# THE ENERGY INDUSTRY TIMES

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# Japan backtracking on nuclear phase-out


Flexible: Prime minister Yoshihiko Noda

Japan maintains that it is still heading in the direction of a nuclear phase-out but it is keeping the door open on a nuclear future. **Junior Isles**

Japan appears to be backtracking on its proposal to phase out nuclear power.

Just days after a government advisory panel's recommendation to end production from nuclear power plants by 2040, the Cabinet stopped short of endorsing the move, saying it would only take the policy report "into consideration" and would seek public support for its recommendations.

The public, in this case, includes the general population as well as the nuclear industry, other business interests, and communities near nuclear plants that rely on them economically.

The latest move came as business lobbies became more vocal in criticism of the nuclear-free goal out of concern that giving up nuclear power would lead to electricity rate hikes and adversely affect the country's economy.

The initial proposal to abandon nuclear also raised concern in the international community. Britain and France, where Japan has shipped spent nuclear fuel for reprocessing, were concerned about the future of those facilities, as they would face a fall in revenue. The United States was also concerned because Japanese nuclear technologies have been widely used in the country.

Following the original policy announcement, the chief executive officer of France's major nuclear equipment maker, Areva, said that Japan's new policy of aiming to stop nuclear power generation in the 2030s would have a serious impact on the world's energy market.

Luc Oursel told French newspaper *Les Echos* that the competitiveness of Japanese nuclear equipment makers in the global market would be weakened as the new energy strategy would force them to implement restructuring programmes.

But even in making the initial policy announcement Japan had left the door open, with the government indicating that the zero-nuclear policy could be revised, depending on such factors as progress in the development of renewable energy and changes in public opinion.

Commenting on the latest decision, Hi deyuki Ban, co-head of anti-nuclear Citizens' Nuclear Information Centre, who served on a government nuclear energy policy panel said: "At least the policy showed the direction we should be heading. But the level of commitment has been weakened, and the plan has lots of holes... It's obvious there was tremendous pressure from businesses."

The decision still represents a shift for a government that until recently was considering a plan for nuclear power to continue to supply up to 25 per cent of the country's energy needs through the 2030s.

Prime minister Yoshihiko Noda said that "flexibility" remains important when facing "a variety of uncertainties" and said that the strategy still served to express the direction that Japan would take.

*Continued on Page 2*

# International companies jostle for UK nuclear position

Several of the world's leading companies in the building and decommissioning of nuclear power plants are gearing up to take a advantage of opportunities in the UK's nuclear sector.

At the end of September three consortiums submitted bids for Horizon, a joint venture between German utilities RWE and E.On, which was put up for sale in March. The energy group has licences to build reactors in Anglesey and Gloucestershire. A sale is expected to be decided by the end of the year.

The three consortiums each include a major nucelar reactor manufacturer – Westinghouse Electric, Areva and Hitachi – and the battle for Horizon may come down to a contest between three competing reactor designs.

Westinghouse and Areva have each formed partnerships with state-owned Chinese groups, Areva with China Guangdong Nuclear Power, and Westinghouse with State Nuclear Power Technology, in addition to US generator Exelon. Hitachi is alone in leading an international consortium with no Chinese role.

Areva's EPR will be built in the UK even if the consortium does not end up buying Horizon: EDF Energy intends to build two of the French-designed reactors at Hinkley Point in Somerset.

Meanwhile, last month Areva also moved to exploit opportunities in the decommissioning sector. It formed a joint venture with Atkins, one of the world's leading engineering and design consultancies, to compete for projects in nuclear fuel management and decommissioning.

Dominique Mockly, Areva's Senior Executive Vice President, Back End Business Group said: "We are delighted to link with a company with such a strong reputation as Atkins. This will enable us to put our proven technology to use in meeting the challenges of UK decommissioning and strengthen Areva's footprint in the country."

Atkins (Energy) has been involved in the UK nuclear clean-up programme since the late 1980s.

The Areva-Atkins Partnership UK is expected to bid for significant contracts at Tier 2 level in the UK nuclear engineering sector. Tier 1 contracts are contracts placed with the Nuclear Decommissioning Authority (NDA) to manage and operate the various sites in NDA estate. Tier 2 contracts are the subcontracts the site operators place to deliver their objectives.

The UK represents a lucrative market for decommissioning with the overall budget for decommissioning put at an estimated £3 billion.

Martin Grant, CEO of Atkins (Energy), said: "We can't speculate on what share of that we might take but it is a big industry and offers opportunities today and in the long term. The joint venture will offer services to all the sites but the biggest opportunities are likely to be at Sellafield."

At the moment, the agreement covers the UK only, but the two companies said that the experience gained here could lead to the bidding for contracts outside of this scope in the future.

■ A £1 million pilot programme by the European Space Agency has shown that nuclear batteries for use on deep space missions could be made from an isotope found in decaying plutonium at the Sellafield waste storage site in Cumbria, UK.

Continued from Page 1

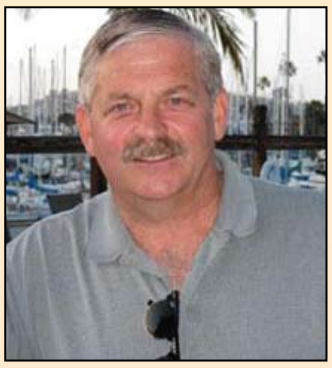
National Policy Minister Motohisa Furukawa said the focus of Japan's energy policy continues to be the phasing out of nuclear power, although it would take time. Furukawa vowed to push for green energy and for cuts in carbon dioxide emissions.

Nuclear power provided about a third of the country's electricity before the March 11, 2011, accident at the Fukushima Daiichi plant, and Japan had planned to increase its dependence on nuclear power. Now only two of the country's 50 functioning reactors are on line while the government addresses public concerns about safety.

Commenting on the recent events, Chris Gadomski, lead nuclear analyst at Bloomberg New Energy Finance said: ""Prior to Fukushima, Japan had intended to increase its nuclear capacity from 49 GW in 2010 to 68 GW in 2030 – a 39 per cent increase. That is an indication of the then perceived value that carbon-free nuclear generation offered Japanese utilities.

"The sudden turn against, and mothballing of, this technology in the aftermath of Fukushima has created significant economic burdens for both utilities and communities while increased fossil fuel use has spiked $CO_2$ emissions."

He said that what has changed in Japan since the Fukushima accident is not the country's need for extensive clean base load power but rather how the nuclear industry interfaces with government and society.



**Gadomski: what needs to be changed is not necessarily the technology**

He explained that the Fukushima accident was triggered by an unprecedented natural disaster that was then mismanaged by government and utility authorities.

"Perhaps a better coordinated response could have controlled the extent of the accident. Accordingly, what needs to be changed is not necessarily the technology, but rather how it is effectively managed."

Earlier in the month Japan said it would allow the construction of new nuclear plants if the government has already given the green light to the project.

Naomi Hirose, president of Tokyo Electric Power Co, the Japanese utility that owns the crippled Fukushima Daiichi nuclear power plant, said that he believes nuclear power should be part of the country's energy mix.

Hirose also said the utility cannot afford to invest in alternative energy after being saddled with huge compensation and clean-up costs after the nuclear crisis.

"We tried to develop those renewable powers, but unfortunately after March 11, we do not have much money and we probably cannot spend as much money to build renewable energy," he said.

# Trade actions mount against China solar panels

The world's major solar countries are lining up to file anti-dumping complaints against Chinese solar panel makers says **Junior Isles**

The EU is following the US in launching an anti-dumping investigation into imported Chinese solar panels, and India may soon follow.

On September 6 the European Commission initiated an anti-dumping investigation into solar panels and their key components imported from China. The plaintiff, an industry association called EU Pro Sun led by German firm SolarWorld, claimed that Chinese solar companies received illegal aid from their government and sold products below market value in Europe.

Shortly after the EU announcement, China's Ministry of Commerce (MOC) spokesman Shen Danyang said China "deeply regretted" the EU decision, and said restricting China's solar panel products will hurt the interests of both sides and undermine the healthy development of the global solar and clean energy sector.

China has maintained its position to resolve the China-EU trade friction through consultation and cooperation and sent a delegation to Europe last month to negotiate trade issues surrounding solar panel imports.

A statement by the MOC said: "We hope the EU adopts a cautious attitude when resorting to trade protection measures, and create conditions for cooperation and common development of the industry between both sides."

Trina Solar a China-based solar panel supplier believes the allegations made by SolarWorld and the EU ProSun group will prove to be unfounded.

"Trina Solar products are neither dumped nor subsidised. They are produced, and sold competitively on the European market. We believe the trade investigation will reveal that Trina Solar competes fairly with its competitors in the European Union," said Chairman and CEO, Jifan Gao.

"We are cooperating with the European Commission to ensure it receives all required information to arrive at a balanced and fair conclusion. Additionally, we welcome Chancellor Merkel's constructive approach to a dialogue and are ready to participate in any dialogue which may be initiated," said Ben Hill, President of Trina Solar Europe.

Angela Merkel's reluctance to support the trade action by the ProSun Group was communicated at a meeting in Beijing with Wen Jiabao, the Chinese premier at the end of August. Her stance, however appears to put her on a collision course with Karel De Gucht, the EU trade commissioner who has taken a harder line against Beijing.

A spokesman for Mr De Gucht told the *Financial Times*: "We've seen Chancellor Merkel's comments and we take note of them."

Some experts say it is "unreasonable" for some German solar manufacturers to accuse their Chinese counterparts of unfair competition. According to the Berlin-based solar industry research centre, SolarWorld itself has received about €137 million of financial support from the German government, including investment allowances, from 2003 to 2011.

"Without government support, SolarWorld could never be as successful as it is today," said Wolfgang Hummel, director of the German Centre for Solar Research.

"Imposing anti-dumping measures such as duties on China is against the interest of the EU," he said. It could lead to an increase in solar panel prices and decrease in demand and ultimately affect employment in Germany. That will be a lose-lose situation."

Trade frictions have also erupted between China and India as some panel makers in India filed applications for an anti-dumping investigation against solar panels made in China and other countries.

Expressing concerns over India's possible moves, China's Ministry of Commerce spokesman Shen Danyang urged producers from both countries to diffuse any dispute through negotiation.

# WWF expresses shale gas concerns

- Worries over UK dash for gas
- South Africa lifts shale gas moratorium

Commenting on a new report released by the UK's Institute of Directors (IoD) on the prospects for shale gas in the UK, WWF-UK said the report appeared to be based on some 'iffy assumptions'. The group also said that the report overlooked the most important impact of a new global 'dash for gas', namely that it would drive climate change to dangerous levels.

The group said that the argument that UK shale gas reserves could lead to 35 000 jobs being created and meet 10 per cent of the UK's gas requirements for a century, was simplistic and based on unverified commercial resource estimates and guesswork.

It also said the executive summary of the IoD report creates confusion by not making a clear distinction between the independent estimates of technically recoverable UK reserves published by the British Geological Survey and the estimates by license holders such as Cuadrilla which mainly refer to the volume of gas thought to be in the ground, not what is actually technically or economically recoverable.

"More importantly, in reviewing the environmental problems associated with shale gas, the IoD skates over the most important one: climate change. There is no evidence that shale gas can reduce UK emissions and as the International Energy Agency themselves point out, a golden age of gas certainly wouldn't be a golden age for the climate, and could drive global temperatures to dangerous levels."

A number of countries around the world are hoping to follow in the US' footsteps of exploiting shale gas for power production.

Most recently, South Africa became the first country to lift a moratorium on shale gas production. Several countries have banned shale gas production over environmental concerns related to the hydraulic fracturing (fracking) technique used to produce the gas.

If developed in commercial quantities, proponents say South Africa's resources, which rank fifth in the world, could solve the country's power crisis.

The debate over the role of gas in Britain's future energy policy was reignited last month by the Committee on Climate Change.

The committee said investment in new gas-fired power stations was "incompatible" with the UK's targets for reducing carbon dioxide emissions, which are legally binding under the Climate Change Act.

British Energy and Climate Change Secretary Ed Davey recently revealed that the UK is likely to build 20 new gas-fired power plants over the next few years. He said the government is planning 20 GW of new gas capacity by 2030, but insists that the surge in new gas capacity would not crowd out investment in renewables or force the UK to break its legally-binding carbon targets.

# UN panel proposes Kyoto carbon market overhaul

A high–level UN panel proposed a package to reform the centrepiece of the carbon market established by the Kyoto Protocol, the Clean Development Mechanism (CDM).

At a September meeting in Bangkok the panel recommended establishing a new fund to buy and cancel some of the carbon credit glut that has depressed prices. It also suggests phasing out the issuance of credits to controversial industrial gas projects altogether.

But the panel's non-binding recommendations will do little to immediately ease uncertainty over the future of Kyoto's Certified Emissions Reduction (CERs) units when the Kyoto deal expires at the end of 2012.

Jørund Buen, the co-founder and director of Point Carbon market analyst firm, said the proposed new CER fund would only raise prices "if it is significant enough and becomes operational quickly, purchasing a large portion of CERs." CER prices for delivery in December have fallen to just €2.30 a tonne

"Nations must, as a high priority, restore faith in global carbon markets generally and in the CDM specifically," the independent panel's chair, Valli Moosa, said in a statement.

Progress was also made on some of the details of future climate change agreements, although questions remain about broader issues.

"Government negotiators have pushed forward key issues further than many had expected and raised the prospects for a next successful step in Doha," said UN climate chief Christiana Figueres, referring to the COP 18 climate change meeting in the Qatari capital.

"There are still some tough political decisions ahead, but we now have a positive momentum and a greater sense of convergence that will stimulate higher-level political discussions ahead of Doha and set a faster pace of work once this year's conference begins."

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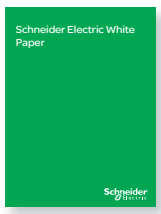


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# Rousseff cuts electricity rates

Brazil wants to reinvigorate its ailing industrial sector with energy price cuts.

Siân Crampsie

Homes and businesses in Brazil are set to benefit from a cut in electricity tariffs after President Dilma Rousseff announced measures to boost the economy as well as the competitiveness of Brazil's industrial sector.

The cuts will be made via a reduction in federal levies on energy production, resulting in a 16 per cent drop in households' energy bills and a reduction of up to 28 per cent for some in the industrial sector.

The tax reforms will be implemented in January 2013. In exchange for lower electricity costs, electricity generators whose concessions are due to expire between 2015 and 2017 will have their licenses renewed.

These generation concessions account for 20 per cent of Brazil's electricity generating capacity. A further nine transmission and 44 distribution contracts will also be renewed.

Rousseff said in an announcement that the measures would improve Brazil's international competitiveness and drive economic growth. Electricity rates for Brazil's industrial sector are the fourth-highest in the world and electricity consumption accounts for 40 per cent of costs for aluminium producers, according to Alcoa.

"Cheaper energy means lower production costs, but it also means more resources to invest [and] to generate more and more jobs," said Rousseff.

Although welcomed by the industrial sector in Brazil, the cuts to energy prices are likely to erode utilities' profits. Around 70 per cent of the concessions that are due to be renewed are operated by Eletrobras.

Utilities that refuse to accept the terms of the new concession contracts offered by the government will have their concessions re-auctioned. The government argues that many of the 20 generation concessions cover older hydropower plants whose costs have been amortised.

It has also pledged to write-off investments in generation and distribution made under utilities' current concessions.

But the utility sector remains concerned about the impact of the changes on their financial positions and on investment, particularly at a time when the country's renewable energy sector is poised for growth.

Brazil's installed renewable energy capacity – excluding large hydropower – stands at around 13 GW and is set to reach 38 GW by 2020, according to GBI Research. Wind energy is one of the fastest-growing energy resources there.

Economic growth in Brazil has dropped and the economy is expected to expand by just 1.65 per cent in 2012. Data from the Brazilian government's energy research organisation, EPE, shows that electricity demand in the country's industrial sector weakened in June and July compared with the same two months of 2011.

The drop in industrial electricity demand reflects "weak activity observed in the main manufacturing activities, especially in the power-intensive sectors", EPE said.

Commercial and residential electricity consumption has grown, according to EPE.

Rousseff also hopes that in addition to boosting the economy, the rate cuts will help to keep inflation under control.

# House supports No More Solyndras

Legislation that aims to bring an end to the US Department of Energy's (DOE) loan guarantee programme has been passed by the US House of Representatives.

The No More Solyndras Act was passed by 245 votes to 161 and will now move on to the US Senate for consideration.

If passed, it would prevent the DOE from issuing loan guarantees on applications received after the end of 2011 and sets new restrictions on existing applications and loans.

The legislation was composed in the wake of bankruptcy filings by US solar company Solyndra and other clean energy firms that had received loan guarantees from the DOE.

California-based Solyndra filed for bankruptcy in September 2011. In 2009 it received a $535 million loan guarantee under a stimulus programme that was aimed at encouraging growth in green energy.

Its bankruptcy has been the subject of investigations by both the FBI and Congress.

An 18-month investigation by the House Energy and Commerce Committee found that the DOE had rushed into the deal with Solyndra and helped to keep it going in spite of a series of warning signs.

Two other companies – Abound Solar and Beacon Power – also filed for bankruptcy after receiving loan guarantees. In total, the DOE has approved $34.7 billion in loans to 33 projects.

There are currently six applications in the DOE's pipeline for nuclear plants and more than 40 applications for other types of clean energy projects.

Lawyers for the US government are now attempting to ensure that the private equity funds that now control Solyndra do not use the company's past operating losses to avoid future income tax liabilities.


California-based Solyndra filed for bankruptcy in September 2011

# Canada to introduce emissions standard

- Stringent regulations for new coal plant
- Shell details oil sands EPS

The Canadian government says that it will strengthen the country's position in clean energy production with regulations governing greenhouse gas (GHG) emissions from coal fired power plants.

Environment Minister Peter Kent has announced plans for a new performance standard that will apply to plants from 2015. The move is expected to reduce Canada's electricity generation sector's cumulative emissions by 214 megatonnes over a 21-year period.

"Canada already boasts one of the cleanest electricity systems in the world, with three-quarters of our electricity supply emitting no greenhouse gases," said Kent. "These regulations will further strengthen our position as a world leader in clean electricity production, while continuing to grow our economy and create jobs."

The regulations apply a stringent performance standard of 420 tonnes/GWh to new electricity generation units and old units that have reached the end of their economic life.

Coal-fired generating units are responsible for 77 per cent of GHG emissions from the electricity sector and 11 per cent of Canada's total GHG emissions. The country has pledged to reduce GHG emissions to 17 per cent below 2005 levels by 2020.

The country's commitment to tackling climate change has spurred a number of key clean energy projects.

Last month Shell said that it would build one of the world's largest carbon capture and storage (CCS) facilities in Alberta, Canada.

The objective of the project is to cut emissions from Canada's massive oil sands extraction industry, which is thought to be the fastest-growing source of GHG emissions in the country.

The Quest CCS project will be built as part of Shell's Athabasca oil sands joint venture with Marathon Oil and Chevron and will be operational in 2015. It will capture 1 million tones of carbon dioxide per year, or 35 per cent of the emissions from Shell's Scotford upgrader, which processes the bitumen from the Athabasca operations.

The gas will be liquefied and piped 2 km underground to be stored in a porous rock formation called the Basal Cambrian Sands.

"Quest is important because it is a fully integrated project that will demonstrate existing capture, transportation, injection and storage technologies working together for the safe and permanent storage of $CO_2$," said Shell Executive Vice President of Heavy Oil, John Abbott. "The knowledge it provides will help to enable much wider and more cost-effective application of CCS through the energy industry and other sectors in years to come."

Both the Canadian federal and Albertan provincial governments have identified CCS as an important technology in their strategies to reduce $CO_2$ emissions. The Alberta government will invest $745 million in Quest from a $2 billion fund to support CCS, while the government of Canada will invest $120 million through its Clean Energy Fund.

# FARC attacks disrupt power

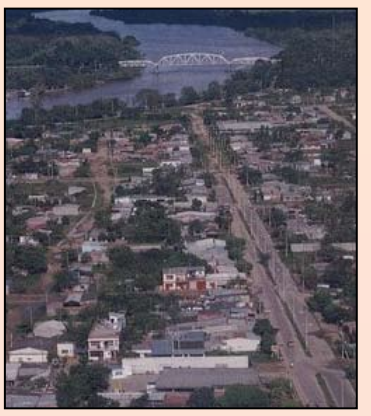
Colombian rebel groups have stepped up attacks on the country's energy infrastructure in spite of the prospect of peace talks with the government this month in Oslo, Norway.

In August an electricity line connecting the province of Arauca in Colombia with Venezuela was cut while two electricity towers were toppled. In addition the port town of Tumaco on Colombia's Pacific coast went dark for more than a week in early August after guerrillas sabotaged three electricity towers.

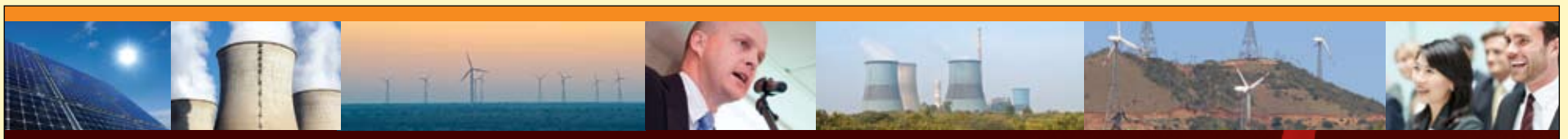
Land mines have also been used by the Revolutionary Armed Forces of Colombia (FARC) rebels to delay restoration work and in August killed five people including two utility workers, according to local authorities.

FARC representatives are due to meet Colombian authorities in Oslo in October for talks and are reported to have proposed a ceasefire.

Colombian president Juan Manuel Santos has rejected the proposal and has asked the country's military to step up actions against rebels, according to reports.



**Under siege: guerrillas cut power line between Arauca and Venezuela**



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# Supreme court demands answers on "Coalgate"

- Indian government to explain its stance on coal scandal
- Power Minister says coal shortage no threat to 12th Five-Year Plan

Syed Ali

The Indian government is coming under increasing pressure in the ongoing coal crisis that is threatening the expansion of its power sector and economic growth.

In mid-September, the Supreme Court gave the Indian government eight weeks to explain its position on an alleged coal scam. The scandal dubbed as "Coalgate" centres on the government's allocation process that enabled private parties to obtain rights to undeveloped coal fields.

India's independent government auditor, the Comptroller and Auditor General of India, has claimed the country lost $33 billion by selling coalfields to private parties at low rates and without auction between 2005 and 2009.

Investigators now say that some of the favoured applicants, having acquired the coalfields free, quickly sold them for tens of millions of dollars to steel or power companies. Others simply kept them as an asset and have not yet developed them, even as the country faces blackouts partly as a result of coal shortages.

Prime Minister Manmohan Singh denied allegations of wrongdoing in the allotment of the blocks in a prepared speech in parliament.

"I wish to say that any allegations of impropriety are without basis and unsupported by the facts," he stated.

The government said that allocating coal blocks to private companies was in vogue since 1993, before the coalition government took charge, and added that auctioning could have pushed up coal and electricity prices.

Power Minister M Veerappa Moily meanwhile says there is enough coal to achieve the 12th Five Year Plan target of adding 84 000 MW, as the required coal linkages are already in place.

"... As far as coal requirement of the 12th Plan period (2012-17) is concerned, it is already taken care of and enough coal is available," Moily said after a review meeting of the power situation in Maharashtra with Chief Minister Prithviraj Chavan.

In August, however, a coal ministry official said India's coal supply is expected to fall short of demand by 192 million tonnes in the fiscal year to March 2013.

Indian coal imports are expected to rise in the financial year through March 2013 as more end-users turn overseas, prompted by a narrowing gap between the domestic and international prices of thermal coal.

"More and more consumers are looking at imports mainly from Indonesia and Mozambique to fulfil at least 50 to 60 per cent of their thermal coal demand," said V.R. Sharma, chief executive and deputy managing director of the steel business at Jindal Steel and Power Limited (JSPL).

Despite the problems, some potential investors remain undaunted. Reliance Power Ltd. recently signed an initial agreement with China Datang Corp. to develop and operate power and other energy projects in India and overseas.

The strategic partnership includes developing Reliance's coal mines in Indonesia and providing operations and maintenance services for power plants in India and other markets, the Indian power producer said.

In July, Reliance secured $1.1 billion in financing from three Chinese banks for a project in central India and also signed an initial pact with wind turbine maker China Ming Yang to develop a large portfolio of clean energy projects in India.

In September, Finnish power company Fortum Oyj said it may invest up to €250 million in India to set up heat and power projects.

"There are good growth prospects in India, and we know we have got something to offer," Fortum President and Chief Executive Tapio Kuula said at a news conference.

Fortum is looking at an opportunity to set up two or three projects in the country.

# China continues emissions reduction drive

- Shanghai carbon emission trading pilot locations
- Over 17 GW of wind capacity installed in 2011

China is continuing on its path to fulfil its pledge to reduce its carbon intensity as it reached important milestones in the establishment of a domestic carbon trading market.

The Chinese eastern metropolis of Shanghai recently launched carbon emission trading pilot locations. About 200 pilot companies such as Shanghai Baosteel Group Corp. will be part of the trading system.

Meanwhile, Southeast China's Guangdong province launched the Guangzhou Carbon Emission Rights Trading Exchange in its capital city, Guangzhou.

The province plans to gradually set up a supervision and management mechanism and watch over enterprises' carbon emissions in a bid to promote energy saving, reduce carbon emissions, and facilitate industrial structure optimisation.

China aims to form a domestic emission reduction and carbon trading structure

China aims to form a domestic emission reduction and carbon trading structure with two levels during the 12th Five-year Plan period (from 2011 to 2015). The first is a national market on the basis of voluntary emission reduction, and the second is a market composed of regional and industrial pilots for compulsory emission reduction.

The trading schemes are being set up alongside a strategy to increase the share of renewables in the generating mix.

China installed 17.63 GW of new wind power capacity in 2011, accounting for 43 per cent of the world's total, according to a report jointly released by the Chinese Renewable Energy Industries Association, the Global Wind Energy Council and Greenpeace.

The nation remained the world's largest wind power producer with an accumulated capacity of 62.36 GW by 2011, representing 26.2 per cent of the world's total wind power capacity, the report said.

According to statistics from the State Electricity Regulatory Commission, China consumed 615.5 TWh of electricity generated by clean energy sources in the first eight months of the year.

The figure accounted for 19.3 per cent of the country's total on-grid power during the period, an increase of 1.1 percentage points from the same period last year, the commission said.

Electricity produced from hydropower, wind and nuclear expanded 20.6 per cent, 32.4 per cent and 10.5 per cent, respectively.

## NRA to restore confidence in Japan's nuclear sector

Japan is hoping the recent creation of a new nuclear safety oversight body will restore confidence in its nuclear power sector.

A new five-member Nuclear Regulation Authority (NRA) has now been formally set up to oversee the activities of the now scrapped Nuclear and Industrial Safety Agency (NISA) and Nuclear Safety Commission (NSC).

The decision follows criticism that collusion between regulators and plant operators contributed to the meltdowns at the Fukushima Daiichi plant in March last year.

The government says the NRA will have greater independence and would take on tasks previously carried out by NISA and the NSC, as well as the environmental radiation monitoring functions of the science ministry.

In a statement, the NRA said the country has "intentionally avoided explicit discussions about the potential risks accompanying nuclear power generation" and ended up not working sufficiently to compile specific measures to protect people from radiation risks.

It also said that from now on, a regulatory organisation should check whether utilities have not only satisfied safety standards but are making efforts to pursue the highest safety levels.

Haruki Madarame, chair of the NSC, told a press conference that its role to double-check the activities of NISA was not necessarily working efficiently and welcomed the government's move to unify regulatory functions.

NISA formerly operated under the industry ministry and 350 of its members are expected to be transferred to the NRA's secretariat, according to a government official.

Economy, Trade and Industry Minister Yukio Edano said he wants regulators assigned to serve for the new regulatory body to "fulfil the duties they did not achieve when they were in NISA."

The government said it will seek Yen81.7 billion ($1.05 billion) for the NRA in the budget for the next fiscal year from April, including funds to conduct research on measures to deal with severe nuclear accidents.

Last month a Cabinet advisory panel proposed a new national energy policy aimed at phasing out nuclear power over the next three decades.

## Thar gasification project not feasible

Pakistan's Minister for Water and Power Ahmad Mukhtar has admitted that the Thar underground coal gasification (UCG) is not feasible.

Plans for the 100 MW project have been cancelled and Pakistan will instead generate power from imported coal to help meet its power shortfall.

In an interview with the *BBC*, Mukhtar said the technology developed by Dr Samar Mubarakmand could not yield the desired results. "We have decided to import coal and produce cheap electricity from it to serve the purpose of overcoming the power shortfall and reducing the overall cost of power production. We cannot wait forever for electricity to be produced due to his technology. We need electricity immediately but Dr Samar Mubarakmand has not made any breakthrough so far."

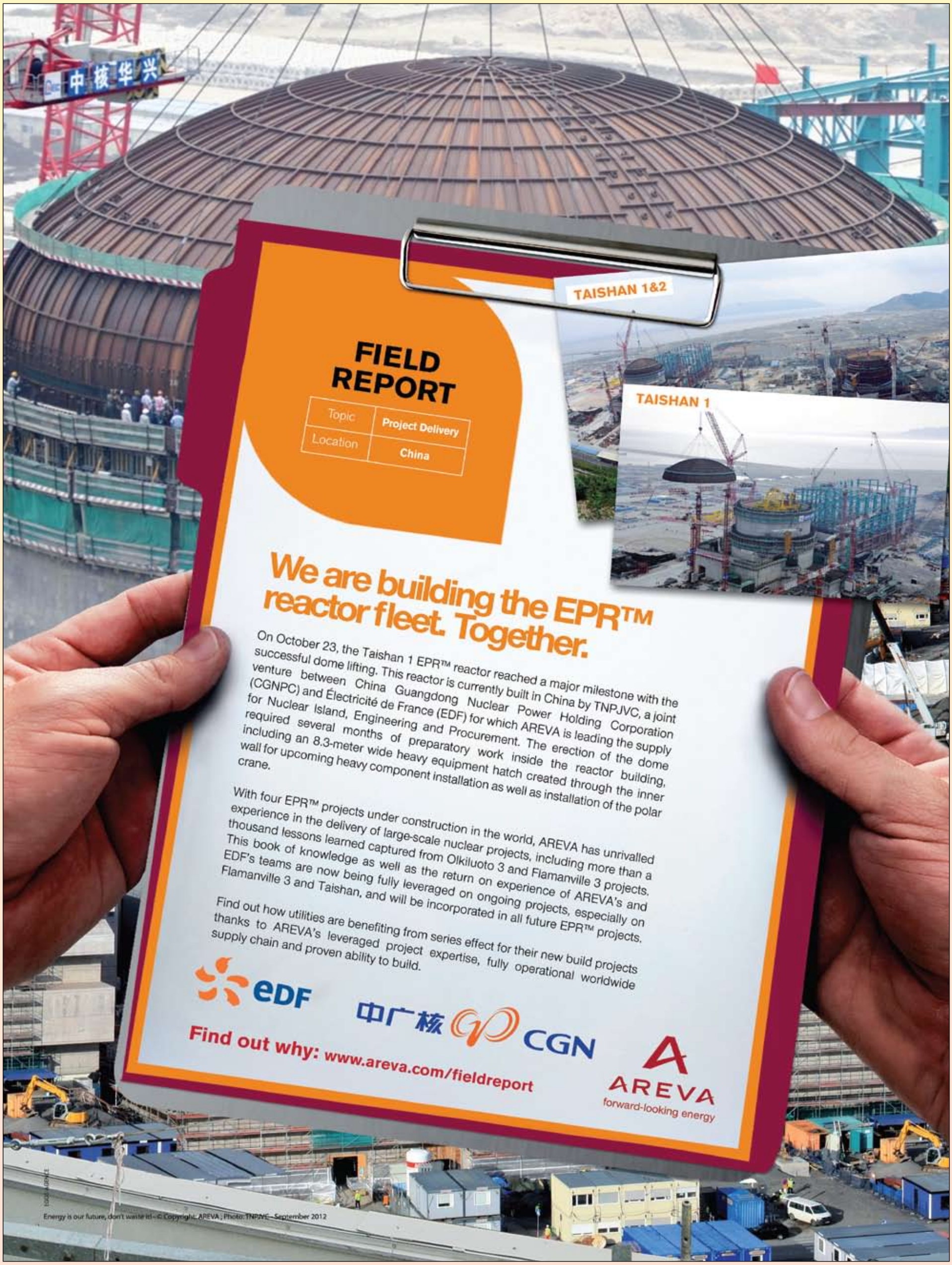
Despite the fact that Thar coal reserves were discovered in 1991, not much electricity has been generated from the estimated 175 billion tonnes of coal reserves.

Five coal bearing blocks have been allocated to four International Mining Companies and one to International UCG Company by Government of Sindh (GoS).

It was hoped that the UCG project would start producing its first electricity by the end of the current financial year 2012-2013. The project's supporters claim that the government's delays in releasing funds for the project have been an obstacle.

Dr. Mubarakmand, who is a member of the Planning Commission for science and technology, maintains he can generate electricity from Thar coal, which he would make available at 4 rupees per unit (approximately $0.04/kWh). He further claims that Thar coal has the capacity to generate 50 000 MW.

The government recently said it would import 1000 MW of electricity from Turkmenistan in order to help overcome its current power outages.


中核华兴
TAISHAN 1&2
TAISHAN 1
FIELD REPORT
Topic
Project Delivery
Location
China
We are building the EPR™ reactor fleet. Together.
On October 23, the Taishan 1 EPR™ reactor reached a major milestone with the successful dome lifting. This reactor is currently built in China by TNPJVC, a joint venture between China Guangdong Nuclear Power Holding Corporation (CGNPC) and Électricité de France (EDF) for which AREVA is leading the supply for Nuclear Island, Engineering and Procurement. The erection of the dome required several months of preparatory work inside the reactor building, including an 8.3-meter wide heavy equipment hatch created through the inner wall for upcoming heavy component installation as well as installation of the polar crane.
With four EPR™ projects under construction in the world, AREVA has unrivalled experience in the delivery of large-scale nuclear projects, including more than a thousand lessons learned captured from Olkiluoto 3 and Flamanville 3 projects. This book of knowledge as well as the return on experience of AREVA's and EDF's teams are now being fully leveraged on ongoing projects, especially on Flamanville 3 and Taishan, and will be incorporated in all future EPR™ projects.
Find out how utilities are benefiting from series effect for their new build projects thanks to AREVA's leveraged project expertise, fully operational worldwide supply chain and proven ability to build.
EDF
中广核 CGN
Find out why: www.areva.com/fieldreport
AREVA
forward-looking energy
Energy is our future, don't waste it! - © Copyright: AREVA ; Photo: TNPJVC - September 2012

# Spain proposes taxes to cut €24 billion deficit

Spain has outlined plans to cut its €24 billion tariff deficit.

The government says that it will levy a six per cent tax on electricity generation, implement new taxes on nuclear and hydropower and introduce a new carbon levy.

The measures will raise Spain's income from the sector by €2.74 billion per year and were agreed after several months of negotiation.

Cuts to renewable energy subsidies have also been proposed.

The government wants to eliminate the tariff deficit, which has arisen because consumer end-prices for energy are not enough to cover the costs of production. Its aim is to ensure that the deficit does not continue to rise after 2012 in line with a ruling by the Spanish Supreme Court.

The measures need approval from Spain's parliament.

The new taxes mean that renewable and conventional power generators will pay a six per cent tax on all the electricity they sell. Other taxes include one on nuclear waste, the use of water at hydropower plants, and a differentiated "green cent" for the use of coal, gas and fuel oil in power plants.

Spanish wind energy association AEE says that the six per cent tax will have a €241 million impact on the industry in 2013 and has expressed concerns about how the new regime will affect renewable energy investment in Spain.

The larger utilities, however, are likely to welcome the changes as they can pass additional costs on to consumers and their balance sheets are currently burdened by the tariff deficit. Shares in companies such as Endesa, Iberdrola and Gas Natural Fenosa rose after the government's announcement.

Spain's renewable energy industry and generous feed-in tariff regime has largely been blamed for the deficit, although analysts point out that the government-set access tariff, which forms part of electricity tariffs in Spain and which is supposed to cover the fixed costs of the power system, has not been set at a high enough level to cover all costs.

The Spanish government expected Spain's utilities to cover the difference between costs and income in the market, leading ratings agencies to cut credit ratings of some market players earlier this year.

It has already increased electricity tariffs in the country and earlier this year temporarily suspended the FIT regime in order to stop the tariff deficit widening.

# UK wind sector celebrates 'super September'

- Installed capacity exceeds 7.5 GW
- Clean energy policy debate

Siân Crampsie

Weather conditions and a rise in installed capacity have enabled the UK to set new records for wind generation.

In mid-September electricity grid operator National Grid reported that generation by wind power plants exceeded the 4 GW barrier for the first time, reaching an output of 4131 MW and accounting for 11 per cent of total generation at the time.

The previous record was 3.8 GW, set in May 2012.

Trade body RenewableUK applauded the new record and noted that one-third of wind energy capacity in the UK is connected to local electricity networks and not the high voltage network. "Once that extra 2.2 GW are taken into account, the amount of electricity being generated is even greater – up to a third more," it said in a statement.

The wind generation figures have been boosted by the start up of a number of key offshore wind projects, including Sheringham Shoal, Ormonde and Greater Gabbard.Together these projects added around 967 MW of new wind power capacity to the UK's energy mix and brought the country's overall installed capacity for offshore wind to just over 2.6 GW. September also saw the UK reach 5 GW of installed onshore wind capacity.

"This is a landmark month for the British offshore wind industry, with more than 2.6 GW of wind energy now installed," said RenewableUK CEO Maria McCaffery. "It provides clear evidence of the extraordinary progress being made in this dynamic sector – the UK has more capacity installed offshore than the rest of the world put together, and we keep on extending that lead."

In spite of the successes of the UK's wind energy industry, clean energy policy in the country continues to draw debate.

The government's political opponents as well as green groups such as WWF have called for upcoming energy reform legislation in the UK to include clear targets for decarbonising the energy sector by 2030 as well as robust, long-term support mechanisms for renewable energy.

Such policies have also been advised by the government's own Climate Change Committee (CCC) and are reported to be under consideration by the current Energy Secretary Ed Davey, a Liberal Democrat in the coalition government.

Specific targets on decarbonisation were earlier this year ruled out because of fears that it would deter investors away from the natural gas sector. The UK has already set a target of reducing carbon dioxide emissions by 80 per cent over 1990 levels by 2050.

In a letter to the government the CCC expressed concerns about a July government statement that gas would continue to play a big role in the UK's energy mix "well into and beyond 2030". It believes that this would be incompatible with the UK's carbon targets.

"This important letter from the CCC clearly explains one of the reasons confidence is flagging across the renewable power sector," said Gaynor Hartnell, CEO of the Renewable Energy Association. "Gas can be a friend of renewables, if used strategically to support the transition to a low-carbon future. That is the approach we would like to see in [the government's] forthcoming gas strategy.

# Hollande outlines new energy future

Taxing pollution: President Francois Hollande and Prime Minister Jean-Mar Ayrault

The French government will seek to reduce the country's dependence on nuclear energy and increase the role of renewables in the power mix.

President Francois Hollande and Prime Minister Jean-Mar Ayrault have outlined policies that will tax polluting forms of energy while providing incentives for renewables and energy efficient technologies for cars and buildings.

Hollande has also announced that the Fessenheim nuclear power plant would close by the end of 2016 and that the government would block the development of a shale gas industry.

The measures are in line with Hollande's election campaign earlier in 2012 but has raised concerns about the future of energy prices in the country as well as energy security.

Hollande said on the campaign trail that he would seek to reduce the role of nuclear energy in the country's power mix from 80 per cent to 50 per cent by 2025. The country operates 58 nuclear reactors and is more dependent on nuclear energy than any other country.

The heavily reliance on nuclear power has been called into question since the Fukushima nuclear disaster in Japan. Many green energy supporters have since then pushed hard for the closure of nuclear plants in France.

Hollande has proposed replacing some nuclear capacity with wind and solar power plants. He has pledged to increase taxes on polluting industries in the 2013 budget.

France's dependence on nuclear energy has enabled energy consumers – particularly in the industrial sector – to enjoy relatively low power prices compared with other European countries. The industrial sector has therefore been critical of Hollande's proposals, particularly with regard to nuclear energy and shale gas.

French power grid operator RTE also warned last month that security of power supply in the country would weaken by 2016 due to the planned closure of fossil fuel-fired power plants.

These closures, coupled with the closure of Fessenheim, will take around 5 GW of production capacity out of operation by the end of 2016. Another directive on industrial carbon dioxide emissions could lead to the closure by 2016 of six to eight fossil fuel-fired power generators, or 3.8 GW of capacity, says RTE.

Four new combined cycle gas power plants are expected to come on stream by 2017, while RTE expects wind power output to rise by 800 MW per year and solar power by 500 MW per year. The 1750 MW Flamanville nuclear power plant is expected to be commissioned in 2016.

The vast Ouarzazate region, Morocco

# Morocco selects Ouarzazate bidder

The world's largest concentrating solar power (CSP) plant is set for construction in Morocco after the country's solar energy agency announced a preferred bidder for the project.

The 160 MW, billion-dollar project is the first step of a 500 MW solar park planned for Ouarzazate, Morocco. The Moroccan Solar Energy Agency (MASEN) has selected a consortium led by the Saudi Arabia water and power company ACWA as the preferred bidder.

Ouarzazate is a key project in Morocco's national solar energy plan as well as other large-scale renewable energy programmes in the Middle East and North Africa (MENA) region, where regional cooperation and integration are important pillars of energy policy. It has already won financial support from seven multilateral lending agencies.

According to MASEN, the ACWA-led consortium, which also includes Aries Ingeniería y Sistemas and TSK Electrónica y Electricidad, met all of its technical and financial criteria of the tender. It bid to produce electricity from the plant at 1.6187 Moroccan Dirham or $0.1879 per kWh.

The consortium will design, finance, construct, operate and maintain the plant. It is reported to be planning on starting construction by the end of 2012 and completing it towards the end of 2014.

Other consortiums that bid for the project include one comprising Abeinsa ICI, Abengoa Solar and Mitsui and another one consisting of Abu Dhabi National Energy Co. Enel and ACS SCE.

Ouarzazate is estimated to cost just over $1 billion and will be jointly financed by the African Development Bank (AfDB), the World Bank, European Investment Bank, Agence Francaise de Developpement, German Development Bank, the European Commission's Neighbourhood Investment Facility and a number of Moroccan institutions.

In May 2012, the AfDB approved a loan for €168 million as well as some $100 million from the Clean Technology Fund for the first phase of Ouarzazate. The bank has also agreed to lend financial support to Morocco's wind energy programme.

Morocco is planning to develop 2000 MW of solar energy and 2000 MW of wind energy by 2020. Across MENA, around 1 GW of renewable energy capacity is on the drawing board as countries such as Tunisia, Algeria, Egypt and Jordan look to boost generating capacity.

As well as improving domestic energy access and economic growth, other objectives of the regional renewable energy plans are improved regional integration and exporting energy to Europe.

■ The government of Qatar has pledged to invest $18 billion over five years in major infrastructure projects in Egypt. Projects will include power plants and industrial facilities in the Port Said region, Qatari Prime Minister Sheikh Hamad bin Jassim al-Thani said during a visit to Cairo.

# US ExIm approves Barakah financing

The US government is to support the construction of the first nuclear power plant on the Arabian peninsula via a loan to the United Arab Emirates' (UAE's) Barakah One Company.

The US Export-Import Bank has authorised a direct $2 billion loan to Barakah One, a subsidiary of the Emirates Nuclear Energy Corporation (ENEC).

The loan is a further step forward in the UAE's plans to build its first nuclear power plant.

Last month the country signed an agreement with Canada on civilian nuclear energy cooperation.

The finance from the US ExIm will support the export of equipment and services from US companies involved in the construction of the 1400 MW Barakah 1 nuclear power plant in Abu Dhabi emirate.

The loan ranks as the US ExIm Bank's largest transaction in the UAE to date and is its first Greenfield nuclear power plant financing since the late 1990s.

Westinghouse Electric Company is the largest US company involved in the transaction and will provide the reactor coolant pumps, reactor components, controls, engineering services, and training.

The US ExIm Bank said it had conducted "a detailed and extensive" risk assessment of the project, which is to be built by a consortium led by South Korea's KEPCO.

Construction of the first unit, Barakah 1, officially began in July 2012 when first safety concrete was poured. Barakah 1 and 2 are scheduled to be commissioned by 2017 and 2018, respectively. A third unit is scheduled to be commissioned in 2019 and a fourth in 2020.

The US will support the first nuclear power plant on the Arabian peninsula

# Iran plans power expansion

Iran is planning a massive expansion of its electricity system to accommodate growing demand, according to the country's government.

The Mehr news agency has quoted Deputy Energy Minister Mohammad Behzad as saying that 12 new power plants totalling 2000 MW of capacity have been added to the grid this year.

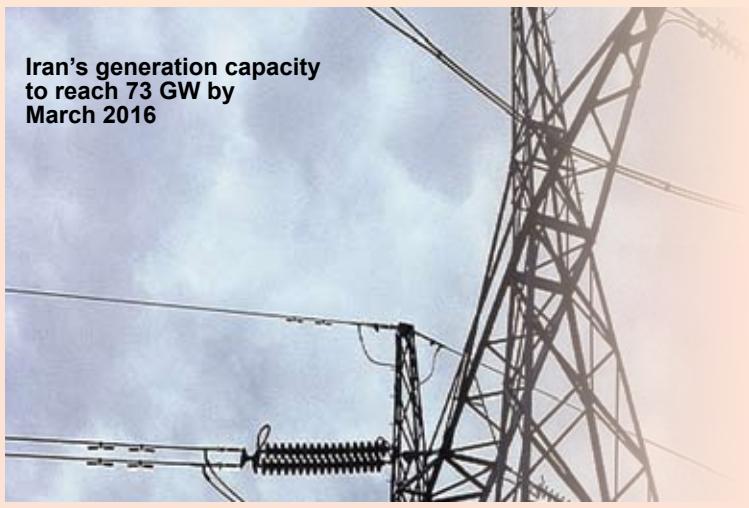
The country is also seeking greater regional cooperation to help boost its resources, according to local reports.

Iran has previously said that it would add 5 GW of new generating capacity to its system this calendar year, which began on March 20, and 10 GW by August 2013.

Its fifth five-year economic development plan calls for its electricity generation capacity to reach 73 GW by March 2016.

Installed capacity in Iran currently stands at around 65.2 GW, according to official figures.

Iran currently trades power with Turkey, Armenia, Turkmenistan, Azerbaijan, Pakistan, Afghanistan, and Iraq. Regional press reported recently that Iran was keen to boost trade with Tajikistan by building hydroelectric facilities and supplying power to its neighbour in exchange for water supplies.



Iran's generation capacity to reach 73 GW by March 2016

# Worldwatch reports on fossil fuel subsidies

■ No progress on G20 pledge
■ Renewable, fossil fuel subsidies rising

Siân Crampsie

Subsidies paid for renewable energy production are still dwarfed by those aimed at fossil fuels, according to a new report by the Worldwatch Institute.

The USA-based organisation says that in spite of the benefits of shifting financial support from fossil fuels to renewables, total subsidies for the latter in 2010 reached $66 billion, while for fossil fuels they were estimated to be between $775 billion and $1 trillion.

Phasing out fossil fuel subsidies would not only reduce pollution levels and the corresponding health issues, it would also help to level the playing field for renewable energy, allowing financial support for clean energy to be reduced as well, says Worldwatch.

Estimates based on 2009 energy production numbers placed renewable energy subsidies between 1.7¢ and 15¢ per kWh, while subsidies for fossil fuels were estimated at around 0.1-0.7¢ per kWh. Unit subsidy costs for renewables are expected to decrease as technologies become more efficient and the prices of wholesale electricity and transport fuels rise.

In its report, Fossil Fuel and Renewable Energy Subsidies on the Rise, Worldwatch indicates that developing countries account for 47 per cent of all fossil fuel consumption subsidies. It also notes that the G20 group of nations have made little progress on their pledge to reduce fossil fuel subsidies.

According to the International Energy Agency (IEA), the elimination of fossil fuel subsidies by 2020 would reduce global energy consumption by 3.9 per cent. Global carbon dioxide emissions would fall by 4.7 per cent in 2020 and 5.8 per cent by 2035.

The US National Academy of Sciences estimates that fossil fuel subsidies cost the United States $120 billion in pollution and related health care costs every year.

"These so-called hidden costs, or externalities, are in fact very real costs to our societies that are not picked up by the polluter and beneficiary of production but by all taxpayers," said Alexander Ochs, Director of Worldwatch's Climate and Energy programme. "Local pollutants from the burning of fossil fuels kill thousands in the US alone each year, and society makes them cheaper to continue down their destructive path."

Some argue that reducing subsidies would disproportionately affect the poor. An IEA survey of 11 developing and emerging countries, however, found that only 2-11 per cent of subsidies went to the poorest 20 per cent of the population, showing that subsidies tend to be regressive.

# Tough times hit wind turbine makers

- Vestas in talks with MHI
- Siemens, Sinovel cut costs

Siân Crampsie

Fierce competition and a slowdown in sales are denting the operating performance of wind turbine makers around the world.

Vestas, Siemens and Sinovel have all made moves in recent weeks to rebalance their businesses in the face of the global slowdown and uncertainty over renewable energy policies.

Even strong-performing wind turbine companies such as Nordex are focusing on reducing costs and keeping a strict eye on capital management.

Siemens last month said it would lay-off 615 of its workers in Iowa, Kansas and Florida and blamed difficult mar-ket conditions and a lack of political support for wind energy in the USA.

"The industry is facing a significant drop in new orders, and this has an unfortunate consequence on employment in this segment of the power industry," Siemens said in a statement. "Now, we have had to make the difficult decision to adjust the manufacturing, projects and administrative support functions of our wind power operations to reflect the current and projected business volume."

Vestas is also wrestling with poor trading conditions and in late August confirmed that it is in talks with Mitsubishi Heavy Industries (MHI) of Japan over a "potential strategic cooperation, it said in a statement.

The talks are thought to include discussions about a capital increase and stake sale by Vestas to help shore up its financial and competitive position.

Reports indicate that MHI could invest up to €200 million in Vestas in return for a 20 per cent stake and access to technology.

Analysts have warned that a cash injection by MHI would only be a short term solution for Vestas, whose share price has fallen by some 60 per cent in the last year. MHI, however, could gain substantially from Vestas' knowledge in the offshore wind power sector and could provide Vestas with financial support for the development of its offshore technology.

Vestas' debt stands at over €1 billion and the company has reported negative free cash flow for the last two consecutive quarters. Talks with MHI are thought to have started in March 2012.

Vestas has already announced plans to accelerate its job cuts programme.

Sinovel, China's largest wind turbine maker, announced that its net profits have fallen by over 90 per cent year-on-year in the first half due to sluggish demand and fierce competition.

It, too, is attempting to reduce production costs. It is also expanding overseas and has reported a large jump in overseas sales.

# Companies seek smart grid cooperation

Siemens announced the creation of a joint venture with Chinese firm Wasion Group

Cooperative ventures and partnerships could help companies active in the smart grid sector develop their technologies and global reach.

Technology giant Siemens has announced the creation of a joint venture with Chinese firm Wasion Group in the smart meter sector, while Alstom Grid and Toshiba have signed a memorandum of understanding (MOU) covering their smart grid businesses.

The Siemens-Wasion joint venture will be known as Smart Metering Solutions (Changsha) Co. Ltd. and will focus on the development and marketing of software for managing meter data. Alstom Grid and Toshiba, meanwhile, will investigate the potential for cooperation and collaboration in electricity grid management technology.

Siemens said in a statement that its venture with Wasion would "significantly advance" its business in the Chinese market for meter data management systems, which is expecting to see annual double-digit growth levels. "For us, the joint venture is an additional milestone on our way to becoming one of the leading global suppliers of solutions for smart grids.

"Collection and analysis of consumption and network data is considered to be one of the keys to the intelligent management of supply networks of the future," said Jan Mrosik, CEO of the Smart Grid Division in the Siemens Infrastructure & Cities Sector.

Siemens said that the venture was the next natural move for its business following its acquisition of eMeter, a meter data management specialist, in early 2012.

"According to our joint venture, Wasion can sell its smart power, water and gas metering products to countries outside China through the global sales network of Siemens," said Ji Wei, Chairman of the Board of Directors of Wasion Group. Siemens and the Chinese meter manufacturer have been working together in a strategic partnership since May 2010. In late December 2011 both companies signed a supply agreement, paving the way for the joint venture.

Alstom says that it and Toshiba will draw on their respective areas of expertise to develop electricity management solutions that can be applied in diverse regions and environments.

Alstom's strengths are in electricity grid management solutions while Toshiba's are in customer-point power distribution equipment and a product line-up that includes smart meters and advanced storage batteries. The companies hope to be able to boost the integration of renewable energy in grids and reduce the cost of power.

# Clean energy cutting corporate risk

New research reports show that companies are using renewable energy to address energy-related risks.

Large global corporations are becoming increasingly proactive in their energy strategies in order to tackle potential future energy cost rises.

Surveys conducted by both Ernst & Young and Bloomberg New Energy Finance (BNEF) show that multinational firms are turning more and more to renewable energy technologies, self generation and energy efficiency measures.

Such strategies are set at board level, driven by a need to save money, improve energy security and enhance brand value.

Gil Forer, Ernst & Young's Global Cleantech Leader, said: "While cost reduction is cited most frequently as the primary objective of corporate energy strategies, a number of other energy-related risks are also being addressed, such as energy security, carbon reduction and price stability. Regulatory compliance, together with reputational and brand aspects, also plays a part."

"As a result, energy efficiency measures, company self-generation of energy and integration of renewable energy into the corporate energy mix are all being implemented at increasing rates to meet these ends and are set to accelerate further over the next five years."

In a survey carried out by Ernst & Young on energy procurement, 67 per cent and 59 per cent of respondents reported that their company-owned renewable generation and renewable purchased energy levels are likely to increase over the next five years respectively. At the same time, 52 per cent of respondents say that their use of high-carbon fossil fuels – such as oil and coal – will decrease over the next five years.

Bloomberg New Energy Finance's CREX ('Corporate Renewable Energy Index') report, completed on behalf of Vestas, showed that consumer-facing industries tend to be the biggest fans of renewable energy, including financial and consumer services and goods companies. It revealed that European firms favoured renewable energy procurement more than companies in the USA.

Hydroelectric power is the most popular form of renewable energy for these companies, followed by wind and biomass/waste-to-energy. The highest percentage of renewable energy is consumed by financial, telecoms and services sectors.

According to CREX, among the top clean energy procurers in the corporate world are AMEC, Vestas, SNAM, Severn Trent and Deutsche Telecom.

# Sun shines on E.On's US business

A robust market for solar energy has led Germany's E.On Climate & Renewables to expand its presence in the USA.

The renewable energy firm recently announced plans to expand its solar energy operations in the country and relocate its global solar headquarters to San Francisco, California.

The strategy will broaden E.On's reach into the US solar market and will also complement the company's other US renewable energy activities. "We are very pleased with how quickly our US based development activities have grown in the recent past and recognise the US as being a very attractive and robust market for [E.On Climate & Renewables]," said Christophe Jurczak, Executive Vice President, E.On Climate & Renewables North America Solar.

E.On's solar business is currently active in several states in the US. Its solar presence compliments its other renewable generation activities in the US. In the wind sector, it has developed, built and operates nearly $5 billion in onshore wind generation assets with more than 2400 MW at 16 sites.

# Tenders, Bids & Contracts



## Americas

### Panda places second Siemens order

Panda Power Funds has placed an order with a Bechtel-Siemens consortium for the turnkey supply of a new combined cycle plant in Texas, USA.

The order is the second for Siemens from Panda this year. Siemens and Bechtel will deliver and build a 758 MW multi-shaft power plant in Sherman based on Siemens' Flex-Plant technology.

Siemens will deliver the power island equipment, including two SGT6-5000F gas turbines, one SST6-5000 steam turbine, two SGen6-1000A generators, one SGen6-2000H generator, the SPPA-T3000 instrumentation and control system as well as two Benson heavy duct-fired heat recovery steam generators manufactured by NEM.

### Alstom looks to Brazil wind sector

Alstom Renewable Power has signed a letter of intent with Casa dos Ventos, one of the largest Brazilian wind power generation developers, to provide wind turbines for new farms in the state of Rio Grande do Norte, north-eastern Brazil.

Alstom said in a statement that it expected to sign the €230 million contract by the end of September 2012. The order includes the supply of 68 ECO 122 wind turbines as well as operation and maintenance services.

The wind turbines will be produced at Alstom Renewable Power's manufacturing unit at Camaçari, Bahia state. "This agreement with Casa dos Ventos is an important step to consolidate Alstom's presence in the Brazilian and Latin American wind markets, said Marcos Costa, Alstom Brazil country president.

### First Solar, PG&E sign PPA

First Solar has signed power purchase agreements (PPAs) with Pacific Gas and Electricity (PG&E) for 72 MW of solar photovoltaic (PV) capacity that it is developing in California.

First Solar says that it expects to start construction on the 32 MW Lost Hills project and the 40 MW Cuyama project in 2013. The PPAs stipulate power delivery starting in 2019.

### Gamesa wins major Brazil order

Gamesa has signed a $417 million contract with Brazilian wind farm operator Santa Vitoria do Palmar to supply 258 MW of generating capacity.

The Spanish company will supply 129 wind turbines for installation across ten sites. The company will also provide operation and maintenance services at the wind farms, located in Rio Grande do Sul state.

The order is one of the largest ever for wind turbines in Brazil, says Gamesa, and also marks the company's first contract with Brazilian utility Eletrobras, which part-owns Santa Vitoria do Palmar.

Installation of the wind turbines will begin in late 2013 and be completed by the first quarter of 2014.

### B&V supports wind US farm

Black & Veatch has announced that it is to provide owner's engineer services to Detroit Edison for the Echo Wind Park in Michigan, USA.

The 70-turbine wind farm will generate up to 110 MW of renewable energy and is a key element of Detroit Edison's plan to boost its renewable energy resources.

As the owner's engineer, Black & Veatch will develop technical specifications and drawings for an engineering, procurement and construction (EPC) document as well as support Detroit Edison in the EPC bid evaluation.

Detroit Edison must source ten per cent of its energy sales from renewable energy by 2015 under Michigan's Renewable Portfolio Standard legislation.

### China Development Bank funds Sinovel

China Development Bank is to provide funding for the construction of a 34.5 MW wind farm in Brazil.

Chinese firm Sinovel wind is supplying 23 wind turbines for the wind farm, which is being built by Desenvix, a Brazilian power development company.

The deal marks the first time that Sinovel has launched a project in Latin America with funding from a Chinese bank.

## Asia-Pacific

### Gamesa boosts India orders

Indo Rama Renewables has placed an order with Gamesa for the supply of 30 MW of wind turbines for an independent power project in India.

The order came just weeks after the Spain-based Gamesa received a 75 MW order from another Indian independent power producer (IPP), ReNew Power, for a project in the state of Maharashtra.

Gamesa will supply Indo Rama Renewables with 15 of its G97-2.0 MW wind turbines, which will be installed at Jath, Maharashtra state. The project will be completed by the end of 2012.

India accounted for 14 per cent of Gamesa's total sales in the first half of 2012. "Our company is fast emerging as a market leader with the Gamesa 2.0 MW platform among the growing IPP segment," said Ramesh Kymal, Chairman of Gamesa India.

### Taiwan Power orders air quality control

CTCI has awarded Alstom a contract to supply air quality control systems (AQCS) for the Talin power plant renewal project in Taiwan.

Alstom will supply a seawater flue gas desulphurisation (SWFGD) system and a particulate removal system with fabric filter to the 2 x 800 MW supercritical power plant that is being developed by Taiwan Power Company.

The AQCS will control sulphur dioxide and particulate emissions in compliance with Taiwan's strict environmental regulations. The new units will enter operation in 2016 and 2017.

### FITs spur Solar Frontier

Solar Frontier K. K. and Yano Industry Co. have agreed to develop new solar power plants in Japan following the introduction of renewable energy feed-in tariffs (FITs) in the country in July 2012.

Utilising Solar Frontier's high yield, fast payback CIS thin-film modules, Solar Frontier will operate a 2.2 MW solar power plant (Kunitomi No.1 Megasolar) and Yano Industry will operate a 1.1 MW plant (Kunitomi No. 2 Megasolar) in Kunitomi, Miyazaki Prefecture.

Kunitomi No. 1 Megasolar, which will be operated by Solar Frontier, will be equipped with roughly 14 000 Solar Frontier solar panels on land rented from Yano Industry. Kunitomi No. 2 Megasolar will be operated by Yano Industry and will use around 7000 Solar Frontier modules.

### 9FB debut in China

GE is to supply key equipment for the 1378 MW Datang Gaojing combined cycle cogeneration plant under construction in Beijing, China.

It will deliver three 9FB gas turbines to the project, marking the debut of this technology in China. The new facility will help meet surging electricity demand in the Chinese capital while also meeting the ambitious environmental targets of China's Five-Year Plan.

In addition to the 9FB gas turbines, GE will supply related equipment and services to GE business partner and licensing associate Harbin Electric Corporation, which is building the plant for owner and operator China Datang Corporation.

The GE 9FB technology will provide over 1.3 GW of power and when combined with Harbin's district heating solution for winter operation, at greater than 59 per cent at ISO conditions, it is expected to be one of the most fuel-efficient Chinese power plants to date.

GE expects to ship the equipment starting in October 2012, and the plant will begin commercial operation in stages beginning in October 2013.

### Bangladesh picks Tenaga

Tenaga Nasional Bhd (TNB) has been selected by the Bangladesh Power Division to build and operate a 1320 MW coal-fired plant in Bangladesh.

The coal-fired plant will be built in either Anwara, Chittagong, or in Maheshkhali and developed by a joint venture company owned by Power Development Board and Malaysia-based TNB. It will use imported coal as fuel and forms an important part of the Bangladesh government's plans to add 20 000 MW of coal-fired capacity by 2030.

### Longyuan orders Gamesa units

Gamesa has signed a deal to supply 48 MW of its 2.0 MW wind turbines to Longyuan Group for a wind farm that the utility will build in Jiangkou, Fujian Province, China.

Under the contract, Gamesa will start to deliver 24 sets of G87- 2.0 MW Class S and G90-2.0 MW wind turbines from October this year.

## Europe

### Magnox awards infrastructure contract

British nuclear energy firm Magnox has awarded a framework contract worth around £300 million over ten years for the delivery of construction, infrastructure and maintenance projects across all ten of its sites.

Costain Group and Balfour Beatty will deliver the project work, which includes the design, construction and maintenance of permanent buildings and structures, infrastructure maintenance and extension work incorporating construction, civil engineering structures and ground work projects. The framework will run for an initial five years with the potential to be extended up to a further five years.

### ABB wins Turkey order

ABB has won an order worth around $35 million to provide a turnkey electrical and automation solution for the 290 MW Yunus Emre thermal power plant near Eskişehir in northwestern Turkey.

ABB's turnkey solution includes design, engineering, installation and commissioning. It comprises the complete electrical balance of plant and power outlet, including the high voltage switchyard.

The order was awarded by Vitkovice Power Engineering, the Czech-based engineering, procurement and construction contractor for the 2 x 145 MW project. The plant is owned by Adularya Energy, a member of Naksan Holding.

### EDF picks Alstom for control retrofit

Alstom has been awarded a contract worth over €50 million to retrofit the control systems of Electricité de France's (EDF's) 1300 MW nuclear power plants.

The 20 nuclear power plants are currently equipped with Alstom Controbloc N20 control systems. Alstom will modernise the current system by adding new technology based on its latest Alspa Series 6 control system.

Deployment for the first retrofitted unit is scheduled for spring 2015.

The retrofits are part of the standard lifetime visits and life extensions plans for the 1300 MW EDF Nuclear fleet in France.

### Saft to provide Canary Islands' storage

Saft is to provide a lithium-ion (Li-ion) energy storage system for one of the first large-scale energy storage projects in Europe, the company has reported.

The French technology firm is to supply an Intensium Max 20 containerised energy storage system that is capable of providing up to 1 MW of energy for three hours to the Store (storage technologies of reliable energy) project on the island of Gran Canaria.

The pioneering project, led by Endesa of Spain, will demonstrate how energy storage can help integrate renewable energies with utility grids and optimise grid infrastructure. Saft's Intensium system comprises Li-ion battery modules, power management and control interfaces, air conditioning and safety devices.

Saft will also provide a power conversion system for connecting the energy storage device to Gran Canaria's grid.

## International

### Contract signed for Kozienice 11

Hitachi Power Europe (HPE) and its consortium partner Polimex-Mostostal have signed a contract with Polish energy supplier Enea Wytwarzanie for the construction of the Kozienice 11 coal fired power plant.

The 1075 MW plant will be one of the most efficient of its kind in the world. HPE will supply the steam generator, coal bunkers, coal mills, firing system, flue gas cleaning equipment, instrumentation and control and balance of plant equipment.

Work at the site in Poland will begin this year and last 58 months.

### Siemens wins Iraq order

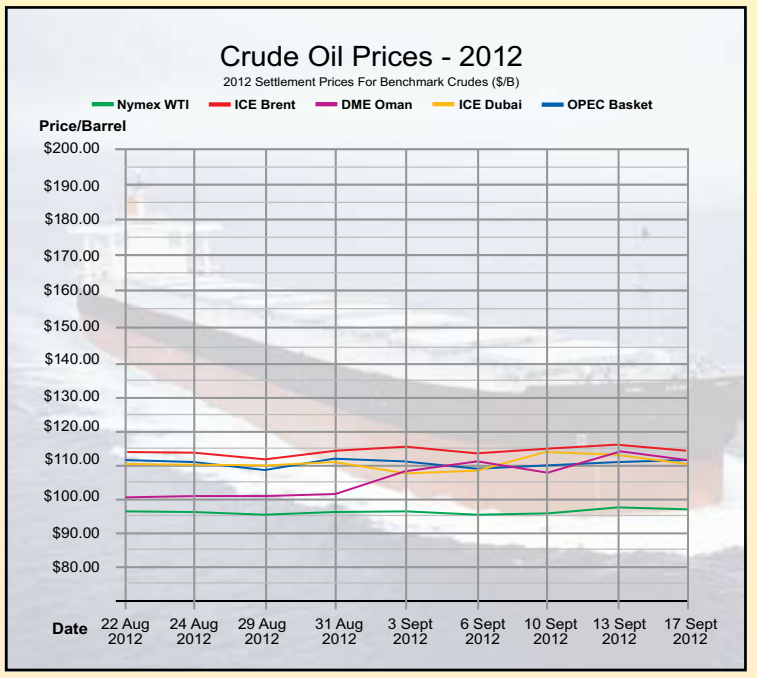
KAR Construction and Engineering Company has placed an order with Siemens for the supply of gas turbines and generators for a new power plant in northern Iraq.

The Khormala power plant will be equipped with four SGT5-2000E gas turbines and four SGen5-1-A generators and will be owned and operated by independent power producer KAR Group.

## Oil

# Slowdown in China and concerns over Iran keep oil prices high

- Market appears to be well supplied
- Iraq has enormous untapped reserves




David Gregory

Crude oil prices have fluctuated little over the last month with West Texas Intermediate (WTI) remaining in the mid-$90/b range and Brent crude staying close to the $115/b mark. Continuing turmoil in the Middle East, the struggling recovery of the economy in the developed countries, a worrisome slowdown in China and new concerns over Iran, keep oil prices high despite the fact that the market appears to be well supplied.

Speaking in Austria in mid-September, Opec Secretary General Abdullah al-Badri stated that the market is well supplied and that current prices are primarily the produce of speculation – an activity that has for some time been deemed the culprit when market fundamentals do not seem to apply.

Mr. Badri said there are no shortages "anywhere in the world" and that the situation is expected to continue. Despite recent comments from some Opec members that $100/b was their idea of a 'fair price', Mr. Badri said the group does not have a target for its basket price, but said the price of a barrel of crude "needs to be at a level that does not affect normal economic growth and at the same time a level that allows producers to receive a decent income and to invest to meet future demand."

There are those analysts who would argue that oil priced at $100/b and above has impeded the much-desired global economic recovery and are in effect responsible for the continuing upward spiral of the cost of many goods.

In the latest edition of its *Monthly Oil Market Report*, Opec forecast that global demand for crude from its 12 members would average 30.51 million b/d during the last quarter of 2012, an increase of 190 000 b/d from its previous report. Demand this year for Opec crude is expected to average 29.92 million b/d and it forecast that demand for 2013 would average 29.55 million b/d, which is 370 000 b/d less than the demand forecast for this year. Opec production during the month of August was estimated to be at around 31.4 million b/d.

Maria van der Hoeven, Executive Director of the Paris-based International Energy Agency (IEA) confirmed Mr. Badri's comments during a meeting with reporters in Madrid several days later. She said the oil market is sufficiently supplied and that Saudi Arabia is pumping extra crude. The US and Canada are also bringing more oil to market, she added. Ms. van der Hoeven also pointed out that Iraq holds considerable ability to boost global oil production.

"Iraq has enormous untapped reserves," she told Reuters. "And the thing is: what is going to happen if these reserves are tapped? Iraq is a game-changer."

An agreement reached in mid-September between Iraq's central government and the Kurdistan Regional Government (KRG) concerning exports from Iraqi Kurdistan and suspended payments to the companies operating and exporting from there holds the promise that more Iraqi crude will be finding its way to market in the months ahead.

A dispute with Baghdad over payments to oil companies exporting from northern Iraq led the KRG to halt exports altogether last April. It restarted exports in August as Irbil and Baghdad renewed efforts to resolve their differences over oil policy in the country. A complete lack of progress in passing Iraq's national hydrocarbon law has led the KRG to proceed with its own exploration and development programme, including awarding contracts to international companies without the approval of the central government.

The agreement ratified on September 18 by the Iraq cabinet will see exports from the KRG area averaging 140 000 b/d in September and rising to 200 000 b/d. Baghdad also agreed to release some $900 million to pay oil companies for their exported crude.

Iraqi Oil Minister Abdul-Kareem Luaibi said last month that Iraq is expected to export 2.9 million b/d in 2013. This will rise to 3.5 million b/d in 2014 and reach 3.75 million b/d in 2015. By 2017, the country's crude exports will average 6 million b/d. Current production is 2.6 million b/d.

Iraq indeed possesses the resources to be one of the world's top crude oil producers, but to succeed it must overcome years of war and economic calamity and avoid new outbreaks of sectarian violence and being drawn into new wars that are currently threatening to erupt in the Middle East.

## Gas

# Interest in East Mediterranean gas for Europe takes shape

With Israel having recently made a decision to export more than half of its natural gas resources and Cyprus on the verge of awarding new exploration licenses, the advocates of how best to move East Mediterranean gas to market are presenting their proposals to the public.

Mark Goetz

With a bit of luck, Cyprus and Israel could become gas exporters by the end of this decade and their most likely first market would be Europe.

US oil company Noble Energy has in recent years discovered some 35 trillion cubic feet (990 billion $m^3$) in Israel and Cypriot waters, and based on an assessment made by the US Geological Survey, more discoveries are bound to be made.

The USGS estimates there are 112 tcf of recoverable reserves in the East Mediterranean. Exploration offshore Lebanon has yet to begin, but seismic readings suggest that as much as 25 tcf of natural gas may exist in its offshore sector.

In a paper recently presented to energy conferences in Geneva and Stockholm, George Pelaghias, Executive Director of the Cyprus-based European Rim Policy and Investment Council (ERPIC), says the creation of a new energy route from the Eastern Mediterranean to Europe – the East Mediterranean Energy Corridor – is in the making and sees such a concept eventually winning the backing of the European Union, as has the Southern Gas Corridor through Turkey.

Earlier this year the government of Cyprus acknowledged that it had taken a decision to go ahead with a plan to establish an LNG export facility at Vassilikos on its southern coast. The plant will have an initial capacity of 5 million tons/year and later expand to 15 million tons/year as more gas discoveries are made offshore Cyprus or if Israel should decide to export some of its gas through the facility.

There are a number of proposals on how energy might be transferred from the East Mediterranean to Europe, including an underwater gas pipeline stretching from Cyprus to Crete and then mainland Greece, and an underwater electricity cable. But Mr. Pelaghias argues that shipping East Mediterranean gas from Cyprus in the form of LNG would provide the producers with the option to sell to numerous European customers as well as in other regions.

"There are several LNG regasification terminals in the Mediterranean that could serve as entry points to Europe with Greece and Italy being the closest to Cyprus," Mr. Pelaghias states, adding: "LNG through the East Mediterranean Energy Corridor would be able to reach regasification terminals in southern France, such as the Fos-Tonkin and Fos Cavaou terminals, and the Cartegena, Sagunto and Barcelona terminals in Spain."

He also mentions the prospects of shipping LNG to the UK as well as the known growing markets of India and China.

But he says the success of this corridor would depend upon a strong bilateral relationship between Israel and Cyprus. "The support of Greece and especially Italy, as well as other southern European countries will be important in securing a commitment from the European community to help develop, and ultimately purchase, Eastern Mediterranean natural gas." He argues that initially, Italy would be the optimal entry point into Europe, but says the corridor would need to be comprised of an Israel-Cyprus-Greece-Italy nexus.

Mr. Pelaghias urges that work on the construction of a LNG plant in Cyprus "be undertaken and completed without delay." Whether Israel chooses to participate in a project that would target the European market or not, Cyprus, as a member of the EU, "must align itself firmly with the concerns of EU energy security and especially the broader Western security interests in the region."

He adds that by assisting with the development of East Mediterranean energy resources, "the EU would secure a substantial new supply of natural gas within its own borders."

Meanwhile, the Greek supporters of the Interconnector-Turkey-Greece-Italy (ITGI) are promoting the idea of an underwater gas pipeline that would deliver East Mediterranean gas to Europe via Greece.

ITGI's Director of International Activities, Dimitris Manolis, was quoted last month by Reuters during an energy conference in Vienna that the huge potential of the Levant Basin holds enough gas reserves to support both an LNG project and an underwater pipeline that would connect with the ITGI.

"By 2018-19, gas from the East Mediterranean may find its way to Greece and through Greece to the rest of Europe, providing security of supply as well as diversification of routes," he was quoted as saying.

# Building a solid foundation

Driving down the cost of turbine foundations will improve the cost competitiveness of offshore wind. International engineering company Atkins tells **Junior Isles** how the wind industry can learn from the oil and gas sector.

While onshore wind has come a long way in terms of competing with thermal power plants in terms of cost of electricity, offshore wind still has a long way to go. Accordingly, this summer, an industry-led task force set out key actions for industry to cut the cost of generating electricity in the sector by over 30 per cent, from around £140/MWh to £100/MWh by 2020.

According to the Offshore Wind Cost Reduction Task Force Report, cost reductions can be made in areas such as the supply chain, contracting strategies, planning and consenting, finance, grid connection, and innovation.

With regards to innovation, increased turbine size for greater power output is one area that has been receiving a great deal of attention but another important area is new foundations, especially jackets, designed for serial manufacturing.

**Willmore: experience and engineering principles from the hydrocarbons industry will be critical**

Foundations represent in the region of 30 per cent of the cost of an offshore wind farm but for the new wave of projects, it is an area where there is little experience to draw from.

Given the first offshore wind farm was built off the coast of Vindeby, Denmark, in 1991, the industry is essentially still in its infancy. Even when looking at the UK, which has the largest offshore wind programme globally, its Round 1 (R1) projects were near to shore and in fairly shallow water. With regards to engineering, these projects probably have more in common with onshore wind farms.

For the ongoing R2 and upcoming R3 projects, wind farm developers are likely to learn more from the hydrocarbons industry i.e. oil and gas exploration. Mike Willmore, Director of Offshore Engineering at one of the world's leading engineering and design firms Atkins, believes the experience and engineering principles from the hydrocarbons industry will be critical.

"We have 50 years of history in hydrocarbons. The wind industry [in the UK] has generally moved from onshore to offshore Round 1 without a lot of feedback from hydrocarbons. But to get to Rounds 2 and 3, it will be far more reliant on that feedback from hydrocarbons in terms of technology, the use of heavy-lift vessels and the whole O&M regime and how to maintain an asset that is remote from the shore.

"Rounds 2 and 3 are in much deeper water, have complex ground conditions and are likely to utilise larger machines. Round 1 was really just machines in the water, R2 is transformer platforms in the water and R3 is not just transformer platforms but potentially maintenance platforms – much more analogous to the hydrocarbons industry."

But while the oil and gas industry will provide the most relevant feedback, the offshore wind industry will still need to do things differently if the costs of foundations and installation are to come down to acceptable levels.

According to Atkins, there are perhaps less than 10 000 offshore hydrocarbon structures worldwide. The cost of these platforms is relatively small compared to the overall cost of a hydrocarbon field development, typically less than 10 per cent.

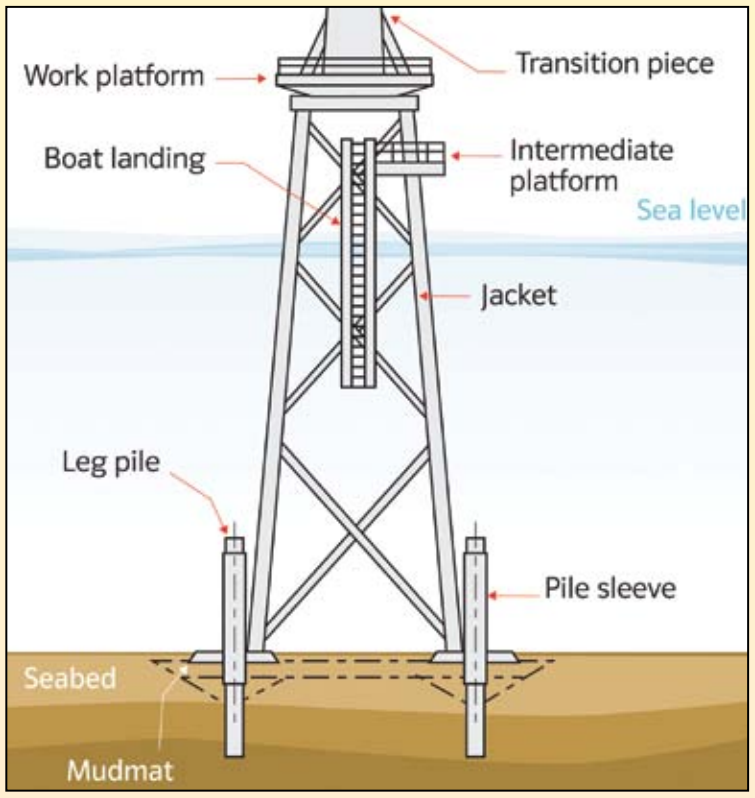
For offshore wind, not only is the cost of the foundations a much higher proportion of the entire asset but the number of subsea structures is significantly more – Europe's offshore wind sector alone may need 10 000 offshore foundations in 10 years.

A bespoke approach to foundation design and installation typically adopted in the hydrocarbon sector is therefore not a commercially viable option for offshore wind. It has to develop ways of serial production.

As Andy Thompson, Director in Energy at Atkins, put it: "We are not talking one-off Bugatti Veyrons; we are talking Ford Focuses both of which are brilliantly engineered and both are cars. However, they have considerably different applications and hence have attracted different methods of design, manufacture and distribution. There cannot be detailed individual engineering for each foundation, there has to be a more production line approach."

Thompson believes that when performing Front End Engineering Design (FEED), integration of the supply chain is key. "There has to be vertical alignment. For us it is imperative as designers that we understand fabrication techniques. Installation vessels are incredibly expensive. So understanding how to optimise the installation, by having maybe certain piling arrangements, or being able to configure designs so that they are easily transportable, is really important," he added.

A wind turbine is a massive rotating piece of equipment that has certain operational performance constraints. For example, resonance must be avoided so the turbine does not oscillate or vibrate. Turbine manufacturers are therefore very specific about the foundation response characteristics. This makes foundation design a much more complex approach than in offshore hydrocarbons.




**Jacket foundations are available in several variations and are common in the oil and gas sector**

Willmore explained: "An offshore wind farm such as Dogger Bank extends over a large footprint, over which ground conditions and water depth can vary greatly. This coupled with the need for a foundation characteristic that matches the turbine manufacturer's requirements means you could end up with 600 bespoke foundations."

He added: "The foundation has to be tuned to a particular turbine. So what we are finding when we go through concept and FEED, is until there's selection of a turbine, it is hard to optimise the foundation design."

To a degree, engineers can get around the problem in the concept engineering phase by basing the design on a broad set of norms. For example, the foundation can be designed for a light turbine or heavy turbine, deep water or shallow water, hard rock or loose sediment soil conditions.

"This would drive you towards a certain type of solution in broad terms. For example, jacket or monopile, or gravity-based solution," noted Thompson. "We could then use this 'ballpark structure', which we are fairly confident it will be, to develop a serial build for two or three derivative turbine types."

There is then an iterative process where the foundation designer develops a more refined solution based on loading information from the turbine manufacturer. The OEM then uses this solution to run calculations again, and feeds data back to the foundation designer. A final optimum solution is reached after two or three iterations.

Clearly, with a serial approach each foundation cannot be specifically tailored for a single turbine and so the final foundation design will have to be a trade-off that delivers the optimum operating performance for a fleet of turbines.

Terrain modelling technology used in oil and gas will help but according to Thompson, the best way to reach this optimum is to involve all parties as early as possible. "It takes everyone – manufacturers, developers, foundations designers, installers, fabricators cooperating at the front end."

Atkins believes this can be achieved by forming alliances that can share confidential information during the concept and design phase.

"As a designer, we have to know that our foundation can be installed and maintained economically," added Willmore.

This type of collaboration has already seen new solutions developed as turbines move into deeper water.

"Some R1 projects experienced problems with the grouted connections between the monopile and the transition piece. It was a real case of where the industry recognised that a few things were beginning to bubble-up and got together to recommend that other designs should be looked at for future projects," said Thompson.

There is still insufficient build-out in deep offshore wind farms to measure the impact of current design and installation approaches on costs and through-life performance. While economies of scale will no doubt bring cost reductions, it will also come down to innovation versus standardisation.

Thompson noted: "There has to be a point where you have to settle on a solution rather than just carrying on innovating. I don't think we are far from that point. Turbines will probably settle down because the R3 developers will want turbines that historically are reliable. Solutions will start to become standardised because fabrication yards will start having the tools, the space and the lifting capabilities. Costs will come down as the industry gains the confidence to invest in production engineering."

The UK has been sensible in gradually building up the complexity of offshore projects. The experience from onshore was used for R1 projects and experience from R1 will be fed into R2 and R3 but it is the oil and gas sector that will also provide highly relevant experience in the drive to make the next wave of offshore wind projects cost competitive.

**Thompson: there has to be a more production line approach**

# Renewed energy

The renewables sector, like any industry, has its challenges. **Junior Isles** caught up with the President of Alstom's renewables division to hear his views on the industry and plans for the division.

Pécresse: happy with the momentum

From the moment he starts speaking, it is clear that Jérôme Pécresse is a high-energy guy. Still fresh as the fairly new President of Alstom Renewable Power and Executive Vice-President of Alstom and, by executive standards, relatively young at 45, Pécresse is looking to inject his considerable energy into a business that is becoming an increasingly important part of the engineering giant's power portfolio.

Sometimes it is hard to keep up, which is hardly surprising. In addition to spending time with his family, Pécresse is "pretty keen on sport", tennis in particular.

"At 45 years old, I still have a little bit of energy left," he jokes. "I am keen on running and developing businesses, which I have done for a significant part of my career so far."

Pécresse studied engineering at Ecole Polytechnique and Ecole Ponts & Chaussées. However, he moved into the financial sector, joining Crédit Suisse First Boston in 1992 as associate, then Vice-President and finally became Director responsible for mergers and acquisitions for France.

He returned to the engineering industry in 1998 when he moved to Imerys, a group that delivers mineral-based specialty solutions for industry. After a period as Vice-President Strategy and Development, he became Director of Finance and Strategy (2003-2006) and Director of the Ceramics, Refractories, Abrasives and Filtration Division (2006-2008). Pécresse took the helm of Imerys in 2008 when he was appointed Deputy Chief Executive Officer.

Reflecting on his career so far Pécresse says: "Since being in the industrial sector in 1998. I have been trying to assemble teams, align them and grow the businesses that I have been in charge of. That is what I will be trying to do at Alstom. We have a wonderful group with some very professional and experienced teams; there is an impressive base of technical knowledge across the group."

Pécresse believes his open-mindedness and ability to listen to different opinions will be important in getting the most out of his teams to the benefit of the overall group and Alstom Power as a whole.

"It is important to accept that the world is not binary. This is especially important when it comes to making technology choices. There are many options and it is not a case of saying one is good and another is bad," he says.

This open, balanced view is crucial in an organisation like Alstom, which is heavily involved in all aspects of power generation – thermal and renewables – as well as supply.

This was evident in his response to the potential threat of shale gas to the renewables sector. He said: "I see shale gas as complimentary to renewable development. As more intermittent renewables come on line we will need gas plants to provide support."

Instead, the two main challenges he sees facing the renewables sector are reaching grid parity sustainably and achieving profitability. In fiscal 2011/2012 operating margin for the Renewable Power division decreased from 8.9 per cent to 7.4 per cent, affected by price erosion in wind.

Pécresse explains: "Grid parity has obviously been achieved for hydro and is beginning to be reached for onshore wind in some countries. However, it is still tough for offshore wind. The other challenge is how equipment manufacturers can achieve better profitability in some sectors, such as onshore wind. Reducing equipment price is part of the equation in achieving grid parity but this does not go with improving profitability. We therefore have to look at how to increase volumes, improve economies of scale and develop more efficient technologies."

This is particularly crucial to bring down the cost of offshore wind production. Alstom sees its award of the French tender with EDF for 1.5 GW of offshore wind as an important step in making offshore wind commercially competitive.

> Reducing equipment price is part of the equation in achieving grid parity but this does not go with improving profitability

Economic conditions are another challenge. Although to a lesser extent than most industries, the tough economic climate has slowed the renewables industry on the whole. While Alstom has not had to make too many structural adjustments to its business, the financial crisis has resulted in project delays.

"There have been project delays in offshore and onshore wind and hydro. The economic slow down has reduced consumption and the financial crisis has made financing of projects more difficult. This means projects are now happening at a slower pace – booking orders takes more time, getting projects to the start line takes longer. You have to have more patience and perseverance and financial muscle but at Alstom we have these assets," says Pécresse.

Nevertheless, Pécresse is very confident about the long term growth of the market and accordingly the company is continuing to invest in developing its renewables business.

In terms of technology focus for the coming years, Pécresse says the plan is for Alstom to be "a global leader in all renewable power technologies" with the exception of PV solar. The company is already a global leader in hydro – with a strong presence in major markets such as China, India, Brazil, Canada and Europe – but is still looking to broaden its global footprint further.

In 2011, it turned its attention to Russia with the establishment of a joint venture with RusHydro called Alstom RusHydro Energy. The joint venture started the construction of a hydropower equipment manufacturing plant in May this year in Ufa, and expects to start equipment production at the end of 2013.

In wind, Alstom does not yet have the strong position it enjoys in the hydro market.

Pécresse says: "At the moment for onshore wind the focus is on Europe and Africa, where we have projects in Ethiopia and Morocco. We have also booked significant orders in Latin America, while the uncertainty surrounding Production Tax Credits is affecting our operation in the US. From Europe, we are targeting parts of Southeast Asia e.g. Australia. But today we are not investing in China and India.

"Offshore, the market is obviously developing in Europe and we want to cover the bulk of the European market today and then progressively look at North America and China."

The company is also investing in other renewable technologies such as geothermal, solar thermal and marine energy with a view to first proving the technologies and making them commercial, and then from there developing the global position.

Explaining the omission of PV from its plans, Pécresse says: "We are not investing in the PV market. Alstom's strength is technology and complex system integration, which is not so applicable to the PV industry. We believe that solar thermal is the most promising form of large scale solar energy production and we are investing in this through our relationship with Brightsource."

Looking at the company's long-term growth, Pécresse was tight-lipped about any future forecasts. In 2011/2012, sales in renewable power were up 4 per cent compared to the previous year. During the first quarter of 2012, Renewable Power reported sales of €0.2 billion. He only added that he expected the business to grow with a "sustained level of profitability".

"We benefit from the fact that a significant part of the business is the mature hydropower business. Clearly last year and this year was historically not a very high level for the hydro market.

In some parts of the world like China, the market is at a lower level than it used to be but we remain confident about the long term prospects.

It is still the cheapest energy source worldwide with a low environmental footprint and is the only large scale technology for storing energy," he notes.

By his own admission, it is his nature to be unsatisfied but Pécresse is happy with the momentum. "We have good dynamics and are investing a lot. We are expanding the hydro footprint, we built two wind facilities in Latin America and North America last year and are investing in geothermal, solar thermal and marine."

Notably, at the end of September Alstom signed an agreement with Rolls-Royce to acquire Tidal Generation Limited (TGL), a wholly owned subsidiary of Rolls-Royce plc, specialised in the design and manufacture of tidal stream turbines. Alstom's acquisition of TGL is expected to be completed within the next few months, subject to closing conditions.

Commenting on the deal Pécresse said: "This new step sets Alstom as a leader in ocean energies, with its Haliade 150 offshore wind turbine and its stake in AWS Ocean Energy Ltd, Scotland's pioneering company in the wave energy, with whom we will provide wave devices for the world's largest wave farm off the coast of Orkney in Scotland. We now intend to be rapidly in a position to participate in pilot projects and develop a tidal turbine commercial offer."

Clearly, one year into the job Pécresse still has plenty of energy. He is enjoying the challenge of being in a business that is competitive but growing, and will continue do so in the coming years.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The Lodi Energy Centre in California will demonstrate the benefits of flexible gas fired generation

# The natural choice

According to a new report, new global gas fired power plant orders will total 537 GW through 2020. **Junior Isles** gets a first-hand look at the Lodi Energy Center, a plant that demonstrates why gas fired generation is becoming increasingly popular.

The Lodi Energy Center (LEC), owned and operated by the Northern California Power Agency (NCPA), is a perfect example of why gas fired power generation is once again becoming the thermal power plant of choice – especially in the US.

Inaugurated in August, the project will be the first operating Siemens Flex-Plant 30 combined cycle gas turbine (CCGT) power plant in the USA and will contribute to meeting California's ambitious renewable energy and greenhouse gas reduction targets.

In celebrating the completion of the 300 MW facility, dubbed as "the most efficient combined cycle natural gas fired power plant in the State of California, if not the nation", NCPA general manager James H. Pope said: "LEC is the future of clean, reliable energy, not just for the individual communities and agencies represented here today, but for the entire state of California. This facility will come on line quickly, burn less fuel and produce fewer emissions."

Pope says what makes the LEC unlike any natural gas fired CCGT facility in operation today, is the "fast-start" turbine at the heart of the plant.

Mario Azar, Head of Gas Turbine Power Plant Solutions Americas in the Fossil Power Generation Division at Siemens Energy added: "The innovative fast ramping gas fired plant was specifically designed by Siemens as a solution to balance fluctuations on diverse power grids managing both renewable and traditional energy sources. Its clean footprint and versatility makes it an ideal solution to the growing need for stable and environmentally friendly power sources in the US and around the globe."

According to a recent report – *Prospects for Gas-Fired Power Generation* – by Frost & Sullivan, global gas fired power plant orders will total 537 GW through 2020. A key market driver is the unpopularity of coal in developed regions due to environmental concerns. Coupled with the extremely low natural gas prices in North America, this is leading to the phasing out of old coal fired plants, which are being replaced by gas-based plants.

Gas fired power generation is also fuelled by the massive availability of natural gas because of new pipeline schemes such as Nabucco, the expansion of global LNG production led by leading producer Qatar, and the boom in shale gas production, spearheaded by the US and gradually spreading to other regions. The high availability of gas, combined with the economic downturn, has brought about a prolonged period of relatively low gas prices, boosting gas-based generation.

"The leading regions for gas fired power plant orders during the current decade will be the Middle East and China," said Frost & Sullivan Industry Director, Harald Thaler.

"The global market will be sustained by the burgeoning demand for new plants in emerging economies as well as replacement demand arising from decommissioning of old coal fired power plants, particularly in Europe and North America."

Considering the problems associated with coal and nuclear power – where developments have slowed down in the aftermath of the Fukushima accident – gas fired power generation will benefit, according to the report.

The report also noted that the greater operating flexibility offered by gas turbines – fast start-up capabilities and higher part-load efficiencies – will be a key differentiator.

Gas fired plants are benefitting from the rapid growth in renewable energy in many parts of the world. As intermittent sources such as wind and solar PV grow, so does the need for back-up power. Gas fired plants are widely regarded as the best option for providing this back-up.

This was one of the key reasons for the use of Flex-Plant 30 technology at Lodi. According to the California Energy Commission, the operating flexibility of the new LEC will facilitate greater use of renewable sources such as wind and solar for electricity generation, which have been more difficult to integrate into the grid because of their intermittency.

"The Lodi Energy Center will provide grid reliability to the Central Valley, while integrating renewable resources," said Energy Commission Chair Robert. B. Weisenmiller. "This is the future for fast-start gas fired combined cycle power plants in the country."

The new plant will serve the needs of 13 different project participants: Modesto Irrigation District, Power and Water Resources Pooling Authority, Plumas-Sierra Rural Electric, State of California Department of Water Resources; Bay Area Rapid Transit; City of Ukiah; City of Lodi; City of Biggs; City of Azusa; City of Lompoc; City of Santa Clara; City of Healdsburg and the City of Gridley.

The plant is based on a Siemens SCC6-5000F 1+1 Flex-Plant combined cycle unit consisting of a Siemens SGT6-5000F gas turbine generator with a rated output of 208 MW, heat recovery steam generator (HRSG) and Siemens SST-900RH steam turbine with an output of 100 MW.

It has an efficiency of 57 per cent and is designed for intermediate to continuous duty and is capable of daily cycling. The SGT6-5000F at the heart of the power plant can reach full load in 30 minutes, ramp up or down at 30 MW/min and turndown with standard emissions compliance to less than 40 per cent load.

According to Siemens, overall plant start-up times are reduced by up to 50 per cent due to the integration of fast start-features, including the three-pressure HRSG with Benson once through technology, high capacity steam attemperation (desuperheating), full capacity steam bypass systems, innovative piping warm-up strategies, and Siemens' steam turbine stress controller (STC).

According to Siemens, its fast start capability to deliver 200 MW in 30 minutes or less, can result in a 30 per cent reduction in greenhouses gas emissions when compared to traditional F-class combined cycle plants i.e. more than 200 t/year of carbon monoxide.

The project's participants see the start up of the plant as an important milestone in their efforts to reach carbon reduction goals.

"California has set very ambitious carbon reduction targets and renewable energy goals," said Santa Clara City Councilman Pat Kolstad referring to the landmark 2006 Climate Change Act, and 2011's 33 per cent Renewable Portfolio Standard requirement. "Our participation in LEC will help ensure that my community will continue to lead the way toward a cleaner, greener energy future for California."

## Prospects for Gas Fired Power Generation

A recent report from Frost & Sullivan entitled, *Prospects for Gas-Fired Power Generation* states that global production of natural gas increased by 82 per cent during the 2000-2010 period, mainly to meet growing power generation needs.

North America is both the largest producer and consumer of natural gas. The United States – as a result of its expanding production of shale gas – has been the world's largest producing country since 2009, overtaking Russia. This will enable the country to become independent of LNG imports and drive a greater expansion of gas fired power generation in the region.

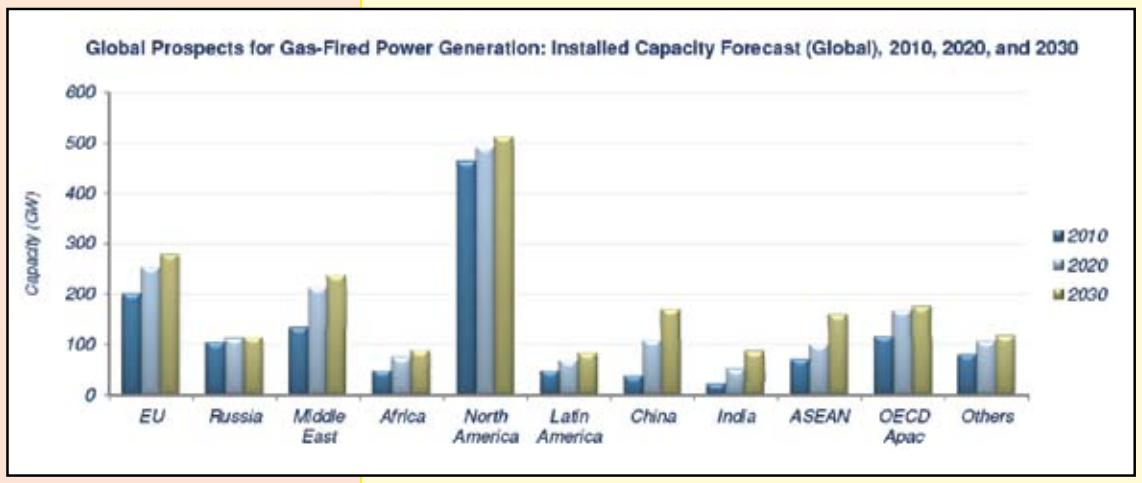
Europe is dependent on imports of gas, primarily from Russia but also from North Africa and increasingly from the Middle East through LNG. Future imports will also come from other territories, such as the Caspian region.

Meanwhile, China and India are increasingly dependent on imports of LNG to meet their burgeoning gas needs.

The report concludes that the prospects for gas fired power generation are excellent. Driven by the decommissioning of ageing coal plants in the developed world and the growing availability of natural gas from new pipeline schemes, expanding LNG development and a boom in the production of unconventional gas, installed capacities of gas-based plants are forecast to rise strongly across all regions of the world.

Global installed gas fired generation capacity is forecast to rise from 1311 GW in 2010 to 2008 GW in 2030, with electricity generation rising from 4444 TWh to 7187 TWh over the same period.

*For more information on this study, send an e-mail to Chiara Carella, Corporate Communications, at chiara.carella@frost.com "*



Junior Isles

# Who's afraid of the big bad wolf?

Since the shale gas boom in the US, there has been much talk about a potential golden age for gas and the subsequent threat to renewables.

While it is an interesting debate and makes for dramatic headlines it could also be argued that it is perhaps a misdirection of time and energy. Maybe.

The topic surfaced several times at this year's FT Global Energy Leaders Summit as well as at the Renewable Energy Finance Forum (REFF), held within a week of each other last month. With both conferences taking place in London and the imminent finalisation of the UK energy bill, it was hardly surprising it was a hot issue.

In its draft UK Energy Bill published in June this year, the government outlined its support for gas saying there would be a £500 million tax break for offshore gas fields – in addition to the £3 billion announced in the March budget.

The government's decision sparked concern among environmental lobby groups who claim that a new 'dash-for-gas' is neither economically sensible nor compatible with the country's legal carbon budgets.

Yet the fierce debate is one that some think should not be a priority. Speaking at the FT conference, James Cameron, Chairman of Climate Change Capital said: "The area we really need to concentrate on is the enabling infrastructure for the whole suite – the infrastructure associated with a grid that can take multiple contributions. We shouldn't waste our time deciding whether gas is better than renewables; that's just a total waste of energy. We spend far too much time trading off one supply against another supply."

Indeed it seems that in some ways, the industry is putting the cart before the horse. There could be much greater benefits by putting greater focus on the transmission, distribution and smart grids that would enable better deployment and efficient use of the energy resources we have.

This was echoed by Adnan Amin, Director General of the International Renewable Energy Agency, who said that Europe's energy infrastructure was not allowing it to take full advantage of its renewable energy resources.

> We spend far too much time trading off one supply against another supply

However, building a new infrastructure takes time and money. It is easier and cheaper to build new low carbon generation – even if this may not be the most efficient solution in the long run. Revenue sources from new capacity are clear. In many countries, the economic incentive to business for improving grid infrastructure is not immediately obvious.

There is also the pressing issue of climate change, which, if we are to believe the science, is clear and imminent. As Martin Lidegaard, Denmark's Minister of Energy and Buildings, put it: "You would have to be deaf to not hear the drumbeat of evidence."

Lidegaard said that $CO_2$ emissions have increased by 40 per cent since pre-industrial times while global energy demand is skyrocketing.

Gas can certainly play a role in slowing the growth of greenhouse gas emissions. Falling levels in the US have been widely attributed to the shale gas boom and the replacement of coal fired generation with gas. While most do not see shale gas having a big impact in Europe in the near term, it is widely acknowledged that shale gas has changed the landscape.

Speaking a few days earlier at the REFF, Chris Hunt, Managing Director at Riverstone Holdings PLC said: "There's no hiding the fact that shale gas has dramatically changed the landscape over the last five or six years. It's real and it's here to stay. As we get more experience with how to do it right, we will see expansion in Europe; how quickly, depends on the regulators.

"It has put tremendous pressure on renewables – lowering power prices in the US dramatically, to the point I would hardly be surprised if we see any long term power purchases agreements [for renewable projects] in the US next year because the price level which you have to hit to beat a low gas price assumption is different.

"But I see that as more of a challenge than a threat. It just means we have to get our projects better and cheaper, responding to the needs of the customer. I don't think it's going to kill the industry; I think it will just make it stand up more and work [harder]. All in all we have to get to grid parity anyway, this just changes the numbers a little bit."

The increasing availability of gas along with the economic crisis may have slowed the growth rate of renewables but the growth remains strong nevertheless. According to new research by alternative energy experts GlobalData, growing government support, combined with significant untapped potential, could see the UK's renewable energy installed capacity almost match that of the traditionally dominant thermal sector by 2025.

A recent report from the company predicts that the cumulative installed capacity of renewable energy plants will reach 79 GW by 2025 – just 2 GW less than the predicted thermal installed capacity for the same year.

On a global level, Mr Amin said today renewables represent a quarter of global power capacity from all sources and deliver 18 per cent of global electricity supply. He said, however, that this was a small percentage of the real potential.

"I firmly believe it is possible to reach the target of doubling the share of renewable energy by 2030," he said.

Lidegaard outlined the Danish experience saying that the country's renewable capacity had grown by 80 per cent since 1980, while keeping power prices at the EU average and lower than countries such as the UK.

On this evidence, gas appears to present no threat to renewables.

Further, according to the IEA, the increased use of gas, even as a replacement for coal, will see result in global temperature rise exceeding the 2°C limit. While acknowledging that gas has a part to play, Lidegaard therefore does not subscribe to any strategy that sees it displacing renewables.

"In some countries, shale gas might be a stepping stone as it replaces coal and provides flexible backup for renewables. But relying on gas instead of actually working on phasing out fossil fuels is equal to mistaking the big bad wolf for sweet old grandmother just because he's wearing a skirt. While natural gas is a useful technology in the transition to a low carbon society, in the long run it is not a viable solution."

In terms of meeting climate change targets it is certainly not a viable option without carbon capture and storage (CCS), which seems to be slowly grinding to a halt. One speaker at REFF claimed that CCS was "off the map".

Even CCS proponents acknowledge progress has been painfully slow and it would take time to get there for CCS on gas plants.

Sandra Locke, Assistant Deputy Minister, Electricity, Alternative Energy, Carbon Capture and Storage, Alberta Energy said: "If we don't get there with coal, the economic case for gas will be more challenging."

It is arguable that GHG emissions reduction could be achieved more economically with CCS than renewables. The problem is that it is not commercial today. But in any event, it does not have to be a case of renewables *or* CCS.

"I would say it is not 'or'; it is 'and'. There are many things to do, and to do now. There are also renewable technologies that don't yet work. CCS is another option for securing a broader security in the energy system and a lower overall cost for reaching the final emission reduction target," said Dr Graham Sweeney, Chairman, Zero Emissions Platform and Special adviser on $CO_2$ to Royal Dutch Shell.

Gas has an important role to play and CCS efforts should be accelerated. Although it may be a mistake to see the 'big bad wolf' as dear old grandma, in the overall scheme of things it could also be unwise to cry wolf too soon.