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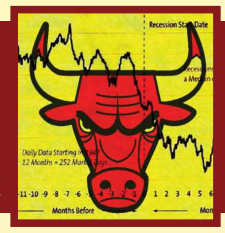

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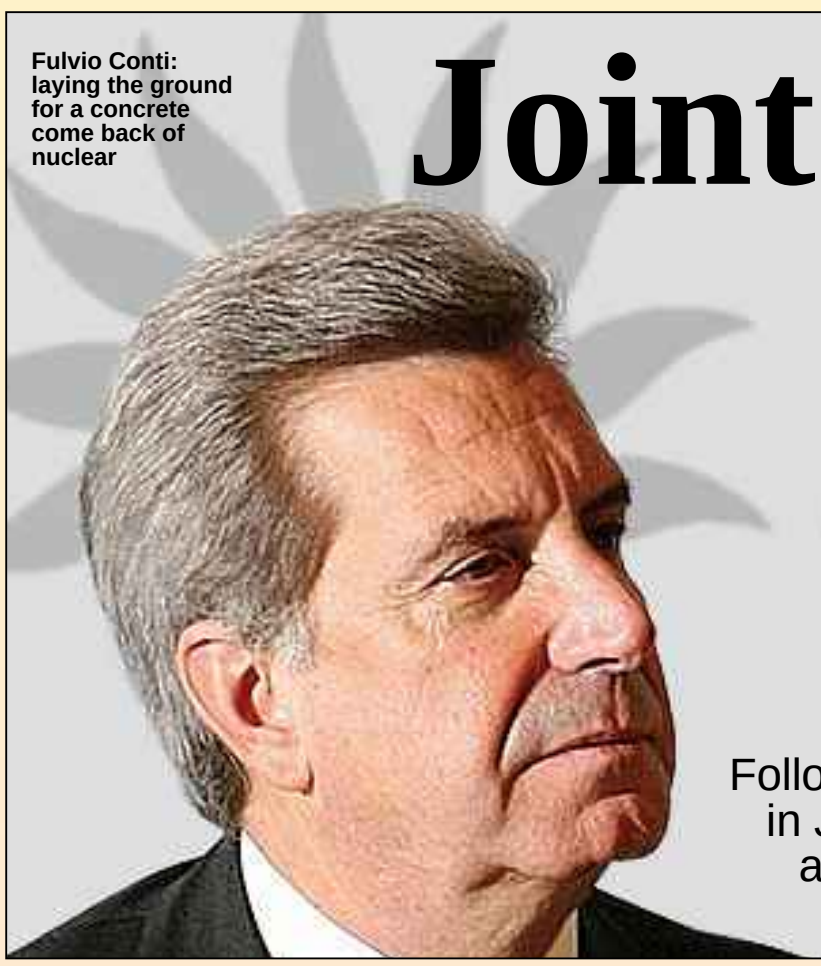

Fulvio Conti: laying the ground for a concrete come back of nuclear

Joint venture targets nuclear revival

Following the passing of a nuclear law in July, a joint venture between Enel and EDF looks set to rapidly move forward Italy's nuclear industry.

Junior Isles

The joint venture announced between Italy's main power company, Enel, and France's EDF looks set to accelerate the country's plans to begin construction of Italy's first nuclear plant since the country rejected nuclear power in a 1987 referendum.

The creation of the 50:50 joint venture known as Sviluppo Nucleare Italia Srl (Italy Nuclear Development) is aimed at developing the feasibility studies for the construction of at least four advanced third generation EPR units as outlined in an agreement between Enel and EDF, signed on February 24 during the Franco-Italian summit in Rome.

Once the studies have been completed and the necessary investment decision taken, individual companies will be instituted to build, own and operate each of the EPR units.

The companies billed the move "as the first substantial step" toward establishing nuclear plants in Italy following the approval of an Italian law in July allowing a return to nuclear energy. The law allows for the setting up of an Italian nuclear safety agency that will select sites for the new plants.

While some regions have expressed an interest in being sites for the plants, experts warned that political and environmental opposition could lead to lengthy delays. Construction of the new reactors is not expected to start until 2013 at the earliest.

The issue of how to finance the construction of the plants, which will be put out to tender, has also not been clarified. A 1600 MW EPR nuclear power plant costs about ¤4 billion to build, according to Enel.

Fulvio Conti, CEO and general manager of Enel said in a statement: "The creation of this joint venture lays the ground for a concrete come back of nuclear in Italy and represents a unique opportunity for contributing to the recovery of the country's economy, creating specialized jobs and increasing employment."

He said that in the past few years Enel had rebuilt its nuclear skills

Continued on page 2

Algeria selling rights to develop uranium deposits

For the first time in its history, Algeria is putting uranium deposits up for sale. In August, the National Mining Patrimony Agency (ANPM) launched an initial call for a show of interest in the eight uranium sites, located in the Province of Tamanrasset. As with petroleum and gas, pre-qualified candidates will have to work with the National Company for the Transport and Marketing of Hydrocarbons [Sonatrach] in order to take part in the call for bids for the assignment of the deposits, scheduled to be launched on September 6.

Algeria is trying to learn the precise capacities of its uranium deposits and prepare for their development with a view towards the launch of a programme for the building of civilian nuclear power plants for electricity production. The first power plant will be built by 2020, according to the official forecasts.

Several countries – France, China, the US and Russia in particular – are interested in Algerian uranium and are trying to obtain contracts to build civilian nuclear power plants in Algeria. Chakib Khelil, the minister of energy and mining, said that the government would decide on which countries will supply Algeria with enriched uranium.

Algeria does not have the technology that would allow it to enrich uranium on its own to use as nuclear fuel. The country is not contemplating investing in this area, as it wants to avoid the political problems that have plagued Iran over its enrichment programme.

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(Continued from page 1)

and expertise, thanks to its international operations and were "now ready to take the lead of the Italian nuclear programme in co-operation with EDF".

EDF and Enel have been working together since 2007 on the construction of a third-generation reactor in Flamanville in Normandy, France, in which Enel owns a 12.5 per cent stake. Under a separate agreement Enel will take an identical-sized stake in the second EPR reactor that EDF is to build at Penly in Normandy.

Commenting on the new joint venture Pierre Gadonneix, Chairman and CEO of EDF, said in a statement: "EDF is delighted to be able to participate side by side with a major industrial partner such as Enel in the relaunch of nuclear production in Italy, a secure, competitive and CO_2-free source of energy." He added that the partnership "is in line with EDF's group strategy aimed at strengthening its position in Europe and at being the world leader in the revival of nuclear energy".

Italian prime minister, Silvio Berlusconi has made nuclear power a key part of his conservative government's energy plan. Italians pay some of the highest electricity rates in Europe and nuclear power is seen as a way to lower them.

Bangladesh company eyes IGCC

Cimillae Development Company (CDC) Limited, a Korea-Bangladesh joint venture is reportedly seeking approval from the government to set up a coal gasification project in the Jamalganj coal mine area of Joypurhat district.

Ali Akkas Nurani, vice president of CDC, claimed the company has already submitted an application to the Prime Minister's Office seeking permission to set up the power plant.

He also claimed that his company had signed agreements with Korean companies, Global Energy Economic Development Inc (GEED) and Samsung Heavy Industries (SHI), and a UK company called Green Power Limited. He said GEED will invest $8 billion in the project and SHI will work as EPC contractor. Green Power would provide the coal gasification technology.

"We are ready to invest $8 billion in this joint venture with GEED for producing electricity within the next three and a half years," Nurani said at a press conference in Dhaka last month.

He said there was sufficient coal in Jamalganj to fuel the project for the next 50 years. The gasification system will not need to evacuate the area, as the coal would not be extracted from the mine, rather it would be fired inside the mine, Nurani said.

The news was reported on the *Bangladesh Economic News* website but no further information was available.

China considers draft climate change resolution

China is considering draft legislation aimed at improving how it tackles climate change. The outcome will be an important indication of how China plans to reduce emissions as we move closer to Copenhagen, says **Junior Isles.**

Xie Zhenhua: Vice Minister of National Development and Reform Commission

China's top legislature is considering a draft resolution on climate change and a draft amendment to its renewable energy law.

The Chairmen of the Standing Committee of the 11th National People's Congress (NPC) began deliberating a State Council (Cabinet) report on handling climate change at the end of August. The report by the country's policy experts said the government should take action so the country's carbon dioxide emissions peak around 2030.

The nearly 900-page *'2050 China Energy and CO_2 Emissions Report'* said that China's gross domestic product may exceed America's by 2030, and its emissions of greenhouse gases will make up 20 to 25 per cent of the world's total emissions. If China implements cuts on the absolute amount of its emissions, emissions of carbon dioxide will start to slow by 2020 and peak by 2030, it said.

A draft resolution on climate change submitted to the NPC puts forward five guidelines to deal with climate change.

It says the country must commit to energy saving and emissions reductions by promoting energy-efficient technology and products, exploiting renewable and clean energy, developing a recycling economy and further advancing afforestation and forestry carbon sequestration.

The draft amendment to the renewable energy law was also submitted to the NPC for its first reading on August 24.

Under the current Renewable Energy Law (2005), the State set up a special fund for renewable energy development. If the draft amendment is approved, a new fund with two sources of income will be set up – one from the special fund and one from the income deriving from surcharges on renewable energy electricity prices.

China will set a minimum purchase quota for electric power generated by renewable energy to promote the development of clean energy and environmental protection, according to the draft amendment.

The purchase, a measure to help protect the development of renewable energy power plants, will be a full-payout by national power grid companies. Qualified renewable power plants' electricity sales will be guaranteed by contracts with power grid companies, who are usually in charge of the construction of power grids nationwide and the distribution and transmission of power.

The draft also stipulated obligations by power grid companies to accelerate grid construction to cover more of these power plants.

> China will continue international negotiations on climate change in the spirit of "being highly responsible for the survival and long-term development of mankind."

The country issued a national plan on the development of renewable energy in September 2007, saying China will increase the portion of renewable resources to 15 per cent in its total energy consumption in 2020 in a bid to reduce greenhouse gas emissions and pursue sustainable economic growth.

At the start of the meeting, Xie Zhenhua, the country's top representative to international climate change negotiations, said that China would "do its best with utmost sincerity" to push for the success of the climate change conference in Copenhagen in December.

Xie, Vice Minister in charge of the National Development and Reform Commission (NDRC), said China would continue international negotiations on climate change in the spirit of "being highly responsible for the survival and long-term development of mankind."

China is the largest emitter of greenhouse gases and has not set a cap on its emissions, believing it needs to continue to expand its economy and lift millions out of poverty. The country's stance is expected to be key to a successful conference in Copenhagen, which will try to reach agreement on a treaty to replace the 1997 Kyoto Protocol for limiting greenhouse gases, which expires in 2012.

A recent report from environmental watchdog Greenpeace China highlighted the heavy reliance on coal that is hampering China's efforts to tackle climate change.

Three of China's biggest companies – China Huaneng Group, China Datang Corp. and China Guodian Corp. – produced more greenhouse gases than Britain in 2008, according to the report, titled *'Polluting Power: Ranking China's Biggest Power Companies.'*

China has, however, made some progress. In the last three and a half years, it closed down 54.07 GW of inefficient coal-fired plants, equal to Australia's total power capacity, the report said.

Both China and the U.S. are looking for ways to cooperate on addressing the issue of climate change in preparation for Copenhagen.

In August China Huaneng Group, China's biggest power producer by capacity, signed a memorandum of understanding on clean coal technology and renewable energy projects with Duke Energy Corp. of the US.

Jim Rogers, Duke's chief executive, said the two companies will cooperate on the development of integrated gasification combined cycle (IGCC) plants, and technology that can capture and store CO_2.

Duke, one of the US's largest power companies, is building a 630 MW IGCC plant in Edwardsport, Indiana, which may become one of the first commercial demonstrations of an IGCC plant in the US with carbon capture and storage.

Huaneng is working on similar technologies as leader of the GreenGen Co. consortium, which is building China's first commercial-scale IGCC power plant in the northern city of Tianjin.

"I actually see our company entering into MoUs with other Chinese companies in the future, focusing on specific areas," said Rogers, adding such agreements could be signed within six months.

By working together, Duke and Huaneng hope to accelerate the mass rollout of IGCC and other clean energy systems on a commercial basis.

Meanwhile at the end of July, ScottishPower welcomed representatives from China Power Investment Corporation (CPI), one of China's leading electricity generation companies, to Longannet Power Station in Fife in Scotland to see the first plant to capture CO_2 from an operational power station in the UK.

Speaking at Longannet, Stephen Adamson, CCS Commercial Manager at ScottishPower, said: "One of the key benefits of retrofit CCS technology is that it can be exported to benefit the tens of thousands of thermal power stations around the world that are currently in operation. We were delighted to host China Power Investment Corporation and show them advances being made in retrofit technology and the workings of the carbon capture plant so far."

Study says carbon capture could double electricity costs

- CCS costs at between $120 and $180 per ton of CO_2 captured and stored
- Costs will fall

Harvard University researchers in the US have issued a new report that confirms what many experts already feared: capturing greenhouse gas emissions from coal-fired power plants will be costly.

According to the report *'Realistic Costs of Carbon Capture'* produced by energy researchers at the Harvard Kennedy School's Belfer Center, costs would fall as the technology matures, but could still amount to an increase of 22 to 55 per cent.

These projections "are higher than many published estimates" but reflect capital project inflation and "greater knowledge of project costs," said the report.

Previous studies have found that carbon capture and storage, or CCS, might cost in the region of $30 to $50 per ton of carbon dioxide that is captured and stored. But in a major report last October, the Union of Concerned Scientists warned that such estimates might be overly optimistic. Among other problems, the group said, previous studies did not reflect rising construction, material and labour costs.

The new Harvard study tried to account for such issues. As a result, it projected CCS costs at between $120 and $180 per ton of carbon dioxide captured and stored. This is for a first-of-its kind, new generation of coal-fired plant that eliminates most carbon dioxide emissions.

The cost translates to an increased cost of electricity of about 10 cents/kWh. Nationally, the average electricity cost is about 9 cents/kWh, according to the US Department of Energy.

The Harvard study projected that, as technology improves, CCS costs would drop. Later-generation plants would cost between $30 and $50 for every ton of carbon dioxide they capture. This amounts to an increase of 2-5 cents/kWh.

■ Southern Company and the Southeast Regional Carbon Sequestration Partnership (SECARB), one of seven members of the US DOE Regional Carbon Sequestration Partnerships programme, have announced plans to capture CO_2 from Alabama Power's Plant Barry coal-fired power plant and inject it into a deep saline reservoir beneath the Citronelle Oil Field north of Mobile, Alabama.

Utilities pave way for smart grid investments

US energy companies say that President Obama's federal stimulus funding will help them to build the technologically advanced grids that they need, **writes Siân Crampsie**

Plans for the widespread roll-out and demonstration of so-called 'smart gird' technologies are moving forward in the USA with applications by utilities for millions of dollars of federal stimulus funding.

Utilities such as National Grid, First Energy, Duke Energy and PECO have applied for the stimulus funds in a move that will help to update the US electricity transmission grid with technologies that are designed to enhance reliability and efficiency.

In a parallel move, the US Federal Energy Regulatory Commission (FERC) says that it will help utilities to recover the costs of deploying smart grid systems.

In early August National Grid, the USA's second largest utility, said that it had applied to the Department of Energy (DOE) for $200 million in federal stimulus funding to develop an 'end-to-end' smart grid deployment in the states of New York, Massachusetts and Rhode Island. Duke Energy and PECO have also applied for similar levels of funding, while First Energy has requested funds of $114 million.

The applications follow the DOE's June request for applications for $3.9 billion in grants to support the deployment of smart grid technology such as smart meters. The initiative – part of the USA's federal economic stimulus package – is designed to modernize the grid, increase reliability and energy efficiency and prepare for the integration of renewables.

National Grid's project will include around 200 000 customers and will demonstrate the benefits of combining smart and green technologies throughout the transmission and distribution network. It will also demonstrate technologies such as plug-in hybrid electric vehicles and energy storage.

The result will be one of the most technologically advanced smart grid deployments in the USA, says National Grid.

"While our smart grid is focused on customers, it also acts as a catalyst to accelerate and accommodate the integration of renewable energy applications into the distribution network," said Tom King, president of National Grid US. "Our intent is to create a flagship smart grid system and we hope the Department of Energy will support us in this important effort."

Utilities such as National Grid will also be able to recover the costs of smart grid technology deployment as well as certain legacy systems made obsolete by smart grid initiatives through a new interim incentive rate policy approved by FERC.

In a policy statement, FERC identified four areas of functionality that are key to the development of future smart grid standards. The four areas are wide-area situational awareness; demand response; electric storage; and electric transportation. It also outlined the conditions that utilities should fulfil in order to recover smart grid costs.

July also saw the DOE award more than $47 million in Recovery Act funding to eight projects in seven US states demonstrating smart grid technology. More than $12 million of these funds have gone to American Superconductor Corporation (AMSC) to help it complete two ongoing superconductor smart grid projects.

"The Obama Administration has placed a high priority on smart grid technologies that enhance the efficiency and resiliency of our expanding power infrastructure," said Dan McGahn, senior vice president and general manager of AMSC Superconductors. "Our DOE-funded programmes will enable us to once again demonstrate the compelling power density and security advantages afforded by superconductor power cables and fault current limiters. We expect there will be a substantial global market opportunity for these smart grid technologies in the next decade."

Brazil concedes to Paraguayan demands

- Talks over 15 000 MW of new hydro in Peru
- Angra 3 to resume construction in September

"Good neighbour": Brazil's president Lula

Brazil and Paraguay have settled a long-running dispute over the Itaipu Dam, with Brazil making a number of key concessions to its smaller neighbour.

In what has been hailed as a "historic" deal, Brazil has agreed to a tripling of Paraguay's income from the dam and will also allow Paraguay to sell surplus electricity directly into the Brazilian market.

The agreement has brought criticism for Brazilian president Luiz Inácio Lula da Silva, who is thought to have conceded to Paraguay's demands as part of his "good neighbour" policy. Paraguayan president Fernando Lugo has hailed the agreement as a major triumph for his country.

The two countries share equally the energy generated by the 14 GW dam situated on the Parana River on the Brazil-Paraguay border, and Brazil currently pays Paraguay around $120 million per year for access to 90 per cent of Paraguay's half. Under the deal, this will triple to $360 million per year, while Paraguay will be allowed to boost income further by selling its share of energy from the dam on Brazil's market.

Brazil has also agreed to help Paraguay to improve electricity infrastructure by providing cheap loans for electricity transmission projects.

Paraguay will still have to service its share of the dam's $20 billion debt, most of which it owes to Brazilian state electricity generator Eletrobras and the Brazilian government.

Lula's good neighbour policy is designed to boost Brazil's standing in Latin America, and has seen the country make concessions to Bolivia over the price of natural gas imports.

Brazil is also in talks with Peru over plans to build as many as 15 hydropower plants in the Andean nation. The first five plants – with a combined capacity of 6000 MW – could be operational by 2015 if the two countries manage to wrap up the deal in 2010, according to local media.

Some 80 per cent of the energy produced by the new plants would go to Brazil, and the remainder to Peru.

Brazil is also looking to boost generating capacity by completing construction of its long-delayed third nuclear power unit at Angra. According to Othon Luiz Pinheiro, president of Eletronuclear, construction will resume in September.

Bolivia negotiates powerco takeovers

The Bolivian government is following through with plans to nationalise the country's power generating sector and has started negotiations with utilities.

Leftist President Evo Morales, a close ally of Venezuela's Hugo Chavez, is seeking to increase state control over the economy after nationalising Bolivia's natural gas industry in 2006.

Negotiations with generators – including Corani, Guaracachi and Valle Hermoso – have already started, according to local media reports, although it is unclear whether the government is aiming to secure controlling stakes or full ownership.

Corani is 50 per cent owned by Inversiones Ecoenergy Bolivia S.A., a subsidiary of France's GDF Suez. Guaracachi is 50 per cent owned by Britain's Rurelec plc, while Valle Hermoso is run by a foreign private firm called the Bolivian Generating Group.

These three generators emerged from the 1990 privatization of the state National Electricity Company and account for over half of Bolivia's electricity market. A Bolivian government statement said that the negotiations "aim to restore state control to these strategic companies that are part of the electricity generation grid". It also said that the government would start final negotiations once the valuation of the companies have been determined.

DOE funds grid research

European engineering firm Areva is to help the USA prepare its electricity grid for the growth in wind power with the help of a grant from the US Department of Energy (DOE).

The award will fund research into best practices for managing wind energy in control room operations and on the effective use of wind forecasts. Areva will use the research to make recommendations for effectively managing a dramatically increased amount of wind power in the US energy mix.

Utilities and transmission system operators in the USA are already struggling with the challenge of a rapid rise in wind power generation in certain parts of the country.

In July the Bonneville Power Administration, a federal agency operating in the US northwest, said that the explosion of wind power on its system since 2005 has led to "operational challenges including risks to reliability and substantial costs". It has announced a 90 per cent increase in the rate that it charges operators of wind power plants to smooth the intermittent stream of power they generate.

The BPA's wind integration rate now stands at $1.29/kW per month. The utility, which markets the energy produced at 31 hydropower plants and one nuclear plant in the Columbia River Basin, believes that the new rate will help it to bring more renewable resources into its system.

The BPA has also undertaken a number of other initiatives to help improve the way it accommodates wind farms, including the installation of 16 stations to measure wind speed and direction in order to provide up-to-the minute data and the development of an in-house forecasting desk alongside its existing hydro forecasting desk.

India outlines "multi-pronged" energy strategy

India's chief scientific advisor to the government, R. Chidambaram has said a "multi-pronged" strategy in acquiring various kinds of energy resources would strengthen the country's energy security and boost its growing economy. Notably, he also said India will increase the use of low carbon technologies, including nuclear, hydro and other renewable energy sources to combat climate change.

According to press reports, India will unveil its first solar power target this month (September) with a plan to increase output from near zero to 20 GW by 2020. The target is part of an ambitious $19 billion, 30-year scheme that could increase India's leverage during climate change talks in Copenhagen in December.

India launched a Solar Energy Mission plan last year as part of its National Action Plan on Climate Change. More recently, the European Commission and the Indian Department of Science and Technology announced a joint initiative for solar power research with each side contributing five million euros (Rs33.5 crore).

India has also been intensifying its civil nuclear trade with many countries, including the US, Russia, France and Canada and has set a target of installing 20 GW of nuclear capacity by 2020.

Mr Chidambaram, speaking at a recent meeting of the Indian Nuclear Society and The Energy and Resources Institute said that "a large dose of nuclear power" was the only way India would achieve both energy security and combat climate change.

At the beginning of August the country's Atomic Energy Commission (AEC) announced that it would soon build four more 700 MW capacity nuclear reactors.

"We are looking forward to launching new 700 MW power reactors. The government has already given in principal, approval for four 700 MW units. So we want to quickly get the approval and start the construction," AEC Chairman Anil Kakodkar said in Chennai, southern India.

During the US Secretary of State Hillary Clinton's visit to India in July, the two countries were reported to have agreed on two sites to build nuclear reactors with US nuclear technology.

R. Chidambaram: calling for "a large dose of nuclear"

Renewables law passed after separation from ETS

Australia passed a law setting a target for renewables after the government agreed to separate the law from its greenhouse gas emissions trading scheme. However, critics argue that it will not be enough to turn around growth in carbon pollution.

Junior Isles

Australia's parliament passed a law last month requiring that 20 per cent of the country's electricity is generated from renewable sources by 2020. But Climate Change Minister Penny Wong told the Senate that even if one fifth of Australia's electricity comes from renewable sources by 2020, the nation's carbon gas emissions are projected to be 20 per cent higher than 2000 levels.

"The only way we're going to be able to turn around the growth in our carbon pollution... is to put a firm legislated limit on the amount of carbon that we produce and make those who create the pollution pay for it," Wong said.

The Australian government was forced to separate the draft law for a renewables energy target from its larger greenhouse gas emissions trading scheme in order to win sufficient support to pass the law.

The law will quadruple the renewable energy target set by the previous government in 2001 and matches the target set in 2007 by the European Union. Australia currently generates about 8 per cent from renewables

Some officials still warn that more aggressive cuts in carbon dioxide emissions are needed. Senator Bob Brown, leader of the Australian Greens minor opposition party, said the target should be 30 per cent and that big polluters were offered too much government assistance.

The bill was passed by the Senate and House of representatives after the government reached a deal with the main opposition party to increase government assistance to industries that are heavy users of electricity and create safeguards for existing investment in the coal mining industry.

Other critics argue the target will make electricity more expensive in coal-rich Australia without curbing the amount of greenhouse gases, as overall electricity consumption rises.

The new law comes just weeks after the Asian Development Bank (ADB) and the government of Australia, through its Global Carbon Capture and Storage Institute, signed a trust fund agreement to support the capture and storage of rising levels of carbon emissions in Asia.

Under the agreement, Australia is supplying an A$21.5 million grant for the Carbon Capture and Storage Fund. The fund will support geological investigations and environmental studies into potential carbon dioxide storage sites, capacity building, and community awareness programmes which can help accelerate the deployment of carbon capture and storage demonstration projects around Asia.

Penny Wong: looking for firm legislated limits on carbon

■ At the end of July GE Energy announced that it is working with Stanwell and Xstrata Coal to develop an integrated gasification combined cycle (IGCC) power plant incorporating CO_2 capture and storage (CCS). The company said that the proposed Wandoan project in Queensland would produce 400 MW of power pre-carbon capture and would be capable of capturing 90 per cent of the CO_2 in the fuel stream for future storage. If the development phase moves forward in 2009, the plant is expected to be ready for commercial operation in late 2015 or early 2016.

US emergency task force to address Pakistan energy crisis

■ US task force to prepare energy plan

■ Sindh approves the agreement to generate 1000 MW from Thar coal deposits

The Pakistan government is hoping that the setting up of a US-led emergency energy task force will help address its chronic energy crisis and eliminate electricity shortages in the country.

US special envoy for Pakistan, Richard Holbrooke, recently told a press conference in Karachi that the members of the task force would come to Pakistan to study and prepare an energy plan that would be discussed at a meeting of Pakistani and American officials in Karachi in October.

He said the Inter Agency Task Force will include representatives from related departments and the US would mobilize support of financial institutions such as the US Export Import Bank, Overseas Private Investment Corp., US Trade and Development Agency and international lenders such as the International Monetary Fund, the World Bank and Asian Development Bank.

In the 1990s, a similar task force created by the US Energy Department led to an investment of more than $2 billion in several independent power plants set up by Pakistani and US business groups.

Pakistan has experienced severe blackouts and power shortages, particularly in Karachi and rural areas, in recent months.

The situation was eased slightly last month with the completion of the 87 MW SITE gas fired power station by the Karachi Electric Supply Company (KESC). The Atlas power plant with a capacity of 225 MW in Sheikhupura (Punjab Province) was also inaugurated after a delay of a few months.

Meanwhile, Nishat Group announced that it would invest $500 million in the power sector to help the government defuse the energy crisis and minimise the power shortage that has affected the economy, especially the industrial sector.

Mian Muhammad Mansha, chairman of Nishat Group in Karachi said that Nishat Group has imported two oil-based power plants having a power generation capacity of 400 MW, which would be installed at Lahore and ensure direct supply to the national grid.

Karachi Electric Supply Company (KESC)'s management plans to invest around $102 million to generate at least 400 MW electricity during the next three months.

The Cabinet of the government of the Pakistani province of Sindh also recently approved the agreement between the government and Engro Power Company to generate 1000 MW of electricity from Thar coal deposits.

A senior official of the Pakistan Power Infrastructure Board (PPIB) said a total of 17 power projects with an installed capacity 3106 MW will be completed by the end of this year.

Vietnam to restructure electricity industry

Vietnam's prime minister, Nguyen Tan Dung, said the country will restructure the electricity industry.

According to a government report, after the restructuring, Vietnamese electricity providers will be able to supply enough, safe and high-quality power for the sustainable development of the country.

The country's large corporations including the Electricity of Vietnam (EVN), PetroVietnam Group (PVN), and the Vietnam National Coal and Mineral Industries Group (Vinacomin), should play key roles in supplying electricity, the report cited Dung as saying.

Vietnam will implement a flexible price framework, which allows the power price to be adjusted to the market price.

The plan to restructure the country's electricity industry is currently being developed by the Vietnamese Ministry of Industry and Trade, said the report.

In a separate development, officials from Vietnam's Ministry of Industry and Trade and Cambodia s Ministry of Industry, Mining and Energy reached an accord on the content of a draft agreement to boost investment cooperation on hydropower plants and the building of power grids connecting the two countries. Vietnam and Cambodia expect to sign the 10-year energy cooperation agreement by the end of this year.

Thailand to launch carbon fund

Thailand aims to establish a carbon fund this year to coincide with the possible launch of Board of Investment (BoI) tax incentives for greenhouse gas emission reduction projects under the Clean Development Mechanism (CDM).

The Thailand Greenhouse Gas Management Organisation (TGO) is drafting the potential structure of the carbon fund, a process that should be completed some time this month, said TGO executive director Sirithan Pairoj-Boriboon.

The final draft will go before the national climate change committee chaired by prime minister Abhisit Vejjajiva for endorsement.

The fund, which the private sector may jointly set up, would provide low interest rate loans for CDM or co-investment in the projects. It will also purchase carbon credits from project developers, including small-scale companies, for sale to the international carbon trading markets.

The CDM enables industrialised nations to buy carbon credits from projects in developing countries to meet their emission reduction commitments under the Kyoto Protocol by 2012.

In July, the Electricity Generating Authority of Thailand (Egat) said it is ready to spend Baht22 billion ($645 million) on establishing renewable power projects with a combined capacity of 258 MW.

Egat deputy governor Somboon Arayasakul said that the move was part of the state agency's development of renewable energy. The 15-year plan spans from 2008 through 2022.

Bangladesh to set up 'emergency' power plants

The Bangladeshi government has taken an initiative to set up new power plants on an emergency basis to meet a growing demand that has resulted in a severe electricity crisis in the country.

In an emergency meeting, the Power Development Board (PDB) detailed a plan for setting up power plants in both public and private sectors to produce an incremental 3300 MW of electricity by 2010, beyond the present plan.

Under the new initiative, rental power plants ranging from 500 to 1500 MW will be set up that will begin operation by 2010.

Ten peaking power plants of 50-200 MW will add 800 MW of generating capacity by 2011 while four coal fired plants of 500 MW capacity will add another 2000 MW to the grid.

According to local reports, Bangladesh's electricity generation is now hovering at around 3700 MW against a peak demand for over 5500 MW.

Meanwhile, the World Bank has approved a $130 million in credit for Bangladesh to increase its access to electricity through the installation of solar systems in rural areas.

This credit is an additional financing for the Rural Electrification and Renewable Energy Development Credit.

Bangladesh currently has only 40 per cent grid connection. Power shortages and load shedding are severe, especially in rural areas.

Ministers call for closer regional cooperation


Simon Crean: Australia Minister for Trade

East Asian energy ministers at a series of meetings held in Myanmar called for deeper and closer regional energy cooperation and integration.

The ministers from the Association of Southeast Asian Nations (ASEAN), China, Japan, Korea, New Zealand, Australia and India attended the one-day meetings of the 27th ASEAN Ministers on Energy Meeting (AMEM), the 6th ASEAN+3 (China, Japan, Korea) Ministers on Energy Meeting (AMEM+3) and the 3rd East Asia Summit of Energy Ministers' Meeting (EAS-EMM).

In the joint statement issued by the AMEM+3, the ministers stressed the importance of enhancing regional cooperation and appropriate regional actions to build a secure, stable and sustainable energy future.

It also said that the ministers agreed to strengthen the ASEAN Senior Officials Meeting on Energy (SOME)+3 Energy Cooperation in the areas of energy security, oil market, oil stockpiling, natural gas, and new and renewable energy (NRE) and energy efficiency and conservation (EEC).

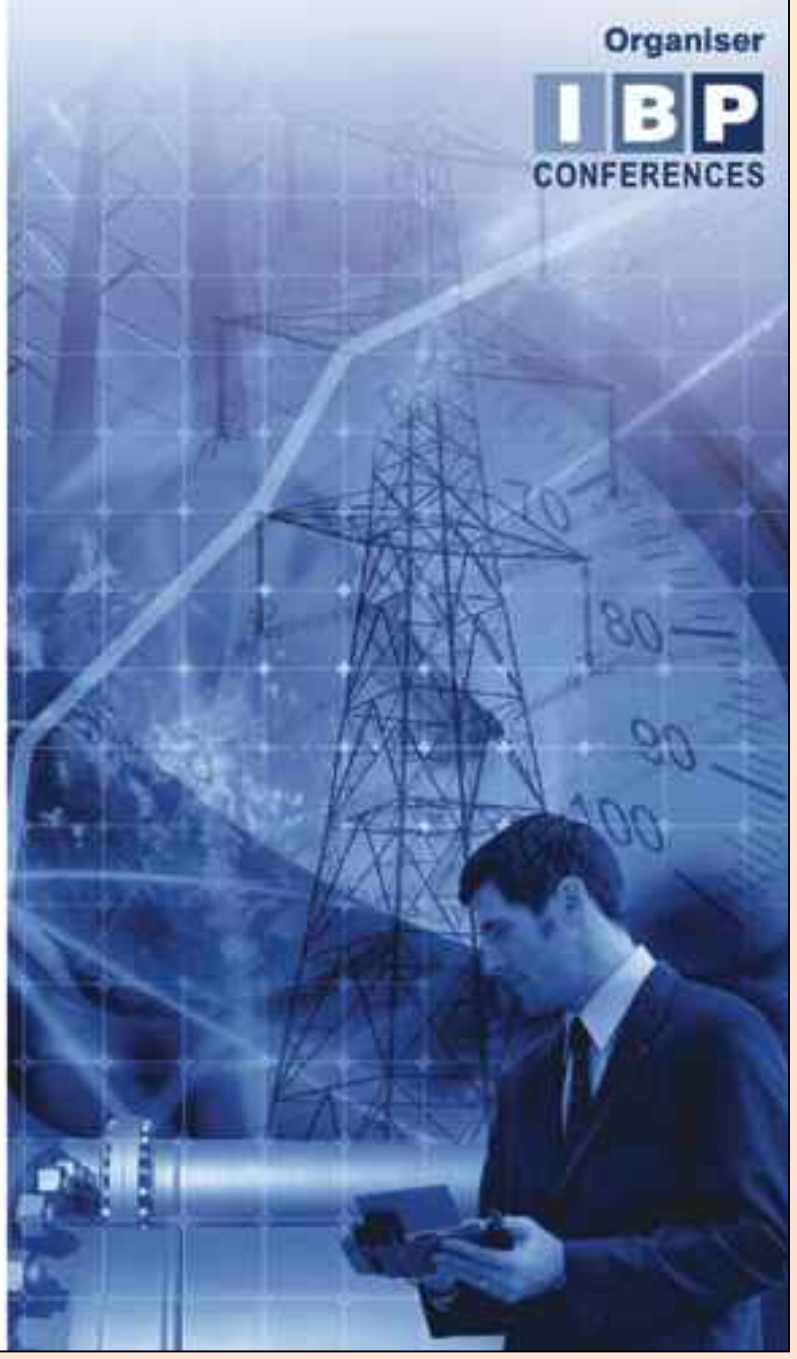
The ministers also expressed serious concern regarding highly volatile oil prices, which pose a great challenge to the global economy and are against the interest of both consuming and producing countries. They emphasized the need to strengthen cooperation among those responsible for energy policy, energy supplies, oil market and transport routes.

In a separate move, Australia's Clean Energy Council (CEC) and the Sustainable Energy Association of Singapore (SEAS) signed a memorandum of understanding (MoU) aimed at boosting trade and investment links in the clean energy sector between the two countries. This is the first international agreement signed by Australia's CEC.

Minister for Trade Simon Crean said: "I congratulate both the CEC and SEAS as they seek to bring our clean energy industries closer together. This agreement sets the framework for collaboration in education, networking and information exchange in sustainable and renewable energy, and energy efficiency issues. It will facilitate cooperation in areas such as accreditation, information sharing and two-way business missions in relation to sustainable and renewable energy."

The minister said the cooperation agreement was the first step to linking CEC with similar associations across Southeast Asia.

This cooperation would be further enhanced by the ASEAN-Australia-New Zealand Free Trade Agreement (AANZFTA), coming into force on January 1, 2010, which would introduce further liberalization for goods and services exports to ASEAN.



Think tank questions cost of carbon mitigation

A think-tank has questioned the need for expensive carbon mitigation techniques, a move that will heighten the climate debate ahead of December's international talks in Copenhagen.

Siân Crampsie

A group of climate scientists have said that the cost of cutting carbon emissions could be drastically reduced if targets were less ambitious and simple "geo-engineering" techniques were used.

In a series of papers published in August, authors from the Copenhagen Consensus say that low cost technologies such as marine cloud whitening would cancel out this century's global warming at a cost of no more than $9 billion. They also say that reducing targets for stabilising atmospheric carbon would fare better on a cost-benefit basis when compared with current proposed targets.

The publication of the reports come as several major energy firms are ramping up efforts to develop and commercialize carbon capture and storage (CCS) technologies, which is the sort of solution that think-tank Copenhagen Consensus says would cost $250 billion per year to deploy. They are likely to stir up controversy ahead of December's United Nations climate talks in Copenhagen.

Engineering techniques analysed in the papers include solar radiation management techniques as well as air capture technologies, which capture carbon dioxide from the atmosphere and secure it in land or sea-based sinks. A further analysis by the organization says that the cost of stabilising atmospheric carbon dioxide at 450 ppm – the level thought necessary to avoid the worst effects of climate change – would be 12.9 per cent of global gross domestic product.

Aiming for a much less stringent target of 850 ppm would cost far less, says Copenhagen Consensus – which is led by climate change skeptic Bjorn Lomborg – and is at odds with the current thinking that large sums of money are needed over the next few years to ward off the effects of climate change.

Companies such as RWE, E.On, Iberdrola, Doosan Babcock, Vattenfall, Alstom, Siemens, GE, Shell and Hitachi, as well as governments around the world, are investing heavily in the development of CCS as well as other promising low-carbon technologies. While they say that they are making considerable progress, there are still several key barriers to the commercialization of CCS.

Critics of the Copenhagen Consensus' reports say that their estimated costs of emission cuts are too high, and that the technologies they have analysed – including stratospheric aerosol insertion and marine cloud whitening – are unproven.

In recent weeks, ScottishPower has switched on a prototype carbon capture test unit at its Longannet power station, marking the first time that carbon dioxide has been captured from a working power station in the UK. Doosan Babcock also recently opened a test facility to demonstrate its OxyCoal system on a 40 MW burner.

In Germany, RWE and its partners Linde and BASF have officially inaugurated the country's first carbon dioxide scrubbing plant, a ¤9 million project that the company hopes will bring it one step closer to the commercialization of CCS.

Iberdrola-owned ScottishPower has also welcomed Shell and National Grid to its consortium that is bidding to win funding from the UK government to demonstrate CCS on a commercial scale. E.On, which is also participating in the UK government's CCS competition with a proposal for its Kingsnorth power station, has applied for financial support from the European Energy Programme for Recovery for the development of a CCS plant at Kingsnorth.

These companies face several barriers to the successful development of CCS systems, including technical challenges, a lack of regulation and public concerns over the safety of long-term carbon dioxide storage. They argue that most of these can be overcome through demonstrations of the kind underway or planned, but this requires large upfront investments.

Although the companies are unwilling to shoulder the costs alone and are relying on government assistance as well as calling for greater regulatory clarity for CCS, they hope that they will reap the benefits of their investments in years to come.

The Scottish government is also hoping that the depleting oil and gas reservoirs of the North Sea will be of considerable economic benefit.

Sicily maps out development plan

- 400 MW of renewable capacity
- Permit issued for LNG terminal

The Italian island of Sicily could see investments of ¤1 billion over the next four years in the construction of renewable energy capacity after its government signed an agreement with Enel.

The Protocol of Understanding paves the way for the development of the island's power sector and is designed to help the region of Sicily and Enel find ways of producing energy at lower cost and with reduced environmental impact. It also allowed Sicily to issue the authorization decree allowing Enel to build and operate a new LNG terminal on the island.

The agreement calls for Enel to improve the environmental performance of its existing power plants on the island, and to develop up to 400 MW of renewable energy capacity over the next four years.

Enel operates five thermal power plants with a combined capacity of 2486 MW in Sicily, as well as nine hydropower plants with a total capacity of 714 MW. The company says that it will invest around ¤70 million between 2009 and 2013 to maximize the plants' efficiency.

The region of Sicily says that it will process quickly the applications that Enel makes for new renewable power plants, the majority of which will be wind or solar. The two organizations will also develop action plans to modernize public buildings, install photovoltaic rooftop technology and mini-wind systems, and improve energy efficiency.

UK banks to boost wind projects

Onshore wind farm projects in the UK that have been hit by the credit crunch could receive financial help to get development underway under a UK government-led initiative.

The UK's Department of Energy and Climate Change (DECC) has asked three UK-based banks to work together with the European Investment Bank (EIB) to lend up to £1 billion to onshore wind farms over the next three years. The government is also offering grants for the development of offshore wind technology.

The three banks – RBS, Lloyds and BNP Paribas Fortis – were teamed up with the EIB with the aim of getting the construction of mainly small and medium-sized wind farm projects underway. The initiative is part of plans in the UK for a massive expansion of renewable energy and a transition to a low-carbon economy.

"The European Investment Bank funds will help the building start on consented wind farms that could provide 1 GW of electricity, enough to power more than half a million homes," said Energy and Climate Change Secretary Ed Miliband. "The money for the development of offshore wind manufacturing will help us generate green jobs on top of our success as the leading country in the world for the generation of offshore wind.

"Alongside these proposals, we are reforming planning laws, finding new ways of working with local communities and are determined to persuade people that we need a significant increase in onshore wind as part of the UK's future energy mix."

Determined: Ed Miliband, Energy and Climate Change Secretary

UK proposes smart grid incentives

Electricity distribution companies in Great Britain will be given strong incentives to trial advanced smart grid technologies and prepare their networks for low-carbon technologies under new proposals from the country's regulator, Ofgem.

The plans form part of Ofgem's proposals for price controls for the period of 2010-2014 and include a new £500 million Low Carbon Networks Fund to support full-scale trials of advanced technologies. The distribution companies would also be encouraged to reduce their own environmental impact and make it easier for consumers to be more energy efficient.

The five-year price review also proposes a 25 per cent increase in investment to update the country's existing electricity distribution networks that were largely built in the 1950s and 1960s. The £6.5 billion investment proposal for the five-year period would cost the average domestic consumer around £4 extra per year, says the regulator.

"The companies need to adapt to the needs of a low-carbon economy," said Ofgem CEO Alistair Buchanan. "Greater use of electric vehicles, home-grown generation and other developments will demand radical change in the way networks are designed, managed and operated. Measures like Ofgem's £500 million Low-carbon Networks Fund will enable the companies to explore new technical and commercial routes to a low-carbon future."

According to Ofgem, the most significant way that the distribution companies can reduce their own environmental impact is by reducing the electricity that is lost on the distribution network. Electricity lost from their networks is equivalent to the amount used each year by six million average households and accounts for 1.5 per cent of Britain's total greenhouse gas emissions.

MENA set for growth

- Economic growth will drive energy demand
- Al Dur finance closed

Siân Crampsie

The economies of the Middle East and North Africa (MENA) are set to see continued strong economic growth in the next few years and will need to continue attracting private investors in order to keep pace with projected electricity demand growth.

According to recent analysis by the Economist Intelligence Unit (EIU), economic and population growth – particularly in the Gulf Cooperation Council (GCC) countries – will drive energy demand. It is expected that the GCC region will need to invest $50 billion in power generation capacity between 2009 and 2015.

The GCC consists of Bahrain, Kuwait, Qatar, Oman, Saudi Arabia and the UAE and has an installed power capacity of 75 000 MW. With electricity demand growing at an annual rate of 9.5 per cent, an additional 55 000 MW of capacity will be required by 2015, says EIU.

The EIU's analysis indicates that the national annual peak demand for electricity in the UAE is likely to be 40 858 MW by 2020, an increase of 162 per cent over current levels.

In spite of the economic crisis – which has hit parts of MENA's economies – the region is continuing to attract investment for key infrastructure projects.

At the end of July, GDF Suez and Gulf Investment Corporation (GIC) announced that they had completed the limited recourse financing of the $2.1 billion Al Dur independent water and power project (IWPP) in Bahrain in spite of the "adverse conditions" brought of the financial crisis. It is the first major finance agreement to be finalized in the Gulf this year.

Al Dur is the largest privately-owned industrial project in Bahrain and the Kingdom's third IWPP to be developed. The government of Bahrain awarded GDF Suez and GIC the contract to develop the plant in August 2008, and the two partners had to put in place a short-term financing solution to keep the project afloat.

"The success of this major finance agreement, the first to be finalized in the Gulf this year, is strong evidence of the confidence of the banking community in the strength of the consortium and the economic development of Bahrain," said Guy Richelle, CEO of GDF Suez Energy Middle East-Asia & Africa. "We are proud that together with GIC, we have been able to contribute to the timely completion of the project by providing the interim financing and the necessary guarantees in a time of significant uncertainty, which is a strong testimony to our respective commitment to the Kingdom of Bahrain and to the region."

Five prominent organizations have joined the project as new shareholders, although GDF Suez will remain the largest shareholder with a 45 per cent stake. In addition to GIC, the French firm's other partners are Social Insurance Organization of Bahrain, Instrata Fund, Capital Management House, Bahrain Islamic Bank and First Energy Bank.

A syndicate of 20 international and regional commercial and Islamic banks, in addition to the Export-Import Bank of the United States, is participating in the $1.6 billion loan. US Exim Bank is expected to contribute $229 million to the financing once its contribution has been approved by the US Congress.

The Korean Export Insurance Company provided commercial and political risk cover for part of the financing.

The project is now 30 per cent complete and is on schedule to achieve full operation in mid-2011, says GDF Suez.

Turkey considers Russian bid

Turkey is set to make a final decision this month on the tender to construct its first nuclear power plant after continued negotiations with the sole bidder for the project in August.

In the latest round of talks with the Russian-led consortium that placed a bid for the project, Turkey has proposed that it takes a stake of up to 25 per cent in the plant. The government has also declared its support for the Russian-backed South Stream gas pipeline and the two countries also look set to sign a nuclear cooperation deal.

The consortium, led by Gazprom-controlled Atomstroyexport, was the sole bidder in the tender, which was held last year. It has already lowered its bid in response to a request from Turkey's government, but Turkish officials say that the price is still too high.

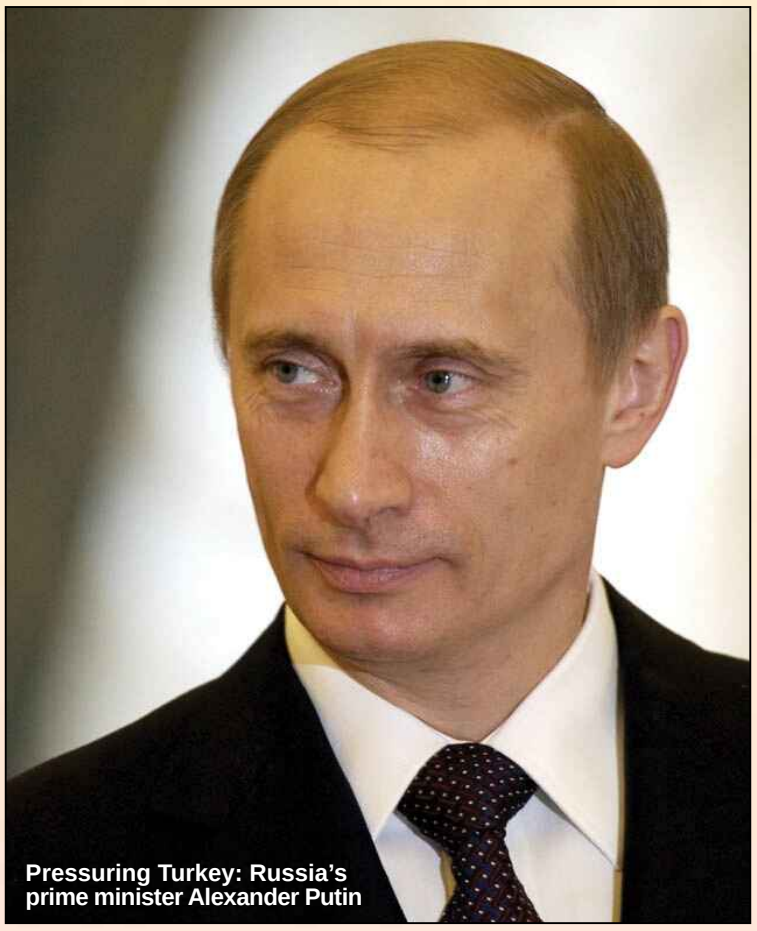
The consortium also includes Turkish firms.

Moscow is now pressuring Turkey to accept the bid, which would see the construction of a 4000 MW nuclear power plant near Mersin on the Mediterranean coast. Turkey says it will buy the electricity from the plant for a period of 15 years.

Analysts have expressed concerns over the legality of the tender, and over the potential for Turkey to become over-reliant on Russia for energy.

In a separate move, Turkey and Georgia have announced plans to build a 1000 MW power line in order to improve the exchange of electricity between the two countries.

The $140 million, 155 km-long line is expected to be completed in 2012. Around 130 km of the line will be built in Turkey and 25 km in Georgia.


Pressuring Turkey: Russia's prime minister Alexander Putin

Zimbabwe in funding plea

The government of Zimbabwe is hoping to attract investment to beef up its transmission network, but its plans may fall foul of the political and economic instability in the country.

Zimbabwe wants new electricity transmission lines connecting South Africa with Zambia, Mozambique and the Democratic Republic of Congo to run through its own territory, a move that would not only boost its own transmission network, but would also provide an outlet for three planned power stations in the country.

International investors are wary of Zimbabwe's political instability and fellow members of the SADC are thought to be considering alternative transmission routes, according to reports from a July roundtable discussion of SADC Power Sector Investors. An existing transmission line connecting South Africa with power plants in Zambia, DR Congo and Mozambique through Zimbabwe has a capacity of 320 MW but can now carry less than 50 MW due to a lack of maintenance.

Power plants being planned in Zimbabwe include the 1400 MW Gokwe North coal fire plant, the 600 MW Hwange expansion project and the 300 MW Kariba hydropower plant.

Mozambique is planning to build a transmission line running directly from the Cahora Bassa hydropower plant to South Africa, while Zambia is planning to build a line through Botswana to South Africa, with a junction to Zimbabwe and Namibia.

Israel provides IPP fall-back

- Guarantee to new projects
- IEC calls for delay to reforms

Israel's government says that a new policy to guarantee payments to private power producers will pave the way for the construction of new generating capacity over the next three years.

The country's Ministry of Finance says that in order to meet the needs of the growing economy, the government will cover payments to private power producers if Israel Electric Corporation (IEC) defaults. The arrangement will help project developers to secure financing, but will only be available for 30 months.

Israel has targeted the construction of 2000 MW of new generating capacity over the next three years, and is also planning to privatize the electricity sector. The Ministry of Finance says that the new arrangement does not derogate IEC's obligation to pay power producers nor exempt it from legal action for non-payment.

IEC has also asked the government to postpone the timetable for the privatization of the country's power plants, according to local news sources.

The company believes that the privatization programme – part of the sector's planned wider reforms – requires the generation sector to undergo a comprehensive restructuring and that the current timetable is unrealistic.

The government envisages the creation of between four and six generation companies, which will then be listed on the stock exchange by 2015.

Manufacturers feel effects of recession despite profits rise

Continued order decline expected
GE earnings halved in Q2

Siân Crampsie

Siemens says that its Energy Sector business has shown its competitive strength through a substantial rise in profits and revenues for the third quarter.

However, the success of the energy group in the third quarter is set against a sharp decline in profits and revenues for the Siemens group as a whole. Siemens CEO Peter Löscher warned that the energy business would soon feel the effects of the recession, due to a decline in orders.

The German engineering firm says that profits at Siemens Energy rose to ¤863 million, a 40 per cent increase over the third quarter of 2008. Revenues at the business unit increased ten per cent over Q3 2008.

In the third quarter, Siemens' profits at its three main divisions – healthcare, energy and industrial – fell by 21 per cent year-on-year to ¤1.7 billion. Revenues were down by four per cent year-on-year and order intake dropped 28 per cent.

Siemens says that the strong performance of its energy group is largely down to economies of scale, improvements in project execution and an improved business mix. Conversion of the sector's long-cycle order backlog produced double-digit rises in revenue in Asia, Australia, Europe and CAME (Commonwealth of Independent States, Africa and Middle East).

Large contract wins for offshore wind farms at Siemens' renewable energy division also had a positive impact on performance. The fossil power generation division was the top profit contributor in the company, with profits at ¤347 million, up 64 per cent year-on-year.

The Siemens energy sector order backlog remains at ¤48 billion, although the division's orders in the third quarter declined by 15 per cent compared to the same quarter in 2008. This is largely due to the economic recession and the financing environment, which have led to the postponement of new projects.

Peter Löscher: carefully considering the challenges ahead

"We again did particularly well compared with our most important competitors," said Löscher. "As expected, the macroeconomic environment clearly left its mark on new business. We had already prepared for that ahead of time. We are also carefully considering the challenges ahead."

In July Siemens' main rival GE reported a halving of 2009 second-quarter earnings compared with the same quarter in 2008. Revenues fell 17 per cent to $39.1 billion.

GE's performance is in line with expectations and CEO Jeff Immelt said that the firm is positioning GE to "win in a reset economy" by "aggressively controlling costs and driving working capital improvements while continuing to invest for future growth".

Siemens is currently in the midst of a plan to shed more than 17 000 jobs worldwide and cut ¤1.2 billion in administrative costs by 2010.

NHPC sale has strong response

India's government could be persuaded to fast-track the divestment of publicly-owned companies after the initial public offering (IPO) for utility National Hydroelectric Power Corporation (NHPC) was subscribed more than 23 times.

The strong response to the IPO mirrors that of private Indian utility Adani Power, which raised around $630 million with a public issue that was more than 20 times subscribed.

The Indian government, which controls NHPC and which is selling a five per cent stake, is hoping to raise around Rs60 billion ($1.3 billion) from the issue. Some Rs40 billion will be reinvested in the company and the remainder used to help fund India's growing fiscal debt.

The government is also planning to divest around ten per cent of its majority holding in Oil India.

The popularity of the NHPC shares on offer means that the deal is likely to be priced at the higher end of its indicated range of Rs30-36 per share.

GE buys offshore wind technology

GE Energy is expanding its wind turbine product portfolio through the acquisition of ScanWind from Swedish firm Morphic Technologies.

The SEK130 million ($18.3 million) deal is expected to close this month and will allow Morphic to focus on its core businesses as well as enable GE to offer its customers a direct drive offshore wind turbine.

ScanWind was created in 1999 and produces 3.5 MW wind turbines suitable for offshore and coastal onshore locations.

"This acquisition will give GE the ability to provide a direct drive, offshore wind turbine offering as an option to our customers. Scanwind represents the next strategic fit for our wind turbine line and we look forward to further developing their proven technology," said Victor Abate, Vice President, Renewables for GE.

GE's existing wind product line consists of turbines in the 1.5, 2.5 and 3.6 MW class. While the 3.6 MW unit is suited to high wind speed sites, including offshore applications, the acquisition of ScanWind could help the firm to make inroads into Siemens' dominant position in Europe's offshore wind turbine market.

Thüga sale cuts E.On debt

Municipal network to be sold
New markets boost results

E.On will be able to pay down its large debt pile following a deal to sell Thüga, its network of German municipal utilities, for ¤2.9 billion.

The German energy giant has reached agreement with two consortia – Integra and KOM9 – to sell Thüga, which owns 90 minority stakes in utilities across Germany and is the country's largest network of municipal utilities. It has decided to sell separately its stakes in four other local utilities.


Johannes Teyssen: to succeed Wulf Bernotat as E.On chief executive

The sale is in line with E.On strategy to divest around ¤10 billion in assets by the end of 2010 in order to reduce debt and fund expansion. Major recent investments in new markets such as Italy, Spain and Russia have increased its net debt to ¤47 billion, but also played a key role in its strong first-half results for 2009.

In 2008 Thüga supplied natural gas to around 2.9 million customers and electricity to 3.5 million and generated sales of ¤16.4 billion.

E.On expects to close the deal this year after consent is given by the German Federal Cartel Office. It then plans to sell its stakes in GASAG Berliner Gaswerke AG (37 per cent), HEAG Südhessische Energie AG (40 per cent), Stadtwerke Duisburg (20 per cent), and Stadtwerke Karlsruhe (10 per cent).

E.On recently announced that it has appointed Johannes Teyssen, the company's deputy CEO, to succeed Wulf Bernotat as chief executive next year. Teyssen, 49, will take over on May 1, 2010.

Bernotat, 60, announced earlier this year that he would step down when his contract expires at the end of April. He has led E.On since 2003.

Utilities hit by drop in demand

Utilities from across Europe and North America have reported that declining demand for energy has affected fiscal performance.

Iberdrola, Dong Energy, Vattenfall, Centrica and Endesa have all reported significant falls in profits in their latest financial results. Similar results have been reported by some US utilities.

Iberdrola said in July that a sharp decline in domestic demand combined with lower prices resulted in a 23 per cent drop in first half profits, with weaknesses noted across all of its main markets, including the UK, USA and Latin America. In Spain, wholesale electricity prices have fallen by over 32 per cent year-on-year.

Dong Energy CEO Anders Eldrup said that the financial crisis "has taken a firmer hold", with declining energy prices and energy consumption contributing to a fall in net profits to DKK617 million ($118 million) for Q2 2009, compared to DKK1.83 billion for the same period in 2008.

Vattenfall has posted a 36 per cent drop in second quarter earnings for 2009 in spite of a 20 per cent rise in sales. Profits fell to SKR2.5 billion in the quarter, down from SKK3.8 billion in 2Q 2008.

A slump in demand for electricity has also hit US utilities, including New York utility Con Ed, whose second quarter profits fell by 73 per cent year-on-year. Duke Energy, one of the largest producers of electricity in the USA, reported a 21 per cent fall in second quarter net profits.

German utility E.On has bucked the trend, however, reporting that its second-quarter net profits rose by 110 per cent year-on-year. The company earned ¤1.9 billion in the April-June period, boosted by changes in foreign exchange rates and the divestment of assets.

Americas

SCE, First Solar sign deal

Southern California Edison and First Solar have signed an agreement to build two large-scale solar power projects in California.

The two installations – in Riverside and San Bernardino counties in southern California – will be among the largest of their kind and could be on-line by 2015. The two facilities will use thin-film photovoltaic (pV) solar modules, with First Solar responsible for engineering, procurement and construction.

The two projects are the 250 MW Desert Sunlight plant near Desert Center and the 300 MW Stateline plant in northeastern San Bernardino County. Pending network upgrades and government permits, construction is scheduled to begin in 2012 and 2013, respectively.

First Solar has also announced a contract with the Los Angeles Department of Water and Power to build a 55 MW thin film pV solar power project in Imperial County, California.

Siemens wins Flex-Plant contract

The Northern California Power Agency (NCPA) has awarded Siemens a contract for the supply of a 280 MW natural gas fired combined cycle power plant with fast-start capability.

Under the $140 million contract, Siemens will supply a Flex-Plant 30 power island, which will be able to supply 200 MW of power to the grid within 30 minutes. The plant will serve the needs of 14 different entities in the region, including several cities and the Port of Oakland, Bay Area Rapid Transit and the State of California Department of Water Resources.

ABB wins order for world's longest power link

The Abengoa Group has placed orders with technology and engineering firm ABB for the delivery of key technology for the world's longest HVDC power transmission link.

The 600 kV transmission 'highway' will link two new hydropower plants in the northwest of Brazil with São Paulo, Brazil's main economic centre – a distance of over 2500 km.

The orders are worth over $540 million, says ABB, which will provide two 3150 MW HVDC converter stations, and an 800 MW HVDC back--to-back station to transmit power to São Paulo and the alternating current network in the northwest of the country. The stations are scheduled for completion in 2012 and are a part of the government's Accelerated Development Programme (PAC).

SPX to design Brayton Point towers

US engineering firm SPX has been awarded a contract in excess of $30 million to design two natural draft cooling towers for the Brayton Point power station in Massachusetts, USA.

The new cooling system will be designed to reduce the amount of water that the 1600 MW power plant – owned by Dominion Generation – draws from Mount Hope Bay to cool its four generating units.

Asia Pacific

Alstom and Andritz support Bhutan

A consortium consisting of European firms Andritz Hydro GmbH and Alstom has signed a contract to supply key equipment for a new hydropower plant in Bhutan.

The Dagachhu Hydro Power Corporation has awarded the Austrian Hydro Consortium Dagachhu a ¤55 million contract to supply generators, turbines, hydraulic steelwork and the entire electrical system for the 124 MW project in the southwestern district of Dagana. The power station, which will operate under a head of 304 m, is due to start operating in 2012.

The project marks a milestone in the development of Bhutan's hydropower potential and of its electricity sector, which earns the country a large portion of its national income through exports to India.

Hyundai orders wind equipment

American Superconductor Corp (AMSC) has received an order from South Korea's Hyundai Heavy Industries Co (HHI) for 17 sets of full wind turbine electrical systems.

HHI will use the electrical systems in 1.65 MW wind turbines that it will produce under a license from AMSC's wholly-owned subsidiary AMSC Windtec. The electrical systems include core electrical components such as power converters, pitch and yaw converters, Scada (supervisory control and data acquisition) systems and other power electronics.

HHI installed and commissioned its first reference 1.65 MW wind turbine near its manufacturing facility in Ulsan, South Korea in June 2009. The company plans to begin shipping wind turbines to customers by the end of 2009.

T3000 sees success in China

Siemens Energy and its joint venture partner Shanghai Electric Power Generation Equipment Co. Ltd. have received an order for delivery of a SPPA-T3000 I control system as well as gas turbine components for a new LNG-fuelled combined cycle power plant in China.

The new 4 x 400 MW Shanghai Lingang power plant is being developed by Shenergy Company Ltd and is due to be completed in 2011. It will provide peak load regulation for the Shanghai power grid.

In addition to the control system, Siemens will supply the components for four SGT5-4000F units. The T3000 I system is currently installed in 18 power plants in China, says Siemens.

Vestas wins at Waterloo

Roaring 40s Renewable Energy, a partnership between China Light & Power (CLP) and Hydro Tasmania, has awarded Vestas a contract to supply 37 wind turbines for the Waterloo project in South Australia.

The order is for Vestas' V90-3MW wind turbine units as well as a Scada system. Vestas, which has previously supplied Hydro Tasmania with equipment for three wind farms, is planning to ship the turbines in the fourth quarter of 2009.

BHEL secures plant package

Jindal India Thermal Power Limited (JITPL) has placed an order with Indian power engineering company Bharat Heavy Electricals (BHEL) for the main plant package for a new thermal power plant in India's Orissa state.

The INR26 billion ($537 million) order includes the supply of two 600 MW units, which will be installed at the Greenfield power project at Derang, Angul district. BHEL's scope of work includes the design, engineering, manufacture, supply, erection and commissioning of steam turbines, generators and boilers, along with associated auxiliaries and electricals, plus control and instrumentation equipment and electrostatic precipitators.

Vietnam signs up foreign contractors

The Vietnam Machinery Erection Corporation (Lilama) has signed contracts with companies from the Republic of Korea, Japan and Singapore for the supply of equipment for a new thermal power plant in Vietnam's central region.

Hyundai Engineering Co. Ltd., Toshiba-Sojitz Corporation and Yokogawa Engineering Asia Pte Ltd. have all sealed deals for work relating to the development of the Vung Ang I plant in Ha Tinh province.

The plant is being developed by Lilama on behalf of the Vietnam National Oil and Gas Group (PetroVietnam). It has a design capacity of 1200 MW and is due to start operating in August 2012.

Europe

Voith Hydro wins Spanish contract

Spanish utility Iberdrola has awarded Voith Hydro a ¤24 million contract to supply a Francis turbine, a vertical generator and a 32 m-long steel liner for a new hydropower plant.

The San Esteban II plant will be built on the Rio Sil and with a capacity of 177 MW, will supplement the capacity of the existing San Esteban hydropower plant. The new plant will be commissioned at the end of 2012.

TVO awards electrical upgrade

Technology firm ABB has been awarded a contract by Finland's TVO to provide an electrical upgrade at the Olkiluoto 1 and 2 nuclear power plants.

The upgrade will help to enhance reliability at the plant and is part of TVO's long-term development plan for the facility.

ABB will replace the low-voltage switchgear and supply a range of power products including the MNS switchgear, high efficiency Resibloc distribution transformers and busbar systems. It will also be responsible for dismantling the old equipment, as well as installing and commissioning the replacement solutions during scheduled annual maintenance outages.

New CSP planned for Spain

Sunstroom Energy Investments says that it is planning to build a 50 MW solar thermal electricity plant in the Extremadura province of Spain and is aiming to raise over ¤300 million to fund the project.

The Thermostroom solar thermal park will be built in Saucedilla, Caceres, and will cover a surface area of 271 hectares. It will use concentrating solar power (CSP) technology, which uses parabolic mirrors to capture heat from the sun. The stored heat is used to raise steam to drive a turbine to produce electricity.

Sunstroom, a developer and operator of renewable energy plants, says that construction of the plant will take 24 months.

Malta plans for smart grid

Enemalta Corporation has placed an order with ABB for a network management system that will help monitor and control Malta's electricity supply network and provide a foundation for the evolution of a smart grid.

ABB will implement an integrated network manager Scada solution to monitor and control the power stations and substations on the island of Malta. The project scope includes design, engineering, installation, commissioning and a three-year service agreement.

The project will be executed by IBM and ABB for Enemalta Corporation, an integrated government utility responsible for the operation of the power generation, transmission and distribution network in Malta.

International

SEC orders ABB equipment

Saudi Electricity Company (SEC), Saudi Arabia's national power transmission and distribution utility, has placed orders worth $60 million with ABB to improve the power efficiency of 28 distribution substations.

Under the deal, ABB will provide power factor correction for 19 substations in central, southern and northwestern provinces, and for nine substations in and around the capital, Riyadh. Products to be supplied include capacitor banks, reactors, medium voltage switchgear, protection and control equipment, and a SCADA system to help the utility manage the flow of power in the network.

The projects are expected to be completed by 2010.

CEZ launches Temelin tender

Czech utility CEZ has launched a public tender for the selection of a contractor for two new nuclear power units at the Temelin complex.

The company has specified the use of pressurized water reactor technology for the project, and is also planning to select a contractor that will be able to help it to build other nuclear power plants around Europe. The new units will be able to use some of the existing infrastructure at the Temelin site.

CEZ said the tender is the culmination of a two-year comprehensive analysis of the Czech Republic's future power options.

Companies vie for Mchuchuma

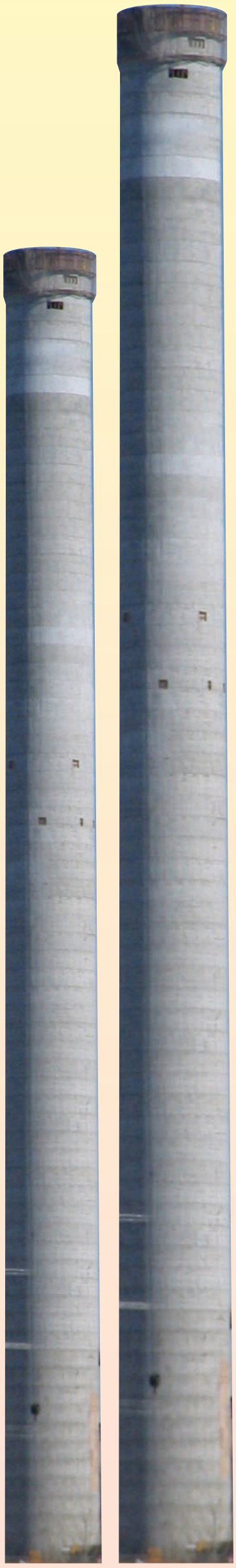
Up to 48 local and international companies have expressed an interest in participating in the development of the Mchuchuma coal and power plant project in Tanzania, according to the country's National Development Corp (NDC).

The NDC says that the Tanzanian government is in the process of selecting investors to develop the project, which consists of a coal mine and a 400 MW power plant. A 200 km high voltage power line will also be constructed linking the project with the national grid.

The project will help to meet rising energy demand caused by the expansion of Tanzania's gold mining sector.

Marafiq, Hanwha sign contract

Saudi Arabian utility Marafiq and South Korea's Hanwha have signed a SR2.7 billion ($720 million) contract for the development of two new power plant units in Yanbu, Saudia Arabia. The combined generating capacity of the two units will be 500 MW, increasing Marafiq's installed capacity to 1500 MW. The first unit is scheduled to start commercial operation by May 2012 and the second two months later.



The new risk management imperative

The financial impact of getting risk management wrong can be huge. The collapses of some of the leading players in the financial and energy markets are a testament to how easy it is for even the biggest names to fall from grace.

Michael Schwartz

Ask 10 people about the future of the commodities and energy markets and you will get 10 different responses. The long-term economic consequences of government bail-outs and stimulus packages are far from clear, and predictions about what will happen to prices vary enormously.

However, among these huge uncertainties, there are several things of which we can be sure. Firstly, commodity price volatility is here to stay. Crude oil prices surged in July 2008 to a record $145 a barrel and then dropped to about $33 in December. Today, oil trades around $70 a barrel. In 2008 alone, we saw three or four '100-year risk events,' and we are almost certainly going to see more of these extreme events that are simply outside of normal expectations.

Secondly, the recession has made everyone take a closer look at credit. Credit risk managers used to triage potential counterparties into three groups – definite yes, definite no and everyone in between. Now there is no chance that a potential counterparty will be automatically accepted – everyone is either rejected or sent for assessment. The profile of the credit department has risen and it is not going to sink any time soon.

Finally, the markets will be more closely regulated. The precise form of regulation is still being worked out, but there is no denying the growing importance of accounting standards that require additional transparency into valuations and accounting methods such as IAS (International Accounting Standard) 39, FAS (Financial Accounting Standard) 133, FAS 157 and FAS 161.

We are now entering a period in which enterprise risk management will determine who survives and who perishes in this new, harsher environment. Leading analyst firm, Gartner, has backed up this scenario by developing its first ever Magic Quadrant for energy trading and risk management software. This is a clear indication that energy and commodities firms should take a serious look at how they could transform their operations by investing in more sophisticated enterprise systems and moving away from using a complex web of disparate software solutions and spreadsheets.

Corporations whose business processes lack transparency are at substantial risk without even knowing it. There is no escaping the fact that trading is a complex process. The workflow of a single trade crosses several departmental boundaries including trading, credit, scheduling, risk management, hedge accounting and settlement and touches multiple systems. Of course, while everyone does their best to co-ordinate across the organisation, it is almost impossible and hugely time consuming to navigate the tangled web of systems and spreadsheets. The problem is that when individual departments become isolated, their stovepipes of data and uncommunicative systems make it impossible to get a clear picture of the corporation's global exposure. Consequently, firm-wide risk is substantially increased.

Any firm that is serious about succeeding in this complex environment needs to deploy a real-time enterprise trading and risk platform that can manage the four key risk areas set by the Committee of Chief Risk Officers: market/price risk; operational risk; regulatory risk and counterparty credit risk. This creates a seamless risk management process that is no longer dependent on a patchwork of individual spreadsheets. Instead, all departments and risk areas are integrated into a single, highly functional system that creates useable information for proactive decision-making.

However, a recent CommodityPoint survey of energy and commodity executives discovered that 70 per cent of companies are using spreadsheets or internally assembled systems to manage risk. At the same time 60 per cent of the companies surveyed felt the need to upgrade their credit risk systems to manage counterparty risk effectively in the current business environment.

Indeed, Triple Point Technology's discussions throughout the industry indicate that spreadsheet dependency is still a huge problem. One individual explained: "Many systems don't automatically interface with each other and we have to manually re-enter data that already exists in one system… " Another said: "We use multiple systems to perform a specific function and the reconciliation of separate systems wastes a lot of time." While another said: "We rely heavily on spreadsheets… many times we use our enterprise solutions as just the system of record."

This type of evidence is supported by more comprehensive research on the accuracy of spreadsheets. A University of Hawaii study showed that 91 per cent of audited spreadsheets contained errors. KPMG has found that 78 per cent of models had no formal quality controls, with errors in terms of inputting, logic, interface and cell range.

And that is just research based on fairly basic, uncomplicated spreadsheets containing relatively straightforward data. Imagine the level of errors contained in highly complex spreadsheets containing curve management, complex pricing formulas and detailed physical supply chain schedules as used in the energy and commodities trading business.

The potential consequences in terms of risk and compliance issues can be huge. Firms that rely solely on spreadsheets are likely to be basing key decisions on out-of-date or incorrect data. If spreadsheet culture was dangerous two years ago, it is absolutely lethal now.

Focussing on risk management: Triple Point Technology's Michael Schwartz

Firms that rely solely on spreadsheets are likely to be basing key decisions on out-of-date or incorrect data. If spreadsheet culture was dangerous two years ago, it is absolutely lethal now

The demise of former masters of the energy universe is a testament to how easy it is for even the biggest names to fall from grace. Constellation Energy provides us with a terrifying example. In August 2008, the US power producer destroyed its reputation for rigorous risk management by revealing it had made an accounting error and underestimated its potential liabilities in the event of a ratings downgrade. Following its announcement, Constellation's credit rating was summarily downgraded by two ratings agencies.

Constellation's size and apparent dependence on multiple lines of credit from various banks that were either faltering or sinking created a perception that it was at risk. Despite the firm's efforts to reassure investors of its excess liquidity, strong balance sheet and solid commodities-trading business, it was sucked into the vortex of Lehman Brothers' death throes. Over a three-day period in September 2008, Constellation's stock shed almost 60 per cent of its value.

Yet some companies have yet to learn the lessons so powerfully illustrated by these high profile cases. Instead of managing risk in a holistic fashion, based on consolidated, auditable data from across the organization, businesses are continuing to rely on error-prone and flawed processes that perpetuate yet more inaccurate data.

What is more, all necessary data should be collated into a management dashboard to provide executives with an accurate picture of the company's exposure at all levels, enabling them to measure performance against any given set of key performance indicators.

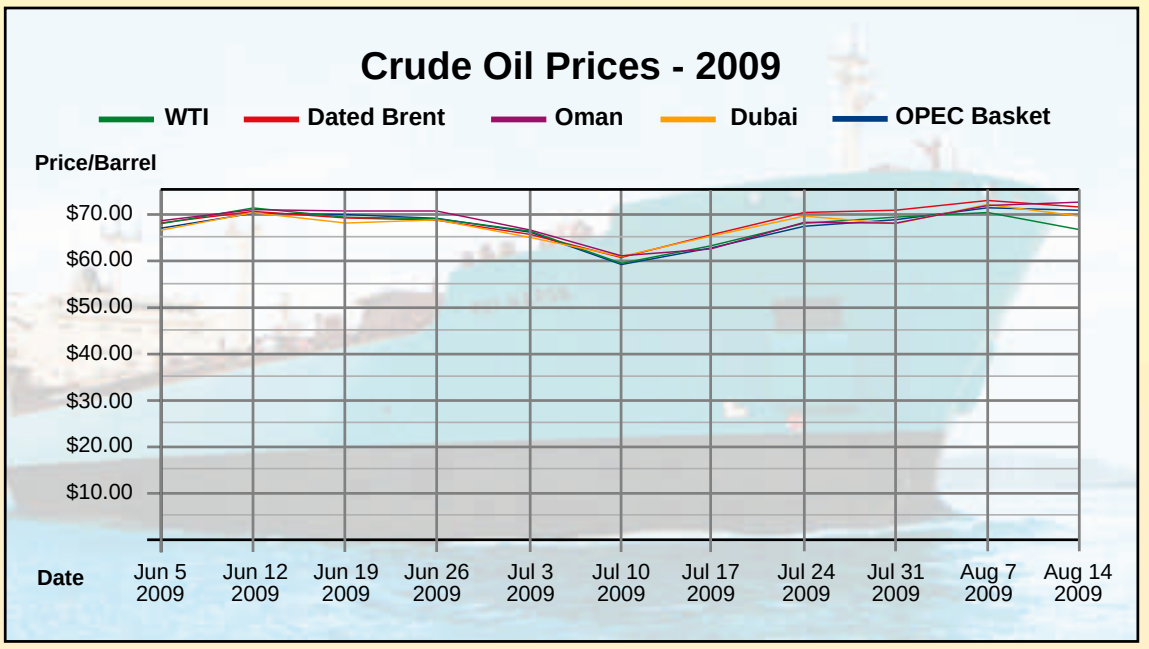
In this day and age, every commodities business should have substantially increased focus on risk and risk management. Many organisations have already invested in managing market risk, through the deployment of ETRM or specialist commodity trading platforms. They now need to protect that investment with fully integrated enterprise systems that manage all aspects of credit, regulatory and operational risk with automation, accuracy and auditability.

The financial impact of getting risk management wrong can be huge. The collapses of some of the leading players in the financial and energy markets are a testament to how easy it is for even the biggest names to fall from grace. Yet many companies have still not embraced the imperative for integrated, enterprise risk management. They fail to do so at their own peril.

Michael Schwartz is the chief marketing officer at Triple Point Technology, a global provider of trading and risk management solutions for commodities including power, oil, gas, coal, metals, agricultural products, freight and biofuels.

Oil

Crude stays in $70/b range despite high inventories



Opec unlikely to consider further production cuts

Oil consumption outside OECD could be recovering

David Gregory

The price of West Texas Intermediate crude oil stayed close to the $70/b mark for most of last month, and during that time Brent reached as high as $74/b. Analysts attribute these prices to speculative trading, which continues to anticipate a timely improvement in the global economy despite data that looks promising one day, but unsubstantiated the next.

Oil market fundamentals continue to show that abundant supplies of crude remain on the market, while demand has yet to improve to the point that it begins to make a significant reduction on stocks. Demand is expected to pick up as 2009 moves to a close and 2010 promises improved economic conditions, but for now the $70-75/b range continues to a puzzle those who closely study the numbers.

But this sits fine with Opec, which has over the course of the last year made it clear that a price of $75/b would best suit its own plans, allowing it to proceed with production capacity expansion projects that will allow it to meet future demand and avoid shortages that could occur if the projects are not carried out as a result of poor financing.

Kuwaiti Oil Minister Shaikh Ahmad al-Abdullah al Sabah said in mid-August, with prices at around $70/b, that it is unlikely that Opec would consider further production cuts during its next scheduled meeting in Vienna on September 9. "Kuwait is happy with the current output. The current price is not bad at all," he said on August 19.

Eleven of Opec's 12 members, agreed last December to cut their production to 24.845 million b/d as of January but over the first half of 2009, the best that the Opec-11 (excluding Iraq) has been able to do is achieve 80 per cent of that target.

During July, the Opec-11 (excluding Iraq) produced some 26.07 million b/d, putting the group 1.226 million b/d over its 24.845 million b/d target, and including Iraq, total Opec production for the month is estimated at around 28.641 million b/d.

In its August report, the International Energy Agency (IEA) said its latest data suggests a relatively quiet time in terms of OECD oil demand – with prevailing weakness remaining the key feature. "All told, European demand contraction widened to 0.9 million b/d in the second quarter of 2009, and the US gasoline season now seems to have fizzled out before getting started," the IEA said.

It added, that by contrast, Chinese demand rebounded during the second quarter, underpinning the 100 000-200 000 b/d revision that the IEA made in its projected global demand.

Following revisions from the previous report, the IEA projected global oil demand at 83.94 million b/d for 2009 and 85.25 million b/d for 2010. It forecast the call on Opec crude for 2009 at 27.7 million b/d and 27.8 million b/d in 2010.

The Energy Information Administration (EIA) of the US Department of Energy said in its last monthly report that the oil market "continues to be defined by the tension between optimism over the perceived recovery of the global economy on the one hand and persistently weak global consumption of crude oil and other liquid fuels on the other." It added, however, that oil consumption outside the OECD countries could be recovering.

The EIA said it expects the price of WTI crude to stay at around $70/b during the fourth quarter of 2009, about $27/b above the first quarter average. It forecast a 2010 price for WTI at around $72/b.

Meanwhile, the London-based Centre for Global Energy Studies (CGES) said in the August edition of its *Monthly Oil Report* that "global oil demand has collapsed," adding that Opec production is "creeping up" and that the prospects for global economic recovery remain uncertain.

Yet it noted that crude prices have doubled since the start of the year and have risen by 20 per cent alone during the last month – although this is not justified by oil market fundamentals. CGES attributed the rising price of crude to "so-called investors on the futures market, who are bidding up prices based on expectations of economic recovery."

It noted that China's oil imports had soared during the second quarter into July but it said the price surge may be "running out of steam," as Chinese commodity purchases have slowed as prices have risen. "If China's oil imports begin to flag, as seems to be happening, this support for oil prices is likely to disappear as quickly as it materialized," the CGES said, adding: "If this happens, the bullish sentiment for futures market players could prove short-lived, bringing to an abrupt end the recent surge in oil prices."

Gas

Santos, GDF Suez deal highlights Australian LNG potential

The recent deal between Australia's Santos and GDF-Suez highlights the importance of Australia's LNG sector to international energy companies.

Mark Goetz

Santos Ltd, Australia's third-largest oil and gas producer, announced in mid-August that it would form with France's GDF Suez an unincorporated joint venture to develop gas resources in the Timor Sea and to build one of the world's first floating liquefied natural gas (LNG) facilities. The deal highlights the trend of an increasing number of energy groups looking to gain a foothold in Australia's natural gas industry.

The deal between Santos and GDF Suez will give the French company 60 per cent of the Petrel, Tern and Frigate gas fields in the Bonaparte Basin in the Timor Sea, for which Suez will pay Santos $200 million. GDF Suez will also pay Santos a further $170 million when a final investment decision on the 2 million tons/year project – named Bonaparte LNG – is taken. The French company will also carry Santos's share of pre-Front End Engineering Design (FEED) and FEED costs for the floating LNG project as well as its share of the upstream pre-FEED and FEED development costs for the three gas fields. This includes two appraisal wells.

GDF Suez will become operator in 2011 and Santos will retain a 40 per cent share of the joint venture.

In recent years, Santos has progressed quickly in expanding its LNG business. It holds 11.4 per cent in the 3.5 million tons/year Darwin LNG project, which is led by ConocoPhillips. Santos also has a 17.7 per cent share in the 6.3 million t/y Papua New Guinea LNG project near Port Moresby. PNG LNG is led by ExxonMobil, which plans to make a final investment decision on the project in 2013-14. The project plans a two-train facility.

Santos is operator and 60 per cent shareholder in the Gladstone LNG project in Queensland. Malaysia's Petronas holds the other 40 per cent. The partners plan to make a final investment decision for the first train during the first half of 2010 and the project's positive prospects has led the company to suggest that a decision for a second train can be expected shortly thereafter.

Santos is also considering developing other assets in the Bonaparte Basin – the Evans Shoal, Baross and Caldita gas fields – for commercial production.

Santos CEO David Knox said the company's focus "remains on delivering the base business of and targeting significant growth through our LNG projects." The company could be producing as much as 8 million t/y of equity LNG by 2020, Knox said.

Santos's partner in Gladstone LNG, Petronas, recently agreed to purchase 2-3 million t/y of that project's LNG, leaving 500 000 - 1.5 million tons still to be marketed. The firm said it will attempt to market the LNG to Japan or South Korea.

Meanwhile, Australia's second largest oil and gas producer, Woodside Petroleum also announced in mid-August that it is planning five trains for its $10 billion Pluto LNG project in northwest Australia. The first 4.3 million t/y train is under construction and could come into production sometime next year. The company said it could make a final investment decision on the second train by the end of 2010. Approval for a third train could be made in 2011.

Woodside is also investing in two other LNG projects in Australia, Sunrise and Browse. Its LNG output could amount to 20 million t/y by 2020.

More than 10 LNG projects in Australia and Papua New Guinea are being developed by the world's largest energy companies.

Chevron, Shell and ExxonMobil recently arranged with India's Petronet LNG, the purchase of 1.5 million t/y of gas from the Gorgon LNG project on Barrow Island off the northwest coast of Australia. Gorgon LNG is to produce 15 million t/y from three 5 million t/y trains.

A potential biofuel exporting powerhouse

Much of the modern bioenergy discussion in Africa revolves around biofuels. Many countries with strong export economies from Mozambique to Ghana are exploring large-scale biofuel production with an eye on the European market.

Meghan Sapp

Meghan Sapp: there is a movement globally to ensure that biofuels are produced sustainably – economically but also socially and environmentally

It is 1979; the oil crisis has seen prices skyrocket to nearly $40 a barrel, the second such crisis in half a decade and the highest prices ever seen. Malawi is suffering not only from the higher prices it must pay, but also because it is landlocked by Mozambique which was then just two years into its post-independence civil war.

Something had to be done. And that something was ethanol.

Throughout Africa, all of Africa, bioenergy offers the opportunity to increase energy security, reduce negative impacts on the environment and support development through job creation and poverty reduction. But to do so, entrepreneurs and government must work together.

Bioenergy is old news in Africa. Traditional bioenergy from wood to dung is the most used form of energy on the continent. Yet wood smoke damages the health of women and children from cooking indoors and inefficient use of natural resources due to the lack of access to technology leads to deforestation.

But modern bioenergy is the key, using what resources Africa already has but in better ways. From biodiesel to operate small-scale electricity generators for businesses, schools and hospitals to biogas able to serve a household, a farmstead or an urban neighbourhood, there are opportunities to fit just about every circumstance.

And bioenergy can be produced from just about any organic substance, from crop waste to animal waste to human waste, all without diminishing food resources while also reducing the greenhouse gases emissions from improper waste disposal. Food security can even be enhanced by incorporating inter-cropping systems for both food and fuel. Many of these technology solutions are low-cost, meaning the only thing missing is knowledge.

Much of the modern bioenergy discussion in Africa revolves around biofuels. Many countries with strong export economies from Mozambique to Ghana are exploring large-scale biofuel production with an eye on the European market. In Europe, where biofuel policies have been in place for more than a decade and blending mandates are now in place guaranteeing increased demand for the decade to come, opportunities are abundant for efficient biofuel producers to tap a value-added market.

Leveraging international investment, the focus is on big business with the introduction of modern farming techniques, technology transfer and improved infrastructure. Tropical climates are best suited for the crops that produce biofuels the most efficiently: sugarcane. That gives traditional sugarcane economies opportunities for new value-added markets rather than the exportation of basic commodities where the processing value goes elsewhere.

At the same time, there is a movement globally to ensure that biofuels are produced sustainably – economically but also socially and environmentally.

The right blend: Nile Petroleum ethanol blending depot in Addis Ababa [photo courtesy of PANGEA]

Food security can even be enhanced by incorporating inter-cropping systems for both food and fuel

By following the rule of law, respecting workers rights to land rights and ensuring that biofuel production leads to an improved environment both locally and globally, opportunities abound. It is these kinds of policy developments where industry and government must work together to create an environment where investments can benefit local economies. In this way, economic development trickles down to the communities rather than being exported along with the biofuels.

But as much focus as there is in the international media about the potential for Africa to become a biofuel exporting powerhouse, the economic crisis that hit economies all over the world hit especially hard those who would invest in biofuels in Africa. That does not mean, however, that biofuels are a dead discussion; far from it. The countries that are doing biofuels, not just talking about biofuels, are the countries that have looked at their internal markets first.

When people talk about ethanol, most often the first place that is thought of is Brazil. As the second-largest ethanol producer in the world and the largest exporter with the most efficient technology and the most sophisticated infrastructure network, it is no surprise that Brazil is seen as the King of Ethanol. Back in the 1970s, at the beginning of the oil shocks, Brazil began looking at its own petroleum needs and sought a way to shelter its economy. Brazil sought energy security and what it found was ethanol.

It is those same concerns that led Malawi to produce ethanol. Around the same time, Kenya and Zimbabwe also began producing ethanol but a lack of policy support and coordination with industry kept those countries from enjoying the advantages of ethanol over the long term. Not so with Malawi.

Two main producers of molasses ethanol exist today: Ethco and Presscane Ltd. Together they produce about 18 million litres per year, but have the capacity to produce 32 million litres per year if there was enough molasses available. As sugarcane production in Malawi expands, currently led by South Africa's Illovo Sugar, molasses availability will increase and ethanol production will follow suit.

Already Ethco is experimenting with flex-fuel vehicles, a project sponsored by the Malawi government, with the idea that one day vehicles in Malawi could run entirely on domestically produced ethanol. Just like Brazil. Malawi has the experience – and technical know-how developed through its universities – as does Brazil to demonstrate and support these developments, and to then transfer that knowledge to other countries in the region or elsewhere in Africa.

Malawi, however, is not alone. Every two days, trucks carrying ethanol from Ethiopia's Fincha sugar mill arrive at the blending depot 40 km north of Addis Ababa and every three days trucks carrying petrol arrive after a 1600 km drive from Sudan. From there, the complicated matrix of ethanol in/blended-petrol out is controlled by a mix of automation, pressure gauges and freshly-expert eyes.

The blending depot produces about 550 000 litres of 5 per cent ethanol blended petrol per day. As demand for the fuel increases, a result of lower prices at the pump compared to pure petrol, the volume will go up until it reaches the limits of the country's ethanol production. The facility can blend about twice as much ethanol as it does now. It is the only in-line system in Africa and will be ready to blend 10 per cent ethanol for supplying the capital region when the higher mandate comes in around 2012.

By 2015, the country expects to boost its ethanol production to 108 million litres per year from 8 million litres now through the expansion of capacity at some of the existing sugar mills and through the development of the new Tendaho sugar mill. National policy is to use all ethanol production domestically to offset petrol imports rather than to export to Europe or elsewhere. Blending is first for the capital region, and later on the mandate will expand nationwide.

Pure ethanol is blended at cost, with no excise taxes or road funds included in contrast to petrol. VAT is added to the ethanol as is a blender's margin and a recovery capital cost that will pay back the infrastructure investment to Nile Petroleum over five years. A distribution margin is added to the blended fuel.

Blended fuel became available across Addis Ababa on October 13 last year, after a careful cleaning of all gas tanks in the region to make sure there was no underlying sediment that could contaminate the introduction of ethanol. Between October and June, the country used 4.3 million litres of ethanol and displaced $3 million in oil imports.

Sudan has made similar moves, with a grand national plan for biofuels that takes it out to 2015. The country opened its 60 million litres of ethanol a year facility in June, with plans to expand that production 10-fold over the next handful of years and introduce a local blending programme. As Sudan is a major oil producing country, the investment is seen as a way to displace the amount of petrol it needs for its own uses so there is more supply available for export. Eventually the same will be said for ethanol.

As the global economy begins to recover from the credit crisis and the price of petroleum rises again, countries will continue to look at opportunities to shield their economies from price shocks while benefiting from new opportunities for development. By looking at domestic needs first, creating a market there and supporting the development of local industries, then can Africa begin looking to international markets.

Meghan Sapp is Secretary General of Partners for Euro-African Green Energy (PANGEA). PANGEA works to encourage biofuel production in Africa as a way to promote sustainable economic development.

Algae is still looking for its niche

The economics of producing oil from algae for power generation may not stack up at the moment but there are still both long and short-term opportunities, writes **Junior Isles.**

A few years ago, the idea of growing algae to generate energy and capture carbon dioxide from power plants looked promising. The technology, developed by GreenFuel Technologies at the Massachusetts Institute of Technology was even tested at a US power plant, with promising results.

However, in May this year it was announced that GreenFuel, one of the first to enter the algae biofuels business, was shutting down. Its first pilot project with Arizona Public Service tested ways to feed CO_2 from a power plant to algae growing in plastic bags. However, manually harvesting the algae proved to be too expensive.

But while no one has managed to make an economic case for the production and use of algae at power plants, some still believe there is mileage in the technology.

OriginOil is a US company developing a breakthrough technology that it says will transform algae into a competitor to petroleum. Riggs Eckelberry, CEO of Originoil comments: "We've done the models, and primary power generation using algae does not appear to be a great idea. You could envisage a fast-growing algae to suck up the CO_2 from a power generation plant. Carbon dioxide represents about 13 per cent of the exhaust from a power plant. If a power plant produces 2 million tonnes/year of CO_2, this would yield about one million tonnes of algae. The algae could be used to go back into the plant but it is more valuable as a source of liquid fuel or co-products. When you do the maths for feeding it back in for power, power is too cheap these days to do that."

Although the economics may not be favourable at this point in time, Eckelberry notes that there are scenarios where algae could make economic sense for power production. "It can workout in island economies such as in the Caribbean where the price of diesel could be as much as 50 cents/kWh," he says.

According to OriginOil's calculations, 25-30 c/kWh is the point at which everything changes.

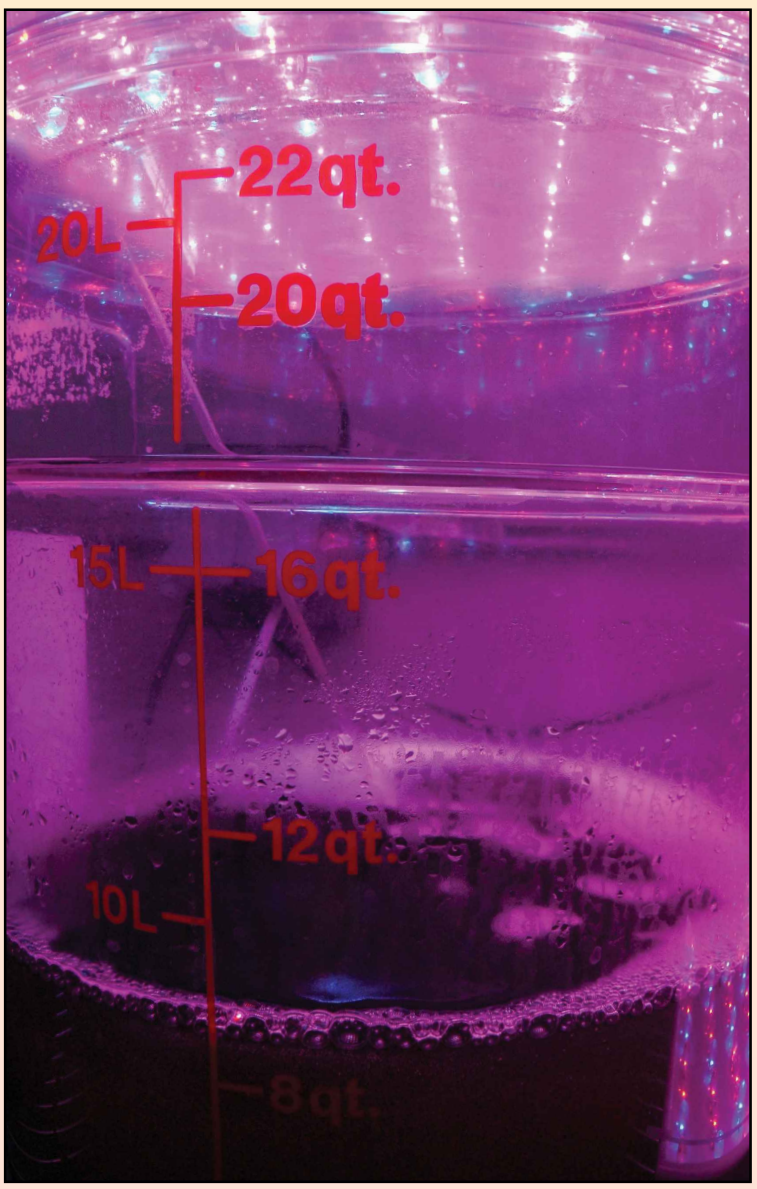
The company's calculations assume that the oil is turned to biodiesel and the biomass is converted to methane gas and then to power. "You could use the methane, for example to heat homes or you could burn it for power. But burning it for power is probably not the best use of it given the low price of coal at the moment," notes Eckelberry.

If 10 per cent of the algae is harvested every day at a concentration of 3 grams dry weight per litre, this would produce a little over 2000 t/year per hectare of algae, given a typical industrial footprint. This produces approximately 550 t/year of lipids which produces about 600 000 litres/year of biodiesel per hectare. This would generate an annual revenue from biodiesel sales of about $500 000 per year.

Total methane produced from the remaining biomass is about 50 mcf/day/ha. Converting this methane to power produces about 0.6 GWh/y. With wholesale power prices at $0.07/kWh, revenue from power production is about $100 000 per year. "From our models we see that at about $0.30/kWh, we start making as much from power production as from biodiesel."

Even when bringing carbon credits into the equation, OriginOil's calculations show that they would only represent about six per cent of overall potential revenues at best. Eckelberry said: "We concluded that the carbon credits are marginal for the algae producer but it is a big hit for the emitter because it comes straight off the bottom line. Also, these emitters may want to do these projects – even if only for the PR."

Riggs Eckelberry: Today, pharmaceuticals and specialty chemicals are the profitable markets



The heart of the OriginOil system is the Helix BioReactor

> "When you do the maths for feeding it back in for power, power is too cheap these days to do that."

A power plant, says Eckelberry needs to find ways of using the algae as much as possible on premises. Algae in "on-premises" use is where he sees possibilities. For example a large plate glass kiln produces 1.6 million t/y of CO_2, which could yield 800 000 t of algae biomass per year. Eckelberry argues that the decision here is more straightforward than at a power plant. "What they need is more natural gas. So you want an algae that will grow fast and only create biomass (no oil) that will be immediately gasified on the premises and fed back into the plant. There are many synergies here. Firstly, you can use some of the waste energy from the plant and process water etc. Also, the algae does not have to be taken off premises."

OriginOil is talking to power producers through partners but sees the power industry as slow moving. It therefore sees first adoption by more entrepreneurial industrial operators. OriginOil is currently speaking to companies that make biodiesel and ethanol. These companies, according to Eckelberry are already active in their field but need a better feedstock. "This is why our concept is more tailored for a brewery-type configuration, because it's compact and it's urban," he said.

OriginOil has a clear vision on how algae will make money in the future. "In the next five years it will not even be about fuel. It will be about the co-products. Today, pharmaceuticals and specialty chemicals are the profitable markets. Beyond five years, when petroleum costs have risen considerably and there is better efficiency of algae production, we will be able to make money from fuel."

Eckelberry says that the main benefit of producing oil from algae is maintaining what he calls "its portable aspect". Like other industry observers, Eckelberry believes that the big challenge in years to come will be in applications that cannot be turned into electricity such as air travel, long haul trucking and shipping. "That's the meaning of portable fuel and what we have to focus on with algae," said Eckelberry.

Based on a tank capacity of about 20 million litres/ha (2 million gallons/acre), every tonne of algae biomass yields 500 litres of middle distillate (e.g. diesel, jet fuel oil or kerosene). This assumes that both sides, the oil and the biomass, are turned into liquid fuel.

So while the industrial sector may be the immediate target and fuels the longer-term goal, Eckelberry does not rule out the future use of algae in the power industry.

"In the US, solar production started at 60 c/kW and now it's becoming competitive. You have to start somewhere. We think our technology will make algae production more viable and so we see ourselves as technology providers, first and foremost who would rather export our technology for use by other providers."

OriginOil algae production

The heart of the OriginOil system is the Helix BioReactor, an advanced algae growth system that can grow multiple layers of algae biomass around-the-clock with daily harvests.

In a natural pond, the sun only illuminates one layer of algae growth, down to about half an inch below the surface. In contrast, the Helix BioReactor features a rotating vertical shaft with very low energy lights arranged in a helix or spiral pattern, which results in a theoretically unlimited number of growth layers. Additionally, each lighting element is engineered to produce specific light waves and frequencies for optimal algae growth.

The helix structure also serves as the bioreactor's nutrient delivery system, through which 'Quantum Fractured' nutrients, including CO_2, are evenly delivered to the entire algae culture, monitored and tuned for optimum growth.

This algae growth environment allows the algae culture to replicate exponentially – doubling the entire colony in as little as a few hours – making for very efficient, low-cost, low-footprint industrial algae production.

Junior Isles

Hints of a soft shoe shuffle?

Things often go full circle. In the early 1990s, the UK was among the first to embark on the great liberalization experiment under Margaret Thatcher's Conservative government. Now some 20 years later, questions are being raised as to whether the model is valid in a world where climate change and security of energy supply are top of the agenda.

A report commissioned by the UK prime minister, Gordon Brown now says: "The loss of relative energy self-sufficiency takes place at a time of rapid energy change and challenge… the era of heavy reliance on companies, competition and liberalization must be re-assessed. The time for market innocence is over… the state must become more active – interventionist where necessary".

The 130-page report published in August has been compiled by Malcolm Wicks, the former UK energy minister appointed by Brown last year as his special representative on international energy issues.

The report says that the government should be commended on its efforts to improve energy efficiency and diversify its energy mix. However, it concludes that "we also need to review regulatory structures designed in good times, where we were broadly self-sufficient and had limited export capacity, to establish if these still provide sufficient assurance of secure supply when we are increasingly import-dependent and connected to continental markets".

Certainly the government's report is timely. In early August, Russia signed an agreement ending its role in the energy charter, a 15-year old agreement used to settle disputes between countries. While no more details were available, the decision is perhaps an indication that Russia intends to make greater use of its position as the biggest supplier of natural gas to the EU as a way to flex its muscles on the political stage.

Dependence on gas imports was certainly not an issue when the UK began liberalizing its electricity market two decades ago. But in a long-cycle business such as the power industry, and when considering a commodity as critical as electricity, one would have hoped for more foresight before embarking on such radical restructuring.

Nevertheless, for good or ill, there seems to be no turning back. Therefore the market is now faced with persistent government tinkering.

Mr Wicks' report is now being considered by the Department of Energy and Climate Change (DECC), which hopes to publish a formal response this autumn. At the same time, the DECC will also publish a Gas Consultation document inviting industry views on security of supply issues related to gas.

In the meantime, a DECC spokesperson stated: "The UK has always been a strong supporter of the liberalization of energy markets and has taken a leading role in the development of policy at EU level. We therefore welcome the Third Package of measures to improve the functioning of EU energy markets, which will enter into force on September 3."

The spokesperson added: "There is a close link between market liberalization and security of energy supply. Well functioning and integrated EU energy markets remain our best defence against supply difficulties – they allow energy to flow where it is needed and encourage investment in infrastructure to meet market needs, as well as delivering more competitive prices for consumers."

> There needs to be joined-up thinking where every step is carefully thought through along with the potential knock-on effects of each step

Mr Wicks' report and its suggestions of greater intervention do not come as an entire surprise to some energy companies. Although the UK market is one of the most liberalized in the world, it is arguable that it has never been completely liberalized. E.On spokesperson, Jonathan Smith said: "The UK market is one of the most liberalized in Europe but with things like CERT [Carbon Emissions Reduction Target] and the Renewable Obligations, whatever you might say, we have the hand of government within energy markets already.

"The question therefore remains as to how much more regulation is prescribed and what is left to the market. It is unlikely that the Renewables Obligations or CERT will disappear. It's more of a question of what else will appear – you could argue that the government's way of funding CCS is a kind of tax. It will be no big surprise if the government's role increases as it becomes trickier to plan the way forward for the energy market."

Many countries that have held up the UK as a model must now be assessing their approach to market liberalization. China, which has long studied the UK model and has sought to slowly introduce market competition, is one country that must feel justified in its approach to maintain an element of central planning.

Certainly there can be market liberalization that has some central planning. Perhaps we will see a scenario where the generation mix is set by government but the retail companies are left to compete on price, customer service, 'green power' etc., and therefore still offer customers the opportunity to switch supplier.

But while this may work on a national scale to decrease dependency on fuel imports, at the pan-European level there is still the possibility that countries could then become dependent on electricity imports. Europe's large utilities operate a Europe-wide energy trading business and will build where the conditions are most attractive and export power as necessary.

Smith commented: "A pan-European group has to make the case that a project built in a particular country has to be as good as, or better, than elsewhere. In the UK, what the government has to do is make sure that the UK is a worthwhile place to invest. For example the increase in ROCs for offshore wind essentially gave us the green light for the London Array project."

With climate change as well as energy security as its main drivers, the report calls for a huge increase in nuclear power. It says "…a range of between, say, 35-40 per cent of electricity from nuclear would be a sensible aspiration beyond 2030". Sensible or not, there are question marks on how this would be financed. Unlike EDF, E.On has not called for subsidies to build new nuclear plants but it does expect that the EU Emissions Trading Scheme, which it again sees as a form of government intervention, will produce a higher cost of carbon. "This will make nuclear more economic than it is at the moment," said Smith.

E.On's view that governments must make their market an attractive place to invest were echoed by David Porter, chief executive of the UK's Association of Electricity Producers. He said: "Security of energy supply does not necessarily occur because the government prescribes the 'right' energy mix. Electricity companies must make investment decisions based on the level of risk. Enthusiastic encouragement for a specific generation fuel or technology can quickly change, damaging electricity companies' proposals for new plant. Consistency and clarity in energy policies is fundamental in achieving the long term goal of allowing an energy mix which assists security of supply and does not threaten the massive investment required."

The industry may see consistency and clarity as fundamental but it is inevitable that in the UK there will be further government intervention. No government wants to see the lights go out. Equally, no government wants to be seen as responsible for increasing carbon emissions leading to catastrophic climate change.

However, intervention has to be sensible. In the past there has been what Smith calls a "sticking plaster approach" where, for example, it specifies a target for renewables by 2020 with little thought of the knock-on effect for other forms of generation or what happens if renewables become uneconomic. There needs to be joined-up thinking where every step is carefully thought through along with the potential knock-on effects of each step.

Two decades ago Margaret Thatcher put her best foot forward taking steps to a Waltz called liberalization. Today it seems the UK is now contemplating the best way to do a soft shoe shuffle.

"I'm not too sure that Maggie and Gordon are dancing to the same tune, but top marks for entertainment!"