



INCA-CO2 NEWSLETTER  
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**F**ew weeks after the GHGT8 Conference in Trondheim, everyone will remind the perfect organisation by our Norwegian friends. Everyone should also remind the strong Japanese participation to that event - 90 according to the list of attendees - despite the long distance between Japan and Trondheim ! Is something special happening in Japan on CCS ? Well ... the Japan Ministry of Economy, Trade and Industry has just announced some few days ago it plans to set up facilities in Japan and abroad (Norway ?) to capture and store CO<sub>2</sub> in an effort to cut Japan's greenhouse gas emissions. Implementing CCS technology could avoid 200 millions tons of CO<sub>2</sub> annually with 100 millions tons each to be disposed of in Japan and abroad. It marks the first time for the ministry to set a numerical target to cut CO<sub>2</sub> emissions using CCS technology. 200 millions tons of CO<sub>2</sub> represents one sixth of the current domestic CO<sub>2</sub> emissions.

The government plans to spearhead research, build facilities and seek necessary legislation in order to use CCS as one of the main method of reducing CO<sub>2</sub>. Japan also intend to take the lead in developing technology and establishing demonstration systems until the cost of reducing CO<sub>2</sub> reaches around 3,000 yen per ton (approx. 20 €/t), as well as in conducting on-site research and safety assessments. Outside Japan, the government plans to support CCS utilisation and aims to obtain carbon credits from developing countries around 2010. As an example, Japan and India just agreed to enhance cooperation in the field of environment technology and energy, as well as to establish a special economic zone in India for Japanese business.

Using CCS in Japan had previously been considered difficult to the lack of suitable land and expensive land prices. International rules are expected to be established in the near future to count developed nations' CO<sub>2</sub> reduction using CCS technology in developing countries as developed nations' own reduction.

Something is happening in Japan... and outside Japan !

**Pierre Le Thiez**

## Australia



### **Anglo American/Shell alliance may develop 5 bln aud Australian project - report**

Royal Dutch Shell group and mining giant Anglo American Corp have formed an alliance that may result in the 5 bln aud Monash synthetic diesel and electricity project being developed in the Australian state of Victoria, the Age newspaper reported, citing the companies...Formation of the alliance comes ahead of an expected mid-year decision to first build a 300-400 mln aud demonstration plant for the Monash project.

It is promoted as "clean" energy because carbon dioxide emissions are to be captured for injection into the nearby exhausted Bass Strait gas reservoirs....The Monash project envisages a new coal mine, drying and gasification plant, carbon dioxide capture and storage, and a gas-to-liquids plant with associated power generation.

<http://www.iii.co.uk/news/?type=afxnews&articleid=5657823&subject=companies&action=article>

### **Federal And Alberta Governments Announce Funding For CO2 Sequestration Study**

The federal government and the province of Alberta have announced they will invest \$16.6 million toward ten innovation and economic development projects under the Western Economic Partnership Agreement. Many of the projects are focused on increasing innovation in, and promoting the commercialization of environmental technologies.. Western Economic Diversification Canada and the Alberta government will each contribute \$3 million to the CO2 Management Program. ....The program will develop an implementation plan and conduct research focused on the geological sequestration of carbon dioxide. It will identify suitable commercial CO2 source-sink opportunities within the western Canadian sedimentary basin and perform risk assessment studies for storage issues.The project will also create and implement a monitoring, measurement and verification program for the Penn West Energy Trust CO2 Enhanced Oil Recovery Field Project. ... **New Technology Magazine, 5/24/2006**

### **Coal industry sets up demonstration fund**

The Australian Coal Association has announced the establishment of a Coal 21 Fund which will provide up to \$300 million over the next five years to work with the electricity generation industry to demonstrate promising technologies for reducing greenhouse gas emissions from coal-fired power stations. Demonstration projects are being assessed for funding support in a range of technologies including:

- capture and permanent geological storage of carbon dioxide (the key to achieving near zero emissions from coal);
- coal gasification for either electricity or liquid fuels production (a way of capturing CO2 without first burning coal);
- oxy-fuel combustion (a way to reduce the cost of capturing carbon dioxide at conventional power stations);
- post-combustion capture and storage of carbon dioxide, including retrofitting of existing stations (another promising option for capturing CO2 from conventional power stations); and
- advanced clean coal preparation technology.

<http://news.researchcentre.com.au/rndinfo/newsletter.php?acro=&issue=2006-03-21#3004>

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## Canada



### **Oil Sands Set to Explode**

Rising energy prices are driving oil sands production to new heights. Last week, Canada's National Energy Board (NEB) released a report giving an update on the opportunities and challenges facing Canada's oil sands between now and 2015. (Link opens a PDF.) A follow-up to a 2004 report, the document takes into account current market conditions, such as the doubling of the price of crude oil and natural gas since the original report came out. We've given our own report on Canada's oil sands, but now let's take a revised look, based on the new NEB report. To meet the requirements of the Kyoto Protocol, Canada will need to invest in clean energy to obtain credits to offset the increase in carbon dioxide, or else capture and sequester the carbon dioxide. In part to balance its oil sands production

<http://www.fool.com/news/commentary/2006/commentary06060511.htm>

### **Klein predicts affordable clean coal technology, says Ontario 'short sighted'**

Alberta Premier Ralph Klein believes Ontario's plans to eliminate its coal-fired power plants are "short sighted," and says affordable, clean coal-burning technologies are inevitable. ...Such coal-gasification technology would enable the capture of carbon dioxide. And in Alberta, the possibility exists that the carbon dioxide could be sent to a pipeline to older oilfields where it is pumped down the wells to bring additional oil to the surface.

...The Monash project initially envisages a new coal mine, drying and gasification plant, carbon dioxide capture and storage and a gas-to-liquids plant.

<http://ca.news.yahoo.com/s/05062006/2/business-klein-predicts-affordable-clean-coal-technology-says-ontario-short.html>

**Alberta Sequestration Test To Demonstrate Carbon Dioxide Storage While Increasing Oil Production (full text)** The first geologic sequestration project to occur under the guidance of the U.S. Department of Energy's Regional Carbon Sequestration Partnerships program is taking place in Alberta.

Through funding from the Office of Fossil Energy's National Energy Technology Laboratory, the test is being conducted by the Energy and Environmental Research Center at the University of North Dakota Plains CO2 Reduction Partnership, in collaboration with its industry partner Apache Canada Ltd., and the Alberta Department of Energy and Natural Resources Canada. It will evaluate the potential for geological sequestration of carbon dioxide as part of an acid gas stream that also includes high concentrations of hydrogen sulfide. The gas will be injected into a well at a rate of 100 tons per day over the next two years. With various types of verification equipment being used, the tests will monitor such things as resistivity, changes in bulk fluid density, pH, pressure and temperature. The project has the ability to sequester 67,000 tons of carbon dioxide annually.... **New Technology Magazine, 6/26/2006**

### **Pacific Asia China Energy Inc.: Asia Canada Energy and Alberta Research Council to Commence Research Study for Enhanced CBM Development in China**

Pacific Asia China Energy Inc. is pleased to announce that the Company's subsidiary, Asia Canada Energy Inc. (ACE) and the Alberta Research Council Inc. (ARC), in Edmonton, will commence a cooperative research study that will technically evaluate the potential for

coalbed methane (CBM) and /or enhanced CBM development (ECBM) on the Company's CBM concession in Guizhou Province, China. The evaluation is part of a larger coal seam study of ECBM technology/CO2 sequestration in China in which the Chinese partner is CUCBM. This process involves the injection of CO2 into coal seams to enhance the CBM recovery process as well as to permanently store CO2 in the seam and avoid its release to the atmosphere.

<http://sys-con.com/read/226004.htm>

#### Canada's CO2 capture\_storage\_ technology roadmap

[http://www.nrcan.gc.ca/es/etb/cetc/combustion/co2trm/pdfs/canada's\\_co2\\_capture\\_storage\\_technology\\_roadmap\\_lowres.pdf](http://www.nrcan.gc.ca/es/etb/cetc/combustion/co2trm/pdfs/canada's_co2_capture_storage_technology_roadmap_lowres.pdf)

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## United States



### Climate Change Versus CO2 Capture Technology

According to an American Bar Association (ABA) newsletter on energy, CO2 concentrations in the atmosphere are rising at 2 parts per million (ppm) per year . On a comparative basis in the 1700s, CO2 in the atmosphere was at 290 ppm; in 1960 the concentration was at 315 ppm, and it has increased to 370 ppm today. The threshold to avoid catastrophic climate impacts is 450 ppm (35 years to critical at this rate).

Presently Norway, Canada and Algeria use industrial point source CO2 capture plants. New developments are underway in the U.S. as well as Europe. The potential for CO2 capture technology used in widespread application is estimated to be near an overall 40% capture of all global fossil fuel emissions. <http://blogcritics.org/archives/2006/05/08/211914.php>

### FirstEnergy coal plant selected for key study Project aims to cut greenhouse gases

FirstEnergy Corp. has become the Midwest's first utility to have a coal-fired power plant chosen for research that could someday be applied broadly to help reduce greenhouse gases that cause global warming. Called geological carbon sequestration, the technology aims to capture carbon dioxide emissions from coal-fired power plants .

<http://www.toledoblade.com/apps/pbcs.dll/article?AID=/20060529/NEWS08/605290329/-1/rss>

### AES Creates Alternative Energy Group

AES Plans to Invest Approximately \$1 Billion over Three Years in Alternative Energy Businesses, Including Greenhouse Gas Reduction Projects

These partnerships give AES the opportunity to develop and commercialize proprietary energy-related technologies developed by these entities. Technologies being evaluated under these strategic relationships include alternatives to geological and terrestrial sequestration of carbon dioxide, fuel cell and other energy storage technologies, and alternative biomass opportunities.

<http://biz.yahoo.com/bw/060417/20060417005346.html?.v=1>

### Action further clears way for FutureGen facility at Penwell site

Approval of a Pecos County site for storage of CO2 bolsters the qualifications of a Penwell site being considered for the \$1 billion federal FutureGen power plant. During Wednesday's meeting of the Board for Lease of University Lands, the board decided a 45,000-acre tract of land in Pecos County "would be an acceptable site" for storage of CO2 produced by the FutureGen facility, according to Jim Benson, assistant director of West Texas Operations for University Lands." <http://www.oaoa.com/news/nw042106a.htm>

### **U.S. group pushes to get credits for burying CO<sub>2</sub>**

Energy companies should get credit in greenhouse gas trading schemes for burying heat-trapping carbon dioxide emissions in aging oilfields, a group of energy experts said. Energy companies have been pumping small amounts of CO<sub>2</sub> into old Texas oilfields since the early 1980s to push out crude that is trapped between rock formations. Focus on the practice is growing as U.S. crude production wanes, oil futures hit record prices, and concern about global warming rises. <http://asia.news.yahoo.com/060420/3/2jcg5.html>

### **A Major Hydrogen Power Plant Is Headed for California**

BP pic and Edison Mission, a subsidiary of Edison International, are planning to build a \$1 billion hydrogen-fueled power plant in Southern California that would generate 500 MW of clean electricity with minimal carbon dioxide emissions. This first-of-its-kind facility will combine a number of different technologies to meet its objectives, which are: to convert petroleum coke produced at California refineries to H<sup>sub 2</sup> and CO<sup>sub 2</sup>; capture and separate 90% of the CO<sup>sub 2</sup> and transport it by pipeline to an oilfield, where it would be injected into reservoir rock to stimulate additional oil production  
[http://www.redorbit.com/news/science/453221/plants\\_and\\_projects/index.html?source=r\\_science](http://www.redorbit.com/news/science/453221/plants_and_projects/index.html?source=r_science)

**DNV To Cooperate With The US On CO<sub>2</sub> Storage** - Det Norske Veritas (DNV) is to cooperate with the United States on the storage of CO<sub>2</sub> in underground reservoirs. Such geological storage is the solution that professionals believe is the best one for limiting climate change gas problems...This collaboration will cover large-scale testing, modelling, data gathering and risk assessments relating to the underground storage of CO<sub>2</sub>. Among other things, DNV will develop a method for calculating how much CO<sub>2</sub> is actually stored. This will also confirm the size of the CO<sub>2</sub> emissions that were actually prevented by the natural gas being burnt in power stations where the CO<sub>2</sub> from the combustion process is pumped down into underground reservoirs or oil fields again, where it is stored for thousands of years. The Research Council of Norway and Gassnova support the three-year collaboration, which is worth 9.4 million Norwegian kroner. The Geological Survey of Norway (NGU) and Aker Kvaerner Geo will also be involved....  
DNV is also highly advanced when it comes to developing and qualifying technology to capture, transport and store CO<sub>2</sub>- **New Technology Magazine, 6/29/2006**

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## **Japan**



### **Japan to cut greenhouse gas emissions with underground storage technology**

Japan is considering cutting its greenhouse gas emissions by building facilities at home and overseas to capture and store carbon dioxide underground, local press reported on Tuesday. The measure is known as CO<sub>2</sub> capture and geological storage technology, or CCS. By using it, Japan aims to reduce CO<sub>2</sub> emissions within the country by 200 million tons annually, a sixth of its current domestic CO<sub>2</sub> emissions, with 100 million tons each to be disposed of in Japan and abroad respectively, the Ministry of Economy, Trade and Industry said. <http://www.angolapress-angop.ao/noticia-e.asp?ID=449574>

### **Japanese potential of CO<sub>2</sub> sequestration in coal seams**

*Applied Energy Volume 83, Issue 9, September 2006, Pages 911-920* Abstract As a reduction strategy for global warming by green-house gases underground storage or sequestration of CO<sub>2</sub> into coal beds or seams has been studied by the Japanese government and some associated organizations. The principle of this study depends on the adsorption of CH<sub>4</sub> or CO<sub>2</sub> on the surface of coal molecules as well as the nearly twice the

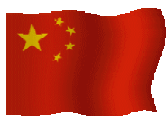
amount of adsorption of CO<sub>2</sub> compared with CH<sub>4</sub>. One of the authors had experimentally clarified the adsorption abilities of the coals in each Japanese coalfield. Based on these adsorption-abilities, the amount of the coal-bed methane resources was calculated, and also the sequestration-potential of carbon dioxide was estimated for each coalfield. In this paper, the CO<sub>2</sub> sequestration-potential obtained from each coalfield is compared with the potentials from the other coalfields in Japan. Among the Japanese coalfields, the Ishikari coalfield in Hokkaido is the biggest and shows 50% of Japanese CO<sub>2</sub>-sequestration-potential. And the other big coalfields are the solitary island area in the northwestern district of Kyushu and the Miike-Ariake Sea area. Their potential percentages are 14% and 13%, respectively.

**Keywords:** Reduction of CO<sub>2</sub>; Sequestration of CO<sub>2</sub> in coal bed; Survey of coal reserves in the past coal fields in Japan; Evaluation of Japanese potential of CO<sub>2</sub> sequestration; Future strategy for CO<sub>2</sub> sequestration

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## Other Countries

### China



**Petromin Resources Ltd. is pleased to announce that it has signed a letter of Intent with the Heilongjiang Coal Geological Bureau (HCGL), China to explore and develop Heilongjiang province's coalbed methane (CBM) resources...** This letter of Intent, as signed by Petromin and HCGL, involves Petromin to providing technical expertise, technology transfer, and funding in CBM exploration and development, which includes participation in the drilling, completion, testing, and equipping of potential CBM/ECBM (i.e. CO<sub>2</sub> sequestration) prospects on selected coal fields within Heilongjiang province. The cooperation may extend to further partners. <http://biz.yahoo.com/ccn/060621/200606210334451001.html?.v=1>

### **Asia Canada Energy And ARC Commence Research Study For Enhanced CBM Development In China (Full text)**

Coalbed Methane - R&D/Funding Pacific Asia China Energy Inc. (PACE) has announced the company's subsidiary, Asia Canada Energy Inc. (ACE) and the Alberta Research Council Inc. (ARC) in Edmonton, will commence a cooperative research study that will technically evaluate the potential for coalbed methane (CBM) and/or enhanced CBM development (ECBM) on the company's CBM concession in Guizhou Province, China. The work will be conducted by the Canadian Consortium on Enhanced Coalbed Methane Recovery which is led by ARC. Other consortium members are Computer Modelling Group, Sproule International Ltd., SNC Lavalin, Calfrac Well Services Ltd., Precision Energy Services and Porteous Engineering Ltd. The study also includes ACE's partner in developing the project, the China United Coalbed Methane Company (CUCBM). The evaluation is part of a larger coal seam study of ECBM technology/CO<sub>2</sub> sequestration in China in which the Chinese partner is CUCBM. This process involves the injection of CO<sub>2</sub> into coal seams to enhance the CBM recovery process as well as to permanently store CO<sub>2</sub> in the seam and avoid its release to the atmosphere.

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**India**



**India, 21 others adopt plan for carbon capture**

India and 21 other countries under the banner of Carbon Sequestration Leadership Forum adopted a draft strategic plan, which chalks out a roadmap till 2013 for developing technologies to capture and store carbon dioxide so as to reduce pollution from thermal power plants.

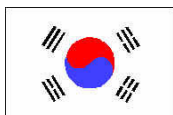
<http://www.thehindu.com/2006/04/05/stories/2006040506471703.htm>

**U.S. and India Sign Historic Agreement on FutureGen Project**

India to Participate in World's First Integrated CO2 Sequestration and Hydrogen Production Research Power Plant [http://www.fossil.energy.gov/news/techlines/2006/06019-India Participates in FutureGen.html](http://www.fossil.energy.gov/news/techlines/2006/06019-India%20Participates%20in%20FutureGen.html)

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**Korea**



**United States and South Korea Sign Agreement on FutureGen Project**

Energy Secretary Samuel W. Bodman and South Korean Minister of Commerce, Industry & Energy, Chung Sye Kyun, today signed an agreement making South Korea the second country, after India, to join the United States in the FutureGen International Partnership. Korea has pledged \$10 million to help build and operate the world's first zero-emissions coal-fired power plant and will sit on a government steering committee to oversee this initiative. Once operational, this plant will remove and sequester carbon dioxide while producing electricity and hydrogen, making it the environmentally cleanest fossil fuel fired power plant in the world.

<http://www.cattlenetwork.com/content.asp?contentid=47940>

**S. Korea to Inject Cash into Fuel Cell Development** The remainder of the money will be spent on technology related to enhancing energy efficiency and dealing with the emission of greenhouse gases. The latter includes the creation of carbon capture storage (CCS) technology that will be needed when the country is obliged to meet Kyoto Protocol climate control commitments.

<http://www.fuelcelltoday.com/FuelCellToday/IndustryInformation/IndustryInformationExternal/NewsDisplayArticle/0,1602,7566,00.html>

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## Saudi Arabia



### Scientists hunt cheaper "carbon capture" technology

Saudi Arabia, May 23 (Reuters) - Researchers laid out on Tuesday rival technologies for removing carbon dioxide before it gets into the atmosphere, a process seen as crucial in fighting global warming. Experts at a Middle Eastern conference held by oil firm Saudi Aramco say carbon dioxide levels -- seen as the main culprit behind warming -- are set to double by 2055 if the industry and energy sectors continue emissions at today's rates. Researchers are focusing efforts on carbon capture and storage (CSS), or separating and removing the gas before manufactured products reach consumers. But pressure is on to come up with technology that is cheap. <http://asia.news.yahoo.com/060523/3/2kymz.html>

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## FORTHCOMING EVENTS

### 2007

**International Symposium : Reduction of emissions and geological storage of CO2** - 4-5 October 2007 - Paris - Hôtel Le Méridien Étoile  
<http://www.ifp.fr/IFP/en/IFP00EVE.nsf/MFOConsultationCON?Openform>

### 2006

#### September

#### 6th European Conference on Coal Research and its Applications

Coal Research Forum, University of Kent  
September 5 - 7, 2006 University of Kent Grimond Building Canterbury, Kent, UK  
<http://www.coalresearchforum.org/crfevent.html>

#### First international Conference on Carbon Management

at Urban and Regional Levels: Connecting Development Decisions to Global Issues Mexico City, September 4-8, 2006 - <http://www.gcp-urcm.org>

#### October

#### POWER-GEN India & Central Asia 2006 exhibition and conference

New Delhi, India, 24-26 Oct 2006  
[attendingpgica@pennwell.com](mailto:attendingpgica@pennwell.com)

#### November

#### Global Environmental Change: Regional Challenges

9-12 November, Beijing, China  
[http://www.essp.org/essp/ESSP2006/Information\\_index.html](http://www.essp.org/essp/ESSP2006/Information_index.html)

#### International Conference on Regional Carbon Budgets

16-18 August, Beijing, China

Conference homepage: <http://www.icrcb.org.cn/> For more information :

<http://yosemite.epa.gov/oar/globalwarming.nsf/content/newsandeventseventscaledar.html#January%2021-26%2C%202006%20-%201st%20iLEAPS>

**2th Conference of the parties to UNFCC and 2<sup>nd</sup> Meeting of the parties to the Kyoto Protocol** - 6<sup>th</sup>-17<sup>th</sup> november 2006, Nairobi, Kenya – Contact : [info@unfccc.int](mailto:info@unfccc.int)



ALSTOM

