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News In Brief

EU ETS vote may doom carbon markets

Hedegaard: Europe needs a "robust" carbon market

A "no" vote on a proposal to prop up the EU Emissions Trading Scheme adds further uncertainty to whether longer term reform of the flagging scheme can be achieved. **Junior Isles**

The rejection of a proposal to prop up the EU Emissions Trading System (ETS) has called into question Europe's commitment to climate change in difficult economic times, and the use of emissions trading as an effective tool for cutting carbon emissions.

European lawmakers dealt a blow to Europe's flagship policy on tackling climate change when they narrowly voted against a proposal to temporarily revive the EU's flagging carbon market.

The European Commission (EC), the 27-nation bloc's executive arm, had proposed tightening the supply of allowances by delaying the auction of 900 million additional carbon allowances – a move that would have increased the price of those already in the market.

The European Parliament at its meeting in Strasbourg rejected the proposal in a 334-315 vote with 63 abstentions. In a separate vote, however, the lawmakers referred the matter back to the relevant committee, leaving the door open for further negotiations.

The EC was disappointed with the outcome of the vote but vowed to pursue efforts to amend the system.

"Europe needs a robust carbon market to meet our climate targets and spur innovation," EU Climate Commissioner Connie Hedegaard told lawmakers.

Attention will now turn to the EC's wider package of reforms designed to tackle oversupply in the carbon market through the permanent retirement of excess carbon allowances, tighter limits on the number of carbon offsets that can be used in the market, or lower emissions caps on those organisations covered by the scheme.

However, experts said rapid progress on the package of reforms is unlikely to materialise, with analysts warning that the market is now unlikely to see any fundamental changes until 2015 at the earliest.

The vote sent carbon prices tumbling to an all-time low of €2.63 per tonne, a fall of about 40 per cent.

The International Energy Agency (IEA) warned that the setback would be felt around the world. Just ahead of the vote Fatih Birol, chief economist at the IEA said: "Europe is the region that started this endeavour, which the world, perhaps with some modifications, has to follow. If we say that this exercise didn't work out, this would be a loss not only for Europe but for everybody."

Immediately after the vote, RepuTex forecast that Australia's carbon price will fall back to an average of A$2.70 from FY2016-2020 as a result of the failed bid, with potential for prices to

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Utilities continue to adjust to difficult conditions

German utility RWE AG has reiterated that its earnings will come under severe pressure over the next few years as low electricity prices across Europe erode the profitability of its power plants.

Chief Executive Peter Terium told shareholders at the company's annual general meeting last month that forward power prices for delivery in 2014 and 2015 are around €12 ($15.7)/MWh lower than one year ago.

He added that power prices have fallen mainly as a result of the rapid expansion of renewable energy, which has eroded the utilisation rates of large fossil fuelled power plants. Additionally, lower electricity demand across an ailing European economy has put further downward pressure on power prices.

"As a consequence, significant parts of our conventional power plant fleet are losing money," Terium said.

E.On has also been experiencing similar difficulties and has been threatening to close its ultra-modern Irsching 5 gas fired power plant in Ingolstadt, southern Germany, because of mounting losses due to low power prices and poor utilisation.

A recent unconfirmed report in *manager magazin*, however, said the plant would now stay open after E.On struck a deal with Dutch grid operator TenneT Holding BV.

The magazine claimed that E.On and TenneT have agreed the plant will be used for so-called re-dispatch operations to stabilise the power network.

Elsewhere, French power utility GDF Suez SA recently said it plans to close three of the four gas fired power plants it operates in its home country because their profitability fell.

Utilities geared toward renewables generation, however, are faring better than their more traditional counterparts.

RWE has previously pledged to respond to the increasingly difficult trading conditions on Europe's energy markets by cutting costs, reducing investment and selling assets.

In March its renewable energies unit said it sold minority stakes in two UK wind farms for €195 million ($252 million), adding that it plans to reinvest the proceeds in new renewables projects.

Enel Green Power SpA , one of Europe's biggest renewables companies by market value, said it expects profits to rise in the next five years as it expands into emerging markets. The company said its expansion plans will be essentially self-financed.

It will enter five new countries – Colombia, Peru, Morocco, South Africa and Turkey – in addition to the 16 it is already present in.

The growth in emerging markets is "firmly at the core" of the Italian company's strategy, especially as the macroeconomic expansion in these nations is driving strong power demand, it said in the statement.

Enel Green Power's outlook is in stark contrast to Enel SpA, which is reeling from the worst recession since World War II in its core markets of Italy and Spain. Last month Enel announced plans to divest €6 billion ($7.7 billion) in assets and cut costs to reduce its net debt, which ended 2012 at €42.95 billion.

Latin America, however, will be excluded from any asset sales as the company plans to increase its presence there.

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fall lower in initial auctioning.

Other supporters of the system also believe that the failure to reform the ETS risks sinking carbon trading in Europe into irrelevance and damages the prospects of similar initiatives in other industrialised countries.

"With their vote, the lawmakers have not only doomed the flagship of Europe's fight against climate change to irrelevance, but also undermined Europe's credibility in fighting climate change," environmental lobby groups Greenpeace and the WWF said in a joint statement.

Rémi Gruet, Senior Climate Advisor of the European Wind Energy Association (EWEA) in Brussels commented: "MEPs have voted against the polluter pays principle and putting a market-oriented price on carbon emissions. This makes the ETS irrelevant in Europe's bid to reduce the use of fossil fuels. The carbon price will continue having no impact on investment decisions in the power sector."

Josche Muth Secretary General, European Renewable Energy Council (EREC) said: "By failing to support the ETS, the European Parliament is contradicting its own goals of providing Europe with a secure, clean and affordable climate and energy framework towards 2020."

The power sector was also dismayed by the vote. Eurelectric the association representing the interests of the European electricity industry at pan-European level said the 'no' vote is a "dangerous setback for the internal energy market and for EU carbon goals".

Some, however, welcomed the vote citing the cost burden in a difficult economic climate.

The World Coal Association (WCA) called it a triumph of common sense and balanced policy.

Catelin: backloading would have been "madness"

Milton Catelin, Chief Executive of the WCA, said: "The European Parliament has finally made a decision on environmental policy that recognises that there's a balance to be made between environmental imperatives and economic growth.

"At a time when across Europe governments are having to make difficult decisions to stimulate economic growth and tackle debt, it would have been madness to agree to back-loading and ignore the cost burden of EU climate policies on consumers and European industry."

The Polish government alone has estimated that back-loading would have cost it €1 billion over the period 2013-2020. Other Eastern European EU members would have been looking at a similar cost.

European Commissioner for Energy, Gunther Oettinger, made the point that the cost of energy needed to be given greater weight when setting EU energy policy and that the bloc needed to be more "pragmatic" about initiatives to reduce its greenhouse gas emissions.

No reprieve for US coal plant

Coming legislation, which would ban coal fired plants without carbon capture, looks like killing off coal fired generation in the US for good. **Junior Isles**

No new coal fired power plants are likely to be built in the US, even if utilities succeed in weakening coming US climate change regulations.

According to Xcel Energy Inc., one of the nation's largest utilities, with 81 generating plants, low natural gas prices make building coal less attractive, but a tough regulatory climate is "icing on the cake".

Chief Executive Ben Fowke said: "I think the political and regulatory reality is that it's going to be next to impossible... to build a new coal plant. If it's not that rule it will be another rule."

The Environmental Protection Agency (EPA) is weighing how to curb greenhouse gas emissions from existing power plants, a regulatory change that could impose costs on coal plant owners.

The EPA is currently drafting limits on greenhouse gas emissions, the discussion of which is causing a split in the industry.

Mr. Fowke, who sits on the board of the Edison Electric Institute, the US power industry's main trade group, believes "there is absolutely going to be a rule", and is pushing for the industry to negotiate with the EPA. "Let's push for state implementation plans," he said, so that states have as much control as possible in enforcing any final regulation.

Other utilities believe the EPA has no legal authority to curb greenhouse gas emissions and are less inclined to negotiate.

The new EPA rules will could essentially ban new US coal plants that do not capture carbon dioxide – a technology that is not yet commercially available as it struggles to demonstrate its financial viability.

Just last month a new report from Congress' nonpartisan research arm questioned the future of the FutureGen carbon capture and storage (CCS) clean coal project in Illinois, citing delays and other concerns.

The report by the Congressional Research Service says the project's many delays raise questions about how close the project will be to demonstrating CCS technology by the time its $1 billion in stimulus funding expires in 2015. The money makes up the bulk of FutureGen's $1.3 billion in financing, and the current timeline calls for construction to start in 2014 and finish in 2017.

Ken Humphreys chairman of the FutureGen Alliance believes the $300 million FutureGen has found, beyond the stimulus financing, will carry the project through to 2017.

"FutureGen 2.0 is on schedule to achieve a 2017 operating date, which will be followed by 20 years of power generation using CCS," he said in a statement.

■ The US reduced its greenhouse gas emissions by 1.6 per cent in 2011 from the previous year, according to the EPA.

Renewables is 'bright spot' in damning low carbon assessment

- Energy "as dirty" as 20 years ago
- Solar and wind grow despite economic and policy turbulence

The rapid expansion of renewable technologies is one of the few bright spots in an otherwise bleak assessment of global progress towards low-carbon energy, the International Energy Agency (IEA) said in a recent report to the Clean Energy Ministerial (CEM).

"The drive to clean up the world's energy system has stalled," IEA Executive Director Maria van der Hoeven told the CEM, which brings together ministers representing countries responsible for four-fifths of global greenhouse gas emissions.

"Despite much talk by world leaders, and despite a boom in renewable energy over the last decade, the average unit of energy produced today is basically as dirty as it was 20 years ago," she said.

The report called Tracking Clean Energy Progress, said the Energy Sector Carbon Intensity Index (ESCII) – which shows the average amount of carbon dioxide emitted to provide a given unit of energy – stood at 2.39 tonnes of CO_2 per tonne of oil equivalent (tCO_2/toe) in 1990, and had barely moved by 2010, holding at 2.37 tCO_2/toe.

The IEA's report did, however, find some positive signs. From 2011 to 2012, solar photovoltaic and wind technologies grew by an impressive 42 per cent and 19 per cent, respectively, despite ongoing economic and policy turbulence in the sector.

The report coincides with the release of the Global Wind Energy Council's Annual Market Update, which gives a snapshot of the global wind industry at the end of 2012, along with a 5-year forecast out to 2017.

Record installations in the US and Europe led to installations of 44.8 GW of new wind power globally in 2012, 10 per cent more than was installed in 2011.

Global installed capacity has now reached 282.5 GW, a cumulative increase of almost 19 per cent. The forecast is for a modest downturn in 2013, however, followed by a recovery in 2014 and beyond; with global capacity growing at an average rate of 13.7 per cent out to 2017, and global capacity nearly doubling to 536 GW.

The modest downturn in 2013 is reflected in the release of the latest figures on clean energy investment figures released by from research company Bloomberg New Energy Finance (BNEF).

According to BNEF, global investment in clean energy in the first three months of 2013 was lower than in any quarter for the past four years.

The first quarter investment figure for renewable energy, energy efficiency, and energy-smart technologies was $40.6 billion, down 22 per cent on the equivalent period of 2012 and 38 per cent on the final quarter of last year.

The decline reflected the effects of policy uncertainty in key clean energy markets such as the US and Germany, a lull in financing in some relatively buoyant markets such as China and Brazil. It also reflected the effect on dollar investment levels of the recent, sharp declines in technology costs, particularly those of solar photovoltaic panels.

Japan cabinet approves sector reform following Fukushima

Japan's Cabinet has approved a proposal to revamp its troubled electricity industry and foster more competition by forcing utilities to split power generation and distribution into separate businesses.

The plan is aimed at encouraging innovation and modernisation of the power grid as the country grapples with its energy policy after shutting down nearly all its nuclear power plants following the March 2011 tsunami disaster at the Fukushima Daiichi plant.

Prime Minister Shinzo Abe says the reforms are part of a strategy to revive the stagnant economy. Abe has instructed Industry Minister Toshimitsu Motegi to submit the power reform bill to parliament for approval as soon as possible.

Abe has indicated he favours restarting reactors if they meet new, stricter safety requirements.

Japan's Nuclear Regulation Authority (NRA) recently decided on a new set of safety standards to tackle serious accidents in the event of earthquakes and tsunamis, which could affect the reactivation of the country's reactors.

The NRA is now soliciting public comments on the standards as well as other regulations including a process to give exceptional extensions to reactors operating more than 40 years. These comments could be reflected in the standards that will be enforced from mid-July.

Implementation of these standards will be a major precondition for Japanese power companies applying for government permits to put their idled reactors back online. Amid heightened concerns over nuclear safety, only two reactors in Japan are currently operating.

As a new safety requirement, operators must install filtered venting systems that can reduce the amount of radioactive substances and lower the pressure inside a reactor container during emergencies. The Fukushima Daiichi complex had venting systems but not with radiation-screening filters.

Meanwhile, the UN's nuclear watchdog, the International Atomic Energy Agency, has begun reviewing the decommissioning process at the crippled nuclear plant, where new problems are causing growing safety concerns about a cleanup expected to take decades.

EIA predicts coal decline

The US shale gas boom is putting pressure on global coal prices, writes **Siân Crampsie**.

The use of coal in power generation in the USA is expected to decline in the long-term in spite of a recent rise in natural gas prices.

Power plants in the USA began burning more coal in February compared to previous months as a prolonged spell of cold weather drove demand for natural gas.

In March, the price of natural gas in the USA rose above $4/million Btu for the first time in 18 months. The rise enabled coal fired generators to regain some market share from natural gas-fired plants, but the respite is temporary, according to the US Energy Information Administration (EIA).

In a recent report the EIA says that natural gas has come into dispatch-level competition with coal because of an increase in the number of combined cycle power plants, the expansion of the USA's natural gas pipeline network, and a significant rise in natural gas production from domestic shale formations.

All of these factors have contributed to a sharp fall in the wellhead price of natural gas, which fell to a low of $2/million Btu in 2012.

Last year coal generated 37 per cent of US electricity, down from 42 per cent in 2011, while the share of gas rose to 30 per cent from 25 per cent. However, the EIA predicts that coal's share will continue to decline – reaching 35 per cent in 2040 – mainly due to the retirement of older coal fired plants.

The EIA's report considers five separate scenarios, under all of which new gas fired power plants are built. The number of new gas fired plants built would depend on the relative prices of coal and gas, says the agency.

However, low natural gas prices in the US has forced a reduction in world coal prices, as US coal miners have been forced to export. This has coincided with strong growth in coal production from Indonesia, the world's largest exporter, and put the international coal market under pressure.

Agreements between coal producers and Japanese utilities last month set the benchmark for thermal coal at $95/tonne, down 17.5 per cent from the previous year and the lowest level for two years.

Thermal coal trader Glencore said in its annual report that "current spot coal prices mean that many of the world's producers are unable to make a reasonable return".

Data from the EIA also shows that the switch to natural gas in the US has contributed to a 3.9 per cent fall in carbon dioxide emissions from fossil fuels in 2012. In all five scenarios analysed by the EIA, coal fired generating capacity in 2025 is less than that in 2011.

Analysts believe that the recent rise in natural gas prices may trigger an increase in production in the US, while there is increased pressure on US gas producers to export more natural gas.

Natural gas prices in the US are half of those in Europe and one-quarter of those in Asia. The boom in production from shale oil and gas deposits in the last few years is helping the USA to recover from the economic recession, according to industrial leaders speaking at a *Financial Times* summit last month.

US oil production rose to a 20-year high of 7 million barrels a day in the final months of last year, while the country's natural gas production has risen 20 per cent in five years to a record high, according to the Department of Energy.

EGS spells geothermal success

The future of the geothermal energy sector is set for change following the successful deployment of enhanced geothermal systems (EGS) technology at a site in the USA.

Geothermal energy specialist Ormat Technologies says that it has used EGS technology to boost output from an existing wellfield. It is the first time that an EGS project has been connected to the electricity grid and paves the way for unproductive geothermal wells to generate more energy and new revenue.

By expanding existing hydrothermal fractures deep within the earth's crust, EGS technology makes it possible to extract additional heat from a reservoir's rocks and inject geothermal fluid at higher flow rates. Ormat, together with the US Department of Energy (DOE) and GeothermEx increased the power output from the Desert Peak 2 geothermal power plant in Nevada by 38 per cent.

The project is the result of four years of collaboration between Ormat, the DOE and other partners, including Lawrence Berkeley National Laboratory, US Geological Survey, Sandia National Laboratory, University of Utah EGI, Temple University and TerraTek.

"Our objective in the Desert Peak EGS project was to demonstrate that this technology can have a significant impact on sub-commercial wells," said Lucien Bronicki, founder and chief technology officer of Ormat. "We achieved an increased injection rate up to 1600 gallons per minute without consuming or discharging water at the surface and using only existing geothermal brine returned to the original aquifer."

Geothermal: set for change

Brazil launches R&D fund

- Wind investment grows
- PV plant with R&D planned

Brazil is aiming to boost private investment in energy sector research and development with a $1.5 billion financing plan.

The country's development bank BNDES and research financing company Finep will offer financing lines with low interest rates to private companies investing in research.

In particular they will target research in four areas: intelligent energy networks, alternative energy sources, energy transmission and distribution and electric vehicles.

"These resources are being offered so that the private sector will assume the leadership," BNDES President Luciano Coutinho told local press. "In Brazil, in general, spending on science, technology and innovation is highly concentrated in universities and the public sector."

The plan comes at a time when investment in Brazil's energy infrastructure is increasing, particularly in the alternative energy sector.

Brazil's wind power generating capacity rose by 73 per cent in 2012 to 2.5 GW, according to the Brazilian Wind Energy Association.

In a report the association said that investment in the wind power sector totalled $1.77 billion in 2012, and it expects investment to rise, with a total of around $10 billion of investment projected between 2013 and 2017.

In April Brazilian oil firm Petrobras and SunEdison signed an agreement to build one of the largest solar photovoltaic (PV) power plants in Brazil and to build a pilot plant to facilitate research and development in the country's solar sector.

The plant will be located in Alto do Rodrigues, Rio Grande do Norte with an installed capacity of 1.1 MW DC. In addition a 10 kW pilot plant will be built at the Federal University of Rio Grande do Norte to aid the testing and certification of equipment, facilitate training, and increase the availability of public data on solar PV technology.

The project is part of an initiative led by Petrobras under the Research and Development Programme of the Brazilian Electricity Regulatory Agency (Aneel).

- Eletrobras posted losses of R$6.8 billion ($3.4 billion) in 2012 compared with a profit of R$3.7 billion in 2011. The company has attributed the result a new law that required the renewal of electricity concessions in order to cut electricity rates. Eletrobras' Ebtida came to R$ 5.520 billion in 2012 against R$ 6.028 billion in 2011.

B&W, DOE sign SMR funding agreement

The US moved forward its programme to commercialise Small Modular Reactor (SMR) technology by issuing funding for one of the SMRs currently under development.

In April the Babcock & Wilcox Company (B&W) subsidiary, Babcock & Wilcox mPower, Inc. (B&W mPower), and the US Department of Energy (DOE) signed a Cooperative Agreement for funding made available through DOE's SMR Licensing Technical Support Programme for the development and licensing of B&W's mPower technology.

The $79 million allocated for the first year of the programme will be immediately available to the B&W mPower programme. While the DOE has projected that approximately $150 million will be made available during the five-year period of the award, subject to incremental appropriations from Congress and B&W mPower's compliance with the terms of the Cooperative Agreement. The Cooperative Agreement allows for $226 million or more in federal funding.

B&W mPower intends to use any additional funding made available on a cost-shared basis for licensing and engineering activities that qualify under this award.

"The Department is pleased to complete this important step in our SMR Licensing Technical Support Programme," said Dr. Peter Lyons, US Department of Energy Assistant Secretary for Nuclear Energy. "Our work with B&W mPower will help advance the commercialisation of safe and efficient SMRs in the United States. US-built SMRs have the potential to cost-effectively support our nation's energy and climate goals while boosting US manufacturing capabilities and job growth."

The signing of the Cooperative Agreement formalises B&W's cost-share agreement with the DOE, following the selection of the mPower America team – comprised of B&W, the Tennessee Valley Authority (TVA) and Generation mPower – as the winner of the competitively bid funding opportunity, which supports commercial demonstration of the B&W mPower SMR by 2022.

B&W mPower and Bechtel (who together formed Generation mPower LLC) will provide licensing and engineering support for the mPower America Project.

Geological characterisation studies will commence at the Clinch River Site shortly. The mPower America team will also develop a Preliminary Safety Analysis Report, a Design Certification Application for the mPower Plant and a Construction Permit Application for up to four mPower SMR units.

The B&W mPower SMW is an advanced pressurised water reactor designed to generate 180 MW. It incorporates technology innovations that advance the state-of-the-art in nuclear plant safety, security and economics.

China feels the heat despite low carbon effort

- Daytime highs rise 0.9°C
- China takes third spot on low-carbon index

Syed Ali

Although China is now taking centre stage in preparedness for the low-carbon economy, the country is directly feeling the man-made heat of global warming.

In the first study of its kind, scientists recently linked the burning of fossil fuels to a particular country's rise in daily temperature spikes. While other studies have linked averaged-out temperature increases in China and other countries to greenhouse gases, this research is the first to link the warmer daily hottest and coldest readings, or spikes.

The study by Chinese and Canadian researchers found that purely because of greenhouse gases, daytime highs rose 0.9°C (1.7°F) in the 46 years up to 2007. At night it was even worse – because of greenhouse gases, the daily lows went up about 1.7°C.

About 90 per cent of the temperature rise seen by the researchers could be traced directly to man-made greenhouse gases, the study said. Man-made greenhouse gases also include methane and nitrous oxide, but carbon dioxide is considered by far the biggest factor. China is the world's biggest consumer of coal, which is the largest source of man-made carbon dioxide emissions.

The findings come although China has made huge investments in alternative energy such as wind, solar and nuclear in recent years in an effort to reduce its reliance on coal.

In April the National Energy Administration said China generated 100.8 TWh of wind power in 2012, marking a 41 per cent rise from 2011.

Separately, it was also announced that the first generator at the Ningde Nuclear Power Station in east China's Fujian Province went into operation last month. According to a government white paper on energy released in October 2012, China has 15 nuclear power generating units in operation with a total installed generating capacity of 12.54 GW, as well as 30 units currently under construction, which will add another 32.81 GW.

These efforts to transform its generating mix have helped China move up the ranks of preparedness for the low-carbon economy, according to a report released by Australia's environmental group, the Climate Institute at the end of March.

The Climate Institute/GE Low-Carbon Competitiveness Index shows that China has leapt from seventh place in the previous year, to third place behind France and Japan.

The index is part of the Climate Institute's Global Climate Leadership Review 2013 report. It uses about 20 indicators to measure carbon competitiveness in three areas, namely sectoral composition, early preparedness, and future prosperity.

"It's clear that the centre of clean energy gravity is shifting to Asia, China in particular. China has improved its ability to compete in the global low-carbon economy significantly, boosted by high-tech exports and just under half of global public equity investment in clean energy," John Connor, CEO of the Climate Institute, said.

CERC throws lifeline to Indian coal plants

The decision by India's regulatory commission to allow Tata Power to raise power tariffs could help generators that have been financially struggling as a result of the coal supply crisis, says **Syed Ali**.

India's Central Electricity Regulatory Commission's (CERC) decision to allow Tata Power to increase its power tariffs for electricity generated from its imported coal-based Mundra plant in Gujarat essentially throws a lifeline to the country's embattled coal fired power plants.

CERC ruled that the company will be allowed to temporarily increase tariffs to compensate for the additional fuel costs it is incurring. Tata Power's special purpose vehicle, Coastal Gujarat Power Ltd (CGPL), had signed agreements to sell electricity generated from its Mundra plant to Gujarat, Maharashtra, Haryana, Punjab and Rajasthan at Rs2.26 per unit (4.2 cents/kWh).

The order paves the way for similar compensation to other power projects in the country including Reliance Power Ltd's Krishnapatnam imported coal-based project in Andhra Pradesh, work for which has been halted because of the unexpected rise in fuel prices.

Tata Power, which welcomed the decision, said the details of the proposed compensatory tariff will be finalised by a committee to be set up by the regulator.

"This decision of the CERC is an important step in resolving the major impasse affecting imported coal based power projects in the country that got impacted due to extraneous factors well beyond the control of developers," Tata Power said in a statement. "CGPL, has been delivering the full potential of Mundra across the five beneficiary states albeit with tremendous fiscal pain."

In its April 15th order to offset losses due to the unexpected increase in the price of imported coal for CGPL's 4000 MW ultra mega power project (UMPP) at Mundra in Gujarat, CERC said: "The compensation package agreed should be over and above the tariff agreed in the PPAs (power purchase agreements) and should be admissible for a limited period till the event which occasioned such compensation exist and should also be subject to periodic review by the parties to the PPAs."

CERC's decision is a repeat of its earlier judgement on Adani Power Ltd's petition for tariff revision, which set a precedent.

Fuel availability has become a cause for concern, largely because domestic coal mining has been unable to keep pace with the growing demand for the fuel in the country.

Last month state-owned coal miner Coal India Ltd (CIL) said it plans to deliver all the extra coal it will produce this year, and for the coming few years, to power companies. CIL made the statement in an attempt to counter criticism of its inability to meet domestic demand that has plunged parts of the country into a power crisis.

Last year, the government mandated CIL to sign fuel supply contracts with power companies and meet at least 80 per cent of the domestic demand for coal for the power sector. A total of 143 such contracts have to be signed by 2015. So far only 55 have been inked.

- Germany will provide India a soft loan of €1 billion (Rs71 billion) to develop a "renewable energy corridor". According to new and renewable energy secretary Ratan P. Watal, an investment of around Rs40 000 crore ($7.5 billion) is required for strengthening the transmission system to support green energy over the next four years.

Help at hand: the ultra mega power project at Mundra in Gujarat

New Zealand prepares for asset sell-off

New Zealand is preparing to sell stakes in three of its state-owned utilities. The sales are the country's first privatisations since the late 1990s.

First on the block is Mighty River Power, which operates a range of hydro and geothermal stations. A 49 per cent stake is expected to be on offer for an estimated NZ$1.8 billion ($1.52 billion). Already, 440 000 domestic retail investors, or 10 per cent of the population, have pre-registered their interest for the shares, which are due to start trading by mid-May in both Australia and New Zealand.

According to the government, the company has an indicative market capitalisation of NZ$3.29 billion to NZ$3.92 billion, and up to 686 million shares will be on offer.

The other energy firms on offer are Genesis Power Ltd., the country's largest electricity and gas retailer, and Meridian Energy Ltd., which harnesses wind and hydropower in New Zealand and Australia.

The government says it wants to keep around 85 per cent to 90 per cent of the shares in New Zealand hands, including its 51 per cent stake in all three but is working to drum up foreign interest for the remaining 10-15 per cent.

Together with a sale in national carrier Air New Zealand, the government hopes the deals will raise as much as NZ$7 billion as part of a plan to help it return to a budget surplus by the fiscal year ending June 2015.

Coal, renewable deals boost Indonesia

Several recent deals will help Indonesia boost its electricity generating capacity from both coal and renewable sources.

At the beginning of April China Development Bank, a Chinese state-owned lender, inked a deal to finance Indonesian power producer Sumber Segara Primadaya's plan to build a coal fired plant in Central Java.

The funding for the plant, to be built in Cilacap with a total capacity of 614 MW, is the latest sign of China's interest in Indonesia.

Muhammad Rasul, president director of Sumber Segara, said that the project would be financed through a $700 million loan from China Development Bank, as well as internal cash. He added that the company also expects to secure another loan from state-controlled Bank Rakyat Indonesia, the country's second largest lender.

"The power plant construction will be completed within 36 months and is scheduled to commence operation in 2016," Rasul said, adding that the power plant would be connected to the Java-Bali power grid.

Meanwhile, several contracts were signed that will boost the country's renewable capacity.

Kyushu Electric Power Co. is set to launch a geothermal power generation project in Indonesia along with trading house Itochu Corp., the *Associated Press* (*AP*) reported.

Under the scheme, the first overseas geothermal power generation project by a Japanese electric power company, a power plant will begin operating in 2016, according to *AP* sources.

The news came as state-controlled utility Perusahaan Listrik Negara (PLN) signed a deal to build the $1.5 billion Sarulla Geothermal Power Project, the largest of its type in the world.

The facility will be built in three stages, and is expected to be fully operational in 2018.

At the start of April, Korea Midland Power Co. said it had signed a memorandum of understanding with the Indonesian government to construct and operate a 284 MW hydropower plant in the Murung Raya region of Kalimantan Island, Indonesia.

Sri Lanka urged to reduce fossil fuel dependence

Increasing reliance on thermal energy combined with delayed construction of hydropower plants are negatively impacting Sri Lanka's energy sector, according to a recent Asian Development Bank (ADB) report.

The Asian Development Outlook 2013 report (ADO 2013) stated: "Growing reliance on oil-fired plants, higher oil prices and the delayed construction of new hydropower plants have significantly pushed up the cost of generation."

The report recommends that Sri Lanka takes steps to strengthen its energy sector by diversifying its traditional energy mix and developing a more cost reflective tariff mechanism.

The share of thermal power in Sri Lanka's electricity generation mix increased from 6 per cent in 1995 to 60 per cent during 2008-2012, leaving the sector with significantly higher exposure to oil price fluctuations.

Referring to the Norocholai Power Plant in Puttalam, the ADO 2013 said: "The option now available for large base load generation is traditional coal fired plants, which are under development."

The Norocholai project will have a total capacity of 900 MW when complete. The current first phase of the project has a capacity of 300 MW but it has experienced 12 major breakdowns since it was commissioned in March 2011.

The ADB also called for continuous improvements to electricity transmission links across provinces. Securing funding for such projects, however, could prove challenging for the government it said.

"Disparities still exist in electrification across the provinces. As demand grows, particularly in the former conflict areas, the transmission network must be continuously improved. The challenge is to obtain financial support to implement crucial transmission links," stated the report.

The report also highlights Sri Lanka's high cost of electricity despite ad-hoc tariff revisions, which do not fully reflect actual generation costs. Generating costs currently average around Rs 21/kWh (16.5 cents/kWh), while the average selling price is Rs16.4.

Although the total installed capacity increased to 3141 MW in 2011 from 2818 MW in 2010, the power sector has been struggling to meet rising demand. In the past, the country's power generation sector had been heavily dependent on hydro sources, which left it vulnerable to fluctuations in rainfall. The government has therefore been focusing on increasing thermal generating capacity to meet surging demand. Coal is expected to provide nearly 73 per cent of the country's power by 2022.

Sri Lanka has also set a target of generating 20 per cent of its power from renewable sources by 2020, including 400 MW of wind capacity.

Limited indigenous energy resources threaten growth

A new Asian Development Bank (ADB) report stated Asia will need a massive increase in energy supply this century, mainly from fossil fuels, if it is to continue to grow and lift millions more out of poverty. However, limited indigenous resources present challenges.

"Asia could be consuming more than half of the world's energy supply by 2035, compared to 34 per cent in 2010," said ADB's senior country economist Ms. Luxmon Attapich, adding that Asia will account for 44 per cent of the world's GDP this year, compared to 28 per cent in 2010.

Under a business as usual scenario, oil use could double with the region accounting for half the world's energy consumption by 2035. This would see oil imports triple because the region does not have enough resources and mainly relies on the Middle East for its energy supply, according to Luxmon.

"Without changes to its energy mix, coal use will increase by 81 per cent, oil consumption will double and natural gas use will more than triple," she said.

"We need to look at alternatives such as solar, wind, hydro and biofuels. Integrating power transmission within the Greater Mekong Subregion will help, but political and regulatory barriers must be reduced," she added.

ADB's country director, Craig Steffensen, said energy security in Thailand and the ASEAN countries has become a greater concern as demand has topped forecasts and nuclear energy remains politically unpalatable following Japan's Fukushima nuclear crisis.

"In Thailand, questions about energy security have become more prominent this year partly because of platform repairs in the Yadana gas field in Myanmar, causing local supply shortages," said Mr Steffensen.

The Electricity Generating Authority of Thailand (Egat) last month said it expects the electricity tariff will hit Baht5/kWh (17 cents/kWh), on a par with Singapore, in two years due to the rising price of natural gas.

Egat governor Sutat Patmasiriwat pointed to imports of expensive liquefied natural gas as a major reason for the projected 35 per cent increase in the power tariff from an average of 3.7 baht per unit at present.

Using gas from domestic sources costs three baht per unit for power generation, compared to 5.5 baht for imported LNG. However, production of local gas has peaked and will decline, paving the way for imported LNG to play a larger role in power production.

2030 paper starts new European debate

Business and industrial leaders have called for a quick agreement on Europe's 2030 climate and energy goals, but ambitious and binding targets will once again be a sticking point.

EREC's Hinrich-Rahlwes wants a "hat-trick" approach

Siân Crampsie

Environmental groups and business leaders called for a cohesive approach to Europe's climate and energy goals after the launch by the European Commission of a public consultation.

Organisations ranging from electricity sector association Eurelectric to the Confederation of British Industry (CBI) and the European Renewable Energy Council (EREC) welcomed the publication of the Commission's Green Paper on energy and climate policies to 2030, which is the first step in the development of a new framework for legislation.

A lack of policy certainty for the period beyond 2020 is one factor blamed for a lack of progress in clean energy development and deployment in the European Union. In a report released alongside the Green Paper, the Commission said that there were "reasons for concern" about the progress made towards Europe's 2020 climate and energy goals.

The CBI said in a statement that it was "critical to get political agreement on a 2030 EU emissions target by the end of next year, to encourage the levels of investment that we need in low-carbon technology".

However, it warned that any policy should seek to minimise carbon leakage, suggesting that there are concerns that Europe's energy-intensive industrial sector would not be happy with ambitious, binding targets for carbon.

Binding targets are what the renewable energy lobby wants, however, particularly in light of concerns over the progress being made towards 2020 targets for renewable energy.

In its renewable energy progress report, the Commission says that member states need to do more to enhance the investment environment for renewable energy because "missing the 2020 renewable energy targets will have major consequences for the EU".

"The report suggests that the EU is broadly on track to meet its renewable energy targets, although it does also raise concerns that particular technologies are deploying more slowly than required," said the UK's Renewable Energy Association (REA). "Progress must also be seen in the context of reduced overall energy consumption due to the European economic downturn, which makes the proportion of renewable energy higher than it would otherwise have been."

The REA has called for an extension of existing national renewable energy targets beyond 2020 because investment decisions that could decide the energy mix in 2030 are being made today. It says that the EU should not rely solely on a 2030 carbon target to drive investment in low-carbon technology.

"It does not bode well that the EU Emissions Trading Scheme has failed to date to deliver long-term carbon signals," said REA CEO Gaynor Hartnell. "The mandatory renewable energy targets for 2020 are accelerating the deployment of renewable energy across the EU and we need to maintain that momentum by continuing this approach to 2030."

EREC has called for a "hat-trick" approach to climate and energy policy by using targets for renewable energy, energy efficiency and greenhouse gas reduction. "The renewable energy sector needs predictability and stability beyond 2020," said Rainer Hinrich-Rahlwes, President of EREC. "The successful economies of the next decades will be those which decrease resource use and greenhouse gas emissions while creating new businesses through technology leadership, technology deployment and increasing employment the way renewable technologies do."

The European Wind Energy Association (EWEA) said that a binding renewable energy target for 2030 "would help the achievement of the 2020 targets, by providing the wind sector with the clarity needed to make the necessary long-term investments, thereby driving down capital costs as well as the cost of capital".

London Array fully operational

The partners in the UK's London Array offshore wind farm say that they are "determined" to drive down the costs of offshore wind energy.

Dong Energy, Masdar and E.On last month celebrated the commissioning of the 175th and final turbine at the 630 MW project – the largest offshore wind farm in the world.

They said that completion of the project was a major milestone and the culmination of two years of offshore construction work. "It has been a complex operation but I am delighted that the commissioning of the wind farm has now been completed on schedule, despite the worst of the winter weather," said Project Director Richard Rigg.

Benj Sykes, country manager for Dong Energy's UK wind business said that the firm wants to drive down the cost of offshore wind farms to €100/MWh by 2020. "What we have learnt at London Array, together with our continuing focus on innovation in technologies and techniques, will help us achieve that," he said.

London Array could be expanded to 870 MW if the partners decide to go ahead with construction of a second phase of development.

Offshore wind energy is a major part of the UK's renewable energy expansion plans. Other large-scale projects under development include the Lincs wind farm off the coast of Skegness, Teesside, Gwynt y Mor off the coast of North Wales and Gunfleet Sands off the Essex coast.

■ Alstom Grid has successfully delivered the offshore substation platform for the Trianel Borkum wind farm in the German North Sea. The 400 MW wind farm will be built in two phases. Alstom also says that the installation of the Global Tech 1 offshore substation is "imminent".

Competition benefits Italy

Italy is to reduce gas and electricity prices for the first time in three years as the country starts to feel the benefit of competition.

The Italian regulator in early April reduced energy prices for homes and small businesses and said that further falls in natural gas prices by the end of 2013 were possible.

Gas prices have been reduced by 4.2 per cent and electricity prices by 1 per cent, leading to a saving of €60 per year by the average consumer.

Last year Prime Minister Mario Monti's government approved rules to promote liberalisation of the gas market, including forcing energy giant Eni SpA to let go of its controlling stake in gas transmission grid firm Snam SpA.

"[The drop] in energy bills is the first concrete effect of this comprehensive reform, allowing consumers to benefit [from the changes]," said energy regulator Guido Bortoni in the statement.

"If the price is right" Hinkley Point C

EDF negotiates on strike price

EDF says that it is making progress in its negotiations with the UK government over a contract for electricity generated by proposed new nuclear power plants in spite of running over a self-imposed deadline for concluding the talks.

The French electricity group is building two new nuclear power plants at Hinkley Point and had hoped to conclude talks with the government over the so-called strike price by 1 April.

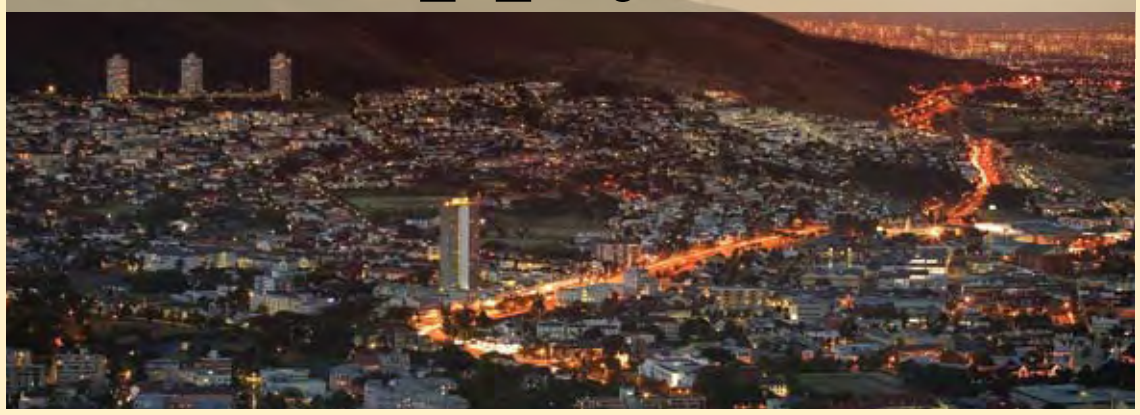
Negotiations have continued into April, and EDF has said that it will reduce spending on the planned Hinkley Point C project in southwest England by lowering the number of people employed on the project.

The company is thought to be spending around £1 million per day on the project, which received planning permission in late March. The government is keen for progress on the new generation of nuclear power plants to be made in order to quash fears over future energy security, but there are concerns that it may be forced to agree a high strike price for energy from the new power stations.

The government is thought to be aiming to agree a strike price of around £80/MWh, although analysts believe that the final agreed figure is likely to be closer to £100/MWh – more than twice the current market price for electricity. The contract could last for up to 35 years.

The strike price concept is part of the government's upcoming energy market reform legislation and guarantees low-carbon generators a minimum price for their electricity. If the market price of power from the new nuclear plant falls below the strike price, EDF will be compensated through price rises imposed by the regulator.

South Africa faces new supply crunch



Planned winter maintenance work, combined with reduced imports from Mozambique, has left South Africa's power system precariously balanced.

Siân Crampsie

Eskom has asked energy consumers to reduce consumption as much as possible in order to help keep the lights on during the winter months.

The South African utility says that the country's power system is in a precarious balance because electricity consumption is expected to rise over winter while high levels of planned maintenance are expected to be made to its fleet.

"We cannot and will not defer essential maintenance work," said Eskom CEO Brian Dames. "We are taking action to ensure that our power stations can improve and sustain their performance, so that they can meet South Africa's long-term need for a secure supply of electricity.

"We have kept the lights on for the past five years and we remain committed to keeping the lights on. But as Eskom we cannot do it alone."

Eskom says that this year one of its main challenges has been to meet electricity demand while carrying out needed maintenance work to its ageing fleet of power plants. It has also struggled because of reduced imports from Mozambique's Cahora Bassa power plant due to flood damage to a power line.

A further 900 MW of capacity was lost due to an unplanned outage at Eskom's Koeberg power station.

The utility says it usually defers maintenance work during the winter. "This winter is different," said Dames. The company is particularly concerned about the 5-9 pm evening peak during the winter, when demand can spike by 3000 MW.

"Eskom's power stations are at a stage where plant reliability can no longer be compromised by delaying maintenance," said Minister of Public Enterprises Malusi Gigaba. "The undertaking of this planned maintenance will result in an even more delicate power system given the number of risks that could negatively affect Eskom's ability to balance supply and demand this winter, thus a partnership in keeping the lights on will be even more required than at any other stage in the past."

Eskom undertook a major investment programme following a severe power crunch in 2008. It is building two major new coal fired power stations that will be completed by 2019, including the Medupi plant, whose first 800 MW unit could go on-line by the end of this year.

Progress panel welcomes new rules

The Africa Progress Panel (APP) has welcomed new European rules on transparency that require companies to provide more information on large payments made to governments.

The new rules require oil, gas and mining companies to disclose full information on payments to governments over €100 000 and move the world closer to a global standard on transparency, says APP.

The rules will also help Africa to seize more effectively the value of its natural resource wealth, said Kofi Annan, former UN Secretary-General and Chair of the Africa Progress Panel. "When they benefit local communities, mining projects are more likely to win "social consent". In the long-run, this reduces political risk," he said.

"Other countries, such as Canada, China, and Switzerland must now adopt these standards," added Annan.

APP said that the disclosure rules would put local communities in a better position to demand a fair share of revenues from energy and mining projects.

Masdar inaugurates Mauritania plant

A 15 MW solar photovoltaic (PV) power plant – the largest of its kind in Africa – is set to alleviate severe energy shortages in the Islamic Republic of Mauritania.

The $32 million, utility scale PV plant has been officially inaugurated and will play a key role in the economic and social development of the country, said Mauritania President Mohamed Ould Abdel Aziz. The plant was developed by UAE-based Masdar.

"Energy access is a pathway to economic and social opportunity," said President Aziz during the inauguration of the solar plant. "Electrification, through sustainable sources of energy, is critical in ensuring our people have access to basic services and is a step toward improving our infrastructure and long-term economic development."

Mauritania's electricity grid has a generating capacity of 144 MW, much of it based on diesel generators. Electricity demand in the country is rising by 12 per cent.

The new plant consists of 29 826 micromorph thin-film panels. Project engineers designed the support structure for the PV modules to be piled into the ground instead of using a concrete foundation in order to reduce the project's carbon footprint and cost.

Areva-MHI in line for Sinop deal

The Turkish government is preparing to award a contract for the construction of a new nuclear power plant to a joint venture between Mitsubishi Heavy Industries (MHI) and Areva, according to reports.

Newswires reported in early April that Japan and Turkey had reached a basic accord on the construction of the Sinop plant in Turkey and were finalising the details of an intergovernmental accord awarding preferential negotiating rights to the MHI-Areva alliance.

Chinese and South Korean firms have also submitted bids for the $25 billion contract.

The *Nikkei* reported on April 3 that MHI and Areva will build four Atmea 1-type pressurised water reactors with a combined output of 4.5 GW at the Sinop site on the Black Sea. Construction is to begin in 2017, with the first reactor coming on line by 2023, and France's GDF Suez will operate the facility, according to the Japanese newspaper.

The government in Ankara is planning to hold a meeting between Japan's Prime Minister Shinzo Abe and Turkish Prime Minister Recep Tayyip Erdogan shortly to confirm the countries' bilateral collaboration on nuclear reactor construction. After the two governments sign an agreement, preferred negotiation rights will be officially awarded to the MHI-Areva alliance.

Sinop would be the second nuclear power plant to be built in Turkey after Russian and Turkish heads of state signed an agreement in May 2010 for Rosatom to build, own and operate the Akkuyu plant near the port of Mersin.

This plant will consist of four 1200 MW AES-2006 units, with the first coming on line in 2016.

Construction of the Sinop plant is due to start in 2017, with the first reactor coming on line by 2023.

Prime Minister Erdogan: cooperating with Japan

GOIC forecasts Gulf investments

- Jebel Ali M on-line
- Sohar 2 and Barka 3 commissioned

Gulf countries are expected to continue large-scale investment programmes in their electricity sectors, according to a report from the Doha-based Organisation for Industrial Consulting (GOIC).

Gulf Cooperation Council (GCC) states are forecast to invest more than $300 billion by 2020, building 20 major power projects with a generating capacity of 8 GW, says GOIC.

The report comes as the 2060 MW, 140 MIGD Jebel Ali M power and desalination project was brought on line in Dubai, while in Oman two IPPs announced the full commercial operation of the Sohar 2 and Barka 3 power plants.

The GOIC report states that the GCC population is set to grow by 30 per cent to over 50 million over the next two decades, and together with rapid industrial development, will cause electricity demand to soar. By 2020, the region's real GDP is expected to grow by 56 per cent.

Nominal GDP, which was $341.6 billion in 2000, is forecast to soar to over $2 trillion in 2020.

The ways in which the region faces up to these challenges will have a major impact on its prosperity and quality of life, not only in 2020 but in the decades to come, the GOIC noted. GCC countries have a vast untapped potential to improve energy efficiency that should be urgently implemented.

Jebel Ali M cost more than Dh10 billion ($2.7 billion) and has increased Dubai's power generating capacity to nearly 10 000 MW. "Securing the supply of electricity and water to ensure sustainability in the long-term is critical to achieving the vision of our government, and Dewa is committed to planning in advance to meet our future demands," said Dewa managing director and chief executive officer Saeed Mohammed Al Tayer.

BP sale marks renewables exit

After withdrawing from carbon capture and storage, and solar energy, BP plans to sell its US wind power business.

Siân Crampsie

BP has put its US wind power operations up for sale, just weeks after announcing that it would wind down its solar energy business.

The move marks the end of the company's earlier strategy to go "beyond petroleum" and will leave it active in only the biofuels segment of the global renewable energy sector.

Earlier in 2013 BP said that it would retreat from the solar power sector after 40 years of commitment because "tremendous change" in the market meant that it could no longer make "the necessary returns to continue" operations.

BP owns interests in 13 wind farms across the USA with a combined gross generating capacity of around 2000 MW. It built the business over the course of four years and in February celebrated the commissioning of its 1000th wind turbine at a site in Texas.

It invested in onshore wind farms in the USA because it believed there were synergies with its natural gas business there and because of the strong business case for onshore wind energy there compared to other geographical markets.

The BP wind energy business could be worth around $1.5 billion and could attract the interest of Asian renewable energy companies keen to gain a foothold in the US market.

The global wind energy sector is facing numerous challenges, including low natural gas prices, economic recession and uncertainty over political commitment to renewable energy.

Last month turbine manufacturer Vestas hit more problems as its finance director said he would leave the company after only nine months in the job.

Dag Andresen was recruited to help steer Vestas through a difficult period of change involving a major restructuring process and a one-third cut in staffing levels.

Vestas has been losing share to other key wind turbine manufacturers – including GE, Siemens and Enercon. In April Bloomberg New Energy Finance said that in 2012 GE caught up with Vestas to become joint leaders in the global wind turbine manufacturing market.

Both companies accounted for 11.8 per cent of commissioned capacity in 2012, when 48.4 GW of new capacity was installed globally.

A surge of development activity in the USA ahead of expiring tax credits at the end of 2012 helped to boost both companies' installations, while other markets contracted.

Siemens, Teradata join forces

Siemens and Teradata have formed a global strategic partnership to help utilities improve the management of 'big data'.

The two companies say that their partnership will enable utilities to improve the reliability of their infrastructure and run their grids more effectively. It will combine Siemens' smart grid business with Teradata's Unified Data Architecture (UDA), which is a framework for the management, processing and analysis of large quantities of data.

Large amounts of data – known as 'big data' – are generated in networks after upgrades from traditional to smart grid infrastructure. Utilities need solutions to manage this data as well as analyse it to assess their operations and customer needs.

Siemens and Teradata say they will be the first to offer end-to-end integration of operational data with smart meter data for analysis on a single platform, providing an entirely new view of the network.

Speaking at the announcement of the partnership Dr Jan Mrosik, CEO of Siemens Smart Grid Division said: "We need a data analytics layer to correlate all the data coming from all the different sources. This layer is made of two components: one is a 'big data' platform provided by Teradata and on top of this, we are together building a suite of applications. This will allow us to bring 'big data' applications to utility customers."

Siemens says the first applications will cover areas such as demand response, meter data management, virtual power plants, electric vehicle charging etc.

Regarding 'big data' applications, Dr Mrosik said: "The consistency of meter data is something we can explore. These systems can, for example, correlate data to help determine if there is any irregular [energy] consumption behaviour."

Hermann Wimmer, President, International, Teradata added: "Of course, just collecting data doesn't drive a cent of value of a utility's bottom line or help a utility's customers understand their energy consumption. By integrating their data and running their analytics on the Teradata platform, utilities can apply intelligence to networks and use meter, asset and other sources of data to gain operational efficiency, improve service and increase customer satisfaction. That is where the value lies."

Shell targets tech innovation

Oil firm Shell has announced plans to increase investment in technology innovation in order to add value to its operations.

The company says that Shell Technology Ventures will "invest several hundred million dollars" over the next six to eight years to accelerate the development and deployment of advanced technologies such as smarter exploration processes.

Shell currently spends about $1.3 billion per year on R&D and the new funds will be spread across a range of technologies.

Gerald Schotman, Shell's Chief Technology Officer said, "Ideas from outside the organisation are critical to our open innovation approach to R&D." He added that the company wanted to get innovative technologies "up and running" as quickly as possible.

The company will invest in promising technology companies as well as technology spin-outs and externally managed venture capital funds. Chosen partners would be granted access to its technical experts, its global research capability and its customer, supplier and contractor base, said Shell.

Areas of interest for Shell include gas production and conversion, geophysical imaging, novel materials, production in challenging environments and future energy technologies.

"A good example of where this is already working is our investment in GlassPoint Solar Inc.," said Geert van de Wouw, Shell Technology Ventures Director. "Their pilot plant in the Middle East taps heat from the sun to generate steam for enhanced oil recovery. Petroleum Development Oman contracted GlassPoint to build the plant, which is currently being tested."

UK utilities under fire

Consumer groups in the UK are putting increased pressure on energy utilities to explain how they can justify making large profits while increasing numbers of customers fall in to fuel poverty.

Top executives from the country's "big six" energy suppliers were grilled by lawmakers last month and it emerged that RWE npower had not paid any corporation tax between 2009 and 2011.

In April the regulator, Ofgem, also fined SSE a record amount for mis-selling energy to consumers.

RWE npower chief executive Paul Massara told the House of Commons' Energy Select Committee that the firm, a subsidiary of Germany's RWE, paid no corporation tax for three years because it had invested £5 billion in the UK over the last five years, making it eligible for significant levels of tax relief.

Massara added that such rules on tax relief would be vital in attracting the investment needed in the UK's energy infrastructure.

However consumer groups such as *Which?* Have questioned utilities' decision to increase energy prices in recent months. Campaign group Energy Bill Revolution says that one-quarter of households in the UK are now in energy poverty.

Ofgem says that the UK's upcoming energy market reforms will increase its powers and make the energy market more transparent. In April it fined SSE £10.5 million for "numerous breaches of its obligations relating to telephone, in-store and doorstep sales activities".

Ofgem is also investigating allegations of mis-selling at E.On, Scottish Power and RWE npower. Last year EDF agreed to pay £4.5 million to customers for breaching marketing rules.

RWE npower made a profit of £390 million across its retail and power generation business in 2012, a 25 per cent increase over 2011.

SSE is due to report full-year results in June. In November it said that half-year profits had risen 40 per cent to nearly £400 million.

Both RWE npower and SSE have increased energy prices by around nine per cent in the last six months along side others, including EDF, E.On and British Gas. According to *Which?* First Utility is planning to increase prices on 1 June 2013.

CEZ pledges capacity sale

Czech electricity company CEZ has pledged to sell up to 1000 MW of generating capacity in order to improve competition in the country's energy market.

Europe's antitrust authorities have accepted the Czech firm's commitment, which followed an investigation into whether CEZ may have abused its dominant position in the market.

Commission vice-president in charge of competition policy Joaquín Almunia commented: "More competition leads to lower prices. The divestiture of significant generation capacity will allow a new player to enter the Czech electricity market and to compete with the incumbent CEZ. This will benefit all electricity customers."

In the course of its investigation, the Commission came to the preliminary view that CEZ might have hindered entry into the Czech market for the generation and wholesale supply of electricity, in particular through making a pre-emptive capacity reservation in the transmission system network, which it did not need at that moment.

CEZ says it will sell either the Pocerady, Chvaletice or Melnik III power plants, together with the Tisova plant. The European Commission said that any buyer acquiring one of these assets would be able to establish itself on the Czech market and then gradually develop a wider portfolio of generating assets and compete effectively with CEZ.

■ CEZ has formally lodged a complaint with the European Commission against Bulgaria for failing to honour national and European energy market regulations. Bulgaria's energy regulator has cut electricity prices and has threatened to revoke CEZ's operating license.

Tenders, Bids & Contracts

Americas

Alstom to supply Cachoeira Caldeirão

Energias do Brazil has selected Alstom Renewable Power to supply all the electromechanical equipment for the Cachoeira Caldeirão, a hydropower plant being built in northern Brazil.

The 220 MW plant will be built on the Araguari river in Amapá state and will be operational in 2017. Alstom's contract also calls for Alstom Grid to supply equipment for the plant's internal substation.

Alstom will supply three bulb turbines, gates, balance of plant and hydromechanical equipment.

Exelon, Areva sign fuel contract

Areva has signed a contract with US utility Exelon to provide nuclear fuel fabrication services to the Dresden and Quad Cities nuclear power stations in Illinois and to continue fabrication services to the Three Mile Island nuclear plant in Pennsylvania.

Under the agreement, Areva will supply a total of 12 reloads to the four Dresden and Quad Cities units, starting in 2016. In addition, the group will provide six fuel reloads to Three Mile Island and continue to supply the facility with both fuel and engineering services.

EDF orders Blackspring turbines

EDF EN Canada Inc and Enbridge have placed an order with Vestas for the supply of 166 wind turbines for the Blackspring Ridge wind farm project in Alberta, Canada.

According to Vestas, deliveries of the turbines for the 399 MW project will start in the second half of 2013. The contract also includes a service and maintenance contract.

The wind farm is expected to be operational by April 2014.

BP awards O&M contract

BP Wind Energy has awarded an operation and maintenance (O&M) contract for a 20 MW wind farm in California, USA, to EDF Renewable Services.

The Edom Hills wind farm consists of eight Clipper Windpower 2.5 MW wind turbines, for which EDF will provide a range of O&M services.

EDF already provides O&M services to a wind farm in Oaxaca, Mexico, that is equipped with Clipper wind turbines.

Asia-Pacific

Malaysia shortlists five

The Malaysian Energy Commission has shortlisted five consortia to tender for the construction of a 2000 MW coal fired power plant.

The Project 3B plant will be developed on a greenfield site on the Malaysian peninsula and will be commissioned between October 2018 and April 2019. The Energy Commission received seven requests for qualification submissions.

The five shortlisted consortia are 1Malaysia Development Bhd (1MDB), Formis Resources Bhd, Tenaga Nasional Bhd (TNB), Malakoff Corp Bhd and YTL Power International Bhd. All the contenders have either foreign or local partners.

1MDB has proposed the plant to be located at Jimah, Negri Sembilan, while Malakoff has proposed Pulau Carey, Selangor. Both Formis and YTL Power have proposed Tanjung Tohor, Johor. TNB, meanwhile, has proposed that the plant be sited in Tanjung Hantu - Segari, Perak.

ABB wins $150 million HVDC order

ABB has won an order worth around $150 million to supply converter transformers, direct current (DC) filter capacitors and key components for converter valves for the world's highest capacity power link.

The 8000 MW Xiluodu-Zhexi link will transmit electricity from hydropower plants in southwest China to demand centres on the country's east coast. ABB will supply converter transformers, DC filter capacitors and key components.

The 1670 km, 800 kV ultra-high voltage direct current (UHVDC) link will run from Yinbin in Sichuan province to Zhejiang province.

Jiangsu Huadian Jurong Power chooses Metso

Jiangsu Huadian Jurong Power Co. Ltd. has chosen Metso's automation systems for its two greenfield 1000 MW power plant units located in Xiashu Town, Jurong City, Jiangsu Province, China.

Scheduled to start up in the coming summer, the units are the first 1000 MW units with ultra supercritical technology to be built by Jiangsu Huadian Jurong Power.

Both power plant units will be controlled with Metso's automation systems from one central control room. The systems will monitor, control and optimise the performance of the units along with the common services at the plant site.

The turbine control system, boiler feedwater pump turbine control system and flue gas desulphurisation system will also use Metso's DNA hardware and software, and will be integrated into the distributed control system, although they are supplied by other vendors.

Europe

Nordex signs Turkey contracts

Nordex has announced the signing of delivery and service contracts with two long-standing customers for four wind power projects in Turkey.

The German wind turbine firm will supply a total of 50 wind turbines with a combined capacity of 125 MW to Eskim Holding and Dost Enerji.

Deliveries will start this year and will enable Nordex to defend its leading position in the Turkish wind market, it said in a statement.

The turbines will be installed at the Hasanbeyli wind farm in eastern Turkey, at a site close to Silivri near Istanbul, at the Yuntdag wind farm north of Izmir, and at the Geres wind farm in Yuntdag.

Hitachi wins Greek plant order

Hitachi Power Europe GmbH and Greek plant constructor Terna S. A. have won an order for the construction of a 660 MW lignite fired power plant in Greece.

Terna, part of the GEK Terna Group, and Hitachi will build the new power plant as the fifth unit of the Ptolemais thermal power plant in northern Greece. Hitachi will provide the steam turbine generator and a flue gas cleaning system.

The power plant will come on line by 2019.

Voith refurbishes Rhine hydro plant

Rheinkraftwerk Albbruck-Dogern AG (Radag) has placed an order with Voith for refurbishment of a hydropower plant on the Rhine near the German-Swiss border.

Voith will modernise several turbines at the Rheinkraftwerk Albbruck-Dogern plant and supply three vertical Kaplan runners for the project. The refurbishment will extend the life of the plant as well as increase the efficiency of the machines.

Rheinkraftwerk Albbruck-Dogern has been in service for 80 years. The project will be executed in two stages, with one machine set being refurbished in the first stage and the remaining two in the second.

Alstom wins South Humber contract

Centrica Energy has awarded Alstom a €120 million contract for gas turbine maintenance at its South Humber Bank power station in the north of the UK. The agreement covers the five Alstom GT13E2 gas turbines installed at the 1260 MW combined cycle power plant over the next seven years.

In addition to the delivery of parts and equipment for the performance of all planned inspections on the five gas turbines, Alstom will supply all necessary craft labour as well as on-site technical field advisors. The contract also includes delivery of two additional upgrade packages based on the successful validation of the first upgrade installed in February 2012 on a single turbine at the same power station.

Scots build food recycling plant

Biogen, a 50-50 joint venture between Kier and Bedfordshire based company Bedfordia, has signed a deal with the city of Edinburgh and Midlothian Councils to design and build a new food waste recycling plant.

The anaerobic digestion (AD) plant near Millerhill in Midlothian, will process 30 000 tonnes of waste per year and generate around 1.4 MW of renewable energy for the grid. It will also produce a valuable biofertiliser for farmland.

Work on site is planned to begin in February 2014 with the AD plant expected to produce electricity by autumn 2015. Biogen has contracted Barhale plc to manage the civil engineering element of the build.

International

Worley Parsons awarded Saudi contract

Saudi Electricity Company (SEC) has awarded WorleyParsons a contract for the design and construction management of two combined cycle gas turbine power plants.

Power Plant 13 and Power Plant 14 will each have a capacity of 1650 MW and form part of Saudi Arabia's power generation capacity expansion programme. WorleyParsons' integrated ECPM services contract includes conceptual engineering, detailed design, material procurement and management, project management, construction management and commissioning management.

Revenue from the contract will be around $125 million, said the firm.

Service contract at Kirishi

Siemens Gas Turbine Technologies (SGGT) and Open Joint Stock Company OGK-2 have signed a long-term service contract for the largest combined cycle power plant in Russia – PGU-800 of Kirishi.

Under the agreement SGGT will provide maintenance of the gas turbines and generators for a period of 12 years. The first inspection with execution of scheduled work is scheduled to begin next month.

The long-term service contract is part of the ongoing collaboration between Siemens and OGK-2, which in 2012 completed the repowering of Unit 6 of Kirishi by adding two Siemens SGT5-4000F gas turbines to the existing steam turbines.

Areva wins Jordan fuel contract

Areva has signed a contract with Korea's Kaeri/Daewoo consortium to supply fuel elements for the Jordan Research and Training Reactor (JRTR) being built in Jordan.

The contract includes the supply of nuclear fuel for the first reactor core and for a reload batch. Delivery of the fuel elements is scheduled for the beginning of 2015.

Construction of the JRTR is an essential step in Jordan's nuclear energy programme. The thermal power of the JRTR will be 5 MW, which can be extended to 10 MW in the future. It will be used for neutron beam research, neutron irradiation services such as medical radioisotope production, and training of Jordanian engineers and scientists.

Nigeria orders Jenbacher sets

GE is to supply four Jenbacher gas engines to a new factory in Nigeria that will manufacture syringes and intravenous drug products for the African market.

The 14 MW cogeneration plant will comprise three 4 MW J624 gas engines and one 2 MW J612 unit and will be installed at the factory in Part Harcourt for Integrated Medical Industries Limited.

In addition to supporting Nigeria's fight against infectious diseases, the on-site power plant will also contribute to the Nigerian government's ambitious targets to modernise the nation's electrical generation infrastructure. The new cogeneration plant will be the first power project in sub-Saharan Africa to utilise GE's 24-cylinder J624 gas engines.

Iraq places substation order

Iraq's Electrical Transmission Project Office of the Ministry of Electricity (MOE) has awarded Avantha Group Company CG a $60 million contract for the construction of four high voltage GIS substations.

CG will design, manufacture, deliver and install the substations, which will play a major role in helping to upgrade and reinforce Iraq's existing 132 kV electricity transmission grid.

The delivery will include all electrical engineering works, 12 power transformers, medium voltage and high voltage Gas Insulated Switchgear (GIS) and SCADA/control and protection systems for the high voltage substations. The project is expected to be completed by August 2014.

M+W to build Israel PV plant

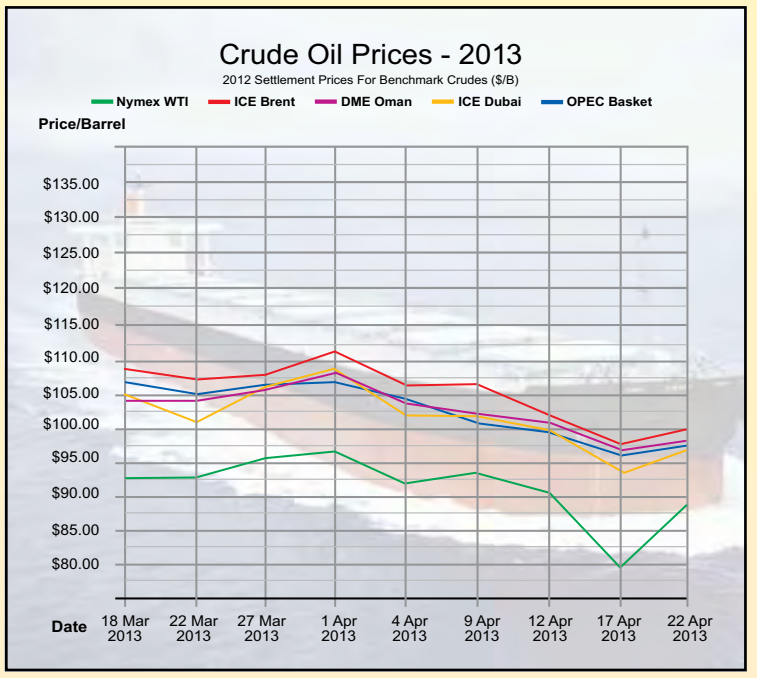
The global engineering and construction company M+W Group has been awarded an engineering, procurement and construction (EPC) contract for the largest photovoltaic (PV) power plant in Israel.

The 55 MW plant will be built near Moshav Ohad, 100 km south of Tel Aviv and will consist of 180 000 crystalline PV modules and 60 central inverters. It will be equipped with a single-axis horizontally simulated tracking system that makes it possible to optimise yield, while minimising installation and operating costs.

Oil

Crude prices slip as economy remains unenthused

- Cyprus fallout and China worries impact market
- US production to exceed imports by end of 2013



David Gregory

Crude prices dipped in mid-April, with West Texas Intermediate (WTI) moving below $90/b for the first time since last December and Brent selling for a few days below $100/b, the first time it has dipped this low since July 2012. The Opec basket price also fell below $100/b in mid-April for the first time in nine months.

While Opec likes its basket price at $100/b or better, the decline is not expected to warrant an emergency meeting before the scheduled gathering in Vienna at the end of May. Opec considers the second quarter a time of reduced demand and counts on the third quarter for the market to pick up.

Considering it is taking years for the global economy to recover, any 'pick-up' in crude prices will not come from any significant increase in demand.

In its *Oil Market Report* for March, released on April 11, the Paris-based International Energy Agency (IEA) reported the oil futures prices declined in March under the weight of renewed pessimism for the global economic outlook. It said weaker crude demand, "amid exceptionally deep seasonal maintenance at refineries", added to the pressure.

Market analysts say the fall-out of the rescue of the Cyprus economy by Eurogroup lenders and the International Monetary Fund (IMF) and worries over the future of the Chinese economy have impacted the market. Cyprus in particular is expected to have a role to play in the future course of the European economy.

While the size of the Cyprus bail-out was not huge in normal bail-out terms, €10 billion, the way in which it was done – usurping funds from depositors in Cypriot banks – could prove challenging for the EU if a similar move is made in other member states needing financial assistance.

In its April *Short-Term Energy Outlook*, the US Energy Information Administration (EIA) said it expects Brent to average a spot price of $108/b in 2013 and $101/b in 2014. It sees WTI averaging $94/b in 2013 and $92/b in 2014.

The EIA forecast that world liquid fuels consumption would grow by 1.0 million b/d in 2013 and by a further 1.3 million b/d in 2014 – reduced projections of 140 000 b/d and 200 000 b/d respectively, compared to the administration's previous forecast.

It said that growth in consumption would increase during the next two years due to "a moderate recovery in global economic growth". It forecast world liquid fuels consumption at 90.0 million b/d in 2013 and 91.3 million b/d in 2014.

The IEA forecast global crude demand at 90.6 million b/d for 2013, an increase of only 795 000 b/d over 2012. It said a projected contraction in OECD demand of 480 000 b/d, led by a 340 000 b/d decline in Europe, partially offsets growth of 1.28 million b/d elsewhere.

Opec supplied 140 000 b/d less during March, according to IEA data, averaging total output of 30.44 million b/d during the month. Global crude supply slipped by 120 000 b/d during March. Non-Opec supply is forecast to average 54 million b/d during the first quarter of 2013 and it expected to average 54.4 million b/d for the year.

The Far East and especially China are setting the course for demand growth but demand there is seen as declining as well.

According to the US-based Energy Information Administration (EIA), recent indicators of weaker industrial data at the beginning of 2013 signal slower growth than in prior years. In its monthly report the EIA estimated that liquid fuels consumption in China increased by 380 000 b/d during 2012 and projected consumption increases of 450 000 b/d in 2013 and 510 000 b/d in 2014. This compares with average annual growth of 540 000 b/d from 2004 through 2010.

In the US, growing domestic production has contributed to lower crude imports, the EIA said. Gross crude oil imports averaged 8.5 million b/d in 2012, the lowest since 1997, the administration said. It added that it expects US production to exceed imports by the end of this year, which would make that the first time to happen since February 1995.

The administration said US crude oil production will grow rapidly over the next two years, increasing from an average 6.5 million b/d in 2012 to 7.3 million b/d in 2013 and 7.9 million in 2014. Total net imports were 7.4 million b/d in 2012 and the EIA expects imports to continue falling to average 6 million b/d by 2014.

Gas

Gas study sees vast potential for US market

US gas resources are far more extensive than previously estimated according to a new report. Meanwhile, the advent of unconventional gas in the country continues to shake things up.

Mark Goetz

The Potential Gas Committee (PGC), an independent natural gas research organisation associated with Colorado School of Mines, recently released its biennial assessment of US natural gas resources. According to the report, the US has gas resources that amount to some 2688 trillion cubic feet (tcf).

"The US possesses a total technically recoverable resource base of 2384 tcf as of year-end 2012," the PGC's report determined. It said this new resource evaluation exceeds the 2010 assessment by 486 tcf. "Most of the increase arose from new evaluations of shale gas resources in the Atlantic, Rocky Mountain and Gulf Coast areas," the committee said, adding that the changes had been assessed in addition to 49 tcf of domestic marketed-gas production estimated for the two-year period since the group's last report.

The 2012 assessment includes 2226 tcf of gas potentially recoverable from 'traditional' reservoirs (conventional, tight sands and carbonates, and shales) and 158 tcf in coalbed reservoirs, the report said.

Compared to the 2010 report, the PGC said traditional resources increased by 486.4 tcf (28 per cent), while coalbed gas resources declined by a nominal 0.4 tcf (0.2 per cent), resulting in an increase in total potential resources of 486.1 tcf (25.6 per cent).

"When the PGC's assessments of technically recoverable resources are combined with the US Department of Energy's latest available determination of proved reserves, 305 tcf (dry gas) as of year-end 2010, the US has a total available future supply of 2688 tcf, an increase of 486 over the previous evaluation," the report stated.

The report quoted Dr. John Curtis of the Colorado School of Mining as saying knowledge of the geological endowment of technically recoverable gas continues with each assessment carried out by PGC.

"Our present assessment, strengthened by robust domestic production levels, demonstrates an exceptionally strong and optimistic gas supply picture for the nation," Dr. Curtis said.

The PGC study ranked the Atlantic area as the richest resource area in the US with 33 per cent of total traditional resources, followed by the Gulf Coast and then Rocky Mountain areas. Together the three areas account for 76 per cent of US assessed total traditional resource.

"Changes in the total assessment from 2010 to 2012 arose primarily from analyses of recent drilling, well-test and production data from these three regions," the report said. "The largest volumetric and percentage gains were reported for Appalachian basin shales, which collectively rose by 335 tcf.

Meanwhile, the advent of unconventional gas in the US market continues to shake things up.

A recent report from Bloomberg, based on data compiled by the US Energy Information Administration (EIA) said some 20 per cent of the $133.7 billion invested in the US tight oil and shale gas exploration and development between 2008 and 2012 was made by foreign companies through joint venture deals.

According to the EIA, foreign companies are looking primarily to learn the technology used by US firms in order to develop unconventional deposits in their home countries. Furthermore, they are forming partnerships with smaller US firms, not the US giants.

China has invested $5.5 billion, Japan $5.3 billion, India $3.55 billion and South Korea $1.55 billion, according to the data. The UK has invested $3.95 billion, France $4.55 billion, and Norway $3.38 billion.

The boost in natural gas production in the US has caused gas prices to fall and this in turn has led to some utility and energy groups to pressure state legislatures to reconsider laws that require utilities to buy some of their energy from renewable sources, another Bloomberg report said.

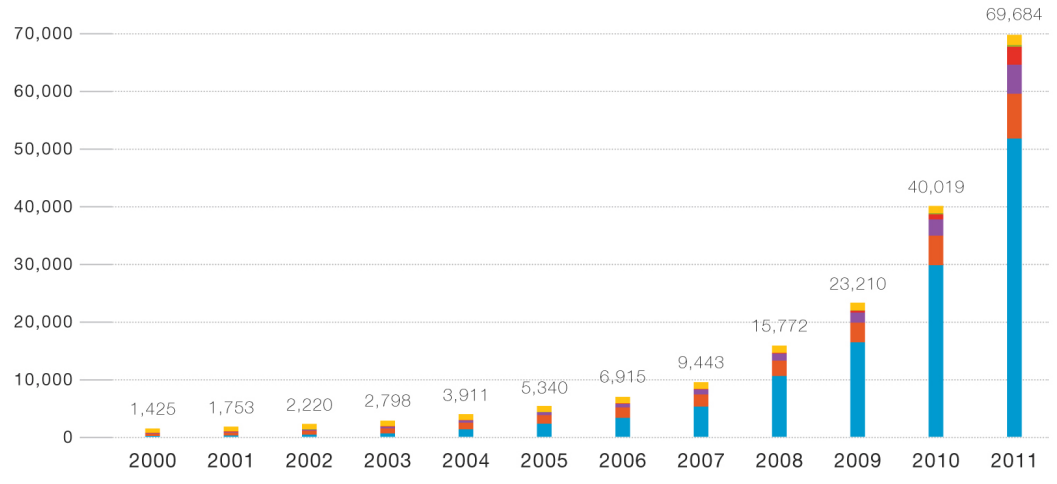
Those lobbying for change argue that natural gas is a clean fuel and is much more affordable than renewable energy.

However, while gas burns cleaner than coal or crude products, it still emits carbon, unlike renewables, the original point of the legislation.

Lobbyists argue that natural gas prices have fallen by 72 per cent since 2005 and that the high prices of wind and solar power projects make it hard for utilities to justify. They say the free market is a better way to determine electricity prices.

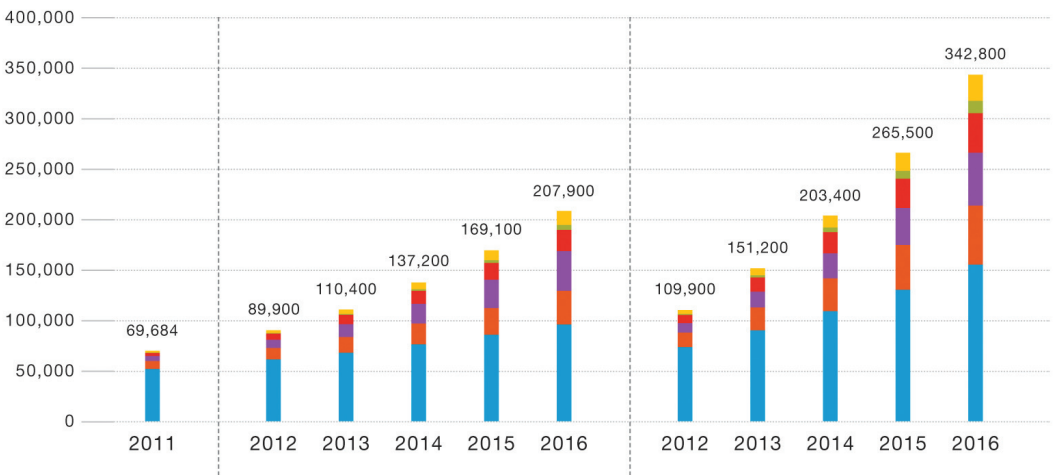
"The shale revolutions are not just having ramifications politically and economically in the US, but also around the world," Michael Liebreich, CEO of Bloomberg New Energy Finance was quoted as saying.

Evolution of global cumulative installed solar PV capacity 2000-2011 (MW)



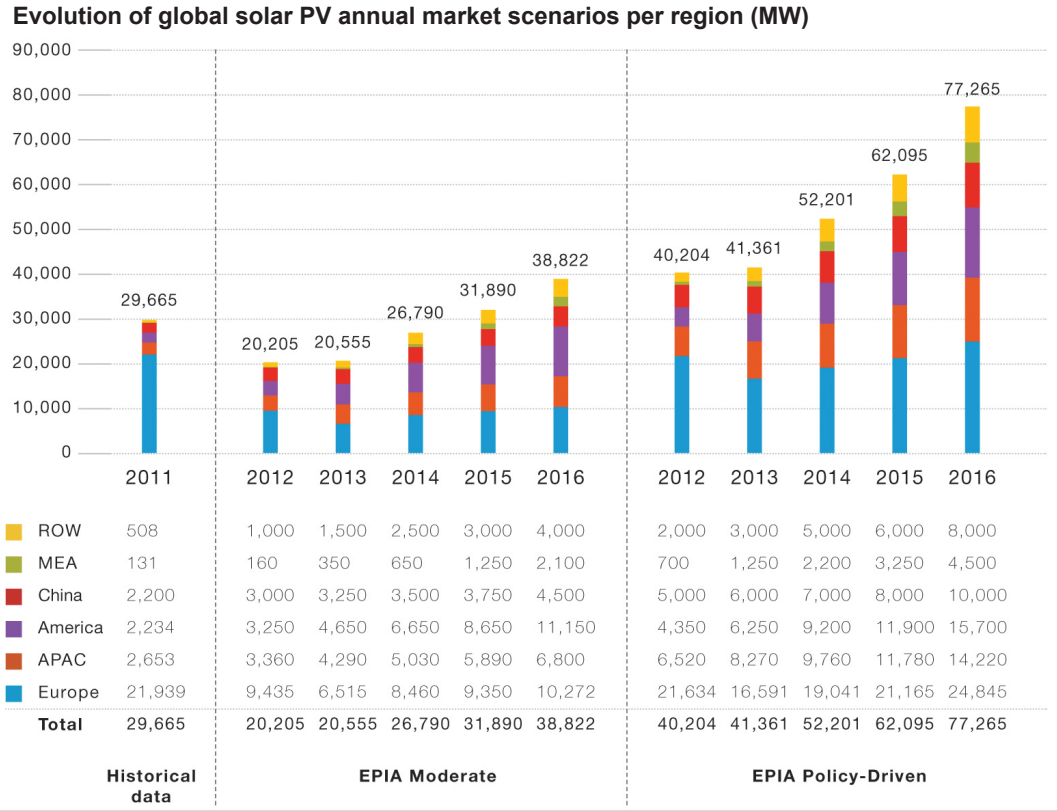
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
ROW	751	807	887	964	993	1,003	1,108	1,150	1,226	1,306	1,209	1,717
MEA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	21	205	336
China	19	30	45	55	64	68	80	100	145	373	893	3,093
America	146	177	222	287	379	496	645	856	1,205	1,744	2,820	5,053
APAC	355	491	677	902	1,178	1,475	1,797	2,080	2,643	3,409	5,116	7,769
Europe	154	248	389	590	1,297	2,299	3,285	5,257	10,554	16,357	29,777	51,716
Total	1,425	1,753	2,220	2,798	3,911	5,340	6,915	9,443	15,772	23,210	40,019	69,684

Evolution of global cumulative installed solar PV capacity per region 2011-2016 (MW)



	2011	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016
ROW	1,717	2,700	4,200	6,700	9,700	13,700	3,700	6,700	11,700	17,700	25,700
MEA	336	500	850	1,500	2,700	4,800	1,000	2,30	4,500	7,700	12,200
China	3,093	6,100	9,300	12,800	16,600	21,100	8,100	14,100	21,100	29,100	39,100
America	5,053	8,300	13,000	19,600	28,300	39,400	9,400	15,700	24,900	36,800	52,500
APAC	7,769	11,100	15,400	20,400	26,300	33,100	14,300	22,600	32,300	44,100	58,300
Europe	51,716	61,200	67,700	76,100	85,500	95,700	73,400	89,900	109,000	130,100	155,000
Total	69,684	89,900	110,400	137,200	169,100	207,900	109,900	151,200	203,400	265,500	342,800
	Historical data		**EPIA Moderate (cumulative)**					**EPIA Policy-Driven (cumulative)**			

Evolution of global solar PV annual market scenarios per region (MW)



	2011	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016
ROW	508	1,000	1,500	2,500	3,000	4,000	2,000	3,000	5,000	6,000	8,000
MEA	131	160	350	650	1,250	2,100	700	1,250	2,200	3,250	4,500
China	2,200	3,000	3,250	3,500	3,750	4,500	5,000	6,000	7,000	8,000	10,000
America	2,234	3,250	4,650	6,650	8,650	11,150	4,350	6,250	9,200	11,900	15,700
APAC	2,653	3,360	4,290	5,030	5,890	6,800	6,520	8,270	9,760	11,780	14,220
Europe	21,939	9,435	6,515	8,460	9,350	10,272	21,634	16,591	19,041	21,165	24,845
Total	29,665	20,205	20,555	26,790	31,890	38,822	40,204	41,361	52,201	62,095	77,265
	Historical data			**EPIA Moderate**					**EPIA Policy-Driven**		

For more information, please contact:

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This section is supported by ABB

Source: Global Market Outlook for Photovoltaics until 2016, European Photovoltaic Industry Association (EPIA)

The lights are on but nobody's home…

The importance of energy efficiency is often overlooked. ***TEI Times*** gets an insight from Bsmart Energy Solutions managing director, Chris Norburn, who has worked with a number of companies on energy management projects aimed at reducing energy consumption.

The 30th April, 2013 marked the point at which EU member states had to begin reporting their year-on-year progress towards national energy efficiency targets, as set out under the EU's 2020 Directive. Agreed in 2009, the directive established a framework of measures for the promotion of energy efficiency within the Union, in the hope of achieving a 20 per cent reduction in the supply and use of energy by 2020.

Under the provisions of the agreement, members adopted a package of mandatory measures, including requiring energy companies to make savings equivalent to 1.5 per cent of their annual sales every year, through the implementation of energy efficiency projects. These can include: improving the efficiency of heating systems, cooling and air conditioning, lighting, building fabrics and insulation. EU members further committed to the renovation of at least three per cent of state-owned buildings per year, and to complete energy-consumption audits on large businesses at a minimum of every four years.

UK-based Bsmart Energy Solutions, a subsidiary of smart energy solutions provider Bglobal plc, recently undertook a series of energy audits for a well-known high street retailer, after it pledged to become carbon neutral by 2050 – a significant challenge for an estate of over 2500 premises. Commenting on the project, Bsmart's managing director, Chris Norburn, said: "With this client, it really wasn't about reinventing the wheel – the retailer already had a well-developed energy management strategy and consumption reporting system in place. Our job was to help the customer achieve a step change in reduction and avoid performance drift across its estate."

There were a number of factors affecting efficiency targets being met in each store. These included: building design – floor area and ceiling height, building fabric, glazing, insulation levels and so on; usage – heating, ventilation and refrigeration requirements, lighting levels, staffing periods and demand peaks; location – outside air temperature, humidity and wind effect; and, perhaps most significantly, staff/user-behaviour and levels of automated controls.

Using profile information obtained from Bsmart's metering systems, the team set up load shedding, scheduling, and central and automatic optimisation protocols

Energy efficiency in buildings is all about taking human influence out of the equation as much as possible, so this is where building management systems (BMS) come into their own, according to Norburn. He commented: "BMS control systems allow for timely adjustments to be made in line with consumption feedback. In a retail environment, demand peaks are responsible for a significant proportion of a stores energy usage, so control platforms are the best means through which to compensate and react for these unforeseen energy loads or exceptional consumption events as soon as they are detected."

Using profile information obtained from Bsmart's metering systems, the team set up load shedding, scheduling, and central and automatic optimisation protocols across its estate. Load scheduling effectively builds elasticity into a premises' energy consumption patterns by accounting for factors like daily energy price fluctuations and peak operating times. This means that energy is drawn during the most cost-effective periods. Load shedding, on the other hand, involves the automatic reduction of energy consumption of non-essential or low-priority plant. Which functions are attributed the utmost importance will vary greatly depending on the building's usage.

"With food retailers, for example, priority is given to the energy supply of freezers and refrigeration equipment, while for a manufacturing company, maintaining production line power supplies will be the main concern," said Norburn.

Another concern for Bsmart's retail client was BMS settings and schedules, which needed to be adjustable depending on system demands.

Norburn continued: "These can work independently or in tandem with features such as central automatic demand response procedures. The system can operate as an energy wastage safety net – for example, turning off equipment that has inadvertently been left on outside trading hours – or be used for regular energy curtailment, whereby equipment such as air conditioning systems can be signalled to turn off for a pre-determined interval (dead-band control) throughout the day, when conditions allow."

Arguably, large retailers have been among the first wave of organisations to really enshrine energy efficiency into their business model. Smaller companies have been somewhat slower on the uptake.

Norburn suggested some potential contributing factors, adding: "Vast organisations are not only under economic pressure to drive home efficiency savings, they also have 'sector peer status' and considerable Corporate Social Responsibility (CSR) duties with which to comply. Not so for the little guys. Conservation for conservation's sake just does not motivate the majority of business users.

"Finance Directors aren't willing to commit budget unless providers are able to guarantee considerable savings levels within short payback periods. So far, Bsmart has never brought a project in with targets of less than a 15 per cent consumption reduction and a ROI of more than three years. Still, however good the benefits, small business' cash flow issues are still a significant barrier to take-up."

Norburn: control platforms are the best means for compensating and reacting to unforeseen energy loads

In 2012, the Department of Climate and Energy published a report which identified 150 TWh of energy savings in the UK could be made up by 2030 through improvements to controls in the commercial sector, and improved buildings efficiency in the industrial sector. However, governmental efficiency policy to date has largely focused on stimulating retrofit projects in the housing sector – of which the Green Deal is perhaps among the most widely publicised. The scheme's aim is to finance the upfront cost of retrofit projects, with users able to pay back the capital through resultant energy savings.

The policy is not without its detractors. "From a commercial perspective, it's a bit of a white elephant," said Norburn. "Businesses are being encouraged to invest time and costs into joining approved supplier listings. But, despite this effort, there's still a lack of certainty over whether sales will actually be generated as a consequence – it could be just another policy flop.

"At the moment, I just don't see how it will work, because someone has to guarantee the savings and be prepared to accept liability if there are shortfalls. Whose responsibility is that – the surveyor, installer, supplier or end-user? It's just not a proposition service providers are likely to jump at, especially when no one is able to state with any certainty where the process is failing and why."

There are also concerns that policy like the Green Deal will not help the UK to deliver the 20 per cent targets, because they miscalculate the potential energy savings that can realistically be achieved from the residential sector. A 2011 DECC report estimated that it was possible to achieve somewhere in the region of 75 per cent overall energy savings from residential schemes. However, detractors have suggested that the report overestimates the amount of power used in domestic settings by as much as a factor of three.

Norburn is unconvinced: "The numbers just don't add up. The housing sector is responsible for around just 25 per cent of Europe's energy consumption, so where's this huge savings potential coming from? Domestic schemes have very limited scope because they don't have the energy load to necessitate demand control platforms or BMS. Instead, you're really only looking at issues to do with the building fabric – glazing, insulation, low-voltage lighting and so on – with levels of usage totally at the occupant's discretion."

Concerns about the Green Deal aside, Norburn claims that more emphasis should be placed on funding projects in the commercial sector. However, customer cash flow also continues to be the significant issue. Businesses that would like to implement reduction projects often do not have the finances to put energy saving schemes into place.

"Unfortunately, much of the current legislative focus is on taxation and charges designed to force them to act, rather than offering positive incentives and benefits to encourage efficient positive cash spending," said Norburn. "Take the Carbon Reduction Commitment, for example. However well-intentioned the legislation, we're now in a situation whereby businesses are increasingly banking cash to pay the levies, instead of investing in efficiency projects which would reduce their emissions and bring them under CRC targets in one – it's completely counter-intuitive."

In Norburn's opinion, the alternative to current government programmes is joint venture schemes. He explained: "We're always telling businesses that 'you gotta spend a buck to save a dime', but the industry's not willing to practice what it preaches by offering clients good financing incentives and performance contracts. We're no longer in a boom economy and something has to be done to get projects kick-started.

"I'd like to see new partnerships and strategic business groups, specifically for those energy companies that want to work together. I'd also like to see manufacturers and suppliers cutting their margins to allow installers to keep the paybacks encouraging to end-users. Currently, providers just have to take the hit on margin, with no pressure on suppliers to do likewise."

Locomotives of innovation

Utilities can be the locomotives of the innovation that can offer valuable opportunities in tackling the challenges they face in all segments of the value chain. Eurelectric's Innovation Action Plan, carried out in cooperation with McKinsey & Company, looks into the needed policy framework for innovation in the power sector. ***Susanne Nies***

The European power sector is experiencing profound and accelerating change. This makes innovation imperative. Today, the power sector is reinventing itself – not just in terms of the generation technologies it uses, but also regarding processes and business models.

A 'Power System 2.0' is in the making, not least enabled by new technologies related to the information and communication technology (ICT) revolution. Traditional business models are being redesigned as the energy system shifts from a one-way street of supply-demand to a more interconnected model. This 'new downstream' is made up of smart grids, smart meters, storage, and 'prosumers'. New stakeholders are entering the system. Big data, disruptive photovoltaics (PV), electric vehicles as 'batteries on four wheels', in-home devices for self-monitoring and control of domestic appliances – these are just some of the concepts symbolising a change that has already started and that will stretch over at least 20 more years.

This latest development is but one of several transformations in the sector's 130-year history; others include standardisation, expansion and ultimately universal electrification in industrialised countries, the shift from coal and diesel to gas and nuclear, the adoption of high environmental standards and successful tackling of SO_2 and NO_x emissions, and the development of new products and services on the customer side. Innovation has also increasingly decoupled power consumption from GDP growth, a trend that is continuing amid the move to greater energy efficiency.

The drivers of innovation in the European power sector have varied over time, evolving along the lines of wider societal and political challenges that marked particular periods. The oil shock in 1973, for example, raised the political priority of establishing import independence. Other drivers have included cost-efficiency, industrial policy, environmental protection and climate change.

Today's change is occurring because of governments' climate and environment agendas, but also because of real existing business opportunities waiting for smart applications. Power system complexity will increase as the value chain continues to shift from a linear supply-demand model to a model with more feedback loops between elements. And with this growing complexity, the opportunities for innovation multiply.

This development is not confined to Europe. Global economic power is shifting. By 2030, 80 per cent of the world's population will live in Asia and Africa. Socioeconomic trends will move economic growth into the Asia-Pacific region, where a new middle class of 3 billion people will arise. At the same time, 1.3 billion of the global population is still lacking access to energy. Demand for energy resources is therefore set to rise dramatically.

In electricity, many of the required solutions will be off-grid or at least more decentralised than today, and the impact of renewable energy sources and downstream technologies will be accordingly high. In this context, the industrialised economies of the 'old' continent will be able to use their experience to shape and deliver valuable electricity know-how for innovative products and services, both at home and abroad. This will be one of the challenges – and ultimately opportunities – of the future.

So why is the power sector key to innovation? In this changing world power utilities have much to gain. Often considered resistant to change, utilities are in reality the locomotives for the required innovation. Their capacity for aggregating resources from universities, research institutes, manufacturers and other innovation stakeholders make them an ideal anchoring point of the innovation eco-system.

Moreover, given the scale of the orders they can place, utilities can provide certainty to new innovations, be they in products, processes or business models. In this way utilities can be market-creators for innovation products.

To assess this potential, European power sector association Eurelectric has been carrying out extensive work on innovation in the power sector. Supported by McKinsey & Company, it has surveyed policymakers and industry representatives in Europe and beyond. The results, brought together in a new report, show that utilities are facing a rising number of challenges in all segments of the value chain, creating valuable opportunities for innovation.

Indeed, increased innovation could go a long way towards resolving the three-way dilemma of decarbonisation, security of supply, and economic viability. Faster technology development could lower power supply costs by enabling extensive continued cost reductions in renewable and other low-carbon electricity generation technologies.

Initial estimates suggest that breakthrough innovation in these areas could be worth €70 billion to the EU economy by 2030, or an additional €350 of GDP per EU household. These estimates are based on comparing a reference case to a high-innovation case, in which innovation reduces technology cost and increases energy efficiency capture. The resulting electricity cost reductions and energy savings have a combined value of €60 billion per year. The benefits could be even larger when wider macro-economic effects are considered, including improved competitiveness.

Accelerated innovation in the EU power sector could be worth €70 billion per year by 2030

Additional benefits of increased innovation include reduced costs of balancing the power system, improved consumer convenience and value, additional economic benefits or contributions to EU objectives through accelerated electrification of transport and heat, and opportunities for EU industry in the context of an expanded global market.

Policymakers should recognise the potential benefits of accelerated innovation and act accordingly. One objective of European energy policy is to facilitate a cost-efficient transition to low-carbon power generation, in particular in these times of economic downturn. Innovation is indispensable to achieving this goal.

The European Commission has acknowledged this role of innovation in its recent Green Paper on the 2030 climate and energy policy framework, stating it will have to "recognise the evolution of technologies over time and promote research and innovation." Eurelectric fully supports this aim.

Yet innovation never flourishes in isolation. Instead, it depends on an enabling setting: a business environment that spurs and rewards private sector innovation, and a public policy framework for investing in innovation where the business case needs initial support. Crucially, policymakers must refrain from overly detailed and prescriptive short-term measures, and concentrate on establishing a sustainable long-term innovation environment.

Eurelectric therefore advocates five main actions to enhance EU innovation policy and better enable the power sector to capture existing innovation opportunities. They are:

1. *Adopt a systems approach*. Innovation policy must become a tool of energy policy, avoiding focus on individual technologies in favour of an expanded and integrated perspective that encompasses interconnected impacts on the overall power system.
2. *Nurture public-private dynamics*. The public and private sectors have to work hand-in-hand to reinvent the power system. Policymakers should harvest the low-hanging fruit: innovation through a competitive and risk-rewarding market framework.
3. *Prioritise demonstration and commercialisation*. Demonstration and early deployment are indispensable parts of the power sector innovation chain. Further support mechanisms are needed to complement R&D support.
4. *Unlock downstream innovation*. Policy should move quickly to put in place the enablers of a "new downstream" set of services and offerings: a competitive and fully liberalised market, innovation-friendly regulation, and enabling smart grid infrastructure.
5. *Avoid inefficient and costly over-regulation, but create light and supportive governance for the EU's 'Innovation Union'*. Innovation would benefit strongly from better coordination and governance of both EU-level and member state support mechanisms, starting with improved joint programming and pooling of resources.

In times of recession especially, there is a need to avoid wasting public – or private – money but to choose and prioritise, to support productive innovation. This does not mean that policymakers should pick winners, especially with regards to technology. Instead they ought to set up a framework that lets the market find the most cost-efficient and suitable option. They should keep the entire innovation value chain in their sights, moving beyond a focus on invention to the longer-term process of commercialisation.

Finally, they must set out on a path of strong public-private engagement and of meaningful interaction between the EU and member states. Under these conditions European policymakers can turn the energy transition into a success story for Europe – and an example for the world.

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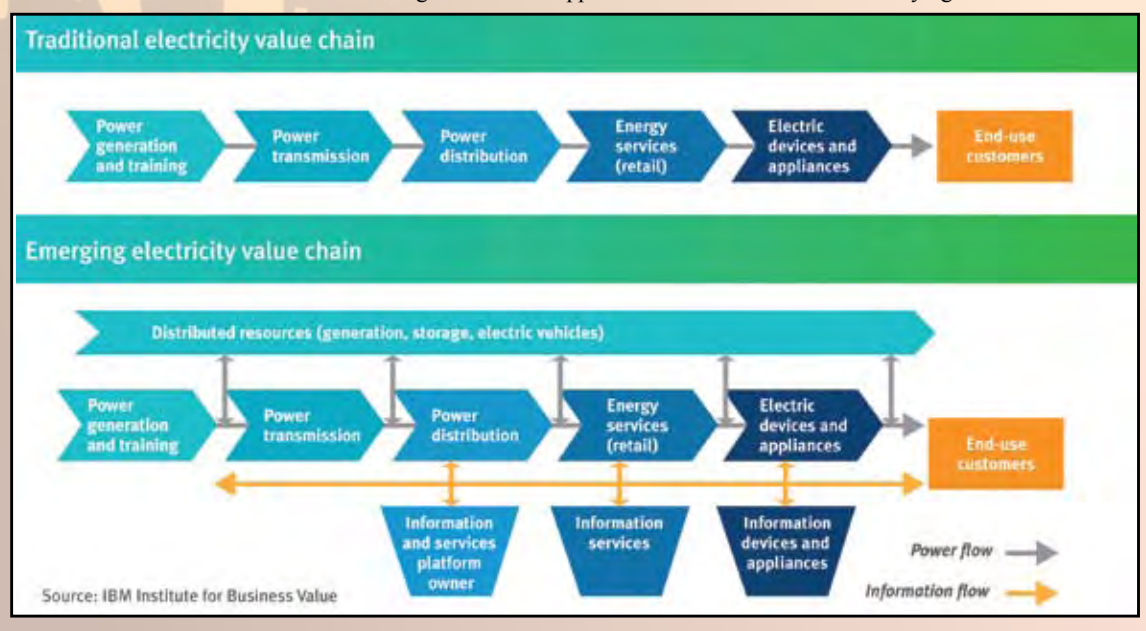
Nies: innovation is indispensable



More breaking news

In February, as part of the EU TWENTIES Project, Alstom Grid claimed it achieved the best performance ever seen in a high voltage direct current circuit breaker. The success is good news for the wind power industry and brings the vision of a meshed DC network a step closer to reality. **Junior Isles**

With a budget totalling €56.8 million (over half of which was provided under the Energy Theme of the EU's Seventh Framework Programme), the TWENTIES Project is one of largest industrial energy initiatives ever undertaken in Europe.

Launched in April 2010, the TWENTIES ('Transmission system operation with large penetration of wind and other renewable electricity sources in networks by means of innovative tools and integrated energy solutions') project is aimed at helping the EU achieve its 2020 renewable targets.

Under the project, various experiments and tests are taking place across Europe that will culminate in the implementation of six large-scale demonstrations aimed at removing the barriers to integrating more wind power (from both onshore and offshore) into the European system by 2020.

For example, Belgium and Spain are working on increasing the flexibility of transmission networks, while in France, high voltage, direct current (HVDC) meshed networks will be validated using simulations and experiments of two different HVDC circuit breaker technologies.

In February this year a major milestone was achieved in the development of one of those breakers.

According to Alstom Grid, it achieved the best performance ever seen in a HVDC circuit breaker while testing a prototype at its testing facility in Villeurbanne, France.

In the presence of an independent expert, the HVDC circuit breaker interrupted currents exceeding 3000 A in less than 2.5 ms.

The achievement highlights recent breakthroughs that manufacturers are making in developing components that will bring high voltage DC networks closer to reality.

In November last year ABB also announced that it had successfully tested a DC circuit breaker.

A prototype of the breaker has been tested at the Villeurbanne Test Laboratories

Commenting on Alstom's work in the area, Stephan Lelaidier, Vice President of R&D at Alstom Grid said: "Although we have been in the HVDC market for the 50 years, we have really accelerated our efforts during the last five years. We have been investing a lot of money in R&D and have been heavily involved in the TWENTIES project since it started three years ago."

Europe has ambitious plans for growing its offshore wind power generation. While it has made significant progress in installing new offshore machines, the challenge of integrating these wind farms into the European power grids is no easy task.

Despite the growth in annual wind energy installations in 2012, with cumulative capacity almost reaching 5 GW, offshore wind deployment is lagging behind the objectives the EU member states set themselves in their National Renewable Energy Action Plans (NREAPs).

According to the European Wind Energy Association (EWEA), by the end of 2012 55 wind farms in 10 European countries had installed and connected a total of 1662 turbines to the grid, totalling 4995 MW. In 2012 alone 369 turbines were erected, 293 of which were grid connected representing 1166 MW. This meant that 76 of the turbines erected are still awaiting grid connection.

While challenges in connecting wind farms to the grid are more due to political than technical issues, the long term goal of having a grid that is capable of handling a large amount of offshore wind capacity in a manner that allows optimum use alongside existing energy resources is indeed technically challenging.

Lelaidier explained: "Implementing [and connecting] just one offshore wind farm to the grid using a point-point connection is not simple. When you have to implement many, it is more than challenging. It requires the study of not just specific technologies but of the whole system."

Lelaidier says it starts with studying how to combine a system that will in the future have AC on one side and DC on the other, i.e. connecting the DC offshore system to an onshore AC network.

"We need to solve problems such as stability of the network, secondary frequency control and voltage control. You also have to find a solution to compensate for the unstable behaviour of wind farms. This could be through balancing generating sources distributed through the AC network, creating a virtual power plant to provide this balancing effect."

However, there are some technologies that are absolutely necessary for the creation of a DC grid. The DC circuit breaker is widely viewed as the starting point. As Lelaidier put it: "There can be no meshed DC grid without it."

Currently, voltage source converter technology is used to connect offshore wind farms to the onshore network as point-to-point systems. Here, DC breakers are not needed. If there is a problem, the link to the onshore network is simply disconnected. However, the situation becomes more complex when there are multiple offshore wind farms.

Lelaidier says there can be no meshed DC grid without a DC circuit breaker

Lelaidier explained: "It will become necessary to have a real DC grid – a meshed DC grid that allows you to optimise generation and monitor the turbines. Like with an AC grid, it will be necessary to have a solution to mitigate the problems that are possible in the grid. You need the ability to isolate branches of the network."

Breaking DC is not as easy as breaking AC. Unlike with AC, with DC there is no point where the current passes through zero. Also, when there is a short circuit, current rises much faster in a DC circuit than in an AC circuit. This means that any breaker has to act very fast.

Lelaidier could not reveal all the aspects of Alstom's new breaker but explained some of the basic principles. He first noted that as DC networks are very efficient, it is important to account for the losses that can be introduced by the addition of equipment such as breakers. Alstom's technology is therefore based on what Lelaidier describes as "some branches in parallel".

He said: "We use some power electronics in the main branch, which sees the current in the network, to break the current. The other branches then see the main current. Everything is monitored in terms of time. When there is no current in the main branch, a fast mechanical switch in the main branch is opened. A surge arrester is used to evacuate the energy resulting from breaking the current."

The breaker has been developed in collaboration with RTE (Réseau du transport d'électricité), the French electricity transmission system operator. RTE's involvement was crucial in terms of providing information on current flow in a network and the rate of current rise in the network when a fault occurs.

Having successfully tested the breaker at 3000 A, the next step is to build a full-size prototype to carry out tests at 7500 A and 180 kV in September this year. This is the level that has been defined under the scope of the TWENTIES project.

Looking beyond the September milestone, the next step will be to scale up the breaker so that it can be implemented on the 320 kV connections currently used for connecting offshore wind farms to the grid. Lelaidier noted, however, that scalability will not be a huge challenge.

He added: "There will be some demonstration or pilot projects before going to this level to gain experience on the network. But developing a product that operates on a lower voltage network can still significantly prove the reliability and the efficiency."

Although the development of the new breaker is being undertaken with the offshore market in mind, Lelaidier believes it is likely that first deployment could be onshore simply because it is physically easier to do.

One possible project where the breaker could be installed at some point in the future, is the South-West Link in Sweden. Here, the owner uses VSCs in a point-to-point connection onshore but is thinking of implementing a DC grid.

"It is possible that this onshore project, in some years, could be the first to use our HVDC breakers," said Lelaidier.

Looking into the future, Lelaidier sees a big role for power electronics in the power industry. In addition to their use to help transfer increasing amounts of energy over longer distances as well as in the stabilisation of networks, he is convinced they will be crucial to the development of other components needed for a DC grid.

He summed up: "Maybe one day we will have DC-DC converters, the equivalent of transformers in an AC network. Maybe we will also need converters to connect storage systems to the high voltage network. All of this equipment will need to be connected and controlled through the use of electronics. I am convinced that power electronics will be key in the coming 20-30 years."

Junior Isles

No time for a slow Ryder

When 'Ryder' takes control of 'Pelham 123', it's clear there's trouble down the line. The train is about to take its passengers turned hostages on a journey down a very dark path. European utilities could be forgiven for thinking they have boarded the 1.23 pm from Pelham Bay Park Station with a psychotic John Travolta at the helm.

The current state of Europe's power generation sector seems to be a tale of woe and impending crisis.

Speaking at this year's *4th Annual European Power Generation Conference,* Alistair Buchanan, Chief Executive of UK energy regulator Ofgem joked: "I hope there is some alcohol with lunch because I think we will be pretty suicidal by the time it comes, judging by the tone of the conversation we are having so far."

As European utilities continue to face financial difficulties in challenging market conditions and a tough economic climate, there is no clear direction on how Europe should add new generating capacity to ensure security of supply while meeting its decarbonisation objectives.

Not so long ago, some may have scoffed at the suggestion of the lights going out. Yet right now it is a real concern for politicians in several European member states. The increasing use of renewable energy sources is making gas fired plant – largely seen as the main baseload source to compensate for the variability of wind and solar – uneconomical and threatening the financial viability of many utilities' existing fleet. This in turn is raising concerns about future investment decisions and thus future generation adequacy.

For some time the EU and national governments have been looking at capacity remuneration mechanisms as a way of guaranteeing sufficient generating capacity is available when needed. But not all are convinced that this is the way to go.

Stephen Woodhouse, Director at international consulting and engineering company Pöyry said: "With regards to capacity payments, I would say be careful what you wish for… Collectively, people have gone to policymakers and asked for certainty on their next project. It's a bit like asking for chastity but not yet. In theory, project-by-project, it may seem more robust to rely on a state-supported project rather than a market-based one. But cumulatively, you end up with so much of your asset base reliant on that policy, that it becomes cumulatively more risky than the market solution in the first place. I fear it is the same for capacity [remunerated] generation. So I would repeat, be careful what you wish for."

Woodhouse also believes there is still a missing part of the market. Although the industry is concerned about the illiquidity of short term markets as well as forward markets, combined cycle plant operators still trade their product according to spark spreads.

He asked: "Does anybody know a CCGT in any country in Europe, that actually runs baseload, where trading their product according to spark spreads has any meaning?" Under this scenario, Woodhouse said it was impossible to trade forward. "What we are missing is the trading of products that allow a combination of price and volume risk. Well we solved this problem in the agricultural market about 200 years ago.

> "Were Brussels to try and force the capacity mechanism approach into some kind of binding [agreement]... I think you would see some fireworks between the member states and Brussels"

There is a product called 'Options' that allows you to hedge a combination of price risk and volume risk – that's what's missing from the energy markets."

Others argue that the current energy-only markets (where generators are paid only for the electricity they generate) and introducing a strategic reserve with predefined despatch prices could be sufficient to guarantee security of supply and remove reluctance to invest in future generating capacity.

Any future market design will ultimately come down to who is driving the change. An important question is therefore: who is actually driving EU power generation strategy? Is it capital markets, companies, politics or even events?

Many argue that markets drive outcomes as opposed to policy and that capacity mechanisms will completely distort the market. Yet 'markets' – as we understand the definition – cannot cope with the current challenges. Until fairly recently, it was arguable that the big companies were perhaps driving energy policy but this is no longer the case.

"In the past the big four [European utilities] would spend a weekend with the chancellor of Germany and sort things out. But now they are chastened by what has happened to them. Fifty per cent or more has been wiped off their share price within the last two years," said Buchanan.

Today Europe's power generation sector is probably being driven mostly by a combination of events and, more so, politics. Yet one of the biggest challenges facing Europe is political consensus.

The question remains of whether any attempt at enhancing market design should be driven by Brussels or by individual EU member states. The EC held a Stakeholder Forum on generation adequacy, capacity mechanisms and the internal market in electricity on March 8, 2013 and plans to publish guidelines on capacity mechanisms next month [June].

However, these guidelines may conflict with the plans of member states such as Belgium, France, Germany, and the UK.

Buchanan noted that although the EU offers a realistic and pragmatic approach to market design, the problem is that it is driving a "slow train" when it comes to power generation policy. "Last year, I said this about gas policy but the same is even truer with respect to [power] generation policy."

Brussels is wisely making infrastructure its prime focus, which will affect the siting of generation and generation strategy. The problem, however, is that Article 194 of the Lisbon Treaty places the responsibility for energy with the member states. This creates a challenge for Brussels.

Buchanan explained: "Were Brussels to try and force the capacity mechanism approach into some kind of binding [agreement], or 'straight-arm up the back approach', on the member states, I think you would see some fireworks between the member states and Brussels – not because of the concept of what Brussels is trying to do but because it is working with a different speed train."

With a generation crunch being widely forecasted in some places within the next few years, the likes of Britain, for example, cannot wait for Brussels to specify market design. Buchanan makes a valid point noting that the train "hurtling towards the wall" in Britain does not allow for that extra time.

He added: "I would argue that we will see the same thing in Belgium and we have already had a sense of seeing that in Germany."

Member states' decisions to move ahead of any EU recommendations is understandable but at the end of the day will not be the most efficient approach for the EU as a whole. In the hope of being self-sufficient, national approaches disregard cross-border capacity.

Marco Garbers, European Power Market Design and Regulation Expert, RWE Supply and Trading explained the situation best. "Lack of coordination is a problem when it comes to capacity markets… The problem we see, is there will be a lot of overcapacity available for exporting most of the time."

Garbers believes that energy-only is still the most efficient market design and could still work with more renewables in the system. "If we have less generating hours for each power plant, they must be compensated with higher energy prices so there are price peaks when there is no wind or sunshine," he said.

Although it sounds simple in theory, Garbers admitted that there are preconditions that need to be fulfilled.

One can argue the merits of one market design versus another. And while all may agree with the ideal of a common design driven by the EU, a simple fact remains – there is no Denzel Washington to save the day in this script and no member state government will risk waiting for the slow ride from Brussels while its country hurtles towards darkness.