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UK urged to extend subsidies to nuclear

Vincent de Rivaz: wants a level playing field

Following the sale of a 20 per cent stake in British Energy to Centrica, EDF is now calling for the UK government to support the construction of new nuclear power stations. Without financial support, it believes new nuclear may be a non-starter.

By Junior Isles

The UK government's plan to build a new fleet of nuclear power stations may stall unless it can provide financial support.

Vincent de Rivaz, chief executive of the UK subsidiary of EDF said that a level playing field was needed for nuclear to compete with other low carbon sources such as wind. He argues that the government should give nuclear the same treatment in terms of the financial support that the government has recently extended to offshore wind and carbon capture and storage.

Mr de Rivaz said that one way to support nuclear would be to make sure that the penalties paid by fossil fuel power generators under the European Emissions Trading Scheme were kept high enough to make nuclear attractive for investors.

EDF also feared that the additional incentives for renewables would result in so much wind capacity being built, that nuclear plants would have to shut down at times of high wind output thus having a negative impact on the economics of nuclear plants.

Ed Miliband, the UK energy secretary said the government did not plan to subsidise nuclear. He told the *Financial Times*: "I think we are right not to subsidise nuclear power stations because we have an obligation to get a low-carbon future at the lowest cost to the bill payer."

The warning from EDF comes after the company last month finalised the deal to sell a stake in nuclear power operator British Energy to Centrica, the UK energy company and owner of British Gas. Mr de Rivas said that EDF investors had to be assured that the deal made commercial sense.

Speaking to the *Financial Times*, Mr de Rivas said: "We have a final investment decision to make in 2011 and, for that decision to give the go-ahead, the conditions need to be right."

Centrica and EDF agreed the deal in principle last summer, but talks were bogged down amid falling electricity prices. The £2.3 billion pound ($3.5 billion) deal was struck after months of wrangling over price.

Centrica will pick up a 20 per cent

Continued on page 2

EBRD to drive sustainable investments

The European Bank for Reconstruction and Development (EBRD) is hoping to drive the financing of new sources of clean energy reduce energy wastage throughout eastern Europe by triggering investments in sustainable energy projects worth up to €'15 billion in the next three years.

The Bank's own investments in sustainable energy projects through 2011 of between €'3 billion and €'5 billion are expected to attract further co-financing of up to €'10 billion.

The EBRD has already invested close to €'3 billion under its Sustainable Energy Initiative launched three years ago, according to a statement.

However, countries in the EBRD region continue to grapple with the legacy of cheap energy that made wastage an endemic problem. They remain the most energy intensive economies in the world when measured by carbon emissions per unit of GDP. The potential for further reductions remains huge.

The EBRD's strategy to help mitigate the impact of climate change is to combat this widespread energy wastage with energy efficiency projects while tapping new sustainable sources of energy via investments in renewables.

"Reducing energy wastage in eastern Europe and developing reliable new supplies of sustainable energy remain core to the EBRD's future strategy," said EBRD president Thomas Mirow. "Energy efficiency helps increase competitiveness. It is a key part of the transition process," he added.

The first stage of the EBRD's Sustainable Energy Initiative (SEI) was launched in May 2006 as a response to the increasing challenge of climate change.

The main elements of the initiative were investment in large-scale industrial energy efficiency, power sector and municipal infrastructure energy efficiency as well as the development of renewables.

The EBRD's investments in sustainable energy from May 2006 up until the end of 2008 reached €'2.7 billion, outstripping the original target of €'1.5 billion by 77 per cent. There were a total of 166 investments in 24 countries for a total project value of €14 billion.

The Bank also launched new facilities to finance sustainable energy projects via financial intermediaries and also supported the development of the carbon market.

According to the Bank, over the next three years, it will build on the work done so far and target additional types of investment, including energy efficiency in buildings and the transport sector, climate change mitigation in natural resources, stationary use of biomass and investments in climate change adaptation.

The EBRD will also develop new products, widening the range of financing instruments supporting sustainable energy investments.

The EBRD, owned by 61 countries and two intergovernmental institutions, supports the development of market economies and democracies in countries from central Europe to central Asia.

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stake in British Energy from EDF in return for £1.1 billion in cash and Centrica's 51 per cent stake in Belgian power generator SPE, which is valued at £1.2 billion. The two companies said they have also agreed to set up a joint venture controlled 80 per cent by the French side to build and operate four new European Pressurised Reactor (EPR) units in Britain.

As part of its divestment plan required by EU regulators after the takeover of Bristish Energy, EDF will sell either the Dungeness site in Kent or the Heysham site in Lancashire. The French utility is seeking only nuclear operators as potential buyers of the site.

At the end of April, EDF bought land at a third site, at Bradwell in Essex, next to land it acquired in January with the acquisition of British Energy. EDF's preferred new build sites are Hinkley Point in Somerset and Sizewell in Suffolk. Subject to various conditions being met, including the level of progress at these two sites, EDF has agreed to sell its land at Bradwell.

Also at the end of April, a joint venture between RWE npower and E.On UK was successful in purchasing potential sites for new nuclear power stations at Wylfa in Wales and Oldbury in South Gloucestershire.

Following the auction run by the Nuclear Decommissioning Authority (NDA), the RWE and E.On joint venture set out plans to develop both sites with the aim of delivering at least 6 GW of new nuclear capacity in the UK. Added to EDF's plans to build 6.4 GW, this takes the total declared plans for the first phase of new build to 12.4 GW. With all but one of the existing nuclear fleet scheduled to close by 2023, the first station would come online around the end of the next decade.

In order to expand its nuclear operations and cut debt following recent acquisitions EDF said it is contemplating the divestment of its UK power distribution operations.

The company needs to reduce the £21.8 billion ($32.73 billion) debt it had at the end of 2008, after the acquisition of British Energy and 50 per cent of the nuclear assets of US partner Constellation for $4.5 billion.

EDF also said it was open to selling further stakes in British Energy to outside investors, although it said it is not prepared to go below 51 per cent ownership.

E.On, meanwhile, said it is ready to provide assets in a move to join the Penly EPR project of EDF. The deal may include assets with a 500 MW capacity to be provided to the German subsidiary of EDF, EnBW in return for participation in the project in northern France.

According to analysts, EDF will hold 50 per cent plus one share in the joint venture in the EPR project. French utility GDF Suez and oil and gas major Total will control 33.33 per cent plus one share. The remaining 16.66 per cent will be divided between Italian Enel and E.On.

Preliminary data shows promise for CCS development

- **Pleasant Prairie captures 88-90 per cent of CO_2**
- **Scottish Power focuses on CO_2 storage sites in North Sea**

Preliminary data on a carbon capture demonstration project being conducted at the We Energies facility in Pleasant Prairie, Wisconsin, USA, bodes well for other projects being planned around the world.

The demonstration project, being conducted by Alstom Power in partnership with the Electric Power Research Institute (EPRI), has operated continually for over 4600 hours, captured 88-90 per cent of carbon dioxide emissions, and achieved more than 99 per cent purity levels.

The data was reported at an industry conference that was co-sponsored by the US Department of Energy. Speaking at the conference, Alstom's Amy Ericson said: "The preliminary results from the We Energies demonstration project and other projects we're undertaking are encouraging. Alstom looks forward to continuing to work with our various partners to move this technology to a commercial scale as quickly as possible."

Alstom has a total of four demonstration projects operating or being built and six additional projects scheduled in the three major technologies it is pursuing: chilled ammonia, advanced amines, and oxy-combustion. The projects are taking place in seven countries.

The data on the Pleasant Prairie project is promising for the second phase in a three-phase process for validating and optimizing Alstom's chilled ammonia technology before it is made commercially available in 2015. The second phase is the development of a new carbon capture demonstration project that will be brought on line later this year at AEP's Mountaineer power plant in New Haven, West Virginia. Mountaineer will be the first integrated demonstration project that burns coal, cleans the flue gas, captures the CO_2 and stores it underground.

Alstom also said that a demonstration project at the Schwarze Pumpe facility in Germany to validate its oxy-combustion technology was also successful. While additional work is planned to further optimize the technology, Alstom said the entire oxy-combustion process worked well and that the CO_2 captured was more than 99 per cent pure. Higher purity levels allow the CO_2 produced to be used in the widest possible range of ways.

Work is also continuing on the advance amine technology. In April, Alstom and The Dow Chemical Company announced a new advanced amine CO_2 capture pilot plant in West Virginia.

CCS is gaining momentum across the globe as companies invest in technologies to capture CO_2 from large fossil fuelled power plants.

Finnish power utility Fortum and PGE Belchatow Power Plant, a subsidiary of Polish energy company PGE recently signed an agreement, under which both the companies will start co-operation in carbon capture technologies and storage solutions.

Both Fortum and PGE have their own development projects, which are aimed at setting up projects under the European Commission's CCS demonstration programme.

The EC's goal is to start 10 to 12 large-scale CCS demonstration projects in the member states starting from 2015.

Fortum aims at starting a CCS demonstration project jointly with Teollisuuden Voima (TVO) at the Finnish 565 MW Meri-Pori power plant.

Last month Fortum also announced a partnership with Metso to explore oxyfuel combustion technology. The three-year R&D project is partly funded by Tekes, the Finnish Funding Agency for Technology and Innovation.

The goal of the development activity is to determine how oxyfuel combustion technology could be implemented in an industrial-sized power plant using circulating fluidized bed technology. A key feature of such boilers is that they can be operated on a wide selection of fuels, like coal and biomass separately or together as any mixture.

At the beginning of May, Iberdrola's UK-based subsidiary Scottish Power said it would be focusing on the central North Sea to store potentially all of Europe's CO_2 emissions into the next century. Scottish Power expects to have a full-scale demonstration project working at its Longannet plant by 2014 utilizing these North Sea resources to store CO_2.

The company, which is one of the participants in the UK government's competition to develop the UK's first commercial scale CCS project, part funded a one-year joint study to assess potential carbon storage sites in a section of the North Sea.

The study has identified the largest sites to date in a number of saline aquifers beneath the seabed and in depleted oil and gas fields.

Climate change talks gain momentum

- **EU and Japan agree to cooperate on preparing a new climate change document**
- **Beijing takes tough stance on developed countries**

International talks are gaining momentum ahead of the climate change meeting in Copenhagen at the end of the year.

The European Union (EU) and Japan have agreed to cooperate on the preparation for a new document on the reduction of greenhouse gas emissions to replace the Kyoto Protocol at the Copenhagen conference in December.

The agreement was announced at the EU-Japan summit by European Commission president Jose Manuel Barroso, Japanese prime minister Taro Aso and Czech president Vaclav Klaus, whose country holds the current EU presidency.

Klaus said the EU-Japan talks on climate issues mainly focused on energy-saving technology.

The Organization for Economic Cooperation and Development (OECD) is now preparing a document that will take effect after 2012, when the Kyoto Protocol on lowering emissions expires.

In May, comments from Beijing indicate that tough talks lie ahead in Copenhagen. It demanded that developed countries be bound to give at least 0.5-1.0 per cent of their annual economic worth to help poorer countries, including China, to cut their GHG emissions.

Some officials in Europe and the US have privately dismissed China's stance as posturing. Formal negotiations were set to officially begin on June 1 in Bonn, with three or more meetings to follow before the final summit in December.

Scientists at Oxford University, UK, and the Potsdam Institute in Germany recently said that even the most drastic greenhouse gas cuts currently being discussed stand little chance of limiting global warming to safe levels.

Meanwhile, at the end of April a meeting of the world's major economies, convened to talk about climate change and energy.

At the meeting, Australian Climate Change minister Penny Wong raised the importance of cleaning up the coal industry in talks with US president Barack Obama in Washington.

"Australia outlined the importance of carbon capture and storage in reducing emissions globally, and the work of the Australian-led Global CCS Institute in driving this," the minister said in a statement.

Separately, the International Energy Agency (IEA) unveiled a research report in Beijing a week earlier, making policy suggestions for China to advance its clean coal operations.

Nobuo Tanaka, executive director with the IEA, said: "It's in everyone's interest to ensure that the environmental concerns associated with coal can be managed, even in these times of economic uncertainty."

Statistics show that 46 per cent of the world's hard coal is now consumed in China and 83 per cent of Chinese carbon dioxide emissions come from coal use.

EU energy integration moves forward with UK-Nord Pool collaboration

Nord Pool, Norway's leading power-hub, aims to launch a new power trading platform in the UK to pass on volume and price transparency efficiencies to market participants. According to industry analyst, Datamonitor, this key development in UK power trading is seen as a significant step closer to a single EU market.

Following its selection in November 2008 by the British Futures & Options Association, the US-Nordic led consortium of Nasdaq OMX/Nord Pool intends to launch a power exchange in the UK on September 28. The exchange, called N2EX, will initially provide day-ahead, weekend, week-ahead and intra-day trading auctions. Nord Pool also hopes to feature as a Market Index Data Provider (MIDP), while derivatives contracts may be added to N2EX at a later date, contingent on the speed and efficiency at which its clearing and settlement services work on prompt products.

Although Elexon, the company that manages the UK's electricity balancing and settlements code, has come out in support of these plans, Swedish power generator Vattenfall has questioned the possible changes and the way that imbalance charges are currently calculated. It argues that N2EX would be in direct competition with the existing Anglo-Dutch energy exchange, APX, which would ultimately harm the development of a single and robust UK spot market index and therefore should be open to significant regulatory scrutiny before being created. This is on the basis that N2EX would run parallel with the APX, taking away liquidity and scale efficiencies.

Climate debate gets America hot under the collar

President Barack Obama: growing policy momentum

The US government's determination to regulate greenhouse gas emissions is becoming more apparent but success of current proposed legislation is by no means guaranteed, writes **Siân Crampsie.**

Moves to regulate and reduce emissions of greenhouse gases have gathered pace in the USA with the progression of proposed climate change legislation and a landmark ruling by the US Environmental Protection Agency (EPA).

The US House Energy and Commerce Committee has given its approval to the American Clean Energy and Security Act (ACES) – a landmark piece of legislation designed to reduce greenhouse gas emissions and alter the country's energy economy.

The move paves the way for the bill to be debated in the House of Representatives this month, and came just weeks after the EPA announced a proposed ruling that greenhouse gases contribute to air pollution and may endanger public health.

The developments are an indication of the growing momentum of President Barack Obama's policies on energy and the environment. The ACES bill is not expected to have an easy passage through Congress, but if it fails, or is significantly weakened, then the EPA's endangerment findings could be enacted under the Clean Air Act.

The EPA reported its finding following a scientific review that started in 2007. The proposed finding identifies six greenhouse gases as a potential threat: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.

The EPA's endangerment finding states that "in both magnitude and probability, climate change is an enormous problem. The greenhouse gases that are responsible for it endanger public health and welfare within the meaning of the Clean Air Act".

The approval of the ACES bill by the House committee was described as "extraordinary" by the Pew Center on Global Climate Change, which says that the legislation would also help with the USA's economic recovery. ACES covers four key areas and is designed to promote clean energy technologies and energy efficiency and create a cap-and-trade system to reduce emissions of greenhouse gases.

> The ACES Act combines ambitious but achievable greenhouse gas emission reduction targets

"The ACES Act combines ambitious but achievable greenhouse gas emission reduction targets with a market-based programme that will reward business leaders for deploying clean energy technologies as quickly and inexpensively as possible," said Eileen Claussen, Pew's President. "There is a global race underway to develop these technologies – a race that will dominate the 21st century economy – and the ACES Act will help US businesses lead that race."

But many argue that the regulation of greenhouse gases will have a negative impact on the US economy, particularly on energy-intensive industries that will have to compete with countries such as China where no such legislation exists. House Republicans – almost unanimously opposed to ACES – argue that the legislation would cost the average American family as much as $3000 in additional energy costs.

To help protect energy intensive industries, the ACES legislation proposes the imposition of tariffs on imports from countries that do not have restrictions on greenhouse gas emissions. The proposed tariffs – known as border carbon adjustments – have been criticised by both China and Canada, who have said that the tariffs amount to trade protectionism and will threaten constructive international negotiations on global warming.

The financial sector has also expressed concern that the proposed legislation may prevent over-the-counter carbon trading, a market that can help companies to reduce price risks associated with major infrastructure projects such as power plants.

But the ACES bill has the support of industry groups including the US Climate Action Partnership (USCAP) and the Coalition for Green Bank, which said in a statement that it "cites this vote as yet another significant milestone in the effort to transition the US to a clean energy future, which it deems critical to creating new jobs, energy independence, and environmental and economic health".

USCAP, whose members include Siemens, Shell, Exelon, Duke Energy, Rio Tinto and FPL Group, said: "This significant vote demonstrates the urgency we face in addressing global climate change and our ability to do so in a way that protects the environment while safeguarding our economy … taking action to address climate change provides important opportunities to spur innovation and economic investment."

No deal over Itaipu, says Brazil

Paraguay's hopes of extracting more money from Brazil for energy from the Itaipu hydropower plant faded last month after the two countries failed to reach agreement on the issue.

The presidents of the two countries have postponed the signing of a number of other accords due to their continuing differences over the 14 GW dam but say that they will continue their dialogue in the future.

Paraguay's new President Fernando Lugo made renegotiation of the Itaipu contract and nearly $18 billion of debt from the construction of the plant a major element of his 2008 election campaign. He has asked Brazil to write-off a portion of the debt as well as increase the rate paid by Brazil for the energy it takes from the plant.

Brazil financed the construction of Itaipu – located on the Parana River on the Brazil-Paraguay border – and under the 1973 Itaipu Treaty Brazil and Paraguay each have the right to 50 per cent of the energy generated by the plant.

Paraguay sells most of its electricity from the dam to Brazil, earning around $100 million per year. Brazil has offered to double this as well as help Paraguay to finance other infrastructure projects through development bank BNDES.

Lugo, a former Catholic bishop who took office a year ago, says the sum must be increased to around $2 billion per year.

The Itaipu Treaty is due to expire in 2023.

Sinohydro starts Coca Codo talks

A major new hydropower plant project in South America is taking shape with the start of negotiations between the Ecuadorian government and the Chinese firm that wants to build it.

The 1500 MW Coca Codo Sinclair plant will produce around 75 per cent of Ecuador's energy needs and will cost around $2 billion to build. Chinese firm Sinohydro-Andes recently won the bid to build the plant and in April began formal negotiations with Ecuador's government.

The government has until June to decide whether or not to give the project to Sinohydro-Andes, a partnership between Sinohydro of China and Ecuadorian company Coandes.

The Coca Codo Sinclair project is being developed by a joint venture of Ecuador's state-owned power company Termopichincha and Argentinian power company Enarsa.

Sinohydro-Andes could start construction on the project in early 2010 and would finance 85 per cent of the project cost. Construction of the plant will take five years.

DOE boosts wind sector

ARRA funding for wind project

Obama launches new agency

The US DOE says that $8.5 million of funding for the wind energy sector will help the industry to address market and deployment challenges identified in a 2008 report.

Energy Secretary Steven Chu announced in early May that 53 wind energy projects will receive funding as part of the US Administration's plan to develop the country's clean energy sector. Just days later the DOE announced the first wind power project to receive funding from ARRA, the country's economic stimulus package.

In spite of installing over 2800 MW of new generating capacity in the first quarter of 2009, the US wind industry has been eagerly awaiting the disbursement of ARRA funds in order to help get delayed projects back on track. The American Wind Energy Association (AWEA) has also reiterated its call for more long-term signals in the market such as a national renewable energy standard.

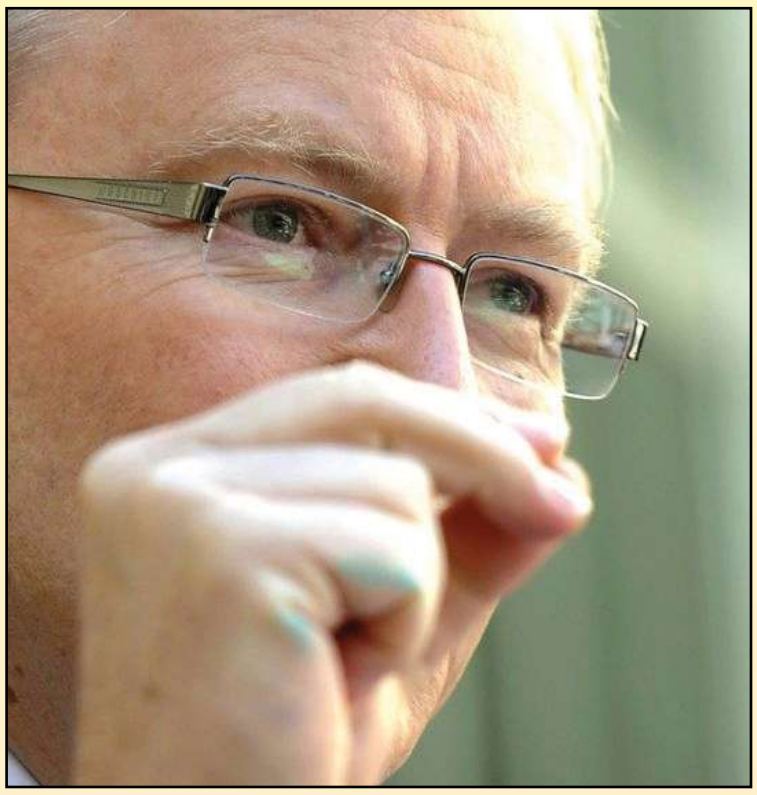
The first project to receive ARRA funds is a wind technology testing centre in Massachusetts state. The centre, which will receive $25 million of funds, will test commercial-sized wind turbine blades to help reduce cost, improve technical advancements and speed deployment of the next generation of wind turbine blades into the marketplace.

The 53 projects to receive $8.5 million of DOE funding cover four topic areas: market acceptance, environmental impact, workforce development and distributed wind technology.

In line with its energy and environment policy, President Obama has also launched the Advanced Research Projects Agency-Energy (ARPA-E) with $400 million of ARRA funding. The new agency will fund energy technology projects that translate scientific discoveries and cutting-edge inventions into technological innovations, and it will also accelerate technological advances in high-risk areas that industry is not likely to pursue independently.

Energy Secretary Steven Chu: announced wind energy projects funding

Australian commitment boosts international climate change efforts



Providing certainty? Kevin Rudd protecting national interest

Commitment to cutting GHG emissions by 25 per cent
ETS delayed 12 months

Australia has given a vital and strategic boost to international efforts for an effective global climate agreement by committing to reduce Australia's carbon pollution 25 per cent by 2020 if other countries join in, said the Southern Cross Climate Coalition of environment, union, welfare and research groups.

"This commitment unleashes Australia's negotiating effort on the difficult challenge of getting the commitments from developed and major developing countries necessary to achieve an agreement to stabilise greenhouse gas levels at 450 ppm or lower in Copenhagen later this year," the coalition said in the statement.

The Southern Cross Climate Coalition is comprised of the Australian Council of Social Service, Australian Council of Trade Unions, The Climate Institute, and World Wildlife Fund-Australia. The coalition called on all parties to get behind the package of reforms announced in May and pass appropriately amended legislation for the Carbon Pollution Reduction Scheme (CPRS).

The joint statement said: "This internationally credible target, coming after COAG (Council of Australian Governments) cleared the way for renewable energy legislation and further steps on energy efficiency, means the CPRS should be supported so business can get on with investing in the clean energy and other low carbon jobs that other competitor countries are investing in.

"We acknowledge that the government is now proposing a softer start to the emissions trading scheme but believe that the stronger 2020 target gives Australia the best chance of helping to achieve a good international climate agreement which will be an important step in tackling the climate crisis and giving sufficient certainty for business."

The statement followed shortly after Australian Prime Minister Kevin Rudd announced that introduction of the federal government's emissions trading scheme (ETS) was delayed until mid- 2011, 12 months later than originally planned.

Significant changes to the scheme have been made because of three factors, said Rudd: first, the impact of the global financial crisis on the Australian economy; second, the need to continue to provide maximum impetus for a strong outcome at the Copenhagen (climate) meeting due at the end of the year; and third, because it was in Australia's fundamental national interest to provide business certainty and investment certainty for the future.

Submissions made to a Senate inquiry at the end of April showed that the business community was split on the decision to delay the ETS.

"The delay in passing (the ETS) ... is another obstacle for investment and jobs," said wind turbine manufacturer Vestas in its submission. "We can see a solid pipeline of clean energy projects."

Petroleum giant Shell strongly backed emissions trading, saying it would give industry the certainty to invest in clean energy. "Notwithstanding the current economic situation, Shell believes there is urgent need for national and international policy implementation to combat climate change," its submission said.

But other businesses, particularly the mining giants, strongly opposed the ETS in their submissions to the Senate inquiry.

Rio Tinto said the scheme would have a "significant adverse impact" on its Australian operations, particularly coal, aluminium and iron ore. "Some coal mines would close early, around 2020. Put simply, the (ETS), as proposed, will cost jobs – now and in the future," it said.

South and central Asia eye regional power trade

Development of a central-south Asia electricity market will help combat power shortages in Pakistan, **writes Syed Ali**

Leaders of Afghanistan and Pakistan recently voiced their commitment to improving regional economic cooperation, including the facilitation of electricity trade between Central and South Asia.

President Hamid Karzai and his Pakistani counterpart Asif Ali Zardari also discussed the development of the Central Asia-South Asia Regional Electricity Market (CASAREM) and Central Asia-South Asia Transmission Project (CASA 1000 Project).

The project is central to the facilitation of regional electricity trade. As a first step in the development of CASAREM, the CASA-1000 Project will allow the export of existing surplus hydropower from Tajikistan and the Kyrgyz Republic to South Asia in summer months.

Together with the governments of Tajikistan and Kyrgyzstan, a functioning inter-governmental council was established in 2007 and a secretariat in 2008 with the objective of developing CASAREM and the CASA 1000 Project.

Afghanistan and Pakistan also affirmed their intent to seek financing from international finance institutions for the CASA 1000 Project. The country's presidents recognised that the completion of CASA 1000 – designed to accommodate an expanded volume of power in the future – will catalyse additional energy investments and trade both in the four CASA countries as well as in the region.

Completion of the programme will certainly become increasingly important to Pakistan which has been struggling to combat power shortages.

Tahir Basharat Cheema, managing director of Pakistan Electric Power Production Company (Pepco) last month said that 3000 MW of new capacity will be added to the system by December 2009.

He said that power generation in the country was now 12 242 MW, equal to the electricity demand, and there was now no power shortfall. He said the government is committed to achieving its targets for ending load-shedding by the end of the year, and the need for planning to meet the growth of electricity demand over the next five years.

While there is no load-shedding in major cities, in rural areas power cuts ranged between three and four hours. He said the situation had improved over last year, but shortages persisted and power outages could increase in July and August.

India to sign nuclear agreement with Kazakhstan

India is set to sign a bilateral civil nuclear power agreement with Kazakhstan this month, according to a senior Indian Foreign Ministry official.

According to the official, India will buy uranium and technology from the central Asian country under the broad framework of the Inter Governmental Agreement for Cooperation in Peaceful Uses of Nuclear Energy. "Apart from fuel supplies and technology transfer, the pact will involve construction of small and medium power stations in India," the official said.

The agreement with Kazakhstan would be the first techno-commercial nuclear deal to be signed by India with another country since the Nuclear Suppliers Group lifted a ban on India last September, allowing India to carry out commercial trade in this field.

India already has struck nuclear enabling accords with the United States, Russia and France.

India has also expressed interest in selling small nuclear power reactors to Malaysia and other developing countries, if the governments are keen to use them to generate electricity.

"We are willing to sell to friendly nations like Malaysia, if there is a genuine interest, as nuclear power production is a long term commitment," Sudhinder Thakur, executive director of the Nuclear Power Corporation of India Ltd (NPCIL) was recently quoted by the *Bernama* news agency as saying.

Indonesia, Malaysia step up energy cooperation

Increased cooperation between Indonesia and Malaysia in the energy sector may see greater exchange of power and energy sources between the two countries.

Indonesian President Susilo Bambang Yudhoyo and Malaysia's new Prime Minister Dato Sri Mohd Najib Bin Haji Tun Abdul Razak held talks recently aimed at boosting cooperation on energy sector issues.

Malaysia offered to supply electric power to Indonesia's Kalimantan island shared with Malaysian territory, Najib told a joint press conference.

He said that his country planned to build a power plant, which could supply power from the Malaysian Peninsula through a cable passing through Indonesian waters.

Indonesia meanwhile, offered Malaysian oil and gas firm Petronas the opportunity to take part in developing Indonesia's Natuna gas block in Riau province, said Najib.

"These are some of good examples of the cooperation in energy," he said.

"In the energy field we agree to continue cooperation in electricity, oil, gas and bio-energy," President Susilo said.

The two countries also promised to boost trade volume. The trade volume between Indonesia and Malaysia rose to $15.3 billion in 2008 from $11.5 billion dollars in 2007.

Vietnam shortlists nuclear locations

The Vietnam Atomic Energy Commission and the International Atomic Energy Agency held a seminar last month on the safety of nuclear power and to appraise a number of proposed locations for Vietnam's first nuclear power plant.

Phuoc Dinh commune in Ninh Phuoc district and Vinh Hai commune in Ninh Hai district, in the southeastern province of Ninh Thuan are considered ideal for the plant as they meet all safety requirements e.g. no volcanoes and little chance of earthquakes, sparsely populated and convenient for transporting extremely long and heavy equipment to the plant, and sufficient cooling water.

Deputy Minister of Science and Technology Le Dinh Tien said that more research should be conducted with more attention being paid to the balance between the benefits of a nuclear power plant and things such as tourism and maritime transport facilities. He asked the relevant agencies to draw up a list of other possible locations for the building of other nuclear power plants in the future, because the national grid needs more than one nuclear plant.

The Ministry of Science and Technology is currently working on the necessary safety criteria before making a final decision on the exact site of Vietnam's first nuclear power plant.

Indonesia mobilises power plant funding

Indonesia's power sector received a boost with the signing of a number of loan agreements for funding.

At the beginning of May, the Chinese government agreed to let its lenders ink a $1.06 billion loan deal with state-run power company PT Perusahaan Listrik Negara (PLN) to help finance the government-sponsored 10 000 MW Crash Programme.

The loans from China had been put on hold after a row between state airline PT Merpati Nusantara and China's Xi'an Aircraft Industry

PLN has mobilized $579 million from the Export-Import Bank of China (Cexim) and $455 million from Bank of China (BoC), PLN said in a statement.

"Cexim will lend $481 million for (three 350 MW) power plants in Pelabuhan Ratu and $124 million for (two 110 MW) plants in Aceh, while BoC lends $455 million for (three 315 MW) plants in Teluk Naga," said Finance Minister Sri Mulyani Indrawati.

So far, PLN has secured $3.25 billion loans from local and overseas lenders to finance the programme but still needs about $1.55 billion (of foreign currency funding).

At the end of April PLN signed a loan contract with a syndicate of 23 banks owned by regional administration (BPD). The Rp4.7 trillion loan ($427 million) will be used to finance 13 coal-fired power plants under the Crash Programme.

Meanwhile, Japan's Mitsubishi Corporation and state owned construction firm PT Wijaya Karya (WIKA) said they will immediately begin construction of a gas-fired power plant with a total capacity of 740 MW in Tanjung Priok, North Jakarta. The plant is expected to be completed in 32.5 months.

China formulating new energy stimulus plan

China's National Energy Administration (NEA) is formulating a stimulus plan which will boost the development of energy sources such as wind and nuclear.

The new plan sees significant adjustments to the future development targets set by the country's previously announced Long and Mid-term Renewable Energy Development Plan and 11th Five-Year Plan on Development of Renewable Energy, said Wu Zhonghu, a researcher with the Renewable Energy Development Centre of the Energy Research Institute (ERI), a think-tank of the National Development and Reform Commission.

Shi Pengfei, director of the Wind Power Committee of China Renewable Energy Society, also predicted that the target for installed capacity of wind power for 2020 was likely to adjust to 100-150 GW, up from 30 GW. China's wind power installed capacity had exceeded 10 GW at the end of 2008 and is predicted to exceed 30 GW by 2011.

A separate report in the *China Daily*, said China plans to finish 100 GW of wind power capacity by 2020 and expand its renewable energy consumption to 40 per cent of the energy market by 2050.

The development of nuclear power would be expanded under the new plan, probably to 70 GW at least by 2020, said Niu Li. Since the founding of the NEA, China has launched 35 nuclear power projects, each with an installed capacity of above 1 GW.

This year, China will start the construction of nuclear power plants in Sanmen in Zhejiang, Haiyang in Shandong and Taishang in Guangdong. It has also given the green light to the construction of 8.4 GW of nuclear power projects.

The acceleration in the increase in renewables and nuclear is part of a drive to reduce greenhouse gas emissions in the country.

At the end of April, Chinese regulatory authorities were drafting plans for collecting environment and energy taxes for a carbon tax scheme. Speaking to the *Daily Economy News* Su Mingjin, deputy director of Finance Institute of the Ministry of Finance, said the environment tax under study includes carbon tax on carbon dioxide emissions, sulphur tax on sulphur dioxide emissions, nitrogen tax on nitrogen oxide emissions and a tax on wastewater treatment.

Construction of the Sanmen plant will start this year

n According to recent power generation figures China's economic recovery is still some way off. Data from State Grid Corp of China (SGCC), the country's main power transmission company, showed national power generation in terms of the daily average dropped by 3.9 percent from April 11 to 20, when compared with the same period last year.

Italy close to new nuclear law but funding issues remain

Nuclear ties: Berlusconi and Sarkozy

With the Italian government expected to pass legislation on a new fleet of nuclear reactors into law this month, utilities and engineering firms will be watching closely to see if the country will be able to swallow costs, writes **Siân Crampsie.**

Italy is moving closer to the development of a new fleet of nuclear power plants but is unlikely to commission the first unit before 2020.

The country's Senate has approved legislation that will clear the way for the revival of nuclear energy in the country, but the bill must now be passed by the lower house and key details such as the approach to funding have yet to be debated.

Italy's government launched the proposal to re-start the country's nuclear programme in 2008. It is the only G8 country without nuclear power and is the world's largest net importer of electricity.

The Senate passed the bill in mid-May. The lower chamber – the Camera dei Deputati – had already passed the bill late last year but must re-approve the latest text as it contains several modifications.

It is expected that the bill will pass into law in mid-June, after which the government will have six months to define criteria for the identification of sites and selection of technology. Under the legislation, the government will also have to define rules for nuclear waste storage, establish a new permitting process and set up an agency to supervise nuclear safety.

Nuclear power is an important cornerstone of energy policy in Italy, which voted in 1987 to close its nuclear power plants following the Chernobyl accident.

Italians pay some of the highest energy prices in Italy and Prime Minister Silvio Berlusconi believes that nuclear energy will help to improve energy independence as well as reduce prices.

Italy is likely to have to pay heavily for new nuclear power plants, however, with current construction costs for new reactors estimated to be around €6 billion. Utilities and engineering firms that are already active in the growing world nuclear market will be watching closely to see if the country – and its consumers – will be able to swallow this cost.

French utility EDF – which is set to play a key role in the UK's nuclear build programme – has already staked its claim in Italy through an agreement with Enel to construct at least four EPRs. The deal reflects an accord on civilian nuclear cooperation between the French and Italian governments signed in March, and also gives Enel the option of a stake in new nuclear power plants in France.

Edison – which is jointly controlled by EDF and AEM Milan – is also keen to participate in the new build market. "We are interested in entering the new nuclear programme when the legislation has been finalised," said an Edison spokesperson, adding that the company wants to participate in the "building and management of one or more" plants, most likely by joining forces with EDF and Enel.

Enel and EDF say that their goal is for the first Italian unit to enter commercial service no later than 2020. Edison believes that the first operational unit could be up and running by 2019 if site preparation work begins in 2012.

Italy's Industry Minister Claudio Scajola said in May, however, that companies will be able to apply to build new nuclear facilities in 2010 and that he expects construction works to begin in 2013. His proposed schedule envisions the commissioning of the first unit in 2018.

The government is aiming for nuclear power to generate 25 per cent of Italy's electricity needs. This would result in a 30 per cent fall in electricity bills, according to Scajola.

But the funding of the nuclear new build programme – and therefore its impact on electricity prices – is currently unknown. It is thought that the government currently favours the so-called Finnish approach to funding, which is based on long-term supply contracts with major electricity users and utilities.

Smart meters part of UK low carbon plans

- All homes and businesses to receive smart meters by 2020
- London Array green light after increase in ROCs

The British government is hoping to change the energy use habits of millions of consumers through the widespread roll-out of smart meters.

Under plans published last month, all homes and businesses in the country will have smart meters installed by 2020. The initiative will help improve energy consumption and is a key part of the government's plans to reduce carbon emissions.

The smart meters will enable meter readings to be taken remotely and will also give householders real-time information on their energy use. The plans represent the largest-ever roll-out of such technology and have been welcomed by the utility industry.

Willie MacDiarmid, director of energy retail at ScottishPower, said: "Smart electricity and gas meters will provide precise real-time information on energy consumption to customers thereby enabling them to better manage their energy use. They will also mean the end of estimated bills and manual meter readings, so there will never be any doubt about the cost of energy."

The UK government has set an ambitious target to reduce greenhouse gas emissions by 80 per cent by 2050 and also recently became the first country in the world to establish five-year "carbon budgets" alongside its fiscal budget. It has started a consultation process to help determine the best option for rolling out the meters and what the meters should be capable of doing.

"Smart meters will empower all consumers to monitor their own energy use and make reductions in energy consumption and carbon emissions as a result," said Energy and Climate Change Secretary Ed Miliband. "Smart meters will also mean the end of inaccurate bills and estimated meter readings."

"This is a big project affecting 26 million homes, and several million businesses, so it's important we design a system that brings best value to everyone involved."

Another key element of the government's low carbon economy plans – offshore wind power – has also received a boost with news that the developers of the 1000 MW London Array project have made the final investment decision on the project and will start construction in 2009.

The London Array project will be the world's largest wind farm and the three partners – E.On, Dong Energy and Masdar – will invest €2.2 billion in the first, 630 MW phase of the project. The UK government's recent decision to increase financial support for offshore wind was a major factor in the decision, according to the developers.

In its latest fiscal budget the British government announced the provision of £525 million for offshore wind subsidies by increasing the number of renewable obligation certificates (ROCs) available for offshore wind. Under the new rules, two ROCs will be issued for every MWh of offshore wind power produced, compared with the previous level of 1.5 ROCs.

Prime Minister Gordon Brown said: "The London Array is a flagship project in our drive to cut emissions by 80 per cent by 2050 and meet future energy needs. The UK is a world leader in offshore wind farms … that's why we have increased our support for this technology as we move towards a low carbon future."

Miliband said: "The UK is already the world's leading offshore wind power and this multi-billion pound project will help keep us there, cut our carbon emissions and contribute to secure energy supplies."

The first phase of the project will be completed in 2012 and will consist of 175 turbines.

Lithuania, Sweden agree power bridge

- **New link from Baltics to Europe**
- **European Parliament approves fiscal stimulus package**

Lithuania is to have a direct link to Europe's power network after it reached a deal with neighbours Latvia and Estonia over the route of a new underwater power link with Sweden.

The agreement brings an end to a long-running dispute between the Baltic neighbours and means that the €435 million project can go ahead, with commissioning scheduled for 2016.

The 350 km cable will run from Lithuania to Sweden and will integrate the Baltic market with the Nordic market. Currently only Estonia has a direct link to Europe's grid, through the 100 km Estlink connection to Finland.

The new link will have a capacity of up to 1000 MW and is a key project in the European Commission's plans to further integrate Europe's energy networks.

It will also help Lithuania to reduce its dependence on Russian energy imports, which will rise significantly after the closure of the Ignalina nuclear power plant this year.

The European Union has allocated €175 million for the interconnection project from the recently-approved economic stimulus package, provided work begins by 2010.

In early May the European Parliament gave its approval to the use of €5 billion of unspent EU budget funds to boost the region's energy and telecommunications infrastructure and stimulate the economy.

The fiscal scheme includes support for energy network interconnection projects, including €910 million for electricity interconnectors and €200 million for the Nabucco gas pipeline project.

Other areas supported by the stimulus package –proposed by the Commission in January – include offshore wind farm projects, which will receive a total of some €565 million.

The €5 billion of funds represents unspent 2008 EU agricultural funding.

Japan, Russia pen nuclear agreement

Two nuclear and economic powers are coming together to secure fuel and technology for the future, **writes Siân Crampsie.**

The Japanese government is hoping that a nuclear cooperation deal with Russia will not only help to secure a stable supply of uranium but also provide Japanese firms with a major export market for their nuclear technology.

The two countries have signed a bilateral civil nuclear deal that forms the basis for cooperation in areas such as uranium mining, the construction of new reactors, nuclear waste processing and nuclear safety.

The pact was finalized during a visit to Japan by Russian prime minister Vladimir Putin and was part of wider talks on economic cooperation.

The deal – signed by Russia's State Atomic Energy Corporation (Rosatom) and Japan's Ministry of Economy, Trade and Industry (Meti) – is expected to foster both trade and the development of joint projects. Specifically, it will enable Russia to provide Japan with enriched uranium for its nuclear power plants while Japanese firms will be able to expand their presence in Russia's growing nuclear energy market.

As the deal was inked, Toshiba announced that it had signed a memorandum of understanding (MOU) with Russian firm Technabexport to discuss possible cooperation in the nuclear fuel business. Meanwhile Rosatom says it is negotiating with Mitsui, Marubeni and other Japanese firms over uranium exploration opportunities.

The Russia-Japan deal is expected to help Russia to increase its share of Japan's nuclear fuel market to 25 per cent from 15 per cent. It is an important part of the Japanese government's plans to increase the share of nuclear power in its generation mix to 40 per cent by 2017.

> … it will enable Russia to provide Japan with enriched uranium for its nuclear power plants while Japanese firms will be able to expand their presence in Russia…

Russia is also expanding its nuclear generating base and is planning to build 28 new nuclear plants by 2022. To meet demand for fuel for both the domestic and export markets it is rapidly expanding its uranium exploration and mining activities.

The deal between Toshiba and Technabexport – part of Atomenergoprom – will focus on initiating studies into commercial plans for the production of enriched uranium products. "Both parties believe such a collaboration could contribute to stable and secure supply of services for the front-end civilian nuclear fuel cycle in Japan, the United States and elsewhere," said Toshiba in a statement.

Japan depends on nuclear power for around one third of its electricity needs but has no indigenous uranium resources. It imports uranium from Australia, Canada and other countries but is seeking to expand supplies in order to promote energy security and to keep pace with the planned expansion of its nuclear sector.

Putin: fostering trade

Toshiba and Technabexport, which specialises in uranium enrichment services, said their work will be undertaken "within the current and future framework of cooperation between the two countries' governments, as well as the international framework for peaceful use of nuclear power". Their MOU follows the signing of a general framework agreement between Toshiba and Atomenergoprom in early 2008 to explore collaboration in the civilian nuclear field.

Atomenergoprom and Toshiba have already started to conduct feasibility studies into areas such as nuclear fuel, design and engineering of nuclear power plants and the manufacture and maintenance of large equipment.

Atomenergoprom's parent company Rosatom is hoping to develop uranium reserves in Russia and in other countries with Japanese firms such as Marubeni and Mitsui. The Russian giant says that the success of these projects will guarantee the stable supply of fuel for both Russian and Japanese nuclear power plants.

Africa-China partnership sets the standard

The head of a commercial bank in South Africa says that the development of the Morupule B power station in Botswana will make a difference to the lives of millions of people.

Standard Bank Group and its partner, the Industrial and Commercial Bank of China (ICBC), have been named as the joint lead arrangers of financing for the $1.6 billion coal-fired project by the Botswana Power Corporation (BPC). The 600 MW plant is part of a major Botswana government initiative aimed at boosting generating capacity in the country.

The deal comes at a time when banks around the world are cutting back on international lending and concentrating on domestic lending, said Standard Bank in a statement. "This project will make a major difference to the lives of millions of people in Botswana and we are proud to be part of it, said Jacko Maree, Standard Bank Group CEO.

He added: "There is little doubt that had it not been for our strategic partnership with ICBC, we would not have been able to undertake the funding of a project of this scale."

ICBC owns a 20 per cent stake in Standard Bank and the two companies have agreed to make the co-funding of large infrastructure deals in Africa a key objective.

Standard Bank and ICBC are arranging an $825 million loan for 20 years, backed by a Botswana Ministry of Finance guarantee and a Sinosure guarantee covering the project's political and commercial risks. A $140 million bridge finance facility will also be provided.

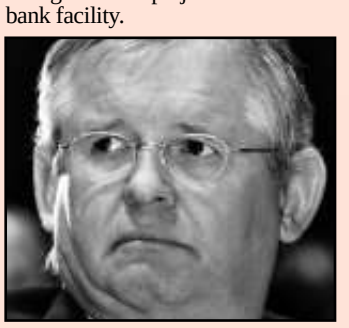
Demand for electricity in Botswana is rising rapidly and supplies dropped when Eskom switched off power to the country in the wake of its own supply crisis. The power deficit in Botswana is expected to reach 100 MW in 2009 and 225 MW in 2010, according to BPC.

Morupule B will consist of four 150 MW coal fired CFB boiler units. The China National Electric Equipment Corporation (CNEEC), one of ICBC's key corporate clients, has been awarded a $970 million contract to supply and build a significant portion of the plant.

BPC is aiming to commission the first unit in late 2011 and the final unit in mid-2012.

Chinese firms are also playing a key role in another major power project in Botswana.

In March 2009 CIC Energy Corp., developer of the 1320 MW Mmamabula power plant, awarded China's Shanghai Electric Group Co. Ltd an EPC contract for the project. It also selected Standard Bank and Absa Capital as mandated lead arrangers for the project's commercial bank facility.



Making a difference: Standard's Jacko Maree

WorleyParsons ahead in race for Egypt contract

An Australian engineering firm could play a lead role in establishing a civil nuclear power programme in Egypt after the country's government failed to reach an agreement with US firm Bechtel.

Egypt's Ministry of Electricity and Energy is reported to have invited WorleyParsons to negotiate a contract for the provision of consultancy services to establish the country's first nuclear power plant. Bechtel and WorleyParsons were among the 14 bidders that last year competed for the contract.

Local reports indicate that the Egyptian government ended negotiations with Bechtel after talks stalled. WorleyParsons submitted the lowest bid out of the remaining offers for the $180 million contract.

Bechtel won the tender for the contract in December 2008.

If negotiations are successful, WorleyParsons will undertake a 10-year project to assist Egypt with the construction of a fleet of nuclear power plants. Its responsibilities would include site selection, technology assessment and preparation of turnkey contracts.

The contract could also include the provision of construction management, field engineering, start-up and commissioning services.

Egypt unveiled plans for a civilian nuclear power programme in October 2007. It froze a nuclear programme after the Chernobyl accident but now wants to build nuclear generating capacity to help enhance security of supply.

Lake Turkana has wind

AfDB supports Kenyan wind scheme

- 300 MW project will boost capacity
- DFIs filling financial void

Kenya's power sector is set to receive a major boost after the African Development Bank (AfDB) said it would facilitate a €300 million loan for a wind power project.

The loan will cover 70 per cent of the cost of the Lake Turkana wind project, which will increase Kenya's installed capacity by 25 per cent. The AfDB will provide €100 million of the required amount itself.

The Lake Turkana wind power project is expected to start generating electricity in June 2011 and reach full production – with a capacity of 300 MW – by July 2012. It is being developed by a consortium of Kenya and Netherlands-based companies and individuals, including Anset Africa and KP&P B.V.

AfDB, which recently discussed the impact of the global financial crisis on Africa's infrastructure development plans at its annual meeting, is the lead arranger for the loan and will source funding from development finance institutions (DFIs) and commercial sources.

"At 300 MW, the project will be of high impact and high visibility for the Kenyan economy," said Hela Cheikhrouhou, Manager of the Infrastructure Finance Division at AfDB. "It will increase Kenya's installed capacity by 25 per cent and represents about 12.5 percent of additional capacity needed by 2020."

The Lake Turkana project will take advantage of the wind resources in the northwest of Kenya and will consist of 353 Vestas wind turbines. A 400 km-long new transmission line will be required to connect the wind farm to the national grid and some 200 km of road requires upgrading to transport the turbines to the site.

At its May annual meeting in Dakar, AfDB officials noted that development finance institutions have stepped in to fill the void left by commercial banks in the wake of the credit crunch. "In the current environment, it is more important than ever that countries continue to move forward with key reforms that make their power sectors attractive to private investment," said Mandla Gantsho, the African Development Bank's Vice-President for Infrastructure and Regional Integration.

Africa's infrastructure gap is a key constraint on the region's economic growth potential and efforts to reduce poverty, according to the AfDB. Africa's power sector alone requires an estimated $29 billion per year in capital expenditure over the next 10 years.

Mobilising private investment is crucial if this level of investment is to be achieved, said the bank.

Siemens, Vestas head west

Strong growth predicted in US wind market
Mixed fortunes in Europe

Peter Löscher: CEO of Siemens AG

European engineering firm Siemens energy is expanding its wind power activities in Europe and North America in anticipation of continued growth in the sector. Meanwhile competitor, Vestas, is scaling back its operations in the northern Europe but is planning to continue investing in the North American market.

Siemens has established a new European headquarters for wind power sales in Germany and is also to build a new wind turbine production facility in the USA.

The company, which is to supply the turbines for the first phase of the 630 MW London Array offshore wind farm, says that it has established its European headquarters for wind power sales and project execution in Hamburg, Germany. It is also upgrading its Bremen operation to be its European headquarters for the service business.

"We're planning to strongly expand our good market position in Scandinavia and the United Kingdom. An important part of our work is to develop business in new markets such as Turkey and North Africa," commented Lars Krogsgaard, Siemens Wind Power's Europe CEO.

Vestas, however, says that it has built up overcapacity in its European operations over the past few years resulting in a need to lay off around 1900 employees, mainly in Denmark and the UK. The company is predicting continued strong growth in 2009 in spite of the financial crisis.

In its first quarter result for 2009 Vestas says that, "during the past six months, the wind power industry has suffered from a funding crisis – not a demand crisis. The projects that will help Vestas meet its forecast for 2009 are currently only awaiting funding; everything else is in place. Consequently Vestas expects that significant contracts will be signed during the coming months".

Vestas has highlighted other problems in its European activities, notably the impact of exchange rates on the export of wind turbines to the US. It has also said that the UK is one of the most difficult places in the world to get planning permission for wind projects in spite of government support for the technology.

Consequently the firm is planning to consolidate its North American activities by building a new Vestas Americas headquarters in Portland, Oregon. The new 46 450 m2 facility will allow for future growth in the region, according to Vestas.

Siemens says that its planned expansion in the USA will initially create 400 jobs. The German firm said in early May that it will build a new production facility for wind turbines in Kansas, with construction starting in August 2009.

"The United States already is and will continue to be one of the world's fastest growing wind energy markets," said Peter Löscher, CEO of Siemens AG.

"Just two years ago we opened a rotor blade manufacturing facility in Fort Madison, Iowa. By expanding our investment in Kansas, we are strengthening our presence in the US and, at the same time, we are increasing the proximity to our US customers. This new location will enable us to serve them more rapidly and cost-effectively," said René Umlauft, CEO of Siemens Energy's Renewable Energy Division.

The new 27 870 m2 facility will produce nacelles for Siemens' 2.3 MW wind turbine product family, with the first unit scheduled to come off the production line in late 2010. The factory's initial output will be around 650 nacelles per year.

Siemens has also announced plans to invest $50 million in the construction of a new office at its Charlotte, North Carolina manufacturing facility where it produces steam turbines and generators for the Americas market. It expects to create more than 220 new jobs at this location over the next five years.

RWE, Essent plan investments


Power station construction at Eemshaven in the Netherlands

Focus on increasing efficiency, lowering CO_2
RWE power sales drop amid recession

RWE says that its partnership with Essent will enable the Dutch firm to make much larger investments in sustainable energy than before.

The two companies, which earlier this year announced plans to merge, have entered a binding agreement to make investments in sustainable power projects in the Netherlands. The news came as RWE learned that the majority of Essent's shareholders intend to sell their shares to the German company.

Essent and RWE's development plan for the Netherlands earmarks investments of several billion euros to 2013 in projects such as the construction of a biomass and coal-fired power station in Eemshaven, the modernization of existing power plants and the development of up to 2500 MW of wind capacity.

An independent Essent Sustainability Development Foundation has been set up to monitor and supervise compliance with the development plan.

RWE's all-cash offer for Essent must be approved by at least 80 per cent of Essent shareholders. The current approval rate is 56 per cent, says RWE.

RWE recently reported that the economic crisis had hit its operations, with power demand in the UK and German markets declining by around 4-5 per cent in the first quarter of 2009. Its first quarter results remain strong, however, driven by exceptionally high profit contributions by its trading business and the gas midstream activities of RWE Supply & Trading.

Net profit at the company rose by 115 per cent in the first quarter of 2009 compared with the first quarter 2008 to €1745 million.

Despite a drop in electricity and gas sales volumes RWE posted a first-quarter revenue increase of more than eight per cent to €14.52 billion. The company said the rise in revenue was driven mainly by higher realized prices for power and gas.

Peabody backs White Energy technology

US coal company Peabody Energy says that a new agreement with White Energy Company Limited will bring "substantial global growth opportunities".

The two companies have signed an agreement to develop a coal upgrading plant in the USA using a technology that upgrades low-Btu coals. Under the agreement, Peabody may take an equity share in White Energy, and also has the right to participate in the development of other coal upgrading plants in North America and China.

Sydney-based White Energy's coal briquetting technology uses a mechanical process to increase the energy content of low-Btu coal by around 35 per cent. The upgraded coal can be used interchangeably with high rank thermal coal for a number of applications, including power generation, industrial processes and Btu conversion processes such as coal-to-gas and coal-to-liquids.

"We view this technology as a way to unlock further value in our reserves in the Powder River Basin and at other locations to create new marketing opportunities for US or export customers," said Richard A. Navarre, Peabody's President and Chief Commercial Officer. "Coal has been the fastest-growing fuel for each of the past five years and will continue to be the world's primary source of electricity."

The two companies say they will start on the engineering design and permitting activities for a plant sited at a Peabody operation in the Powder River Basin that will initially produce over 1 million tons of upgraded coal per year. Subsequent phases could increase plant capacity to more than 20 million tons per year.

Westinghouse plans fuel growth

Westinghouse Electric Company is to enhance its position in the global nuclear fuel business by investing in Japanese firm Nuclear Fuel Industries Ltd.

The US company is to acquire a 52 per cent stake in NFI, Japan's only producer of nuclear fuel for both boiling water and pressurized water reactors, for around $100 million.

The move will boost Westinghouse's fuel capabilities, helping it to meet the predicted growth in demand for fuel brought on by major nuclear power plant construction programmes around the world.

In addition to producing nuclear fuel, NFI is active in the development of nuclear fuel services such as fuel-related inspection equipment, maintenance operations and safety planning. NFI is currently owned by Furukawa Electric Co. and Sumitomo Electric Industries Ltd., which will each relinquish a 26 per cent stake.

"The acquisition of NFI will significantly enhance Westinghouse's commitment and support to the Japanese market and also expands our global position in the PWR and BWR fuel business," said Joe Belechak, senior vice president of the Westinghouse Nuclear Fuel business unit.

Americas

Alstom to equip Mexico geothermal plant

Mexico's Comision Federal de Electricidad (CFE) has awarded Alstom a €45 million contract to supply a 25 MW geothermal power plant in the east of the country.

Under a turnkey contract, Alstom will supply the key equipment as well as build the Los Humeros II plant, which is scheduled to be commissioned by October 2011. The project represents the return of Alstom to the geothermal market after a gap of nearly nine years.

Los Humeros II will have a guaranteed net capacity of 25 MW and will supply electricity to Puebla state. Alstom will supply the complete engineering, procurement and construction, including the geothermal steam turbines, air-cooled turbogenerator, turbine control and digital control system, a high voltage electric 115 kV substation, a direct contact condenser, hot-well pumps, cooling tower, fire protection system, HVAC, civil works, project management and leadership, mechanical balance of plant engineering and site supervision.

Consumers Energy invites renewable bids

US utility Consumers Energy is hoping to boost the amount of renewable energy supplied to its customers through a new Request for Proposals aimed at independent power project developers.

The Michigan-based company wants project developers to build, own and operate around 250 MW of renewable energy capacity generating around 600 000 MWh of energy per year. Consumers Energy will offer successful bidders long-term power supply contracts of up to 20 years.

The initiative is part of the utility's plan to increase its green power supplies to 10 per cent by 2015 in line with the requirements of Michigan's new energy law.

New turbine for Bison I wind project

A North Dakota wind farm will be the first in the USA to use Siemens' new SWT-2.3-101 wind turbine after developer Minnesota Power placed an order for 33 units.

The Bison I wind farm, located near Center, North Dakota, will be built in two phases and will have a total capacity of around 75 MW. In addition to supplying the 33 wind turbines, Siemens will also be responsible for installation and commissioning.

The wind farm's first 16 units will be installed in 2010, with the remaining 17 units being installed in phase two in 2011, says Siemens, whose 2.3 MW family of wind turbines has already clocked up 30 million operating hours worldwide.

The new wind turbine enables wind farm operators to generate more power with the same wind resources and gives developers more flexibility when choosing locations for wind projects.

Calpine selects Siemens for upgrades

Siemens Energy has secured a deal to upgrade around one-third of Calpine Corporation's fleet of Siemens F Class gas turbines.

The contract, valued at more than $110 million, will help the US independent power producer to increase the output and enhance the efficiency of its US power plants. It also includes an option to add additional units to the order.

The upgrades will be carried out over the next few years. The scope of the technology upgrades for the turbines will vary from unit to unit, but will generally include combustion turbine components, operational enhancements and installation services.

Enel signs deal for Chile wind

Enel Green Power has signed an agreement with SoWiTec Energias Renovables de Chile to develop a number of wind power projects in Chile with a combined capacity of up to 850 MW.

Through its subsidiary Enel Latin America Chile, the Italian firm will have exclusive access to several wind power projects being developed by SoWiTec Energias Renovables de Chile, an affiliate of the German developer SoWiTec International. It will also have the right to purchase the projects once they are fully authorized.

The projects will be located in Chile's northern and central electrical systems and have capacities ranging from 60 MW to 150 MW.

PGE orders SCADA for Biglow Canyon

Portland General Electric Company (PGE) has placed an order with Emerson Process Management for an Ovation SCADA system for the Biglow Canyon wind farm in Oregon, USA.

The 450 MW wind farm is being built in three phases and will consist of 277 turbines from two different manufacturers and will be complete in late 2010. Under its contract with PGE, Emerson will provide an enterprise-wide control system for the entire project that will interface with the SCADA subsystems provided by the wind turbine suppliers.

The Ovation SCADA solution will allow automatic or manual control of the substation switchgear as well as perform automated supervisory voltage control. Providing supervisory management on one unified platform will streamline overall monitoring and control of the wind farm.

Asia Pacific

Private firm orders HVDC link

Indian firm Adani Power Limited (APL) has placed an order with Siemens Energy for the supply and installation of a 960 km-long bipolar 500 kV high voltage direct current (HVDC) transmission link in India.

The 2500 MW link will export power from a planned coal-fired power plant at Mundra on India's west coast to the industrial regions of New Delhi.

Siemens will assume overall responsibility for the project, including design of the entire HVDC system, and will supply core components such as the converter valves, converter transformers, smoothing reactors, protection and control equipment, and the AC and DC filters. The German firm will also handle shipping operations, civil engineering, installation and commissioning.

The link will start operating in February 2011. It is the third HVDC system to be installed in India by Siemens.

Wärtsilä wins O&M contracts

Finland's Wärtsilä says that its strong track record in after sales service support has helped it to secure two operations and maintenance (O&M) contracts in the Philippines.

The firm has been awarded a four year contract by Cemex Strategic Philippines Inc covering its APO Cement power plant, as well as a contract by the Philippine Gold Processing & Refining Corporation for the Masbate Gold project power plant.

Included in the scope of services at the APO Cement facility in Naga City, Cebu, are operating staff, maintenance of the engines and auxiliaries, and supply of spare parts. At the Masbate Gold plant in Aroroy, Wärtsilä will operate and maintain the plant and supply tools and consumables.

China orders HVDC

The State Grid of China has awarded Areva's Transmission and Distribution division and China Electric Power Research Institute a contract to supply high voltage direct current (HVDC) systems for major interconnection projects in China.

Under a €100 million contract, the two organizations will deliver the systems in December 2010. The HVDC systems will be used in projects interconnecting the Ningdong and Shangdong regions in northeast China and the Three Gorges Dam to Shanghai.

Vestas sells in China

Vestas China is to supply 58 wind turbines to Chinese Datang Tongliao Huolinhe Renewable Power for the Zhaqi Phase I wind farm, located in Tongliao, Inner Mongolian Autonomous Region (IMAR).

The order was secured through China National Water Resources & Electric Power Materials & Equipment and is for Vestas' V52-850 kW wind turbine units. Delivery of the units is scheduled to take place between May 2009 and July 2009.

Powergrid boosts reliability

Indian national transmission company Powergrid has placed substation orders worth around $100 million with ABB in an effort to boost capacity and improve grid reliability in the country.

Under the contracts, ABB will be responsible for the design, supply, installation and commissioning of 765 kV/400 kV substations in Uttar Pradesh and Madhya Pradesh and of a 400 kV/220 kV substation in Kerala. The projects are part of Powergrid's plans to strengthen the national transmission grid and to enhance the inter-regional power transfer capacity to around 37 000 MW by 2012.

The equipment to be supplied includes circuit breakers, current transformers and voltage transformers, surge arrestors, protection systems, control and relay panels and substation automation systems.

Alstom wins €1 billion contract for UK project

UK utility RWE npower has placed an order worth around €1 billion with Alstom for the design and construction of a gas-fired combined cycle power plant in Wales.

The 2000 MW plant will be the largest of its kind in the UK and will be built on the site of an oil-fired power plant. It will consist of five single-shaft combined cycle power blocks, each comprised of one GT26 gas turbine, one triple-pressure heat recovery steam generator, a reheat-type steam turbine and a hydrogen-cooled generator.

Europe

Acciona orders ride-through technology

Spanish renewable energy firm Acciona Energy has placed an order with American Superconductor Corporation (AMSC) for technology that will help it to meet new grid interconnection requirements for wind farms in Spain.

Under a $10 million contract AMSC will supply Acciona with its new Dynamic VAR Ride Through (D-VAR RT) system that enables wind turbines to continue operating smoothly by "riding through" voltage disturbances that would normally interrupt their operation. The first units will be used on 250 MW of Acciona-owned wind capacity in Spain.

New regulations in Spain dictate that both existing and new wind turbines remain connected to the grid in the event of voltage disturbances.

AMSC's D-VAR RT technology has received official certification of compliance for the new rules and has also undergone field testing and operation by AMSC and Acciona at a site in Spain.

Alstom to equip Nant de Drance

French engineering company Alstom has been awarded a €125 million contract to equip a new hydropower plant in Switzerland with variable speed pump turbine technology.

The Nant de Drance hydropower plant, located near Finhaut in the southwestern Canton Valais of Switzerland, will have an installed capacity of 628 MW and will be the first in the country to use both a conventional pump turbine and a variable speed pump turbine.

Alstom will deliver the equipment to the project over several years up until 2017.

Under the contract, Alstom will supply four 157 MW vertical Francis reversible turbines, four 170 MVA vertical asynchronous motor/generator units and further key equipment to the new plant, as well as handle complete site delivery, erection, supervision and commissioning.

Poland orders biomass boiler

Finnish industrial group Metso has received a €60 order from PGE Zespol Elektrowni Dolna Odra for a biomass-fired power boiler for installation at a plant in northwest Poland.

The bubbling fluidized bed boiler, with a steam capacity of 183 MW, will be installed at a combined heat and power plant in Szczecin and will burn forest residue, willow chips and straw pellets to produce electricity for the national grid. It will also supply the city of Szczecin with district heat.

The Szczecin plant is expected to be the largest biomass energy project in central Europe, according to Metso, which will also supply the plant's automation and information management system.

The new boiler will replace the plant's existing coal-fired boilers.

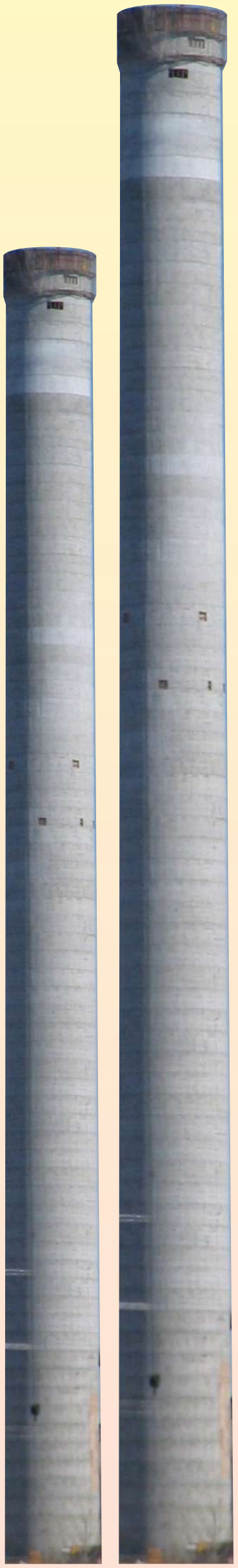
International

ABB wins contract for Qatar GIS

Al Jaber & Partners Construction & Energy Projects has placed an order with ABB for the supply and installation of outdoor gas insulated substations (GIS) in the new city of Lusail, Qatar.

Under the $25 million order, ABB will supply two compact GIS substations rated at 66/11 kV and install them underground.

The turnkey contract also includes the supply of the power transformers, GIS equipment, medium voltage switchgear and the automation and telecommunications systems.



Testing wind conditions

Difficult conditions in some wind power markets have seen wind turbine manufacturer, Vestas, announce recent layoffs. But the company remains positive about the global market, especially in China and the US.
Ditlev Engel

Vestas is a global wind turbine company with a strategy that is based on three markets – North America, Asia-Pacific and Europe. Naturally, we organise and run our company in accordance with local developments in each market. Quite new, however, is the development that is currently taking place in each of these markets.

There has been a fall in demand in northern Europe caused by the credit crunch as well as exchange rate difficulties for the British Pound, the Swedish Kroner and the Polish Zloty. There has also been a lack of will to install wind turbines in some countries in northern Europe.

All of these elements have hit demand in northern European countries harder than expected, leading to an unavoidable negative impact on our wind turbine production business units, especially in Denmark. Similarly, the blades plant on the Isle of Wight in the UK has also been seriously affected.

With insufficient convergence between the countries in which we have plants and the markets that are expected to buy our products, we have been forced to adjust the company to match the actual market conditions. The reduced demand in northern Europe means we can no longer maintain our current capacity in these countries.

Although our growth scenario is intact, it is not at the same pace in all markets. Such a situation cannot be disregarded in how the company is run. A number of people have said that we should have adjusted and trimmed the company during the autumn of 2008 when our forecasts were published for the year to come. I disagree, however. We did not conceal the fact that 2009 would be a challenging year. At the same time we pointed out that for us, layoffs were absolutely the last option. This is still the case.

Nevertheless, unfortunately we now have to say goodbye to 1142 Danish colleagues, and we are having negotiations with around 600 employees about the future of the blade factory on the Isle of Wight, UK. This still leaves Vestas with 20 356 employees worldwide.

While it is deeply regrettable that such drastic steps must be taken, we must remain objective. Fortunately, there is light at the end of the tunnel. Very recently, Ed Miliband, the UK minister for Energy and Environment, said that environmental challenges will now be given greater priority than ever before. The initiative bodes well, and hopefully Britain's budget plans will lead to specific orders in the coming months.

In the past, Vestas has played most of its matches on foreign soil – 'away games'. The challenge now is to convert as many away games as possible into future home games. Global markets, including our largest markets – the US and China – are showing strong growth prospects and we therefore continue with our huge investments in these countries. In terms of sales, production and service we are at full scale.

In 2008, Vestas opened its first manufacturing facility in Windsor, Colorado and has so far created 650 local jobs. The blade factory in Windsor will in 2009 and 2010 see the addition of another three factories – a second blade factory, a nacelle assembly factory, and a tower factory, to be built in Brighton and Pueblo, Colorado. By the end of 2010, Vestas' manufacturing capacity in the US will exceed 1400 nacelles, 900 towers and 4000 blades. Vestas Technology R&D is also now in the process of building up its US centre in Houston, Texas, and is establishing a R&D hub in Boston, Massachusetts.

Vestas and Boeing have also recently announced their interest to work together on research projects that could further the development of environmentally progressive technologies. By the end of 2010 Vestas expects to employ more than 4000 people in the US.

In Hohhot, Inner Mongolia, China, Vestas in April inaugurated a new factory that will produce a 850 kW turbine specially designed for the Chinese market.

Hohhot was chosen as the location for this facility because of its proximity to the key wind energy sites in northeast China and the developing wind energy market in Inner Mongolia. Vestas has also benefitted from the strong wind energy vision and support of the governments of Inner Mongolian Autonomous Region (IMAR) and Hohhot.

Ditlev Engel: The reduced demand in northern Europe means we can no longer maintain our current capacity in these countries

Wind energy currently accounts for less than two per cent of the world's electricity production. Vestas expects this share to rise to at least 10 per cent by 2020

Vestas has been under pressure in other markets before but has demonstrated the willpower to come back. It will happen this time, too. Our growth scenario is intact – the company is still striving for 20 per cent growth in 2009 and we will deliver earnings of 11-13 per cent of the turnover.

We have a vision we express as: wind, oil and gas. It expresses the ambition of assuming leadership in the efforts to make wind an energy source on a par with fossil fuels. Wind energy, currently accounts for less than two per cent of the world's electricity production. Vestas expects this share to rise to at least 10 per cent by 2020, equal to an installed capacity of at least 1000 GW, against 122 GW at the end of 2008. Our expectations are underpinned by official targets and initiatives around the world – not least in the EU, China and the US.

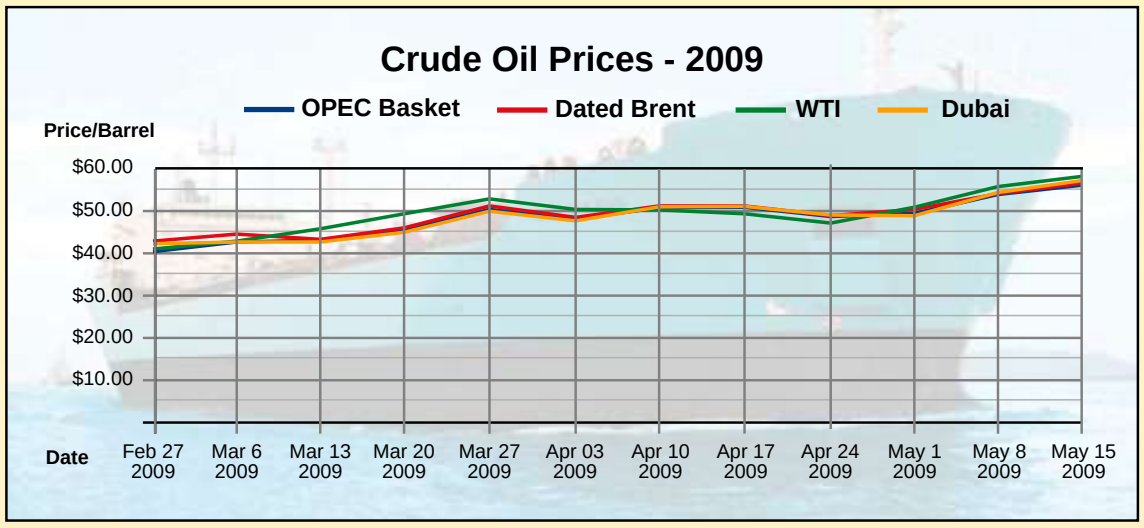
Wind energy is currently the best solution to the climate and energy challenges and Vestas is making a dedicated effort to keeping wind power at the top of the global energy agenda. Furthermore it also creates thousands of local jobs in the short-term. A fixed price on CO_2 would promote the necessary climate investments because it would provide industrial and financial investors with a higher degree of predictability than the present quota system, which leads to large fluctuations in the price of CO_2.

Ditlev Engel is president and CEO, Vestas Wind Systems

Still blowing: some markets still show strong growth

Oil

Market optimism prompts Opec to roll-over production



- Demand for crude picking up in Asia
- Rising oil prices could work against economic recovery

By David Gregory

What happens next in the oil market is anybody's guess, but Opec is betting that crude oil prices will continue to rise, while many analysts are looking for a price correction. At its last meeting in Vienna on 28 May, Opec's optimism prompted it to roll-over its production target of 24.845 million b/d and envisage oil prices soon reaching $75/b.

"The price is good. The market is in good shape. Recovery is underway. What else could we want?" asked Saudi Arabia's Minister of Petroleum Ali al-Naimi at the end of the meeting.

However, crude stocks remain plentiful and some analysts say they expect the market to correct itself in due course. The price of West Texas Intermediate (WTI) crude closed above $65/b on 28 May following the release of weekly data published by the US Energy Information Administration (EIA) that showed US crude inventories had fallen by more than 5 million barrels from the previous week. A price of $65/b had not been expected until much later this year.

While some economic indicators are showing slight improvements, speculation is again being seen as a prime driver for recent price increases rather than fundamentals. Investors are indeed keen for the global economic crisis to ease, but their eagerness is not a reflection of the laws of supply and demand. The current situation appears similar to that last summer when WTI topped $147/b. There are signs that demand for crude is picking up slightly in Asia – particularly China – but questions remain about whether that up-tick in demand constitutes a price in the current range.

Compliance with target production received scant attention by Opec members, some of which are pumping well above their quota. It had been thought prior to the meeting that compliance would be a controversial issue in Vienna, but that scenario did not unfold, despite the existence of a large amount of crude in storage.

Production for all 12 Opec members during April totaled 28.3 million b/d, while output for the Opec-11 (excluding Iraq, which is exempt from production quotas) averaged 25.9 million b/d. This was more than 1 million b/d over the Opec-11 target of 24.845 million b/d set by the group at the start of the year. Arab Gulf members of Opec have adhered closely to their targets, but Iran, Venezuela and Angola exceeded theirs. Iran's output in April was more than 400 000 b/d over its quota.

Prices are defying the most recent monthly forecasts published by the International Energy Agency (IEA), the Energy Information Administration (EIA) of the US, and Opec. All three organizations have predicted larger declines in demand during the course of 2009 compared to the forecasts they had made in previous months. The IEA put world demand at 83.2 million b/d for 2009 in its May report, while the EIA forecast 83.67 million b/d and Opec 84.03 million b/d.

As the single most important supplier of crude oil to world markets, Opec has succeeded in removing large amounts of oil from the market. On its own, this act has helped to stabilize crude prices. Opec decided last December to cut output by 4.2 million b/d from September levels. Had Opec not taken that action, crude oil prices would have fallen below the $33/b mark they hit earlier this year and oil producing countries would have found themselves in a far more serious situation than they do now.

Crude oil prices was one of the topics discussed by US President Barak Obama and Saudi Arabia's King Abdullah. President Obama and other oil consuming countries have expressed their concern that rising oil prices could work against the economic recovery.

Indeed, a recent report issued by the IEA stated that rising oil prices over the last few years had played a key role in bringing about the current global economic downturn.

Gas

European plan for Kurdish gas lends hope for Nabucco

A deal to purchase stakes in Pearl Petroleum by OMV and MOL has thrown a lifeline to the Nabucco Gas Pipeline project but Iraq's Ministry of Oil has been quick to dismiss the plan.

By Mark Goetz

Austria's OMV and Hungary's MOL announced last month that they have each purchased a 10 per cent share of Pearl Petroleum, a joint venture between Sharjah-based Dana Gas and Crescent Petroleum formed two years ago for the purpose of developing natural gas reserves in Iraqi Kurdistan.

The OMV/MOL-Pearl Petroleum deal throws a possible lifeline to the floundering Nabucco project, which has been unable to secure sufficient sources of gas to fill its 31 billion m^3 per year (bcm/y) capacity. OMV and MOL are both founding members of the Nabucco Gas Pipeline project and the announcements made prominent mention of exporting gas from northern Iraq to Europe via Turkey.

The European firms said their aim was to have gas ready to export via Nabucco by 2014, when the 3300 km pipeline is due to come into operation. Nabucco is being contested by Russia's Gazprom, with which Italy's Eni is targeting eastern and southern European markets with their proposed South Stream gas pipeline project. It is to cross the Black Sea with a capacity of 63 bcm/y.

The deal in Iraqi Kurdistan calls for Pearl Petroleum to invest up to $8 billion in exploring and developing the Khor Mor and Chemchemal gasfields located in the region of Iraq controlled by the Kurdistan Regional Government (KRG), which welcomed the deal. Pearl Petroleum has already invested around $605 million and is producing around 2.55 million m^3 per day of gas from Khor Mor. That gas is being used to feed a power generation station. Dana Gas and Crescent signed an agreement with the KRG in 2007 to develop the fields and to also build the Kurdistan Gas City with the intention of creating a downstream gas industry in the region. OMV and MOL's joint initial investment would amount to $700 million.

But Iraq's Ministry of Oil has been quick to dismiss the plan. Baghdad has been in dispute with the KRG for several years over the sovereign rights of oil and gas contracts within the country. The central government has failed to pass a hydrocarbon law covering Iraq's huge oil and gas reserves and how they should be developed and the revenues divided amongst the country's ethnic groups. Out of frustration, the KRG passed its own hydrocarbon law in 2007 and proceeded to award contracts to foreign oil companies. Baghdad has repeatedly declared these agreements to be illegal, but it recently relented to allow crude oil shipments from Kurdistan to begin as of June. The crude shipments, which are to start at 85 000 b/d and could reach 250 000 b/d in the months ahead, will be exported through Iraq's northern pipeline to the Turkish Mediterranean port of Ceyhan, marketed by state-owned SOMO, and the earning deposited with Iraq's Ministry of Finance.

OMV has already drawn Baghdad's displeasure with a deal that it signed with the KRG in 2007 involving two production sharing contracts for the Mala Omar and Shorish Blocks.

Commenting on OMV and MOL's plan to join Pearl Petroleum and export the gas to Europe, Iraqi Oil Minister Husain al-Shahristani said the government would not allow any entity to export gas from northern Iraq without first obtaining the approval of the central government and the Ministry of Oil. Furthermore, Iraqi government spokesman Ali Dabbagh said Baghdad rejects the agreement signed by the KRG and both Dana Gas and Crescent Petroleum that could lead to the export of gas via the Nabucco pipeline.

Mr Dabbagh went on to say that Iraq is considering the possibility of exporting gas to Europe from the Akkaz gasfield, with reserves estimated at 113 bcm, in the western Anbar province. For the moment, this plan calls for the gas to be routed through Syria to Turkey, where along with Egyptian gas, it would join the Nabucco pipeline to Europe by 2014.

For its part, the KRG said the Pearl Petroleum deal would "accelerate the development of local gas resources, ensuring the commercial viability of the Nabucco pipeline project linking Turkey to Central Europe."

Dr. Ashti Hawrami, Minister of Natural Resources for the KRG said: "It is the KRG's policy that the domestic market receives priority in any gas supply deals. However, we are certain that there will be substantial surplus volumes of gas available to satisfy the needs of the Nabucco pipeline project from the currently discovered gas fields and from any other license areas currently under exploration and appraisal."

The combined reserves of Khor Mor and Chemchemal are currently estimated at 102 bcm and both OMV and MOL have stated that production from them could reach 31 bcm/y.

While production at this rate would quickly exhaust the gasfields, the companies have stated that their assessment shows combined reserves in the trillions of cubic feet, sufficient enough to meet local demand while exporting 28.3 million m^3/day to Turkey and 42.5 million m^3/day to Europe via Nabucco.

India is poised for dynamic growth

Following recent elections, India is poised for tremendous growth in the coming decades. Key policy initiatives are likely to see increased government investment in infrastructure, particularly power and energy.

Vishvjeet Kanwarpal

Over the past five years, the global power and energy industries have experienced fundamental shifts in the dynamics of demand and supply, competition and price, as well as the policy and regulatory environment.

In South Asia, there are a number of key regional and global drivers behind the quantum shift in the power and energy sectors.

At the regional level, factors include: the onset of RIL Krishna Godavari (KG) gas production; Indo-US civilian nuclear power/international cooperation; India targeted pipelines (Iran and Middle East); and policy impetus to bio-fuels and renewable energy.

Global factors include: coal supply and pricing impacting power projects; dramatic shifts in coal supply and pricing; uncertainty in LNG supply and pricing; oil price movement impacting naphtha prices; and financial and currency uncertainty.

These shifts and their potential impact have not been fully understood or evaluated and pose a tremendous challenge to national system planning, market development and project risk assessment.

With the recent elections, the spotlight is again firmly on India. The 1.2 billion people of India voiced their opinion in no uncertain terms. They voted overwhelmingly for the Congress Party, for a stable five-year tenure government and for policies that had earlier been hamstrung by the left front. The Indian stock market responded with spectacular gains, the Rupee saw its biggest day rise since 1986 and the confidence in the Indian economy received a tremendous boost.

India's infrastructure is poised for spectacular growth in the coming decades. Key policy initiatives that are likely to receive a fillip are increased government investment in infrastructure particularly power and energy, acceleration of nuclear power bilateral agreements, easing of control of oil products and LPG pricing and an increased emphasis on disinvestment in public sector companies.

Vishvjeet Kanwarpal: predicting spectacular growth

India's installed capacity in March 2009 comprised of over 1000 power projects amounting to a total of about 150 000 MW.

Despite enormous improvement in the enabling policy environment and private sector activity, the promise of private power has not been realized in the past two decades. It represents about 22 500 MW or about 15 per cent of the total grid capacity today. If pre-IPP policy private capacity is excluded, the private sector has added less than 1000 MW per year on average. In addition, almost 85 per cent of the private investment in power projects has been in the southern and western regions.

However, there are a tremendous number of power projects being planned to meet growing electricity needs. There are a total of 2685 power projects amounting to a staggering 950 000 MW that have been proposed on paper. A vast majority of these will never evolve beyond press announcements and their 'paper status'.

Over the past six months, many of the power projects, which had made significant progress, suffered a setback as a result of the global meltdown, equity collapse and severe financing constraints. As promoters retreated to core investment and defensive stances, many of the aggressive expansion plans were shelved.

The Congress-led government's clear emphasis on infrastructure spending and stabilizing financial markets are likely to have a positive effect in reviving the power sector. There are over 550 projects amounting to over 175 000 MW which have achieved milestones in project development.

Indian industry has traditionally invested heavily in captive power, due to notoriously unreliable and expensive grid power. A significant proportion of this captive capacity was based on coal, diesel and gas. Government initiatives and tax incentives resulted in a tremendous increase in renewable energy projects, particularly wind.

The Electricity Act 2003 explicitly encouraged and enabled captive power. Provisions for wheeling, banking and power trading added to the attractiveness of captive power. Industry began to view captive power assets as having enormous value 'beyond the fence'. Captive power developers are clearly eyeing the power trading market.

India currently has over 3600 captive power plants with an aggregate capacity of over 35 000 MW. Another 685 captive power plants are on the anvil representing a total of over 55 000 MW capacity. In addition, the average size of coal-based captive power plants has increased from around 40 MW for the installed capacity to nearly 200 MW for the new proposed projects.

Predictably, there has been a marked shift towards coal and gas based captive power plants as high oil prices discouraged investment in diesel-based capacity.

The power sector alone consumed more than 71 per cent of domestic coal to generate over 55 per cent of India's electricity.

India is the third largest coal producer in the world, has huge coal reserves around 287 billion tonnes (fourth largest in the world), of which proven reserves are 115 billion tonnes. Its non-coking coal reserves are estimated at 255 billion tonnes (88 per cent), of which proven reserves are assessed to be 98 billion tonnes.

However, several significant constraints thwart India's quest for thermal coal self-sufficiency. Lack of investment in shaft mining is the primary factor and delays in enabling private sector investment policy have severely affected the sector. Logistics and rail transportation constraints are another key factor. The high ash content (15-45 per cent) and low calorific value of Indian coal makes it unattractive for long distance transportation.

Coal mining is predominantly a public sector activity. Coal India Limited accounts for 85 per cent of total coal production. It also determines and regulates pricing. Domestic coal prices have increased only minimally in the past decade. This is likely to change and coal prices are likely to be revised upwards on a more regular basis.

Private and foreign investment is now permitted in captive coal mining for the power sector. The lack of an independent regulatory body to govern investments and operations, coal block allocation, mine approval and introduction of competition in price determination are some of the key factors hampering the progress of private investment in captive coal.

India imported about 30 million tonnes of non-coking coal, mainly from South Africa, Australia, Indonesia and China. Indian coal imports are projected to increase dramatically in the next 10 years and this will put pressure on international coal prices.

With the volatility in international coal prices, the strategic issues facing the Indian power sector have become more complex. The attractiveness of imported coal-based projects is no longer assured and the risks to the competitive position of such power plants have increased.

Gas prices, meanwhile, have been a subject of much debate and are in need of a major overhaul. Historically, the government has controlled gas prices as they have a tremendous impact on the cost of electricity and fertilizer.

Until the 1970s, gas prices were decided by expert committees on the principle of alternate fuel parity. Later they were benchmarked to coal prices based on thermal equivalence and subsequently were linked to replacement cost of reserves. Between 1987 and 1997, gas prices were fixed based on a cost-plus methodology. The Kelkar committee recommended gas price revisions, and in 1997,the Sankar Committee recommended gas prices be shifted from cost-plus basis to import parity pricing. However progress on the issue was painfully slow.

The introduction of NELP (New Exploration Licensing Policy) and the need to attract private investment in energy and power provided the first push for market-determined pricing for new blocks allotted.

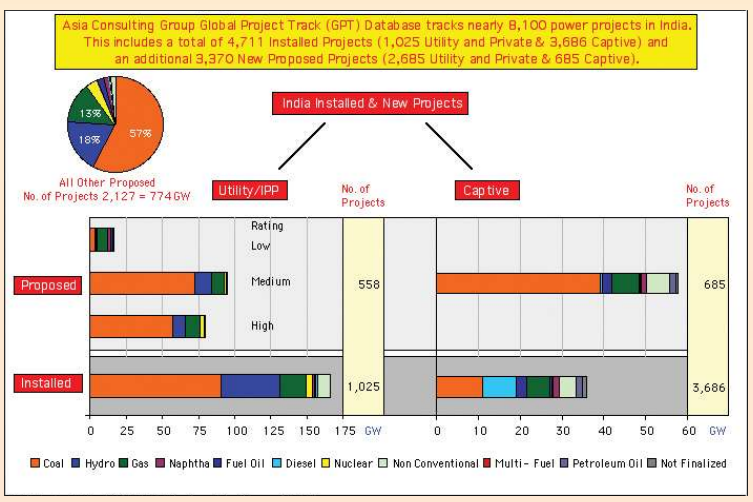
The 2004 PMT (Panna Mukta Tapti) price revision was also a significant move toward market pricing. PMT gas prices were increased to more than double from initial $2 per million Btu to $5.57 per million Btu. Gas price under APM (Administered Price Mechanism) for core sectors was $2.11 million Btu, while it was $2.53 million Btu for small consumer and the transport sector. The APM price for non-core sector APM consumers was $4.75 million Btu.

In 2009, the pricing formula approved for RIL's KG-D6 gas, translates to a price of gas to $4.2 million Btu at $60/b oil.

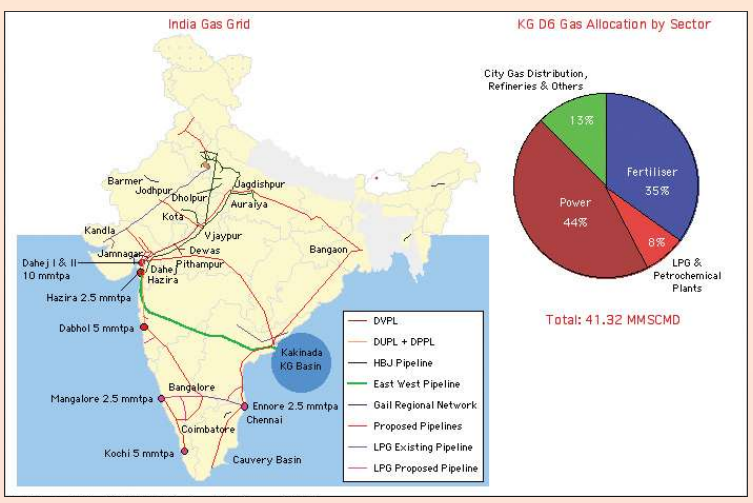
Key developments in gas pricing suggest that gas prices will converge towards a market sustainable price band. This will result in increased choice for the power sector but will spell enormous risk for energy suppliers. Contracts tenures are likely to be shorter and it is well possible that with additional gas flowing into the Indian gas grid, a competitive market will develop in the medium term.

Although the Indian power sector is poised for tremendous growth, as always its power market will be a challenge to develop. However with its resilient demand for electricity, power market evolution and a sturdy economy, it may be one of the most attractive power investment destinations in the world for the coming years.

Vishvjeet Kanwarpal is CEO, Global InfraSys (P) Ltd. and Asia Consulting Group (P) Ltd. This article is an excerpt from "The South Asia Power and Energy Study". The study spans all the eight countries of SAARC (South Asian Association for Regional Cooperation) including India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan, Afghanistan and Maldives. For further information on the South Asia Power and Energy Study email: ceo.gis.acg@gmail.com



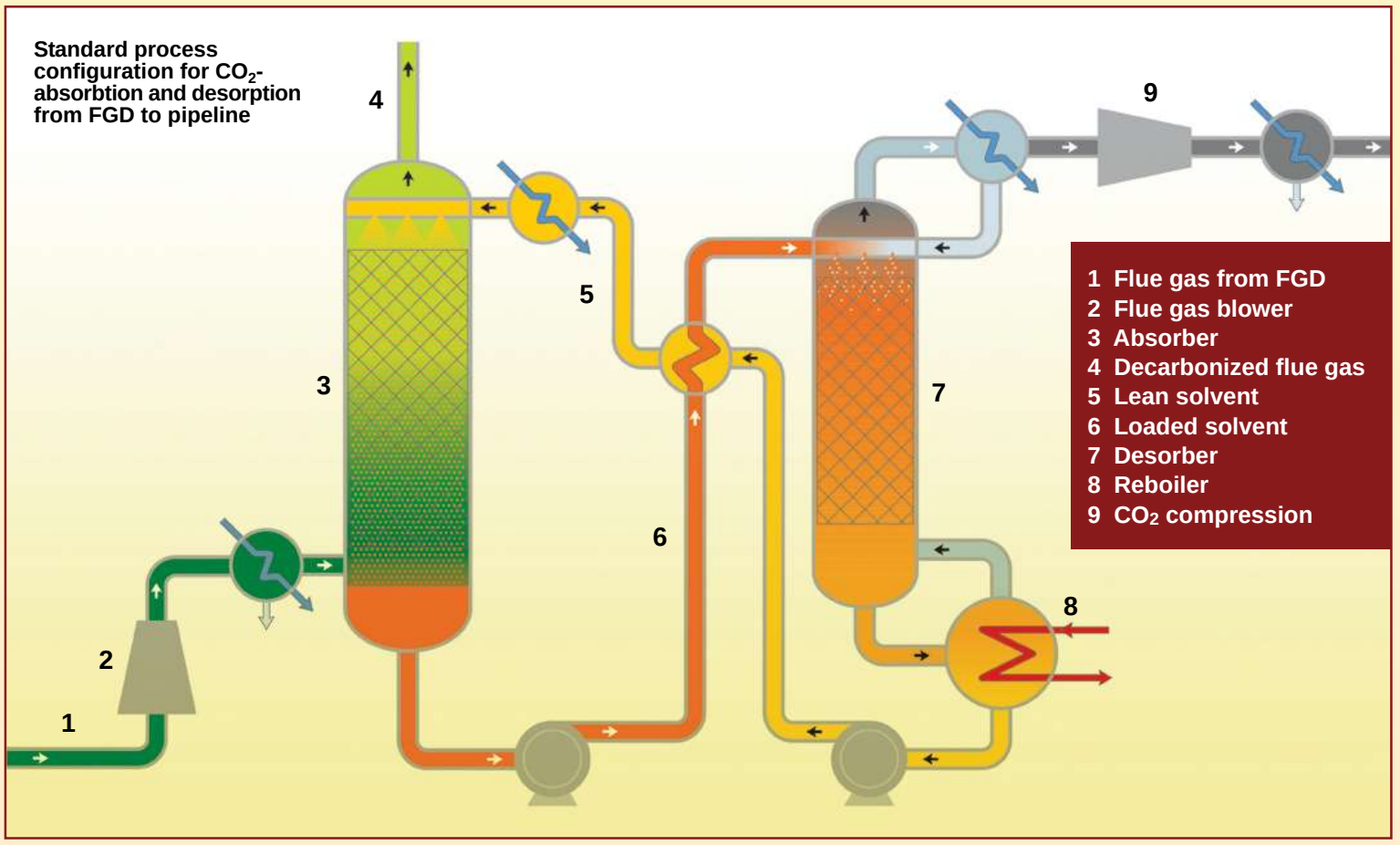
Utility, IPP and captive power projects



India's gas grid and KG gas allocation

Preparing to capture carbon from CCGT power plants

Siemens Energy is working with Norwegian utility Statkraft to assess the technology for capturing CO_2 from combined cycle power plants. Work underway at a laboratory facility in Germany will study the key areas where technology development is needed.
Junior Isles.



Until now, the general consensus has been that the reduction in carbon output when changing from coal to gas obviates the need to capture carbon from gas fired plants – something that is probably also not economically feasible at current CO_2 emission certificate costs. But a recent announcement from Siemens Energy indicates that some industry players are re-thinking their strategy.

At the end of March, Siemens said it would adapt its proprietary process for CO_2 capture to the special conditions of combined cycle gas turbine (CCGT) power plants for the Norwegian utility Statkraft. Dr Tobias Jockenhoevel, head of post-combustion at Siemens Fossil Power Generation division explained: "For many years, our view has been that if you make the fuel switch from coal to gas, you save more than 50 per cent of the CO_2. Like most people developing post-combustion capture, we focussed on coal since the economics looked much better."

According to a EU Directive, all fossil fuelled plants, including combined cycle plants, above 300 MW have to be capture-ready. While this may not make sense from an economic viewpoint, Siemens believes that some markets will at least be asking whether their plants are capture-ready. Certainly it is possible that at some point, traded CO_2 prices could increase to the level where CO_2 capture even from CCGT plants becomes economically attractive for plant operators.

For a plant to be classed as capture-ready means that it can be retrofitted with capture technology in the future if necessary. For example, sufficient space has to be reserved around the steam turbine so that pipes can be installed to transport steam from the steam turbine to the capture plant. Making a plant capture-ready could therefore involve measures such as increasing the size of the turbine hall, or building slightly stronger foundations than needed. "These things don't cost much at the start but could be costly if they have to be done later. It's all about having space in the right place, inside and outside of the power plant," noted Dr Jockenhoevel.

Unlike baseload coal fired plants, many of today's CCGT plants operate as intermediate or peaking plants. To make its CCGT plants capture-ready, Siemens will adapt and optimise its process for post-combustion capture to suit combined cycle plants from both an operational and a process viewpoint.

Specifically, the process has to be adapted to the much lower CO_2 concentration levels found in the flue gas from CCGT plants as well as the much higher oxygen content. This then has to fit into intermediate or peak load operating regimes.

This calls for a change in the solvent used in the CO_2 absorber, since the higher oxygen content leads to higher solvent degradation. Jockenhoevel commented: "The oxygen destroys the solvent so we are looking for solvents or inhibitors with better degradation behaviour."

"We also have to adapt the process configuration. Heights of columns, diameters, flow rates etc also have to be adapted," he added.

The process is being developed with the support of Statkraft under a programme that began in January this year. Statkraft will provide expertise in terms of utility operating data and engineers to work alongside Siemens at a laboratory facility in Frankfurt, Germany. This laboratory pilot, which will run on synthetic flue gas, will provide important data and experience ahead of any potential installation in the slipstream of flue gas from a commercial Statkraft power plant.

The laboratory plant can perform a fully automated post-combustion capture process. It has an absorber, heat exchangers and desorber and can, according to Siemens, validate the entire process.

> Like most people developing post-combustion capture, we focussed on coal since the economics looked much better

Degradation and corrosion tests at various gas concentrations and operating points, and the entire development of the process will be carried out at the facility throughout the rest of this year. "We can pressurise the absorber so we can analyse the degradation faster. The desorber is completely made of glass and extends over two floors so we can see the whole process live," said Dr Jockenhoevel.

While for Siemens it is too early to give figures on the economics of installing CCS in CCGT plants, it said that the penalties on plant electrical efficiency would be less than at coal fired plants. Dr Jockenhoevel said: "In the hard coal world, our process has an efficiency penalty of about 9.2 percentage points. In a combined cycle plant, the energy use per tonne of CO_2 is higher but the concentrations are lower so, overall, less CO_2 has to be treated. We therefore expect the efficiency penalty to be less on a combined cycle plant, perhaps between 8.5 and 9 percentage points. We hope to improve this but the first priority is the adaptation to the operating conditions."

The project has now been underway for six months and is scheduled for completion within two years. This technology will then be available for industrial-scale applications.

Siemens will be investigating solvent behaviour at its laboratory facility in Germany

Post-combustion capture using amino acid salt

Post-combustion CO_2 capture is similar to desulphurization, whereby the entire flue gas stream is treated in a scrubber (CO_2 absorber) that contains a solvent.

Siemens' post-combustion CO_2 capture process uses an amino acid salt as the chemical solvent. Other conventional options use amines or ammonia. According to Siemens the salt is environmentally safe and gives off no emissions. In addition to minimised environmental impact, Siemens' priorities for solvent choice are high selectivity for CO_2, low degradation, low energy demand, high CO_2 capture rate and high purity of the CO_2 stream

Solvent selection is essential because the solvent directly influences the energy demand and the environmental impact of the CO_2 scrubbing process.

Amino acid salts have the advantage of negligible vapour pressure so that, given an appropriate demister on top of the absorption column, the solvent emissions will be nearly zero. Amino acid salts have an ionic structure and are less sensitive to oxygen. As salts have no vapour pressure, they are not inflammable. Furthermore, the solvent exhibits low thermal sensitivity, and so refill requirements are expected to be very low. This has a direct impact on the operating costs of the CO_2 capture plant. Thermal stability of the solvent also provides increased flexibility with the process design, i.e. the absorption and desorption process can be performed under a wide range of temperatures and pressures.

Junior Isles

The trouble with forecasting

Some people believe in crystal balls, while others visit fortune-tellers. In our business, we often analyse the past in order to predict the future – sometimes with the help of some computer modelling to overlay 'what if' scenarios. The technical term is forecasting.

The problem with forecasting is that sometimes it is no more accurate than gazing into a crystal ball. Who would have predicted that oil prices would hit $150/barrel in July last year? Further, who would have predicted that they would fall to $40/barrel less than six months later? And 18 months ago, did anyone predict that global GDP figures would be where they are now?

Still, we have to depend on something. The latest and supposedly, most advanced tool so far for predicting the future of energy systems was announced by the UK's Energy Technologies Institute (ETI) last month.

The ETI's Energy System Model (ESM) is being developed to help identify those technologies capable of having the greatest impact in achieving the UK's future energy target. The ETI considers it to be an important tool in the government's efforts to reduce emissions by 80 per cent by 2050. According to a statement by the ETI, the ESM will highlight those technologies that potentially pose the lowest technical and financial risk in the face of a number of future demand scenarios.

Lord Hunt, the UK minister for Sustainable Development and Energy Innovation said: "The way we generate electricity is set to change dramatically over the coming decades, with greater reliance on low-carbon sources like renewables, nuclear and clean coal.

"The ETI's Energy System Model will be an important tool for both government and the energy sector in determining how we can make that shift in the most effective way, using the most appropriate technology mix and maximising our contribution to the fight against climate change."

The ESM focuses on technology choices across the entire UK energy system (including electricity, heat, transport and infrastructure) with future energy demand patterns established via a number of 2050 scenarios.

The model is being developed by the ETI's strategy and modelling team, with support from two UK consulting companies – CRA International and Redpoint Energy.

Work on developing the model began late last year and the ETI said it is at the stage where the modelling tool has been developed and is now being applied. Dr David Clarke, ETI's chief executive commented: "We have a first data set in the model but now we need to acquire better quality data and a much broader data set. Essentially, the tool is developed and now we are populating it with data so that it can make better informed recommendations for us."

The model itself has four main aspects, which according to Dr Clarke, differentiates it from what has been done before for the UK.

Firstly, it looks at engineering from the viewpoint of the energy infrastructure in the UK i.e. it is based around engineering systems for generation, transmission and use of energy.

> The ETI's Energy System Model is being developed to help identify those technologies capable of having the greatest impact in achieving the UK's future energy target

Secondly, it has geography built into the model so it understands potential population growth and can present views on what could influence population development and where people will be in the UK in the future.

Thirdly, the model does not start from today and look forward but instead starts from the target date of 2050 and looks backward to today. Dr Clarke said: "Rather than *us* tell *it* how fast we think the UK energy system can develop in a particular area, the model tells *us* how fast *it* thinks the energy system needs to develop. For example, it will tell us how fast wind or carbon capture and storage needs to develop if we are to meet 2050 targets for greenhouse gas reductions."

The fourth aspect, which Dr Clarke believes is perhaps the most important, is that the model is "probabilistic". He explained: "it doesn't tell us you need 4500 wind turbines in the North Sea by 2020, for instance. It will give us a 'likelihood' of what's needed – say, a 65 per cent likelihood – as opposed to an exact number."

He believes this can give commercial investors an indicator as to whether a particular technology or market is a good investment for their business.

Whether modelling can give a realistic assessment of risk for investors going into a technology or market is a point of debate. If developers target a particular market segment based on the model's output, as more investors enter that particular market the risk and rewards will alter.

Dr Clarke agreed: "Yes, the risks would change but you have to be careful and assess how you use the outputs from the model. The view you get from the model is firstly, only as good as the data underpinning the model and secondly, the level of intelligence that people bring to looking at the outputs. It is important to question the model's outputs and understand the major technology unknowns or constraints that may result in a particular likelihood."

Clearly the data sets are important. The ESM uses three main sets of data: costs for different technologies; resources, in the broadest sense, including supply chain, technological skills and fuel resources; and time, for example, how long it will take to build a nuclear plant.

The ETI will continue to build these data sets to improve the modelling. "In some technology areas such as marine or tidal, where we've done a lot of road-mapping, we know what the data set looks like. In other areas such as carbon capture and storage, we have a less complete data set. We are deliberately doing work in this area to get some of that data. It is important that we get help from industry and academia to fill in some of the white spaces." noted Dr Clarke. "

The ETI expects the ESM to attract significant interest in the UK and internationally (overseas regions can be modelled by adapting the input demand scenarios and other assumptions). It has started talking to other groups and will gauge interest over the next 6-9 months. "We will start with the UK and then assess interest elsewhere," said Dr Clarke.

The ability to predict energy scenarios in the distant future is no doubt important, especially if the climatologists are right. But the good thing about making long-term predictions is that no one remembers who forecasted what when the time eventually comes.

Nevertheless, we cannot underestimate the importance of forecasting, especially short-term and very short-term forecasting. It is certainly a crucial area if wind energy is to be incorporated into the grid and effectively managed by operators.

The importance of this was underlined by a recent partnership between GE Energy and WSI Corporation, a global leader in weather information and a member of The Weather Channel Companies. The two companies are coming together to launch more accurate forecasting tools for wind farm owners and operators, and transmission and distribution providers.

The two companies plan to develop technology to collect real-time turbine and wind data, incorporate this data into proprietary forecast models, and provide customised forecast and operational guidance services. "The integration of timely, accurate weather forecasts with turbine operations can provide tools to help operators improve the efficiency of their wind farms," explained Victor Abate, vice president, renewables for GE Energy.

Having the tools to accurately predict when the wind will blow, or indeed the weather in general, is always useful. But sometimes we don't need any tools to foretell future weather patterns.

Here is a prediction. We have a national holiday here in the UK on the last Monday in May and I have plans to take part in a big street carnival in Luton (just outside of London). Regardless of how sunny it is during the run-up, I guarantee it will rain on the day.