of its kind in the world and will supply enough energy to meet around one-tenth of Saudi Arabia's current electricity demand. Siemens' scope of supply encompasses a total of 12 SGT6-5000F gas turbines, 18 generators of the SGEN6-1000A series and six SST6-4000 steam turbines together with associated electrical systems.

Commissioning of the plant's six blocks is scheduled for 2014. Siemens will also provide the long term maintenance for the major equipment in the Qurayyah plant.

Alstom to reinforce Tajikistan network

Alstom Grid has been awarded a contract worth more than €30 million with the Tajikistan National Utility Barki Tajik, to design and deliver a 500 kV switchyard reconstruction project to the Nurek hydroelectric power plant.

The project will be the first in Central Asia to use 500 kV gas insulated switchgear technology and will improve the reliability of electricity supplies in Tajikistan.

Alstom Grid will replace an existing 500 kV air insulated substation that is at risk because of geological conditions. It will build a 500 kV GIS on a more stable site.

The 3 GW Nurek plant is the largest hydropower plant in Central Asia and produces over 75 per cent of Tajikistan's electricity.

Ming Yang ships wind turbines

China Ming Yang Wind Power Group has shipped the first batch of wind turbine generators for a 125 MW project in Bulgaria.

The Chinese firm is supplying its MY1.5MW units to the project, which is being developed in Somovit by W. Power, a wind power project developer specialising in Eastern European markets.

Ming Yang signed an engineering, procurement and construction (EPC) contract with W. Power for the project in December 2011. It will initially build a 4.5 MW pilot phase by July 2012, followed by a 120 MW phase that will start construction in the second half of 2012.

Siemens secures Africa wind turbine order

Siemens Energy has secured its first order for wind turbines in Africa.

The German technology firm has signed a contract with Nareva Holding for the delivery of 44 wind turbines for the Haouma and Foum El Oued wind power plants in Morocco. The scope of supply includes the delivery, installation and commissioning of the wind turbines, as well as a five-year service contract for each project.

Both wind power plants are expected to commence commercial operation by summer 2013.

Jordan selects international consortium

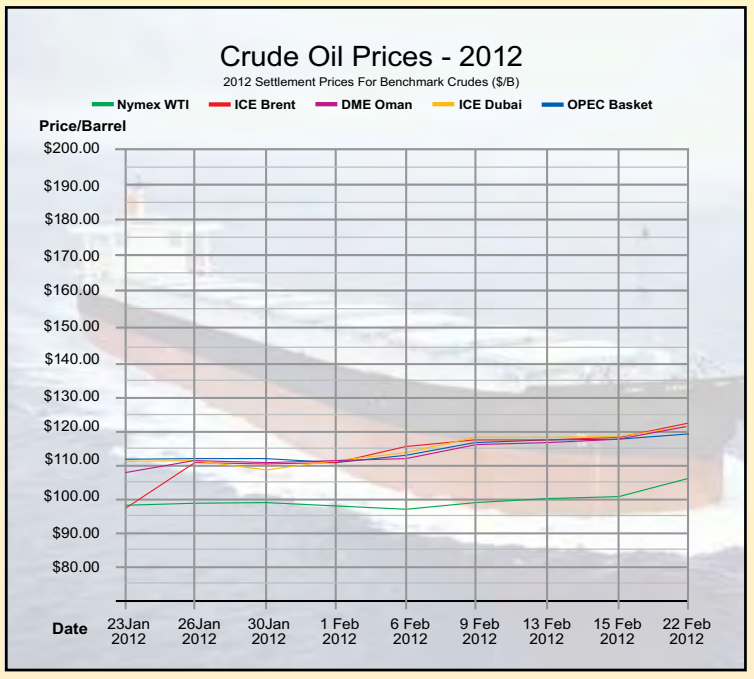
A consortium consisting of Korea Electric Power Corporation, Mitsubishi Corporation and Wärtsilä Corporation has been selected by National Electric Power Company of Jordan (NEPCO) to build and operate IPP3, an independent power project in Jordan.

The bid consortium intends to sign a turnkey contract for the project with a separate EPC consortium, led by Wärtsilä. The total output of the power plant will be approximately 600 MW.

Oil

Iran debacle increases crude prices

- High crude prices acting as brake on economic growth
- Opec facing production uncertainties in 2012



David Gregory

Crude oil prices, which rose to $125/b in the last week of February, could threaten the global economic recovery, just when it appears that the economy is improving in the US and while Europe has yet to get a firm grip on its sovereign debt problems.

While the crisis in the eurozone is having its own impact on the oil market, fears that the debacle with Iran will lead to oil supply disruption and higher crude prices are creating new problems for Greece, Italy, Spain and much of the rest of the world.

As the international community attempts to isolate Iran with an embargo on purchases of its crude oil due to go into effect this summer, Iran has threatened to close the Strait of Hormuz.

The *Financial Times* on February 24 reported Didier Houssein of the International Energy Agency (IEA) as saying that high crude oil prices were already acting as a brake on economic growth. It also quoted economist James Hamilton from the University of California as saying that "all but one of the 11 post-war recessions [in the US] were associated with an increase in the price of oil, the single exception being the recession of 1960."

Writing in *Weekly Oil Data Review* published by Barclays Capital on 23 February, senior analyst Paul Horsnell said of the oil market and the situation with Iran that "there is a relatively high and growing probability to a scenario in which there is no resolution in 2012, in which oil prices grind higher along with gradual escalation in tension, including proxy and covert wars. Under such circumstances, the optimal use of strategic reserves would be a difficult art."

Continuing rising prices has prompted the question of whether the US and Europe would opt to release stocks from their strategic reserves, but as yet that does not look like a possibility. As the release of stocks last year during the Libyan civil war failed to have a lasting impact on reducing prices, it is doubtful that strategic stocks would be released without a genuine disruption in supply.

Besides the threat of disruption of supply from the Persian Gulf and the planned embargo against Iranian crude, politics in the Arab world has led already to the disappearance of some oil from the international market.

The growing unrest in Syria and Yemen have led to cuts in exports from those countries, and South Sudan's decision to halt oil production because of its dispute with Sudan over tariffs has removed in total more than 500 000 b/d from the market. All are non-Opec producers.

Meanwhile, Opec leader Saudi Arabia is reported to have increased its production to 9 million b/d in order to offset the latest shortfall in supply, but according to the new monthly oil report by the IEA, growth in crude oil demand has fallen by 300 000 b/d from its last projection in February.

The IEA said "the economic growth rate that underpins the global oil demand outlook has been reduced to 3.3 per cent from 4.0 per cent previously." Demand for crude in 2012 is expected to average 89.9 million b/d, a rise of only 800 000 b/d over 2011.

The London-based Centre for Global Energy Studies (GCES) said in its February report that non-Opec supply may not amount to projected volumes this year. It said growth in crude output from several producers in the Western Hemisphere may possibly be offset by political disruptions to supply in Africa and the Middle East – such as Syria, Yemen and South Sudan – and the North Sea.

It added that Opec is facing some production uncertainties during 2012. It noted that Libyan output is returning to the market quickly and that new export capacity may be expected from Iraq, Nigeria and Angola. But it added that Iran's output remains in question.

The GCES said those producers with extra production capacity "may need to show an unusual degree of flexibility in matching their exports to changes in the world's need for their oil if we are to avoid raised price volatility this year."

In short, those crude oil producers are going to have to produce all out if the world is to avoid prices in a range that could threaten the global economy and send it again into crisis.

Gas

Algeria to boost gas production with Repsol deal

Algeria is looking to give its hydrocarbon sector a boost, beginning with state approval allowing Spain's Repsol to proceed with the development of the North Reggane project.

Mark Goetz

Approval of the North Reggane project signals a re-start to some degree of expansion plans made by Algeria before a corruption scandal involving state-owned oil and gas company Sonatrach erupted in 2010. It also comes at a time when the country's own energy demand is expanding.

On February 14, Spain's Repsol announced that Algeria's state hydrocarbon agency ALNAFT had granted authorisation for the development of the North Reggane project, which has been delayed by several years and was originally due to start up in 2014.

The project involves the development of six gas fields located 1500 km from Algiers in southwestern Algeria: the Reggane, Azrafil Southeast, Kahlouche, South Kahlouche, Tioliline and Sali fields, all of which lie in Blocks 351c and 352c.

Production from the North Reggane project is scheduled to begin in mid-2016. Some 104 wells are to be drilled and natural gas production is designed to reach a stable output of 2.9 billion cubic metres per year (bcm/y), during the first 12 years of operation. Production is to run for 25 years. The project is estimated to require an investment of €2.225 billion (about $3 billion). Shareholders in North Reggane include Sonatrach (40 per cent), Repsol (29.25 per cent), Germany's RWE Dea AG (19.5 per cent) and Italy's Edison (11.25 per cent).

The development plan for North Reggane was approved in November 2011. Repsol said that basic front-end engineering and design (FEED), topographic and geotechnical studies as well as 3D seismic surveying will get under way in the coming months.

Repsol said in a statement that the project would develop wells, surface facilities and infrastructure, including a gas treatment plant, a gas accumulation system and a new gas pipeline that would carry production to processing facilities in northern Algeria. The pipeline is to connect with that used by BP at the 9 bcm/y In Saleh field and the key gas hub at Hassi R'Mel in central Algeria.

Repsol said its investments in Algeria had exceeded €400 million between 2005-08 and that between 2008-12 it had invested some €450 million in the North Reggane project. The company is also involved in Algeria's Issaouane and Tin Fouye Tabankort projects. Algeria accounts for 1.9 per cent of Repsol's total reserves and 2.4 per cent of its production. Repsol also holds 60 per cent in the delayed Gassi Touil project, which is being developed to supply gas to the Arzew LNG plant.

The decision to move ahead with North Reggane will likely bring development of the Touat field, where Gaz de France is to produce 4.5 bcm/y and the Timimoun field, which will be operated by Total and target production at 1.6 bcm/y. Production from the three projects will comprise Sonatrach's Southwest Gas Project with a target production of 9 bcm/y.

Algeria supplies Europe with about 20 per cent of its gas supplies through pipelines that run across the Mediterranean to Sicily and Italy and to Spain. Algerian LNG is also delivered to Europe. Spain relies on Algeria for about 38 per cent of the 36 bcm of natural gas supplies that it requires annually, practically all of which is imported.

Several years ago, Sonatrach had been looking to increase its gas production substantially but that scenario has not played out and it now looks to maintain gas exports at around 60 bcm/y. However, actual exports are reported to have fallen from 65 bcm/y in 2005 to around 50 bcm/y in recent years.

Commercial gas production was calculated at 88 bcm in 2005, according the *BP Statistical Review*, but registered 80 bcm for 2011. Domestic demand has surged in recent years, eating into production earmarked for export. Domestic demand for gas went from 23 bcm/y in 2005 to 30 bcm/y last year.

The new gas production projects in the south, the proposed Galsi pipeline to Italy and new LNG trains at Skikda (4 million tons/year) and Arzew (4.5 million tons/year), which are due to come into operation in 2013 and 2014 respectively, will raise Algeria's export capacity and maintain the country's role as a major global gas supplier.

Revenues from high market prices for crude oil and gas are providing state-run Sonatrach with funds that will enable it to boost investment in the country's hydrocarbon sector. Spending is slated to rise to $15.8 billion during 2012, compared to $12 billion in 2011. Of the $15.8 billion, $11.1 billion will go towards the upstream sector. The investment is seen as an effort to shake off the stagnation that has hampered the country for the last two years.

Sonatrach has budgeted some $68.2 billion for energy development and maintenance during 2012-16.

Energy Efficiency: demanding a response

Although the Energy Efficiency Directive has been fiercely contested, some realise its positive potential. Those promoting demand side management have seized the opportunity to bring forward key issues related to enabling demand response programmes and realising the potential of the smart grid.
Ali Haider

Of all of the EU's 20-20-20 targets – that is a 20 per cent share of renewable energy in the European energy mix, a 20 per cent reduction in greenhouse gas emissions and a 20 per cent increase in energy efficiency through a drop in consumption by the year 2020 – the energy efficiency target is proving to be the most elusive.

In absolute terms, calculated in million tons of oil equivalent (Mtoe), the aim is to reduce consumption by 368 Mtoe in 2020 compared to projected consumption in that year of 1842 Mtoe. This needs to be achieved by the EU as a whole. At the moment, with all the measures on the EU and national levels in place so far, the Commission calculates that we would only reach 1678 Mtoe, or 9 per cent of savings.

Wanting to encourage progress, the Commission unveiled its Energy Efficiency Plan in March 2011, which it then used as the basis for the Energy Efficiency Directive unveiled last June. Unlike the renewables and CO_2 emissions targets, the energy efficiency target was not legally binding. The Directive attempts to remedy this by setting out a number of legally binding measures to save energy.

Most notably, this includes an obligation for energy distributors or retail energy sales companies to save 1.5 per cent of their annual energy sales, by volume, by implementing energy efficiency measures such as improving the efficiency of heating systems, installing double-glazed windows or insulating roofs, among final energy customers. This, along with some of the other measures on the table, has made the Directive fiercely contested.

The intense interest in the Directive has resulted in the tabling of 1800 amendments on the European Parliament's draft report on the Directive. The legislative process is being delayed by the need to reach a compromise within the European Parliament as well as in the Council of the European Union where Member States are likely to make attempts at further dilution.

However, one section of the energy community has realised the positive potential of the Directive. Those promoting demand side management have seized the opportunity to bring forward key issues relating to the enabling of demand response programmes and raise awareness of the technical and regulatory obstacles that need to be addressed in order to fully realise the potential of the future smart grid.

Bi-directionality and the active involvement of consumers is a central objective of a smart grid. Without fully functioning demand response programmes, smart grids will not fulfil their purpose of delivering energy savings, reducing GHG emissions and balancing intermittent renewable energy.

Needless to say, demand side management is an essential part of energy efficiency. For this reason the Directive attempts to address the issue of empowering consumers through enhanced requirements for metering, customer feedback and billing.

Article 2's energy efficiency related definitions do not include a definition of demand response. Furthermore, the Directive does not mention the ability of a building to interact with the energy network in efficient cooperation as an element of energy efficiency. The definitions are written assuming that buildings and end consumers will not interact with generation to balance a grid that will, as a result of the integration of renewables, fluctuate much more vigorously than today. This is insufficient from a smart grids perspective.

More positive is Article 8 on metering and informative billing. The Article states that 'Member States shall require that if final customers request it, information on their energy billing and historical consumption is made available to an energy service provider designated by the final customer'. It also sets up requirements for daily feedback which should be available either through a display or on a website. Accurate billing and the ability to see price changes for dynamic pricing programmes is also a requirement.

These are essential elements for enabling smart grid related demand response programmes which are, at present, technically difficult or even impossible due to the prevailing regulatory and market structures. Article 8 also states that the meter should be able to measure electricity generated through micro-generation and sold into the system.

Meanwhile, Article 12 addresses transmission and distribution. Crucially, the Article aims to remove disincentives for network operators to increase efficiency by 'ensuring the removal of those incentives in transmission and distribution tariffs that unnecessarily increase the volume of distributed or transmitted energy'.

It also states that national regulation 'shall in particular ensure that network tariffs and regulations provide incentives for grid operators to offer system services to network users permitting them to implement energy efficiency improvement measures in the context of the continuing deployment of smart grids'. This is already a big step forward towards establishing the types of dynamic pricing tariffs required for demand response programmes to work.

Above all else, it is commendable that the Commission has realised the insufficiency of previous legislation on smart meters. Existing EU legislation on the internal market for electricity and gas already foresees a roll-out of smart meters (e.g. at least 80 per cent of smart meters for electricity deployed by 2020, subject to a positive cost-benefit analysis by Member States).

Yet neither the directive on energy end-use efficiency and end services nor the electricity and gas directives in the Third Energy Package define a smart meter or smart metering when imposing obligations on the Member States to deploy this technology.

By the Commission's own admission there are shortcomings in the current technical specifications of smart meters, and developments on individual metering and billing have so far not been always helping end-users to save energy. For example, new electronic meters for electricity/gas are often provided without proper interface (e.g. in-home display or via some other type of electronic device such as smart phones, tablets, etc). Also, billing is still often based just on forecasts and not actual consumption.

Haider: encouraged to see many in the European Parliament and Council supporting demand response in the context of the Directive

Aware of these shortcomings, the Smart Energy Demand Coalition (SEDC) – an industry group representing the requirements of demand response programmes in order to further the development of the smart grid and ensure improved end-consumer benefits – has put forward five policy recommendations that should empower consumers to better control their consumption and increase efficiency.

> "… there are shortcomings in the current technical specifications of smart meters, and developments on individual metering and billing have so far not been always helping end-users to save energy"

Firstly, minimum feedback requirements should be spelled out for informative billing. This should include next-day online access to smart meter data collected the previous day and be provided in a standard format on the utility's website. Real-time access to smart meter data could also be made available subject to a positive cost-benefit analysis.

Second, smart meters' surrounding communication infrastructure should be capable of supporting a variety of demand side programmes by handling direct and multi-channel feedback, dynamic pricing, and building automation.

This links into the third recommendation concerning the functional requirements necessary for demand response to take place. This means allowing third party access to meter data – with the authorisation of the customer – in cooperation with utilities. This can be done via the utility's back-office or through a secondary communication interface such as a gateway or a Home-Area Network (HAN).

Fourth, Member States should encourage electricity retailers to use multi-channel, direct feedback to maximise consumer engagement and support transparent and dynamic pricing tariffs. Finally, consumers should be offered a range of dynamic pricing tariffs such as critical peak pricing and peak time rebates, that communicate swings in wholesale prices. This would enable consumers to save money by shifting consumption to cheaper, off-peak times.

The devil is, as always, in the detail, and the Energy Efficiency Directive is no exception to this rule. The SEDC is very pleased to see the Commission supporting the measures proposed by the SEDC and their push to achieve energy savings through the further empowerment of consumers. It is equally encouraging to see many in the European Parliament and Council supporting demand response in the context of the Directive.

Ali Haider is Analyst at VaasaETT Global Energy Think Tank and Policy Advisor at the SEDC)

India: in pursuit of renewables

India's decision to set up a ministry devoted to the growth and development of renewable energy demonstrates it is serious about targets for the sector. **Junior Isles** asks Minister Of New and Renewable Energy, Dr Farooq Abdullah, whether its targets are realistic and how they will be achieved.

Faced with the challenge of meeting increasing energy needs while minimising damage to the environment, renewable energy and clean technologies are important to emerging markets such as India.

"We in India look at renewable energy and clean technologies as vehicles of sustainable development. We are now at the verge of a second transition as far as renewables are concerned. We have passed through the phase of research, development and small scale deployments and now have an installed base of over 22 000 MW renewable based capacity, which is around 11 per cent of India's total power generation capacity," said Dr Farooq Abdullah, Minister Of New and Renewable Energy.

Indeed the country's progress in renewables is impressive. India has added over 11 GW of capacity in the last five years and plans to add another 30 GW in the next five years. Its renewable generation capacity represents over 5 per cent of the electricity mix – an almost 400 per cent increase in the past five years alone, elevating it to among the top five countries in the world in terms of renewable energy capacity.

To promote further growth, India has taken the unusual step of establishing a separate ministry devoted to the growth and development of renewable energy. The most recent initiative – the Jawaharlal Nehru National Solar Mission (JNNSM) – envisages a capacity addition of 20 000 MW of grid solar power by 2022. A similarly ambitious undertaking called the National Bio-Energy Mission, aims to tap the over 15 GW bio-energy potential in the country.

However, it is debatable as to whether these goals are achievable, and many believe the expectation that renewable energy can meet the growing energy needs in the next 10-15 years is unrealistic.

In its first phase, the JNNSM aims to establish 1300 MW of capacity by 2013. The plan is that 1000 MW will be grid connected and 300 MW will be as distributed generation in villages. Phase II, from 2013 to 2017, has a target of 4000 MW. The remaining 14 700 MW will be added in Phase III (2017 to 2022). On average this equates to 2 GW per year for the next 10 years – an unprecedented sum – with almost 3000 MW a year in the last five years.

Yet Dr Abdullah remains confident. "We will learn as we go and by then technology will improve. By the last phase, much faster progress will be made."

India got its solar industry moving by waiving import duties and giving 10-year tax concessions to developers. Land was provided by the states at discounted prices and grid connections were improved.

In mid-January Dr Abdullah said 186 MW of grid-connected solar power projects had been commissioned during the first year of the programme and another 300 MW was likely to be commissioned by March 2012.

Nevertheless, there is still a tough road ahead. One of the major challenges will be availability of capital – an issue that Dr Abdullah admits is " a hard battle". However, he believes it will get easier as banks see the progress that is being made.

Domestic production of solar panels, which are now being utilised domestically instead of being exported, has seen the cost of solar energy fall from 33 cents/kWh to about 8 p/kWh (13 cents/kWh) over the last two years, according to Dr Abdullah, who also says prices will fall still further. This, he says, is giving the banks greater confidence. "In the beginning banks did not know whether this [decrease] was sustainable and were not coming forward with financing. Luckily they are now realising this is possible. Power tariffs are now at a level to enable banks to make a return on loans and it is also compulsory for states to buy this energy."

> " There is continuous need to innovate to increase efficiencies and bring down costs. The challenge before us in the renewable energy sector, generally and in India particularly, is to reduce the per-unit cost of renewable energy"

Dr Abdullah said India has succeeded in cutting solar power costs by allotting projects through a tight international auction process. For example, in the latest auction, the lowest bid came from French company Solairedirect SA at 7.490 p/kWh. "That's about 38 per cent below the average price in the December auction (Batch-I) and about 30 per cent cheaper than the global average for similar projects," he noted.

Solar farms are going into diverse locations. In Gujarat, solar panels are being installed over canals to prevent water evaporation, thus conserving water while producing energy for the surrounding villages. Elsewhere, solar energy centres or "clusters" are being set up in the villages of Rajasthan. Dr Abdullah explained: "Industries will be established around these clusters. As well as providing power locally, they will also create jobs in the villages rather than pulling them into the towns."

The Ministry believes that its "extremely renewable friendly and supportive" policies will promote further growth in solar and other renewables.

It has introduced solar specific Renewable Purchase Obligations and tradable Renewable Energy Certificates but does not rule out the possibility of feed-in tariffs in the future. "The Certificates were important to us because we felt that this way we were actually assuring the banks that everything is fine. But certainly there could be a move to feed-in tariffs at some point," said Dr Abdullah.

Its policy framework Generation Based Incentives for wind power projects, meanwhile, has seen wind capacity reach 17 000 MW and with the larger megawatt machines now on the market, the country plans to add 3000 MW every year. Dr Abdullah said: "We made a new wind atlas with Denmark which shows there are many more sites than we had before. Conservative estimates put potential capacity at 48 000 MW – there could be three or four times this amount.

"The next phase of our wind programme will also see turbines installed out at sea," he added.

Dr Abdullah is confident that renewable energy is "an idea whose time has come" noting that there is an unmistakable shift from the use of conventional energy to renewable sources of energy.

"While 10 years may be an ambitious timeframe to aim for a total transformation, the role of renewables will continue to increase, not only in India but in the entire world. Whether or not renewable energy completely replaces fossil fuel, we must all work together to develop renewable energy to its fullest potential."

He pointed out that renewable energy has already created its space in grid connected power generation. He said wind and small hydro are commercially viable options and that solar is moving towards grid parity.

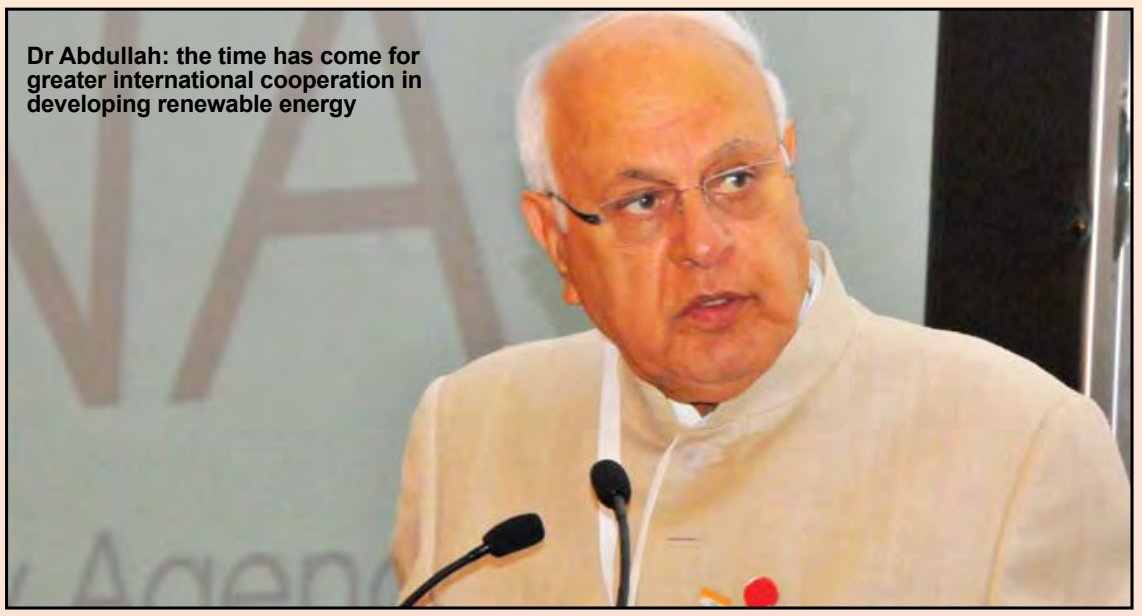
"However," he said, "what is most amazing is the capacity of decentralised renewable applications to usher in energy access for all including the most disadvantaged and the remotest of our habitations. In its decentralised or standalone version, renewable energy is the most appropriate, scalable and optimal solution for providing power to thousands of remote and hilly villages and hamlets. By providing energy access to the most disadvantaged and remote communities, it becomes one the biggest drivers of inclusive growth."

Dr Abdullah stressed that the time has come for greater international cooperation in developing renewable energy and for rich countries to invest part of their capital in renewable projects in countries such as India. "India, Norway and Britain joined together to set up a £100 000 fund to develop renewable energy. These are the types of things we need to see more of. Rich Arab countries, who receive so much revenue from gas and oil, can invest some of this money in projects that will benefit them financially and benefit humanity."

Dr Abdullah says governments have a crucial role to play in overcoming the challenges facing the growth of renewable energy – many of which are not unique to India.

"There is a continuous need to innovate to increase efficiencies and bring down costs. The challenge before us in the renewable energy sector, generally and in India particularly, is to reduce the per-unit cost of renewable energy. Besides the power generated through renewable energy is usually intermittent and sometimes difficult to predict. There are also other challenges like those related to technology and financing. Like many other countries, India too is facing these challenges by encouraging economies of scale, easy transfer of technology and indigenous research and development."

He summed up: "I see the role of governments as active facilitators who will work to create an enabling ecosystem for promoting newer business models, technical as well as market innovations, as well as for promoting basic and applied research."



Dr Abdullah: the time has come for greater international cooperation in developing renewable energy

A leap forward for solar thermal panels

A new, high-vacuum flat collector at Masdar City could change the solar industry.

Junior Isles

Piero Abbate is supremely confident that the technology he passionately describes will "change the world". "We are going to change the solar thermal industry. We are introducing the first panel that can enable air conditioning in real, daily operating conditions," exclaimed the chief executive officer of Swiss company TVP Solar at this year's *World Future Energy Summit* in Abu Dhabi.

In January TVP Solar announced that a field of revolutionary solar panels installed at Masdar City is to begin an 18-month test programme where it will be compared against concentrating solar thermal collectors for a solar cooling application.

Solar thermal technology has a long history and although there is a great deal of publicity surrounding its use for concentrated solar power (CSP) electricity generation, the main application is for residential heating applications such as sanitary hot water and ambient heating.

Abbate pointed out: "This market is huge. There are 30 million m^2 of collectors. This corresponds to one third of the world's PV market – just for sanitary water heating. China alone has 20 million m^2 of collectors."

Collectors can generally be segmented into two groups of products: traditional collectors for applications below 100ºC i.e. predominantly residential heating applications; and concentrating solar collectors for applications that require higher temperatures e.g. industrial process heating or air conditioning/cooling.

TVP Solar has developed MT-Power, what it claims is a unique collector that can achieve temperatures of 325ºC without the use of mirrors for concentrating the sunlight. Abbate said: "This is the only technology that can do this. The advantage of being able to consistently operate in any climate condition at 200ºC means we can also use it to drive an absorption chiller for air conditioning/cooling."

Absorption chillers are typically driven by gas, which is used to heat the working fluid to 180ºC. TVP Solar's technology, allows the heating to be done by solar energy. The MT-Power panels at Masdar City are designed to provide over 70 per cent solar-to-cooling conversion efficiency operating at 180ºC to drive double effect absorption chillers.

The departure from concentrating mirrors for this application is significant in hot dusty environments such as the Middle East, according to TVP.


The first installation is at Masdar City, Abu Dhabi

Abbate explained: "The sun delivers 1000 W/m^2 no matter where you are on the Earth. What differs between the Middle East and northern countries is the number of hours of sunlight you get per day. The issue is how much of the sun's power we can convert [to heat]."

Concentrating solar mirrors need to track the sun. However, the mechanical moving parts to move the mirrors require regular maintenance in dusty environments. Further, a concentrator is an optical device wherein the light has to hit the mirror at precisely 90º. It depends on direct light, and cannot convert energy when a cloud covers the sun because the light is diffused.

A traditional collector does not suffer these drawbacks. No tracking, and therefore no maintenance, is needed. Secondly, they can capture diffuse light, i.e. light from any angle, which means more sunlight can be captured for conversion to heat. "A country like Abu Dhabi receives 1950 kWh/m^2 per year from the sun. However, only 1100 kWh/m^2 is direct, the remainder is diffuse. This means flat panels are able to capture 45 per cent more energy output from the sun in Abu Dhabi," noted Abbate.

The ability to capture diffuse light also means that the panels do not need regular precision dust cleaning as with concentrating mirrors.

"We still capture the light even if the panel is covered by dust. Although the dust [particles] change the angle of the sunlight, we still capture it as diffuse ligh," said Abbate.

Existing traditional collectors, however, cannot heat water above 100ºC. There are two types of traditional collector – flat plates and evacuated or vacuum tubes – but these cannot heat above 100ºC and so are limited to low temperature heating applications.

In a flat panel, the sun's energy heats the glass panel absorber and conducts this heat to the internal pipes, which in turn heats the fluid used for the end process. The efficiency of the panel depends on the heat lost in transferring heat to the fluid through conduction, convection and emissivity.

"Convection is the real issue," said Abbate. TVP substitutes glass wool insulation for a high-vacuum to minimise convection losses. Although the industry has long realised that a vacuum is the best form of insulation, manufacturers have been unable to produce a flat panel design that uses high-vacuum.

TVP has developed and patented an inorganic and flexible glass-metal seal that is the foundation of its high-vacuum flat solar thermal panels.

Abbate gave a brief history lesson in explaining the unique glass-metal seal invented by Dr. Vittorio Palmieri. "In 1898, Thomas Edison invented how to seal glass to metal to keep the electrodes inside a vacuum in the light bulb.

Then in 1953, RCA invented the second glass-to-metal seal for sealing the glass canopy to the electron gun in the cathode ray tube in televisions.

TVP Solar says it has invented the third glass-to-metal seal in history. "People have been trying to make vacuums in a flat plate for 50 years but no one was able to do it on a commercial scale," said Abbate.

"When you have a high-vacuum [inside] it is the same as putting a pressure of 10 tonnes/m^2 on the glass. You have to seal in a way that the glass remains fixed to casing. TVP Solar has developed a perimeter seal all around the panel that seals the glass panel to the metal casing. This is a radical innovation."

The company says that its collectors have several advantages over its competitors. With an efficiency of 62 per cent at 180ºC, they operate at a much higher efficiency than any other solar thermal collector. TVP will not disclose the cost of the collector until October this year but claims they cost less than any other solar thermal collector. "It has a similar cost profile to other flat plate panels. A flat plate costs €150-250/m^2. Concentrators cost €400-700/m^2," noted Abbate.

High performance and a compact layout mean MT-Power has a low cost per watt profile. "We have the lowest installation footprint. This is crucial for roof installations since it means we can deliver more power from fewer square metres," according to Abbate. He added: "Its lifetime is expected to exceed 20 years."

Abbate believes there are so many things in favour of the technology that it will change the industry.

"I don't believe in an industry that says, we are renewable but we will cost a bit more. The world is in a crisis and we have to be honest; no one wants to pay more. This [panel] will cost very little to produce. It will compete with fossil fuels."

The first installation at Masdar City is an important start for the future deployment of the MT-Power panel.

"We are so confident of our product, we have put the panels between the two best concentrating technologies on the market. Over the next six months we will demonstrate how much better we are," said Abbate.

TVP aims to deploy further MT-Power solar fields during 2012 for solar air-conditioning applications with a double stage absorption chiller in a hybrid natural gas/solar system configuration that will operate on a 24/7 basis, covering peak and base loads.

The company has already started the programme to allow volume production, which will begin in April 2013. The first factory will be in the south of Italy. Production in India, Brazil, the US and the Middle East will follow in the next two years.

With the goal of producing millions of panels at low cost, TVP says it has developed a new manufacturing process that allows it to produce the panels using the same equipment lines used to produce plasma display panels.

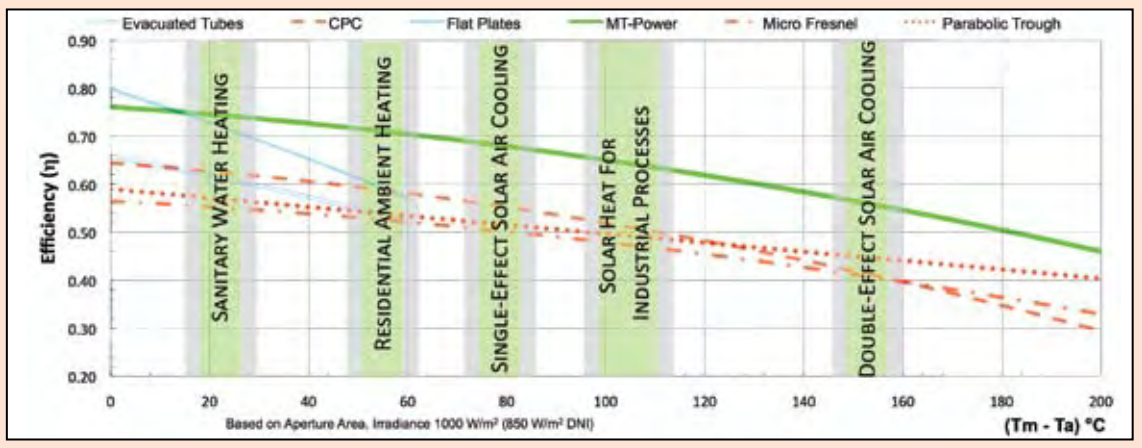
Abbate said: "Solar PV panels require €100 million in CAPEX investment to generate €100 million in revenues. We will invest €10 million in CAPEX to generate the same €100 million in revenues. So we are not a capital-intensive industry; we can massively grow with a limited investment."

Although power generation is an interesting prospective market, MT-Power panels address only applications requiring heat/steam between 100ºC-200ºC. Abbate says the focus will remain on thermal applications in the short-term. It is easy to see why.

He concluded: "In the residential market, lighting is about 25-30 per cent of the household consumption. Air conditioning, ambient heating and sanitary hot water heating together represents more than 60 per cent. In shopping malls and office buildings etc., air conditioning is the largest source of energy consumption.

"Cooling is the largest and fastest growing energy demand application in the world and it is a trend that will continue as there is more building insulation. So the issue is to serve thermal applications directly with thermal energy to have the best economic and energetic efficiency while maximising emission reduction. The big mistake today is to use electricity for thermal applications."

According to TVP, the new panels offer the best performance in any weather condition for any application



Junior Isles

Riding the winds of pain

There's a cold wind blowing, one that is threatening to bring a lot of pain to a lot of people. Just two years ago, US president Barack Obama said that the renewables and clean-tech sector would lead the economy out of recession and create new jobs. Like an Obama echo, many politicians around the world relayed a similar message to their citizens.

Two years on, these bold words seem little more than rhetoric. Earlier this month the US pulled the rug from under the wind industry when Washington decided not to renew a tax credit for wind production. As the clean energy technology that has seen the most growth over the last few years, there was unrealistic expectation on the wind industry to shoulder the burden of economic recovery.

The decision by a House and Senate conference committee to abandon the tax credit, as part of an effort to cut federal spending, is a major blow for a sector that is facing tough times.

Globally, the wind power sector has struggled with overcapacity, falling turbine prices, delays with grid connections and reduced support from governments because of the economic crisis. Potential investors have consequently become more wary of the sector and its prospects.

The effects are being felt around the world in one way or another. India is among the top five countries for wind generation, with plans to add 3000 MW per year. Yet in what could be an indication of looming consolidation, Lanco Infratech Ltd recently gave audit and consulting company Ernst and Young the mandate for selling its wind business. Lanco has 5000 MW of wind power licences and had acquired land for 600 MW of capacity through Lanco Wind Power Pvt. Ltd. It has a current capacity of 3300 MW, with 6000 MW under construction. It planned to have a total installed capacity of 15 000 MW by 2015.

Meanwhile, German energy giant E.On warned last month that Germany's plan for a rapid transition to renewable energy is at risk from delays in connecting offshore wind farms to the grid. The company said it will put two large projects on hold unless the grid operators speed up the construction of power lines.

Mike Winkel, head of the company's Climate & Renewables division, told the *Berliner Zeitung* newspaper: "The situation is disastrous. The grid operators aren't keeping up." He said grid operator Tennet was 15 months behind with work on linking the Amrumbank offshore wind farm, operated by E.On, to the grid.

"The grid operators overestimated themselves and underestimated the problems," Winkel said. "Secondly, they don't have sufficient financial incentives," he added, explaining that the regulatory authority does not pay an especially high return on their investments. He said another problem is that suppliers are not manufacturing the required cables. "Authorities are causing major confusion over who is responsible for what, and they're not coordinating among each other."

He said E.On plans two other major projects after Amrumbank, one in the North Sea and one in the Baltic. "But given the uncertain grid link, we can't make an investment decision at present."

There has been growing criticism of delays in building wind farms in the North Sea and Baltic. In January, the German Transport Ministry provided figures that showed the scale of the problem.

The plan is to have 10 000 wind turbines in operation off Germany's coasts by 2030. It currently only has 27. The aim is for the wind farms to produce 25 000 MW of power – so far, the figure is just 135 MW. RWE has also complained about delays in power line construction.

> "There has been growing criticism of delays in building wind farms in the North Sea and Baltic"

In its first quarter results, Siemens' power transmission division reported a loss of €145 million for the quarter, largely due to charges related to grid connections in the German offshore wind sector. It said that the complex regulatory environment caused project delays, and that the continued economic uncertainty is causing clients to put off investments.

Last month Danish wind-turbine manufacturer Vestas also cited project delays as part of the reason for reporting its first loss since 2005. The company's operating loss for the full-year 2011 was at €60 million, down from €310 million profit in 2010. It has now abandoned its targets for 2015.

As manufacturers' profits feel the pinch, the pain will naturally be passed through to the workforce. Vestas also announced that it will lay-off 2300 employees. And the US decision is likely to increase the pain. Vestas had warned that without the $3.5 billion a year tax credit, 1600 jobs in the US could be at risk because of an expected slump in turbine sales.

While the expiry of the tax credits at the end of the year may see a rush of projects in 2012, 2013 is likely to be bleak. Competition from cheap natural gas and weak demand for power as the economic recovery struggles to gain momentum will not help. Industry consultants say new wind capacity in the US is likely to return to lows the country has not seen since 2004.

Fortunately, there will continue to be bright spots. Growth in the UK has seen the number of people working in the UK's offshore sector rise from 700 people in 2007, to around 3200 in 2011. One of three scenarios, completed this year by Cambridge Econometrics for RenewableUK, estimates the installation of 31 GW of offshore wind by 2020 would create 42 400 direct full time employees (FTEs) and 25 300 indirect FTEs. Deputy Prime Minister Nick Clegg said the offshore wind sector could provide 66 000 jobs in the country by 2020.

The materialisation of these jobs will, however, require consistent government policy and available financing for the planned mega offshore wind farms. There will also have to be incentives for the designers and manufacturers of big turbines.

At the moment, the wind is blowing in the right direction. At the end of January, Samsung announced a £100 million project in Scotland to develop its new 7 MW offshore turbine at Fife Energy Park, which will employ up to 500 people.

Vestas has also submitted an application to build a factory near Sheerness. Although there may be firing in the US, there is likely to be hiring in the UK.

Yet Paul Flynn Managing Director of Earthstaff, a UK-based company that specialises in recruitment of energy personnel, warned: "It could go the other way as it did with Clipper in the northeast [of the UK] and not materialise.

There has to be consistent positive [political] noise and the capital, and return on capital, has to be there. Even the multi-national companies that are best positioned to make the projects happen need to have the money to do it. If you look at RWE – which has possibly the largest asset base of offshore wind farms planned – they are weighed down by an enormous level of debt."

There will be tough times ahead for wind power as a result of the eurozone crisis and the global recession. And although this will be the case for the entire power generation sector, wind faces the additional hurdle of delays in grid connections.

It also now has to cope with the impact of falling subsidies, which will slow growth. This is a natural progression for any industry as it makes the transition to maturity. As the market develops, the weaker players will disappear or be swallowed up, and the economically questionable projects will fail to materialise.

In the short term it may get a little bumpy for developers and manufacturers but eventually the stormy winds will subside and the ride will smoothen out.