

Coal e-Newsletter

Issue No. 7

March 2005

COAL NEWS

New Zealand

Pike River makes preliminary coal sales to Japanese steel mills

The Pike River Coal Company's planned export coking coal mine has made preliminary agreements with two major Japanese steel mills for supply of a combined 450,000 tonnes a year of coal. The West Coast mine northwest of Greymouth expects to begin production in 2006.

The company said the agreements came at a time when world prices for premium hard coking coal have more than doubled in the past year to about US\$125 a tonne. Strong demand from China and India has driven world metallurgical coal prices to these record levels. Pike River said the arrangements with the two Japanese buyers would be for a minimum four-year term but remain subject to several matters including price. Wellington-based New Zealand Oil and Gas Ltd owns 71% of Pike River.

Pike River considers its coal transport options

A floating coal transfer station in Golden Bay, barging to deepwater ports, or sharing transport routes with rival Solid Energy are among options for Pike River Coal Company to get its coal to market. The final decision to develop New Zealand's second largest export coalmine in the headwaters of the Pike River near Greymouth is yet to be made, but a request for proposals has been sent to logistics providers. Port Marlborough has abandoned its plan to develop Shakespeare Bay near Picton as a coal export port.

Solid Energy had asked if it could make a proposal. Solid Energy uses rail from the West Coast to Lyttelton, and, after years of bitter disputes with Tranz Rail about the state of the line and the service provided, signed a 13-year contract with the new owner, Toll NZ, last year. Solid Energy said it was prepared to work with Pike River and it would be "very foolish for us and Pike River to set up completely independent operations".

PRCC said the latest estimate for developing the mine was \$70M, with an additional \$15M for working capital. On a conservative analysis, the mine is expected to produce 1 to 1.2M tonnes of coal a year for 15 to 20 years. It would export to Asia, South America and Europe.

Coal slurry would be piped to a dewatering plant, and could be shipped out of Greymouth or Westport. Once at the ports, another challenge is loading because the water is not deep enough for the large export vessels. One option is to lease a floating transfer station anchored in Golden Bay. Coal would be barged to the transfer station, which would be visible only on the horizon from coastal areas.

Huntly coal seam gas joint venture company

Solid Energy joined forces with an independent US oil and gas company, Resource Development Technology LLC (RDT) to prove and develop coal bed methane gas resources in deep coal seams in the Waikato.

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The two have formed a joint venture company – Coal Bed Methane Ltd – to operate the 2860 km² petroleum exploration permit PEP 38605 covering central-western Waikato including the Huntly coalfields and includes Hamilton and Cambridge while the western boundary of the permit goes down the coast from the Waikato river mouth to just south of the Raglan Harbour.

Coal Bed Methane Ltd will assess the reserves and, if economic, extract trapped CH₄ gas from sub-bituminous coal resources, up to 1000 metres deep. The permit has been operated by RDT since 2002. The two have formed a joint venture company – Coal Bed Methane Ltd – to operate the 2860 km² petroleum exploration permit PEP 38605 covering central-western Waikato including the Huntly coalfields and includes Hamilton and Cambridge while the western boundary of the permit goes down the coast from the Waikato river mouth to just south of the Raglan Harbour.

Kenham Holdings now possesses eight coal exploration permits

Kenham Holdings Ltd, the associate company of L&M Mining Ltd (Christchurch), has recently been awarded five more coal exploration permits. The company now holds eight exploration permits for coal, 6 of which are in the Southland and Otago region, four on large lignite deposits.

Kenham has just been awarded an 18,000 ha complex-shaped permit on the West Coast on the Buller field around the current Solid Energy Stockton mine. The Kenham permit covers a number of areas including Seddonville in the north to Denniston as well as Millerton and Stockton.

In the North Island the company has been granted one exploration permit in the north of the Waikato Coal region at Maramarua, where steaming coal is being assessed for potential use in power generation. It also holds a permit acquired last year over part of the Ohai sub-bituminous field in Western Southland, and one on the Kaitangata sub-bituminous field in South Otago. It already holds coal exploration permits over four of the largest Southland lignite deposits across the Southland plains: Mataura, Edendale to Invercargill deposits, Ashers-Waituna (SE of Invercargill) and Hawkdun in Central Otago.

Solid Energy benefits from soaring world prices

Solid Energy is on track for a record 2005/2006 financial year because of soaring world coal prices. The Press newspaper reported that new contract prices for coking coal have leapt from US\$57 a tonne to US\$125 a tonne, the best prices for about 25 years. The company's export volumes would rise from 2.2 Mtonnes to 2.7M tonnes in the upcoming year, but demand was outstripping supply by two to three times. Solid Energy said the company planned to reinvest as much as possible in the business and has earmarked about NZ\$80M for capital expenditure. For the year ended June 2004, Solid Energy posted a net profit of \$33.7M, down from \$56M the previous year.

Solid Energy committed to the long term future of mining at Rotowaro

Rotowaro Opencast Mine, near Huntly, has to date felt little impact following the February appointment of voluntary administrators in Australia by contractor Henry Walker Eltin (HWE), according to Solid Energy. The administrator's representative in New Zealand was working to ensure that mining continues at Rotowaro and for Solid Energy and the local HWE staff it is business as usual. HWE has been contracted to remove the overburden (material above coal) and extract coal at the opencast mine since 1998.

Mining operations and coal supply to customers have not been interrupted and, with initial work already underway at Solid Energy's new Awaroa 4 opencast pit, Rotowaro may even break its own 2004 production record of 1.18Mtonnes. The Awaroa pit is expected to have an eight year lifespan, with more than 100,000 tonnes a month mined once it is ramped up to full production capacity. Rotowaro's existing Township opencast mine has about 6 months of life left, after which it will be used for backfill from Awaroa. However, mining at Awaroa will be a more complex and expensive business than at Township. For every tonne of coal mined at Township, 6 tonnes of overburden is removed. The ratio is 11 to 1 at Awaroa, while the flatter slopes and working over the top of old underground mines add another constraint.

No new slip found at Strongman Mine

An aerial inspection at Solid Energy's Strongman Opencast Mine has shown no evidence of a debris flow into Doherty Creek or of any significant spillage of new material from Harrison's Ridge. Solid Energy and the West Coast Regional Council officers conducted an aerial inspection of the site in February following allegations that there had been a new slip or debris flow into Doherty Creek near the mine. Solid Energy has an agreed plan with the Regional Council for the monitoring and management of an underground fire at the site near Strongman Opencast Mine which has been burning for several years. The company is currently injecting a clay-based grout into hot spot areas below the surface to reduce the fire and heat. This is a slow process, but it is proving effective.

Solid Energy's Environmental Manager explained that the combined action of the underground fire and subsidence has exacerbated the natural instability of an escarpment above Doherty Creek. This has resulted in continuous erosion of the natural cliffs and is a phenomenon of which the Regional Council is aware.

Solid Energy seeks partner for Buller power plant

Solid Energy is looking for a partner to develop its proposed new coal fired power plant (around 150 MW) in Buller. A decision will be made by the beginning of next year. The site for the plant was selected as long ago as the mid-1970s, by the then Electricity Department, and transmission lines were built then. The site is close to rail and road, as well as coalfields. Solid Energy's specialty is coal, rather than electricity generation, however, and the company is looking for a partner. That could be one of the other energy SOEs, or a private sector partner with expertise in this area. Solid Energy is also "working on the viability" of a Southland coal fired power station.

Southland lignite has exciting potential for syngas

Solid Energy is pressing ahead with a coal gasification project which could see Southland lignite converted to syngas, with potential to fire combined cycle gas power stations. The company has been working on the gasification project for about 8 months as part of its commitment to develop clean coal technologies. Although the project has great potential, Solid Energy stresses it is still at least 10 years away before gasification is going to be mainstream technology. It is also too early to say how cost effective it will be to produce syngas from coal. Lignite is considered a very large, low cost resource and gasification would make them available for the rest of NZ as a source of energy. Syngas is clean burning and very efficient as an alternative to natural gas in combined cycle power stations.

Changes promised for Cypress mine

Solid Energy has agreed some of its mining practices have been unacceptable but promises big changes at its proposed Cypress mine near Westport. In the Environment Court hearings in Christchurch this month, chief executive Don Elder said the company recognised its environmental responsibilities and was working to minimise the impacts of its operations. The court has been hearing appeals by the Royal Forest and Bird Society and Buller Conservation Group against the granting of resource consents for the proposed Cypress open-cast coalmine in the Upper Waimangaroa Valley. Dr Elder reported that the company is only at the beginning of a long term programme and it may be some years before it can report that it has reversed the legacy of historical mining practices. However, Solid Energy says it is committed to achieving compliance with its environmental policy as soon as practicable. The company presented evidence that the great spotted kiwi and a land snail, both endangered species found in the area of the proposed mines, would benefit from programmes proposed for their management. The proposed mine is expected to produce around 5M tonnes of coal over 10 years.

Reserves not in doubt says Solid Energy

Reserves of coal in the Waikato are not in doubt, but the cost of extracting some of them are, according to Solid Energy. The company was commenting on the recent announcement from power company Genesis that it was putting plans to build two coal fired generators at Huntly on hold, blaming constraints in recoverable reserves of coal. Solid Energy stressed that the issue is about prices: "Our reserves estimates have not changed. We have always said there are 200-300M tonnes of coal in the Waikato, and we stand by that."

Solid Energy had recently completed work to rank each individual coal reserve in the Waikato into a priority order, from most easily recovered to the hardest and most expensive. That information was shared with Genesis. "At today's electricity prices they are only comfortable with buying 50M tonnes of our coal – the coal that is most easily recoverable." To recover more of the reserves, there were issues that had to be worked through, including, for example, the location of current and planned state highways. "Resolving them will naturally add cost."

On the question of CO₂ capture and storage, Solid Energy noted that it was a partner with Genesis in the same sequestration research project. "We are both of the view that CO₂ capture and storage will be commercially feasible but that it will take time to arrive at that point."

Solid Energy awarded two exploration permits in King Country and Southland

Solid Energy has been awarded an exploration permit over a 1328-hectare section of the Mangapehi coalfield in the King Country area of the North Island. It covers an area to the northwest of Benneydale on both sides of the Mokau River. Another exploration permit is for a 122-hectare lignite coal deposit in Southland, west of Gore. It is in the Hokonui survey district, north of Waimumu where other lignite mines are operating.

Solid Energy identifies a number of changes for Spring Creek mine

Solid Energy, which is undertaking a review and reorganisation of its large underground mine at Spring Creek near Greymouth, has identified a number of initiatives to improve development, mine systems and practices.

Production was halted in November after the mine encountered gas problems, and Solid Energy has been undertaking a full review of the operation, with extraction due to resume some time between April and June.

Among these initiatives is the improvement of mine ventilation management, achievement of ongoing commercial viability through greater development rates, setting up of a taskforce to address coal quality, particularly in improving the performance of the Rocky Creek washery and completion of the new coal train loading operation. The company is also actively recruiting experienced mineworkers in the United Kingdom to work at both Spring Creek and at Terrace underground mine near Reefton.

International

World Energy Outlook 2004

The report re-emphasised the following major themes and conclusions outlined in the previous edition, published two years ago:

- Continuing growth in the world's demand for energy.
- Dominance of fossil fuels.
- Importance of energy security with major oil and gas importers becoming more dependent on imports from distant, often politically unstable parts of the world.
- The link between access to energy and poverty.
- The need for huge amounts of new energy infrastructure to be financed.
- Many of the world's poorest people will still be deprived of modern energy services. Electrification rates will continue to rise in developing countries and the total number of people without electricity will fall only slightly, from 1.6B to just under 1.4B in 2030.
- CO₂ emissions will continue to rise.

Coal will continue to play a key role in the world energy mix, meeting 22% of all energy needs in 2030, a small decrease from the current level of 23%. Coal demand is projected to increase by 1.4% per year between 2002 and 2030. By the end of the Outlook period, coal demand – at just over 7B tonnes – will be almost 50% higher than at present. Power stations will absorb most of the increase, with coal remaining the dominant fuel for power generation.

Asian countries will see the most increase in demand for coal, with China and India alone accounting for 68% of the increase in demand to 2030. Prospects for coal in OECD countries will depend greatly on climate change policies and on the development and deployment of advanced clean coal technologies.

Coal-fired power plants provided 39% of global electricity needs in 2002. This will fall only slightly over the Outlook period, to 38% in 2030. Coal-fired plants will generate 47% of developing countries' electricity in 2030, a 2% increase from today's level.

Coal meeting the challenge - World Coal Institute

The World Coal Institute welcomed the focus on climate change and energy policy that will result from the entry into force of the Kyoto Protocol. It stated that the world will increasingly need to focus on practical solutions to balancing environmental considerations with continued access to low-cost energy – the key driver of economic growth, poverty alleviation and improved health prospects.

It noted that the coal industry has worked responsibly to reduce its environmental impact and will continue to strive for better environmental outcomes in the future. Clean coal is critical to enabling both a comprehensive global response to climate change and to ensuring that developing countries overcome crippling levels of energy poverty. The World Coal Institute states it represents an industry serious about its environmental and social responsibilities and looks forward to a positive and productive dialogue with all parties who share concerns about climate change and energy poverty.

International monitoring network established

The Greenhouse Issues newsletter of the IEA Greenhouse Gas R&D Programme recently reported that a new international research network covering the monitoring of injected CO₂ in geological storage formations has been established. The research network will achieve one of the goals of IEA GHGR&D Programme to encourage practical research, development and demonstration and to facilitate co-operation between researchers.

The inaugural meeting of the Monitoring Network Workshop was held at the Seymour Centre, University of California Santa Cruz, California, in November. The international workshop, attended by nearly 60 people, aimed to bring together the main research groups currently active in the field of monitoring of injected CO₂ in geological formations and to discuss and critique the work that is currently underway.

Coal India pulls out of Aussie mine race (Australia)

Coal India Ltd (CIL) has backed out from the race for acquiring a 25% stake in Tamhoor Coal mines in Australia for which it had earlier bid and has now decided to acquire other coalmines on the block there. CIL had earlier bid for the stake but later on found out that Steel Authority of India, to which it will supply the imported coking coal, has also bid for the same stake.

Major power plant boosts to Queensland coal industry (Australia)

Ergon Energy has reached agreement with coal gas producer and explorer CH₄ and coal giant Peabody Energy Australia Coal to investigate the feasibility of developing a 30MW dual fuel power plant at Peabody's North Goonyella mine in the Bowen Basin, southwest of Mackay. The plant would initially be diesel fuelled then later on, use coalmine CH₄ from mine drainage and coal seam gas extracted from other coal seams on the mining lease. Ergon Energy would own and operate the plant, selling electricity to Peabody and the gas extraction process while selling excess electricity back into the grid.

Meanwhile, Origin Energy is proposing a new 1,000MW gas plant to be built in Roma using coal seam methane. The plant will be built with highest-efficiency technology, probably combining gas and steam turbines, and will run on gas from one of Origin's coal seam methane deposits in the area. Origin has submitted development requests to the Queensland Government, and expects permits to be granted by 2006.

Aussie coal rush (Australia)

BHP Billiton Mitsubishi Alliances (BMA) is upgrading its giant Goonyella Riverside Mine, and several other mines in the Queensland Bowen Basin given the wave of demand for coal from China, India and South America. BMA, which owns and operates the Blackwater, Peak Downs, Saraji, Norwich Park, Gregory and Crinum coal mines in the basin, is well advanced in its plan to transform its Broadmeadows open cut pit at Goonyella into an underground mine.

Centennial Coal of New South Wales has opened the Mannering Colliery, which is expected to produce 500,000 tonnes annually. Initially output will be used by the adjacent Vales Point Power Station, and later on, some of the production may go to foreign markets. Production from Mannering forms part of Centennial's full year production target of 17.6M tonnes.

New coal-fired power investments in North America (Canada)

The 2005 Electricity Outlook, a survey of 75 US and 14 Canadian utilities conducted by energy consultants GF Energy, finds that while utilities in the US and Canada are concerned about GHGs, most are still planning major new investments in coal-fired generation plants.

Coal is expected to be the generating method of choice given high natural gas prices and other factors. While some companies are planning to order new nuclear generation, most respondents view this as six or more years down the road, according to the survey. The survey also finds that new coal-fired generation is seen as the best way to address carbon emissions as new plants replace existing generation, because new plants are far more efficient.

China coal prices to grow by 10% in 2005 (China)

The Market Economy Research Institute under the Development Research Center of the State Council has reported that, due to booming demand, raw coal prices are expected to grow by 10% in 2005. The growth will be mainly attributed to increased usage of the power industries (at 120 Mtonnes) and metallurgical industries (at 30M tonnes) as they remained the largest coal consumers in the country.

US-Chinese JV orders DBT (China)

Shanxi Asian American-Danang Energy Company (SAADEC) is the Chinese joint venture company owned 56% by Asian American Coal, Inc. (AACI) and the first modern-day foreign company to receive a license from the Chinese government to mine coal in China. Recently, it has ordered three belt systems from DBT America as well as a large volume of conveyor components from sister company DBT China.

The equipment is destined for the new Danang longwall mine to be operated by SAADEC. The company has a license from the Chinese government to develop and operate a mine at Danang with reserves of 170M tonnes. Located near Jincheng City, Shanxi province, some 360 miles southwest of Beijing, the mine targets annual production of 4M tonnes.

Iran to achieve fully-mechanised coal production (Iran)

The Public Relations Office of Iran Mine House announced that Iran's first fully-mechanised coal production will start operation in Tabas, Khorasan Razavi Province by March 2006. The project will aim to produce 750,000 tonnes of coal concentrate by using fully mechanised methods. This is the first time that Iran will achieve fully mechanised technology for coal production.

Poland aims for greener energy infrastructure (Poland)

The Polish government has adopted an energy policy to 2025 seeking to balance security, competitiveness and environmental concerns by making fossil fuel use cleaner and boosting the share of renewable energy. The country is heavily dependent on coal for power generation and the strategy foresees greater use of clean coal technologies.

Sale of Zululand Anthracite Colliery (South Africa)

BHP Billiton have announced the completion of the sale of Zululand Anthracite Colliery (ZAC) to Riversdale Mining Ltd, subject to the conversion and transfer of ZAC mining rights in terms of the Minerals and Petroleum Resources Development Act of 2002.

Riversdale Mining will hold 74% of ZAC with the remaining 26% to be held by a black economic empowerment (BEE) consortium. Riversdale Mining also owns a 74% interest in an anthracite deposit in the Vryheid area of Kwazulu-Natal province and is focused on building a portfolio of quality assets in South Africa.

Peabody gets permit for coal plant in Illinois (USA)

Peabody Energy Co. (USA) has announced plans to build a coal power plant in Illinois' Washington County as soon as it received its air pollution permit. The 1,500 MW Prairie State plant and an adjacent coal mine would employ 450 people full time. Up to 2,500 workers would be needed to build the plant. The Prairie State plant would be one of the largest coal-fired plants approved in the nation and would also be using the latest technologies to reduce emissions to a very low level.

Potential IGCC plant sites (Canada & USA)

Jacobs Consultancy UK received a Gasification Optimisation Study from the Canadian Clean Power Coalition (CCPC) to identify suitable innovative technologies for a new generation of coal gasification-based clean power plants in Canada. The plants will incorporate CO₂ capture and storage.

American Electric Power has engaged PJM Interconnection (an independent electric transmission provider) to evaluate transmission interconnection feasibility for three potential sites being considered by AEP for a commercial-scale IGCC power plant. The 3 potential sites are on land currently owned by AEP and meet the criteria identified by the company as necessary for building and operating the plant, including acreage, contour, proximity to water source, accessibility, timely permitting and other environmental factors. The three potential sites are all on the Ohio River, in West Virginia, Ohio and Kentucky.

Technology News***Second Coal Technology Tour***

The Coal Association hosted the second coal technology tour to Australia in mid-March. The aim is to expose key people (MPs, officials and industry representatives) to the clean coal technologies in place or actively researched in Australia. This tour provided new insight and understanding of coal issues and was very well received by the participants.

CO₂ capture & storage offer emissions solution (IEA)

The International Energy Agency (IEA) recently presented a new publication "CO₂ Capture and Storage" at the United Nations Conference of Parties on Climate Change in Buenos Aires which states that CO₂ capture and underground storage could constitute as much as half of the global emissions reduction by 2050.

The publication describes the challenges for a CO₂ capture and storage (CCS) strategy to reach market introduction and achieve its full potential within 30–50 years. Developing CCS technologies provides the opportunity to continue using fossil fuels such as coal, oil, or natural gas without significant CO₂ emissions. In addition, the captured CO₂ may be used for enhanced oil and gas recovery, which would offset, at least partially, the high cost of capturing CO₂ through additional oil and gas production.

Australian states consider clean coal technologies (Australia)

NSW and Victoria have joined Queensland and the Federal Government in identifying clean coal technologies as part of their broader GHG abatement policies.

The Victorian Government recently released the position paper "Greenhouse Challenge for Energy" which proposed the establishment of a strategy to drive development of cleaner energy production methods. The Victorian Government will pursue a strategy to develop and demonstrate those technologies in which Victoria has a particular advantage (cleaner brown coal), and to facilitate technology developments with respect to renewable energy and energy efficiency.

The NSW Government recently issued its discussion paper "Energy Directions Green Paper" which suggests the state will need an extra 2000MW – or about three new power plants – on top of its existing 12,000MW capacity by 2012, one of which is likely to be coal-fired. It indicated clean coal technologies will play an important part in the mix of solutions to combat GHG emissions and meet growing demand for energy in the state.

The Western Australian Government released a new strategy to strengthen the future of coal mining in the state. It advocates a partnership with coal mining companies to expand their markets domestically and overseas. It supports a boost in the state's coal production and moves to improve the competitiveness of coal for domestic energy production and preparing the industry for an environmentally-friendly future.

CCS to reduce cost of greenhouse cuts (Australia)

The Australian Bureau of Agriculture and Resource Economics (ABARE) has released its "Near Zero Emissions Technologies report" which stated that the use of carbon capture and geological storage (CCS) technologies in the electricity sector are expected to reduce the costs of achieving reductions in CO₂ emissions.

CCS applied to coal and gas fired electricity generation could provide significant opportunities to reduce CO₂ emissions over the period to 2050. ABARE modelling indicates that using carbon capture and geological storage technologies could significantly reduce the global economic costs of meeting an international carbon emissions constraint.

Funding for CCS demonstration projects (Canada)

The Canadian Ministry of Natural Resources Canada announced the awarding of funding under the CO₂ Capture and Storage (CCS) Incentive Program to Anadarko Canada Corporation, Apache Canada Ltd, Penn West Petroleum Ltd and Suncor Energy Inc. to lead the way in demonstrating the capture and storage of CO₂.

The four projects are located in Alberta and involve converting and reconfiguring existing wells or using new processes to explore the potential and benefits of CO₂ storage. The technology involves capturing CO₂ and storing it underground in geological formations.

The Ministry, at the same time, put forward a call for a second round of proposals available in April as it reiterates the Canadian Government's commitment to support innovative uses of CO₂ to reduce GHG emissions.

Coal bed methane recovery (China)

China has achieved an initial success in using CO₂ enhanced coalbed methane (CBM) recovery technology from Canada to tap the country's huge CBM resources. China United Coalbed Methane Co Ltd, said a test had been completed with a total of 193 tons of CO₂ injected into the targeted coal seam of the CBM well.

The Canadian International Development Agency and the Chinese Ministry of Commerce signed a memorandum of understanding concerning the development of China's CBM technology/CO₂ sequestration project in Beijing in 2002.

The project aims to effectively exploit coalbed methane, while storing CO₂ in unmineable deep coal beds. Because of the preferential absorption of CO₂ over CH₄ in coal beds, the project uses injections of waste CO₂ from nearby energy production industries to cause the release of CH₄ from the coal beds, while the CO₂ remains in the coal beds for geological time scales. This enhances the recovery of CBM, and eliminates the release of CO₂ to the atmosphere.

The study includes preliminary engineering for a commercial size demonstration plant for installation in Canada. The CCPC represents power generators and coal suppliers of over 90% of Canada's coal-fired power generation. Their goal is to develop a demonstration project at commercial utility scale, which will allow all emissions, including CO₂, to be controlled to meet all foreseeable new regulatory requirements.

Geosequestration as one key to big greenhouse cuts (Japan)

The Japanese government will urge the international community to back geosequestration as a major part of the means to cut GHG emissions by 2050. By 2050, Japan is reported to propose CO₂ emission levels to ¼ of 2002 levels, and by 2100 to 1/20 of 2002 levels.

Japan will advance research and development of new technologies in three areas - nuclear power, including reprocessing nuclear fuel and establishing total control over the nuclear fuel cycle, geosequestration, and developing renewable energy sources.

Pew Center's report on Induced Technological Change and Climate Policy (USA)

The recently released report of the Pew Center on Global Climate Change (USA) entitled "Induced Technological Change and Climate Policy" examined how climate policies can spur additional or 'induced' technological change

(ITC). It stated that public policy has a legitimate role in promoting technological change because the benefits of intervention can exceed the cost to society. It emphasized that technological change will crucially influence how successfully countries will achieve the goal of slowing or avoiding the atmospheric build-up of GHGs.

The report stated that the presence of ITC justifies more extensive reductions in GHGs than would otherwise be called for. This is because ITC lowers the costs of achieving emissions reductions and hence the optimal extent of GHG reduction is greater than would otherwise be predicted. It noted that announcing climate policies in advance could reduce their costs. The example is given whereby announcing a \$25/tonne carbon tax 10 years in advance reduces discounted GDP costs by about a third compared to the same climate policy imposed without any prior notice.

IGCC deployment and commercialisation closer (USA)

Browers Consulting (USA) reported that Integrated Gasification Combined Cycle (IGCC) technology has advanced significantly in the past few years. Financial support from the U.S. Department of Energy has helped two projects to successfully construct and operate: Wabash River in Indiana for demonstration of ConocoPhillips gasification technology, and Polk in Florida for demonstration of Chevron/Texaco gasification technology. The next step in the advancement is to build a commercial plant. Several events transpired in 2004 which significantly advance the prospect of commercial IGCC plants.

The Supercritical Steam Cycle continued to gain momentum in 2004. The need to reduce emissions has been one driver in moving the industry to supercritical technology. Supercritical technology brings pulverized coal plants closer to IGCC technology in terms of emissions. IGCC is still the clear environmental winner for a broad range of measures including criteria pollutants, waste/by-product production, mercury removal, and the potential sequestration of CO₂.

EVENTS

1st Coal21 annual conference Sydney, NSW, Australia, 5-6 Apr 2005 The Meeting Manager, 2nd Floor, 81½ George Street, The Rocks, Sydney, NSW, Australia Tel: +6 12 9241 2955 Fax: +6 12 9241 5354 Email: meetings@tmm.com.au Internet: www.tmm.com.au

3rd Coaltrans China Beijing, China, 10-12 Apr 2005 Coaltrans Conferences Ltd., Nestor House, Playhouse Yard, London EC4V 5EX, UK Tel: +442077798945 Fax: +442077798946 Email: coaltrans@euromoneyplc.com Internet: www.coaltransconferences.com

Australasian Institute of Mining and Metallurgy (AusIMM) coal operators conference 2005 Brisbane, Queensland., Australia, 26-28 Apr 2005 Donna Edwards, The AusIMM Central Services, Level 3, 15-31 Pelham Street, PO Box 660, Carlton South, Vic. 3053, Australia Tel: +61396623166 Fax: +61396623662 Email: dedwards@ausimm.com.au Internet: www.ausimm.com

2nd international conference on clean coal technologies for our future: CCT 2005 Castiadas, Italy, 10-12 May 2005 Conference Secretariat, Consulcongress Srl, via San Benedetto, 88-09129 Cagliari, Italy Tel: +39070499242 Fax: +39070485402 Email: info@cct2005.it Internet: www.cct2005.it

11th Coaltrans Asia Bali, Indonesia, 5-8 Jun 2005 Coaltrans Conferences Ltd., Nestor House, Playhouse Yard, London EC4V 5EX, UK Tel: +442077798945 Fax: +442077798946 Email: coaltrans@euromoneyplc.com Internet: www.coaltransconferences.com

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