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COAL NEWS

New Zealand

Solid Energy and Ravensdown plan Southland lignite to fertiliser plant

Plans for a \$1.5 billion coal to fertiliser plant in Southland based on the area's huge lignite resources have been announced by Solid Energy and agricultural fertiliser supplier Ravensdown. The two companies are jointly investigating the viability of building a urea fertiliser plant capable of producing up to 1.2M tonnes a year of the nitrogen fertiliser from up to 2M tonnes a year of lignite from Solid Energy's large lignite resources in the Mataura-Gore area.

The project could make New Zealand an exporter of urea fertiliser as well as supply domestic farming needs. The fertiliser project may be followed by a second bigger project to produce diesel from Southland lignites. Solid Energy is at the pre-feasibility stage for a lignite-to-diesel plant.

The fertiliser study will consider the economics and possible location of the plant. Following engineering design, and subject to consenting and financing, construction could start by 2012, and the plant could be operational by late 2014. The lignite deposits are central to the fast growing Southland-Otago dairying region and just 10km north of the world's largest milk processing plant at Edendale, which uses lignite for part of its energy supply.

The fertiliser project could create up to 500 permanent new jobs from both the mine and the plant with many more people involved in construction. New Zealand currently imports about 500,000 tonnes of urea a year, mostly from the Middle East (gas based) and China (coal based). About 40% of New Zealand's ammonia-urea is produced at the Kapuni plant of Ballance Agri-Nutrients using natural gas as a feedstock.



Solid Energy to investigate lignite briquetting at Mataura

Solid Energy has entered a joint venture with Australian based GTL Energy to look at the feasibility of a plant to upgrade approximately 100,000 tonnes of lignite a year mined from its New Vale opencast mine 10 km west of Mataura. The GTL Energy technology upgrades low rank coal by removing significant amounts of moisture to raise the thermal value and reduce emissions from the upgraded product.

Over the next few months Solid Energy and GTL Energy will complete technical and economic feasibility studies, undertake final engineering design and seek resource consents. A decision to proceed with construction of the plant is expected to be made early in 2010 and will be based on demand from South Island industrial and commercial customers. The lignite briquettes could also be used for home heating.

Pike River Coal considers equity options

Pike River Coal needs to raise a further NZ\$20M of capital because of further delays to the date for its first coal shipment.

The PRC board was confident of its ability to raise the further \$20M to meet the costs of production delays and any associated bond redemption obligations. One of several debt-equity options could involve a customer taking a stake in PRC. Existing customer-shareholders are Saurashtra Fuels Private and Gujarat NRE Coal (NSW) Pty.

PRC has agreed with its customers that its first coal shipment will be 20 to 30,000 tonnes, contracted (until April) at US\$128/tonne, equivalent to the international benchmark price achieved by the big Australian coal producers. Recent international spot prices for hard coking coal had increased to US\$160/tonne. PRC said Chinese imports had had a big impact this year on world trade in coking coal. In the eight months to August 2009, China is estimated to have imported 15.7M tonnes of coking coal, offsetting reduced demand in Europe and the US.

Production has been running at lower rates than envisaged due mainly to early geological complexity and machinery difficulties resulting in slower roadway development driveage. First hydro coal is now expected in the April-June 2010 quarter.

Genesis Energy deal with Meridian ensures future role for Huntly station

Genesis Energy said an October deal with Meridian Energy has bought time for the ageing Huntly power station. Genesis said Huntly's continuing availability to the electricity system depended on there being commercial arrangements in place to cover its fixed and operating costs. Terms of the hedging agreement were confidential.

The generator said its principal challenge remains the prospect that Huntly's 1000MW of coal fired generation, commissioned in the early 1980s, will be called on a lot less than in the past. Genesis was aware that raised policy issues about long term security of supply and the company was actively involved in the search for solutions. The Meridian deal did not solve the problem but it did buy time for other solutions to be found.

Genesis expects two of Huntly's four units to stay in the market for "quite a few years yet". "Huntly is a well maintained asset built to an extremely high design standard. There is no reason it couldn't stay in the mix for another 20 or 25 years." The company is looking at upgrading its small gas fired peaking plant at Huntly into a more efficient combined cycle plant which would raise its capacity from 48MW to around 100MW. It also has plans for a 480MW gas fired plant at Rodney but this would depend on certainty of gas supplies. If this did get the green light it would take two or three years to build.

Australian mining company gets exploration licence close to Kahurangi National Park

Australian mining company Fortescue Metals Group has been granted a prospecting permit for a large 3568sq km area of the upper South Island bordering Kahurangi National Park. FMG Pacific, a subsidiary of the Perth company, has been given approval to search for 23 minerals but is most interested in iron ore and coal.

The permit is the latest of 14 picked up by the company throughout New Zealand, including an area off the Northland coast. Prospecting in New Zealand was the first overseas prospecting for Fortescue, a \$13.5 billion company which specialises in shipping iron ore to China from its mine at Pilbara in the north of Western Australia.

The company said initial work would be "desktop prospecting" - analysis of historic data and 3D modelling. While the company's main experience was in bulk commodities it was interested in any economically viable minerals. Fortescue had experience of mining next to national parks in Australia and of "managing its environmental obligations". Under the terms of the permit, FMG has two years to complete its preliminary work, including seismic reflection data.



Richard Michael, chief executive of mining industry group Straterra, said Fortescue's growing interest in New Zealand was a vote of confidence in the mining sector here. "The government has done a lot of work in promoting New Zealand overseas. It's got to be welcomed as a sign this is becoming a prospector-friendly environment."

New Stockton mining alliance between Downer and Solid Energy

Solid Energy and mining operator Downer EDI Mining NZ have established a joint mining alliance agreement for New Zealand's largest export coking coal mine at Stockton, near Westport. Solid Energy said it has also placed orders for \$75M worth of new heavy mining equipment which will form the core of the new Stockton mining fleet. The equipment investment will bring Solid Energy's total investment in the Stockton mine this year to about \$200M, including \$110M for the new coal processing plant currently being constructed.

Solid Energy said that to deliver substantial export earnings from the mine over the next 20 years, a step change was needed in operational performance. This required a substantial investment in skilled people, in new fit-for-purpose plant and equipment, and in systems.

The Stockton Alliance is considered an innovative approach to mining in New Zealand, bringing together one group of people in one team committed to achieving a common set of objectives. It expects to have up to 650 people working at the mine, employed directly or seconded from Solid Energy and Downers. Up to 100 people will continue to work for contractors who provide specialist services at the mine.

The new heavy mining equipment ordered includes four Hitachi excavators (110 tonne and 180 tonne) and seven excavators (35 to 110 tonnes), 27 trucks, two loaders, three graders, two wheel dozers and two bulldozers from Caterpillar for delivery from December. Decisions about additional equipment will be made next year when plans for mining the Millerton and Cypress blocks are more advanced.

Improved environmental performance commended at Stockton

The Parliamentary Commissioner for the Environment (PCE) recently commended Solid Energy for its improved environmental performance and "world leading" environmental management system at Stockton Mine. The company noted the PCE's recognition that significant improvements in the environmental management and performance of Stockton have been made voluntarily and through interagency cooperation.

In 2004 the company acknowledged that in the past some of its mining activities, particularly on the West Coast, had fallen well short of environmental best practice. Solid Energy promised to change the way operations were done to minimise impacts on the environment. Over the last five years, its environmental team and people working at Stockton have delivered on a major undertaking to move the site to environmental best practice and had developed innovative solutions to address some of the site's environmental issues.

Solid Energy set up the Stockton Environmental Consultative Group in 2004 with the participation of the local community, local councils, iwi and the Department of Conservation. The group agreed targets for improving the quality of water running off the Stockton Plateau and into the Ngakawau River. In June, the Mangatini Sump, a large reservoir used to treat mine water was completed at a cost of \$45M. As a result, the water quality targets for dissolved aluminium and pH in the lower Ngakawau River should be met more than 99% of the time by December.

Coal production up slightly in 2008

Coal production in New Zealand went up slightly from 4.8M tonnes in 2007 to 4.9M in 2008. Production of bituminous coals, nearly all for export, rose to almost 2.5M tonnes in 2008, up from 2.0M in 2007.

Sub-bituminous coal production, substantially from the Waikato region, fell to 2.2M tonnes last year from almost 2.6M in 2007. Western Southland mines accounted for 195,000 tonnes of this sub-bituminous coal, West Coast for 135,000 tonnes with smaller amounts from Otago and Southland mining areas.

Although lignite makes up 80% of national coal resources, output was 253,000 tonnes in 2008, little changed on previous years. Nearly all lignite production was from Southland mines.

There were five underground and 20 opencast mines operating in 2008. Over 63% of national production was from two large opencast operations at Rotowaro near Huntly and Stockton in the Buller field. Both are operated by state-owned Solid Energy, which is responsible for about 80% of national coal production.

Exports of bituminous coal went mainly to India and Japan with smaller quantities going to Chile, South Africa, Brazil, China, USA and Australia. The biggest domestic users of coal last year were the Huntly power station (2M tonnes) and the Glenbrook steel mill (around 750,000 tonnes).



INTERNATIONAL NEWS

Australia

Yanzhou Coal to acquire Felix Coal Mine

Yanzhou Coal Mining agreed to buy Australia's Felix Resources Ltd for about A\$3.5 billion to secure supplies. Felix shares had surged 92% this year in anticipation of the deal.

The acquisition is China's biggest in Australia since Rio Tinto Group rebuffed a \$19.5 billion investment from state-owned Aluminum Corp of China in June. Undeterred by that failure or the strained relations caused by the arrest of four Rio executives in Shanghai, China is buying resources abroad as its US\$585 billion economic stimulus spurs demand.

Yanzhou Coal has been looking at expanding its assets into Australia for several years. Its production levels in China are fairly flat in comparison with its peers and opportunities for expansion at home are limited. It needs to look abroad to expand output. The transaction needed to be approved by Australian and Chinese regulators as well as shareholders of both companies.

China

National strategic coal reserve plan to be implemented

China Shenhua Energy Company, the nation's top coal producer, said in September that China has begun to implement plans to create its first national strategic coal reserve. A series of brutal snow storms in 2008 severely affected the production and transport of coal for generating electricity, and as a result, many provinces had power supply problems. Plans to create the new reserve are part of an effort to avoid similar problems.

Shenhua said that it is now selecting sites and the total planned reserve will be around 30M tonnes. A coal market analyst with the China Coal Trade and Development Association said, a reserve of 20 to 30M tonnes is still big enough to stabilise the market when it faces a short term shortage of coal, even though the country's national demand is much, much larger than that.

China heading for record coal output

China's raw coal output hit 270M tonnes in October, climbing to the year's second highest peak after its 279M tonne output in June. Analysts predicted coal output would maintain at a high level in November and December. The total output from January to October amounted to 2.42 billion tonnes, up 11.4% on the same period in 2008.

Meanwhile, China's coal exports have been falling sharply in volume over the first ten months and the total export volume this year is predicted to nearly halve year on year. The country exported 18.9M tonnes from January to October, down 50.6% year on year.

China's economy is recovering, along with its energy consumption. This led to Chinese domestic demand for coal to soar, which discouraged coal exports and encouraged imports. Meanwhile, major coal export countries encouraged their coal producers to increase their sales of export coal, which altered China's trade situation. For example, Vietnam decreased its coal export tariff from 20% to 10%, inducing more imports into China.

Huaneng Yimin to hike coal output

China's first large coal electricity joint project, Huaneng Yimin Coal Electricity Corp aims to increase its annual coal output from 15 to 20M tonnes this year.

The company, a subsidiary located in Hulunbuir, Inner Mongolia autonomous region under China's leading power generator Huaneng Group, now has an installed capacity of 2,200 MW.

The company sells some coal to other power companies. It is also planning for its own coal to gas and coal to chemical projects to further diversify its business portfolio.

Coal demand to soar as Asia rebounds

Demand for coal to generate electricity and make steel in China and India is expected to grow by 7 to 8% annually in the next five years, leaving the world "chronically" short of the fuel, according to US coal miner Peabody Energy Inc. The company plans to double exports from Australia to handle Asian demand and to develop its joint venture in Mongolia to produce coal for the Chinese.

As industrial activity rebounds from last year's economic downturn, the coal shortage is driving up prices and Peabody forecast thermal coal selling for US\$100 per tonne by 2012, up from around \$70 currently. It also said coking coal is already selling for \$160 per tonne -- way above this year's benchmark of \$129.



The company believes India will turn to seaborne markets and in the next five years the region will experience 7 to 8% growth compounded annually, which is 300 to 400M tonnes per year. That will leave the world "chronically under-supplied," according to Peabody.

The company is targeting 2009 sales of around 190M tonnes in the United States and 21 to 23M tonnes in Australia.

China working on measures to boost coal bed methane extraction

China is working on ways to encourage large scale coal bed methane extraction in efforts to improve coal mine safety. The deputy chairman of the National Development and Reform Commission said the measures would include higher subsidies for gas extraction. He was addressing a national conference on prevention and control of gases in coal mines in Nanchang, capital of east China's Jiangxi province.

China has set the goals of producing 2 billion cubic metres of coal bed methane by 2010. The National Energy Administration will be in charge of drafting and implementing plans for large scale methane extraction and use in mining areas. China has 18 mining districts that were each capable of extracting 100M cubic metres of the gas annually by 2010.

The government has attached great importance to gas extraction and use at coalmines in recent years. A total of about US\$17 billion has been spent on prevention and control of gases in coal mines during the past five years. The efforts appear to be paying off because there were 182 gas triggered accidents at coal mines across China in 2008 resulting in 778 deaths, less than half the 414 accidents and 2171 deaths in 2005.

Indonesia

Banpu sees mine output up in 2010

Banpu said it expected coal output from its Indonesian mines to rise 10% to about 22-23 Mtonnes in 2010 as it had made forward contracts for 30% of forecast coal sales for next year.

The company's average selling prices were above US\$60/tonne in the second half of this year versus US\$79/tonne in the first half.

Datang banks on coal projects

Datang International Power plans to boost profit from its coal related operations to 50%, from the present 20%, in six years. Fuel projects including coal to chemicals production may account for half the firm's profitability by 2015.

Datang's revenue from coal in the first half jumped ninefold to account for 10% of revenue. Its capacity utilisation may reach 5,000 to 5,500 hours per power plant this year depending on the economic recovery.

Indonesian government confirms BHP to sell major coal project

BHP Billiton Ltd plans to sell its Indonesian coal project after deciding not to proceed with the project in Kalimantan (Borneo).

BHP Billiton said it would not go ahead with the Haju trial coal mine because it did not fit with its long term investment strategy. Haju was stage one of the Maruwai coal project, the 100% BHP Billiton owned metallurgical coal deposit in Central Kalimantan, which was expected to produce 1M tonnes/year of metallurgical coal for steel making.

Mongolia

SouthGobi received mining licence

SouthGobi Energy Resources Ltd announced that Mongolian authorities have issued a mining licence for the Tsaagan Tolgoi coal property that is held by the company's Mongolian subsidiary. The Tsaagan Tolgoi property is in the South Gobi Region, approximately 415km east of SouthGobi's Ovoot Tolgoi coal mine.

An independent resource estimate for Tsaagan Tolgoi estimated 23.4M tonnes of measured resources, 13M tonnes of indicated resources and 9M tonnes of inferred resources. The coal is of volatile bituminous B to C in ASTM rank and is suitable for use as a thermal coal. The resources appear to be amenable to surface extraction down to a planned depth of 150 metres.

The deposit has the potential to supply any future coal fired power plant that may be developed to produce electricity for Ivanhoe Mines' planned Oyu Tolgoi copper-gold mining complex, which is approximately 115km northeast of Tsaagan Tolgoi.



Mozambique

Coal resource pre-feasibility study awarded

MDM Engineering has been awarded the contract for the pre-feasibility study of Central African Mining & Exploration Company's coal project in Tete province, Mozambique.

An initial assessment of the licence area revealed that the project has 'world class' potential. CAMEC had earlier announced resource size of 1.03 billion tonnes and it reckons its other licences in the area may hold over 2 billion tonnes.

Exploration work conducted by CAMEC identified eleven coal zones partially exposed in surface outcrop that extended to a depth of at least 250m. The outcropping coal horizons have a combined thickness of around 120m and the shallow dip should make these horizons amenable to large scale open cast mining.

Coal projects to earn annual US\$1.5 billion

Coal projects in Mozambique's resource-rich northernmost province of Tete will generate about US\$1.5 billion/year in revenue, starting from 2015.

The revenue would mainly be generated from coal projects being developed by Brazilian mining giant Vale and Australia's Riversdale Mining. Both Vale and Riversdale are investing about \$2 billion in projects that are expected to resuscitate coal mining in Tete by 2011.

Vale has a mining concession in the Tete district of Moatize, which sits on a massive and largely unexploited coal basin. Mining is expected to start next year, and at full capacity Vale predicts production of 8.5M tonnes of hard coking coal and 2.5M tonnes of thermal coal/year.

Riversdale says total estimates of coal resources at Benga are 4 billion tonnes – 320M tonnes of measured resources, 730M tonnes of indicated resources, and 3000M tonnes of inferred resources.

Mozambique's total coal reserves are estimated at 10 billion tonnes.

Pakistan

Thar coal reserves can provide energy for 100 years

The discovery of about 174 billion tonnes of coal in Thar deserts in Sindh have the potential to fulfil Pakistan's energy requirement for a hundred years. The Geological Survey of Pakistan has also launched a project to explore and confirm more coal deposits in the Kohlu-Chamalang areas of Balochistan.

The Pakistan government attaches high priority to the development and exploration of indigenous minerals to mitigate imports as well as enhancing national income from the mineral sector. The National Mineral Policy 1995 enhanced international competitiveness of the country by establishing attractive regulatory and fiscal regimes. As a result, the mineral sector secured direct foreign investment of US\$8,000M.

Philippines

Coal is fuel of choice for power generation

Coal is likely to remain the fuel of choice for power generation in the Philippines due mainly to its abundance and relatively lower price as compared to other fuel types. The Philippine Energy Plan, which aims to reduce coal imports by 20% and encourage local production, forecasts coal demand to grow from 12.2M tonnes in 2008 to around 15.3M tonnes in 2014, of which 13.1M tonnes are for power generation and 2.2M tonnes are for industries.

In 2007, about 75% of coal consumed in the Philippines came from other countries, mainly Indonesia (4.5M tonnes) and China (2.1M tonnes). In 2008, China almost completely stopped exporting coal to meet its own demands.

Coal accounts for about a third of the country's power producers, the three main plants being the 1218MW Sual in Pangasinan, 700MW Pagbilao in Quezon and 200MW Naga in Cebu. Other existing coal plants in the country are in Calaca (Batangas), Masinloc (Zambales), Mauban (Quezon), Mabalacat (Pampanga), Toledo (Cebu) and Misamis Oriental.

Sultan mining seals 10 year Kepco coal supply deal

Sultan Mining and Energy Development Corp (SMEDC), through subsidiary MG Mining and Energy Corp, has signed a 10 year coal supply contract with South Korea's Kepco SPC Power Corp (KSPC). Under the contract, MG Mining will deliver 320,000 tonnes of coal to KSPC's 200MW base load power plant in Naga, Cebu once it begins commercial operations in 2010.



MG Mining's coal quality has higher calorific value than the KSPC requirement in the contract, as reflected in its ongoing coal deliveries to its existing customers since 2007. With this quality, the firm is expected to earn bonuses, as provided by the supply contract, because of the higher heating value.

MG Mining will initially be sourcing the coal from its mine in Bislig, Surigao del Sur but also plans to offer, for KSPC's approval, coal from the much bigger Daguma coal reserves in Sultan Kudarat and South Cotabato once the mine there comes into full production next year.

Independent validation of the coal reserves indicate that the Bislig mine contains about 62M tonnes of coal resources and about 30M tonnes of minable reserves, while the company reported that Daguma has already blocked coal resources of 426M tonnes.

South Africa

Xstrata to expand coal production

Xstrata Plc may spend about US\$1.6 billion over five to six years to expand coal production in South Africa.

The company is studying investing in the Zonnebloem coal project, currently at the conceptual stage. Zonnebloem may cost about \$700M to develop and would be similar in size to Goedevonden, which will produce 12M tonnes when completed.

USA

Utah operator tunnels way to coal seam

From the base of a 300m cliff face, a Utah company is blasting a set of tunnels to reach a rich coal seam deep in a mountain range. Utah American Energy Inc, a subsidiary of Ohio based Murray Energy Corp, has spent nearly a year digging 150m of tunnels that will advance a total of 350m into the Book Cliffs range, about 200km southeast of Salt Lake City.

Tunnelling upward to reach into a coal mine is unusual but reflects some of the more freakish geography of central Utah's mountainous coal belt. The hardrock tunnels will allow Utah American to recover coal without occupying Lila Canyon, a wild area in the Book Cliffs that hides big game habitat and ancient rock art panels. Three hardrock tunnels — one for vehicle and equipment access, another for a conveyor belt to move coal, plus a third for ventilation — are being blasted out of sandstone.

TVA plans to convert to dry coal ash storage

The Tennessee Valley Authority (TVA) is preparing to convert all of its coal waste and gypsum operations to dry storage in the wake of a massive ash spill from a retention pond last year in Tennessee. The utility has hired three consulting firms to help with the change in response to more congressional scrutiny and expected tougher regulation of coal ash because of the TVA disaster.

TVA has 26 ash and gypsum impoundments at seven coal fired power plants, including the Kingston Fossil Plant, where 4.1M cubic metres of toxic ash breached an earthen dike and swept into the Emory River and a lakeside community last December.

Under a TVA proposal, its six wet ash plants in Tennessee, Alabama and Kentucky would be converted to dry ash operations within eight years. Four of these plants, plus a fifth plant in Tennessee, also have wet gypsum operations that will be converted as well.

TVA officials have estimated the Kingston cleanup will cost US\$1 billion and have suggested it could contribute to a likely power price increase next year for the nearly 9M people who receive TVA power in Tennessee and parts of Alabama, Kentucky, Mississippi, Georgia, North Carolina and Virginia.

Vietnam

Coal exports hit 14M tonnes

Vietnam exported about 14M tonnes of coal in the first seven months of this year, which is equal to the same period last year. Buyers were primarily China, Japan, Thailand, India, Malaysia, South Korea and Europe, according to Vietnam National Coal and Mineral Industries Group (Vinacomin).

Coal for both domestic consumption and export earned Vinacomin more than US\$1.1 billion, of which \$667M was from exports. Vinacomin plans to export 3M tonnes of coal this year.

Despite its estimated 42 billion tonnes of coal reserves, the company is struggling to cater for steeply rising domestic energy demand growth of 17-20% a year and plans to lower its export target.



The coal utility would sell 2.5M tonnes of fine anthracite coal to China through the Van Gia transshipment area in the northeastern province of Quang Ninh by directly signing contracts with Chinese companies. Coal could be exchanged for goods under these contracts.

TECHNOLOGY & OTHER NEWS

New Queensland coal fired power stations must have retrofit ability

Queensland will ban new coal fired power stations except for those that can be fitted with clean coal technology. The move institutionalises the technology in the nation's major coal-producing state. There are four new coal-fired power stations planned for the eastern seaboard - one each in Queensland and Victoria, and two in NSW - and all have provision for clean coal technology.

The Queensland ban is the centrepiece of the state government's updated climate change strategy, which allocates A\$87M to new initiatives. The Queensland Premier said she anticipated clean coal technology could be ready for widespread commercial use within five to 10 years, but acknowledged there was some way to go.

The one new coal fired power station being planned for Queensland is at Wandoan on the Darling Downs, and it is already part of a CCS scheme. The Premier said the private sector had acknowledged that a carbon trading scheme would mean the end of traditional coal fired power stations, and the new rules would make Queensland's position "absolutely clear".

The biggest loser in Queensland from an emissions trading scheme may be the state government, as it owns every coal fired power station in the state. Some are old, such as the Swanbank plant near Brisbane, which was built in 1972 and may have to be replaced if a strict emissions regime is introduced.

In contrast, the Australian Commonwealth government is believed to have rejected an approach by the UK government to promise not to build any new coal fired power plants without "significant" CCS technology fully operating by 2020. The British High Commission had been lobbying for such a policy based on a similar UK commitment made earlier this year. The US and Canadian governments are understood to have also rejected similar approaches.

IEA sees gas glut until 2015, rising coal role, unless huge infrastructure investment

In its annual World Energy Outlook, the International Energy Agency considers global gas demand is set to fall this year and the market is likely to remain oversupplied until 2015, despite a rise in demand when the economy begins to recover. IEA said demand for gas for industry and power generation could fall sharply this year, particularly in Europe, leading to a possible 3% drop in global demand.

The IEA Reference Scenario, in which governments make no changes to existing energy policies to combat climate change, global coal demand is seen rising by an average of 1.9% a year to 2030, driven by a 2.5% annual increase in electricity demand. "Coal remains the backbone fuel of the power sector worldwide," according to the IEA outlook, predicting coal's share of the generation mix would rise from the current 41% to 44% in 2030.

"Growth in (coal) production is dwarfed by China's 61% share of incremental global production, as it strives to satisfy a near doubling of domestic demand." Under its Reference Scenario, the IEA sees coal demand rising more strongly than any other fuel to nearly 7 billion tonnes of coal equivalent in 2030.

Under the alternative 450 Scenario (aimed at reducing global temperature rise to 2°C), CCS in the power sector and industry accounts for 10% of emissions savings in 2030, relative to the Reference Scenario. The deployment of CCS is seen as particularly vital in the US and China, which are projected to account for over half of all emissions reduction in the power sector. Despite the widespread deployment of CCS, coal would be the only fuel to witness a fall in demand between 2007 and 2030, partly due to the increased reliance on gas projected by the report.

The report warns that the recent fall in energy investment, observed as a result of the financial crisis, could have a negative impact in terms of energy security, climate change and energy poverty. Additional financing mechanisms would be required to have any chance of achieving the 450 Scenario. In total, the report estimates that an additional US\$10.5 trillion will have to be invested in energy infrastructure and capital stock to achieve the 450 Scenario. If the UN's Clean Development Mechanism remains in place, it would have to be reformed and expanded significantly to deal with an increase in activity that would see annual carbon trading reach around \$40 billion.



The IEA reinforces that it is critical for governments to act speedily, stating "the time has come to make the hard choices needed to turn promises into action." There is a stark warning that just a short delay of a few years could put the 450ppm (atmospheric concentration of CO₂ equivalent) target out of reach.

Clean coal will work, says IEA head

One of the world's top energy experts says that despite climate change, there is a strong future for coal. Nobuo Tanaka, the executive director of the IEA, gave an upbeat assessment of the prospects for new clean coal technologies. He described CCS as "advancing": "I think now the momentum is there ... it's moving... Technological innovation is happening, the cost is coming much lower, so, I think, the future is there. We still think that coal has a long term future, because technology is coming."

Mr Tanaka said that for CCS to become commercially viable, a CO₂ price of US\$50/tonne was needed by 2020 and this would need to rise to US\$110/tonne towards 2030. There was growing awareness among governments of the importance of the carbon price to CCS, Mr Tanaka said.

More work was also needed on the legal framework behind CCS, and on how to transfer the technology to major emerging economies like China and India. He praised the Australian-led Global Carbon Capture and Storage Institute, which aims to accelerate the deployment of CCS.

World Coal Institute response to UK government consultation on CCS

WCI submitted on the UK Department of Energy and Climate Change (DECC) consultation on a framework for the development of clean coal. DECC highlighted that there is an urgent need to develop technologies that tackle emissions because the global use of coal as a fuel for electricity generation is expected to increase over the coming decades. The consultation specifically looked at the UK's plans for invigorating global action on CCS.

WCI argued that, rather than seeking to deliver "up to" four projects, the government should commit to four projects as the absolute minimum number required. This would provide greater potential for the demonstration of the full suite of capture technologies, including pre-, post-, and oxyfuel combustion.

Demonstrating the full suite of capture technologies would allow the UK to determine the most technically and cost efficient method for its own needs, as well as providing valuable experience to share internationally. A national commitment to four projects would not be excessive for an economy the size of the UK. The Australian Government (with a far smaller GDP) had already committed itself to four CCS projects and the UK government, as a member of the G8, had already pledged its support to a target of developing 20 large scale CCS demonstration projects around the world by 2010, with a view to accelerating broad deployment of CCS by 2020.

WCI supported the government's initial preference to introduce a levy on electricity suppliers (in addition to the EU ETS) as the extra financial incentive required to make widespread deployment of industrial scale CCS a reality. WCI considered it is in the UK's interest for CCS to be accepted as a suitable Clean Development Mechanism activity due to the low cost opportunities present in developing countries and the potential for the transfer of technology and experience between the UK and developing countries.

WCI believed further consideration should be given to proposals for the transition from the demonstration phase to a nationally integrated CCS network. The government also needed to develop an outreach programme to enhance public knowledge and acceptability of CCS. This need had been re-enforced by recent demonstrations from local residents in Germany opposed to the storage of CO₂ captured from Vattenfall's Schwarze Pumpe oxyfuel project. WCI agreed with the decision to target the development of CCS clusters in areas of the country which have existing experience of heavy industrial development.

EU Commission ousted from 300M EUA sale

The EU commission has lost its battle to control the distribution of EU (emissions trading scheme) Allowances to build CCS plants. Member states have rejected a Brussels proposal, which would have left them bystanders in deciding how to spend carbon allowances worth billions of euros.

Instead, a German proposal is gaining traction, which would divide the allowances among the 27 member states according to the 2005 proportions of the ETS. Germany would receive 19.3% of the 300M allowances, Poland 12.2% and the UK 11.4%.

Last December, the EU agreed to finance its clean coal and renewable energy ambitions by giving away 300M carbon permits from the ETS in 2013 to private companies. The money raised would finance up to half of each project's start-up costs, with the rest coming from the host country and the company itself.



The Brussels plan called for a central auctioning of 200M allowances in 2011, and 100M in 2013. Then the European Commission could have selected which projects would receive the cash. But the UK was quick to dismiss the central controlling role of the EC, arguing that the proposal added unnecessary costs and delays.

Under the German proposal, member states would submit a shortlist of their CCS and renewable projects to Brussels, from which the EC would select a maximum of two projects per country. Not all the countries would be selected for projects, and unused carbon allowances would be recycled back to winning tenders. Unlike the EC proposal, member states would also handle the monetisation of the allowances, which means they would decide how to distribute the permits, either by auction or by giving them directly to the private companies.

Canada seen funding new carbon capture plans

Canada may soon fund CCS in British Columbia and Saskatchewan, expanding its plans to cut greenhouse gas emissions. The central government in Ottawa, which has committed about half of the C\$1 billion it set aside earlier for CCS projects, is in talks with natural gas producing companies in the two western provinces regarding new projects.

In October, Canada's national and provincial governments announced CCS project funding worth more than C\$1.6 billion (US\$1.5 billion) for a TransAlta operated coal fired power plant and a Royal Dutch Shell operated crude upgrading plant, both in Alberta province. The companies plan to match government funding with their own investments.

Canada is betting billions of dollars in CCS investment will help it to cut greenhouse gas emissions by up to 20% before 2020, as it ramps up production of crude from its bitumen-rich oil sands in Alberta. In terms of North American energy security, the oil sands are going to play a very important role, according to the Canadian government. Canada has become the top supplier of crude to the US. Exports of more than 2.5M barrels a day were more than double supply levels from any other exporting country. Two new US-bound pipelines are due to start pumping more Canadian oil into the US Midwest next year.

China pushes CO₂ capture, storage questions loom

China is pushing to complete its first commercial scale power plant with CCS, but must do more research on how and where to lock away CO₂ if the technology is to get wide application. A government official noted the technology itself is energy intensive and the significant energy consumption is "quite worrisome". It was also claimed there is no reliable assessment methodology for the long term environmental impact of this technology.

There were concerns if there were problems with storage and large amounts of gas were released at once, perhaps in an earthquake, it could kill people at the surface, while leaks would void the expected contribution to fighting climate change.

Work has already begun on the first stage of China Huaneng Group's Greengem zero-emissions power project near the port city of Tianjin that will eventually strip CO₂ out of gasified coal before combustion, but will run first for several years as a cleaner power station. Construction is planned to start in 2014 and operations to commence in 2016.

China's storage needs will be vast if it decides to push sequestration as a key part of efforts to curb emissions. A 1000MW power plant with a 40-year life span will generate about 200M tonnes of CO₂, according to a recent study by the China-Britain Near-Zero Emissions Coal initiative (NZEC). China's installed generating capacity was already 793,000MW in 2008, and is forecast to hit 1,600,000MW by 2020.

Some geological forecasts are optimistic. There is potential to store 3,066,000M tonnes of gas underground or under the seabed, equivalent to more than 400 years of current emissions, the US National Resource Defence Council said in a report. More than 90% of the country's major CO₂ producing centres are no more than 160km from a potential large underground storage site. However, 99% of this potential capacity is in saline aquifers, a storage option that has not been fully researched.

Mexico works with Colombia, Costa Rica on carbon storage

Mexico is working with Colombia and Costa Rica to seek a joint system for storing CO₂. The Mexican government estimated that if Mexico chose to do nothing about climate change, it would suffer a heavy loss of nearly 15.3% of GDP, while the cost of prevention over the same time would be around 5.6%. The government had committed to reducing greenhouse gas emissions by 128.5M tonnes from 2008 to 2012.

Mexico produces 6.4 tonnes of greenhouse gases (CO₂ equivalent) per person, around 9% less than the world average of 7.1 tonnes. It is responsible for around 1.6% of total world emissions. Mexico has started negotiations



with the US and Canada, its two partners in the North American Free Trade Agreement, about trilateral collaboration on clean energy and energy efficiency.

Japanese utilities to test low emissions coal plant

Japan's two largest utilities, Electric Power Development and Chugoku Electric Power have joined forces to form Osaki CoolGen to undertake a large scale demonstration test of oxygen blown coal gasification combined cycle technology and CO₂ separation and recovery technology.

With government assistance, J-Power began researching multi-purpose coal gas manufacturing technology as an innovative coal fired thermal technology in 2006. The decision to proceed with a large scale demonstration test at the Osaki Power Station in Hiroshima was based on encouraging results from the combined research efforts.

Once constructed, the 170MW facility will proceed with testing to verify the reliability, economic efficiency, and operability of an oxygen blown IGCC system. In the second phase, the company will proceed with the testing of the application of the latest CO₂ separation and recovery technologies. The results of these demonstration tests will have major implications for integrated coal gasification fuel cell (IGFC) technology which has the potential to raise energy efficiency levels even higher.

Osaki CoolGen will undertake an environmental assessment in August 2009, with plans to begin construction in March 2013 and demonstration testing in March 2017.

Future of coal power wagered on carbon capture

Chilled ammonia carbon capture equipment developed by the French company Alstom is under construction at American Electric Power's power plant in New Haven, West Virginia. AEP is the largest consumer of coal in the USA and coal supplies half of US electricity generation. The facility is being attached to a 30-year-old coal plant and pipelines will carry about 1.5% of the plant's CO₂ emissions into saline aquifers 3km underground.

Tests of the technology show it raises the cost of power by about 50%, according to Alstom. AEP said that premium still leaves coal cheaper than most other sources of electricity. An existing coal plant with CO₂ capture could make power for about 6 cents a kilowatt-hour compared with 18 cents for wind generation and 14 cents for power from a new nuclear plant.

The US government has set aside \$3.4 billion for CCS from its \$787 billion stimulus measure. AEP and Southern Co said in June they were pulling out of FutureGen to focus on their own carbon capture efforts. AEP has put its two coal gasification projects on hold, due to failure to obtain all state regulatory approvals and lower power demand forecasts because of the recession. AEP said it would opt for coal gasification if it was building a new plant.

AEP said it was seeking funding from the DOE for half of the estimated \$768M it would cost to capture CO₂ from 235MW of Mountaineer's 1300MW capacity. The demonstration project, which is costing AEP about \$70M, captures more than 90% of the CO₂ from about 20MW. Germany's RWE AG and the US Electric Power Research Institute are partners in the project.

US funding for projects to reduce emissions

US Department of Energy has selected projects by Basin Electric Power Cooperative and Hydrogen Energy International LLC for up to \$408M in funding from the American Recovery and Reinvestment Act. The two projects selected are an existing power plant in North Dakota (\$100M) and a new facility in California (\$308M) which will incorporate advanced technologies to reduce CO₂ emissions. The selected proposals will employ different technological concepts to achieve a goal of at least 90% CO₂ capture efficiency.

Basin Electric Power Cooperative will partner with Powerspan and Burns & McDonnell to demonstrate the removal of CO₂ from the flue gas of a lignite based boiler by adding CCS to Basin Electric's existing Antelope Valley Station, near Beulah, North Dakota. Powerspan's ECO₂ ammonia based technology will be used to capture CO₂ on part of the flue gas stream from a 450MW unit. The net result will be 90% removal of CO₂ from the treated flue gas, yielding about 900,000 tonnes per year of pipeline quality CO₂.

Hydrogen Energy International LLC, a joint venture owned by BP Alternative Energy and Rio Tinto, will design, construct, and operate an IGCC power plant that will take blends of coal and petroleum coke, combined with non-potable water, and convert them into hydrogen and CO₂. The CO₂ will be separated from the hydrogen using the methanol based Rectisol process. The hydrogen gas will be used to fuel a power station, and more than 2M tonnes CO₂ will be transported by pipeline to nearby oil reservoirs for enhanced oil recovery.



The selection of the two projects is part of the third round of the Clean Coal Power Initiative (CCPI). The CCPI is a cost shared collaboration between the federal government and private industry to increase investment in low emission coal technology by demonstrating advanced coal based, power generation technologies with the goal of accelerating their readiness for commercial deployment.

Promotion of European coal to liquids R&D activities

The IEA Clean Coal Centre, with German, Polish, Estonian and Czech partners, is undertaking an overall assessment of the competitiveness and environmental performance of coal to liquids technology from a European perspective. The review will assess CTL activities worldwide (particularly ongoing demonstration programmes in China and planned ones in the USA) and consider possible future CTL R D&D needs for Europe. The benefits of seeking international cooperation on CTL RD&D with stakeholders outside of Europe rather than limiting activities to EU member states is to be discussed.

The information is being promoted and disseminated to all European stakeholders, in particular to those major coal and oil shale using member states, Poland, the Czech Republic and Estonia, in which there is significant potential for an uptake of CTL technology and where industry is now starting to reconsider the development of CTL processes.

Duke Energy, China Huaneng to collaborate on cleaner coal

Duke Energy and China Huaneng Group will explore a range of renewable and clean energy technologies as part of a memorandum of understanding signed in Beijing. Under the MOU, Duke and Huaneng will launch a series of meetings to exchange information and explore potential long term cooperative initiatives to reduce coal plant emissions and develop other renewable sources of electricity generation. One key focal point will be emerging cleaner coal technologies, including CCS and coal gasification.

Duke Energy is building a 630MW coal gasification power plant in Edwardsport, Indiana, which is scheduled to go online in 2012. Duke Energy is spending US\$17M to study CCS at the site and proposing to spend US\$121M to study the potential capture and underground storage of up to 60% of the plant's CO₂ emissions. The company is also building an 825MW coal plant in Cliffside, North Carolina and retiring 1000MW of older, less efficient coal plants. The Cliffside and Edwardsport projects received more than US\$250M in Department of Energy clean coal tax incentives.

China Huaneng Group has built China's first CO₂ capturing demonstration facility in Huaneng Beijing Cogeneration Power Plant. Also, a larger scale CO₂ capturing facility in one of Huaneng's coal fired power plants in Shanghai is under construction, and is scheduled to be put into operation by the end of 2009. Huaneng is also building its GreenGen project, a 250MW IGCC demonstration power plant in Tianjin. It will be China's cleanest and most environmentally friendly coal fired power plant when it is put into operation in 2011.

Murray Energy to build its own longwall coal mining equipment

American Equipment and Machine Inc. (AEMI) has opened its new manufacturing facility in Centralia, Illinois. The machine shop will rebuild and manufacture longwall mining equipment for parent company Murray Energy Corporation's coal mines.

Ohio based Murray Energy Corporation is the largest independent coal producer in the USA, operating underground and surface coal mines in Ohio, Illinois, Kentucky and Utah producing approximately 28M tonnes of coal annually. Murray Energy has worked with various vendors for more than a decade to manufacture custom mining equipment for its mines. With its own machine and equipment facility, the company will produce a proprietary longwall mining system it has engineered to meet the exacting specifications of its own production processes and which will be integrated into all of its mining operations over the next five years.

Methane recovery systems improve coal mine safety in UK

The advance of methane recovery monitoring equipment technology is helping companies improve safety and generate new revenue. Removing methane gas from underground coal mines is a necessary safety measure and in some cases that methane is a valuable commodity which can be burnt to create electricity, either for localised use or to be sold on to aggregators. Methane can be a big revenue earner as demonstrated by (mining company) UK Coal, which has pioneered the technology. In 2007, it realised some £4.3M profit from gas extracted from its mines and generated enough electricity to power over 40,000 homes.

Trolex has introduced a methane monitoring system which uses infrared detection to measure the methane content from the sample on a continuous basis. An initial gas analysis is used to 'train' the system and subsequent analysis can be used to fine-tune the system. This technique provides a continuous online, high accuracy monitoring capability for methane drainage.



Known as Sentinel, Trolex's new system for methane recovery is a stand alone gas to energy project. It is a fully integrated system with the advantages of maximising safety, meeting legal and regulatory requirements as well as generating new revenue streams, all in parallel.

Industrea sells more mining equipment to China

Australia's Industrea group of companies has signed A\$13.6M in new contracts with leading Chinese mining companies, Jincheng Blue Flame Coal and Shanxi Changping Coal Mining. The new contracts secured by Industrea's Chinese subsidiary Wadam are for five Advanced Mining Technologies (AMT) directional drilling and methane gas drainage systems, with a total value of \$11.7M.

The contracts follow orders worth \$9.5M announced earlier this year for similar AMT systems, supplied to Jincheng Group's Sihe mine in the northern Shanxi Province and Daning mine in Jincheng.

Industrea said the additional orders were secured due to excellent results from the AMT systems installed at the Sihe and other mines and further boosted the company's established and longstanding relationships with the Jincheng and Shanxi Mining Groups.

AMT's directional drilling and methane gas drainage system has become the industry standard in China, allowing the typically gassy Chinese coal mines to improve productivity and safety standards significantly.

Algae CO₂ sequestration for coal fired power

MBD Energy (Melbourne) is about to introduce technology that allows algae to capture half or more of the greenhouse gases emitted by a power station, claimed to be at virtually no cost to the utility. Testing at James Cook University in Townsville suggests for every two tonnes of carbon captured, the MBD technology can produce almost 1 tonne of algae, of which one-third can be made into oil products and two-thirds into meal. Revenue from the oil and meal sales is equivalent to more than \$250 for each tonne of CO₂ captured.

The first 1ha display plant of its "fuel synthesiser" is to be installed at the Loy Yang A coal fired power station in the next six months. If the concept is proven effective over six to 12 months then MBD will move ahead to build a commercial pilot plant over 80ha. That will require a A\$25M investment, but MBD estimates it will produce earnings before interest, taxes, depreciation and amortisation of A\$15M. If that project succeeds, the facility can quickly be scaled up to a A\$300M demonstration facility. Australia's largest power station, Eraring Energy, has signed an agreement with MBD to install display plants over the next 12 months.

In New Zealand, Aquaflow Bionomics is taking a different approach to algae fuel production, preferring to focus on "wild algae" found in municipal sewage ponds, polluted water courses and farm outflows. The company has been running a pilot facility of its algae harvester at Blenheim and has embarked on a fund-raising program in Australia to raise money for the first of up to 16 pilot plants.

EVENTS

8-10 Dec 2009, 2009 Power-Gen international conference, Las Vegas, NV, USA, Jan Simpson, PennWell Corp., 1421 South Sheridan Road, Tulsa, OK, 74112, USA, Tel: +1 918 831 9736, Fax: +1 918 831 9875, Email: pgiconference@pennwell.com, Internet: www.power-gen.com/index.html

27-29 Jan 2010, 6th clean energy forum-clean coal 2010, Tianjin, China, Ronnie Tian, Associate Director, Research & Production Dept., China Decision Makers Consultancy, Room 803, Oriental Plaza, No.1500 Century Avenue, Pudong, Shanghai 200122 China, Tel: +86 21 6840 7631, Fax: +86 21 6840 7633, Email: cleancoal@chinadecisionmakers.com, Internet: www.cleancoalforum.com

28-29 Jan 2010, 8th annual coal 2010 markets, Singapore, Singapore, Aileen C. Vitug, IBC Asia (S) Pte Ltd., 1 Grange Road, No.08-02, Orchard, Building, Singapore 239693, Tel: +65 6835 5102, Fax: +65 6733 5087, Email: aileen.vitug@ibcasia.com.sg, Internet: www.abc-asia.com

11-12 Feb 2010, Coal 2010: 10th underground coal operator conference, Wollongong, NSW, Australia, Elena Di Stefano, Coal 2010 Conference Manager, University Conferences & Functions, University of Wollongong, Wollongong, NSW 2522, Australia, Tel: +61 2 4221 8095, Fax: +61 2 4221 8001, Email: elena@uow.edu.au, Internet: www.uow.edu.au/confere....html

22-26 Mar 2010, 6th annual Asia mining congress 2010, Singapore, Singapore, Winnie Koh, Terrapinn Pte Ltd., 1 Harbourfront Place, 18-01/06 Harbourfront Tower 1, Singapore 098633, Tel: + 65 6322 2724, Fax: + 65 6271 8057, Email: winnie.koh@terrapinn.com, Internet: www.terrapinn.com/2010/asiamining/index.stm

29-31 Mar 2010, 8th annual national coal seam gas 2010, Brisbane, Qld., Australia, John Wilson, Informa, GPO Box 2728, Sydney NSW 2001, Australia, Tel: +61 2 9080 4107, Email: john.wilson@informa.com.au, Internet: www.csgsummit.com.au



1-6 Aug 2010, 33rd international symposium on combustion, Beijing, China, The Combustion Institute, 5001 Baum Boulevard, Suite 635, Pittsburgh, PA 15213-1851, USA, Tel: 1 412 687 1366, Fax: 1 412 687 0340, Internet: www.combustioninstitute.org/conferences.htm

11-13 Aug 2010, Coal-Gen 2010 conference, Pittsburgh, PA, USA, Jennifer Lindsey, PennWell Corp., 1421 South Sheridan Road, Tulsa, OK 74112, USA, Tel: +1 918 832 9313, Email: jenniferl@pennwell.com, Internet: www.coal-gen.com/index.html

12-16 Sep 2010, 21st World Energy Congress: Montreal 2010, Montreal, PQ, Canada, World Energy Council, Montreal 2010, 740 Notre-Dame Street West, 8th Floor, Montreal, PQ, Canada H3C 3X6, Tel: +1 514 397 1474, Fax: +1 514 397 9114, Internet: www.wecmontreal2010.ca/en/home.html

12-17 Sep 2010, Coal preparation 2010 conference on advancing coal preparation technologies, Cairns, Qld., Australia, International Longwalls News, PO Box 78 Leederville, WA 6902, Australia, Tel: +61 8 6263 9100, Fax: +61 8 6263 9148, Email: Confedit2010@acps.com.au, Internet: www.acps.com.au

6-7 Dec 2010, 2010 coal trading conference, New York, NY, USA, American Coal Council, 1101 Pennsylvania Ave., NW, Suite 600, Washington, DC 20004, USA, Tel: + 1 202 756 4540, Fax: + 1 202 756 7323, Email: info@americancoalcouncil.org, Internet: www.clean-coal.info/drupal/eventlist

FEEDBACK

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