

New UCG Training Course for 2009 14th – 18th September 2009 UCGP Training Course No 1/09 on UCG (Basic) Imperial College London

We have now finalised the complete course details and are delighted to announce the inclusion of Dr. Jon Gibbons to the team of experts from Imperial College London, who will present on CCS aspects of UCG.

The course will be very similar in format and content as the successful 2008 training course with Imperial College and will outline basic UCG methodology. There are now only a few places left on the course so if you are interested in attending or would like more information please contact julie.lauder@ucgp.com
For more details go to: <http://www.ucgp.com/ucg-partnership/training/>

UCGP International Conferences 2010

Following consultation with UCGP members and the UCGP Advisory Council, with so much UCG activity and interest around the world more events are now required and we need to include more locations. With that in mind we are delighted to announce our conference plans for 2010.

5th International Conference and Workshop on Underground Coal Gasification, London 23rd – 24th March 2010 and 1st UCGP International Conference, Brisbane, Australia October/November 2010

Such was the success of the last event that our main sponsor, Deloitte has already given their support for the next annual UCGP Conference 2010. So the definitive conference on Underground Coal Gasification will once again be held at the prestigious London location, Deloitte Auditorium, New Street Square. Our 5th Conference has been extended to a 2.5 day event. A half day presentation on the EU HUGE Project will be on Monday 22nd March, preceding the Workshop Day and Conference. If you are interested in presenting, please send us your abstract or enquiry.

UCGP International Conference on Underground Coal Gasification and Bloodwood Creek site visit, Australia 2010

We will be holding a second event in Brisbane, Australia in October/November 2010, date to be finalised, and our first major event outside of the UK. The event will include presentations and updates from many of our Australia members as well as global updates and will continue the related work from the recent Clean Coal Networking mission.

A key feature of the event will be a site visit to the Carbon Energy Bloodwood Creek UCG facility, a must for all in UCG and associated technologies. We are already speaking with many who have expressed an interest in taking part in both events but welcome suggestions and input from members and affiliates, especially if you have any contacts who may be interested in the opportunity of sponsorship.

As yet no decision has been made as to whether both events will be free to UCGP members or if there will be a need to charge an attendance fee, hence the interest in sponsors. It may be that both events will be free of charge but a token charge may be made for networking events. We will keep you all updated on progress of both events and hope that you will look forward to them with as much excitement as us.

Not a member? Join Today! If you or one of your colleagues would like to join us we offer not only the chance to add your voice to a growing number working in the same sector but opportunity to engage in projects at an early stage.



UCG Partnership

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New UCGP Address and Phone Numbers

Please note New Address
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Conferences and Meetings

The past few months have again been busy with appearances and meetings. EU Meeting in South Africa, SMI Workshop and Conference in London and CRF in Leeds. Energy is still the main topic for all nations and one of the aims of the Partnership is to make sure in 2009 we spread awareness of UCG more than ever before. Please read the reports of these events from the attending officers.

Forthcoming Events

This year we have again been invited to host a UCG Workshop at the 26th Annual Pittsburgh Coal Conference. The date has been changed due to the G20 summit taking place in Pittsburgh the same week, so will now take place on Sunday 20th September, just ahead of the full conference programme. Global UCG Summit, London October 09. Many enquiries have come into the centre relating to this event. UCGP has decided to take an active part and to use this as a springboard to promote the Partnership our members and our own events. Please check the Conference pages for details of forthcoming meetings and conferences pertinent to UCG.

Speakers on UCG required

UCGP is increasingly being asked to provide speakers to make presentations at conferences, interest groups and trade associations. We are currently seeking potential speakers to communicate our message in every continent and in every language as interest in underground coal gasification is at an all time high around the world. We are seeking responses from members who feel they may be able to present or have already done so in the past. You can promote your organisation/company at the same time and UCGP will pick up your out of pocket expenses. See UCGP News section for further details.

New Members

UCGP warmly welcome the following new member:

GeoCoal, South Africa

AUSTRALIA

World-first clean coal plant could increase Australia's energy security

PACE 24 April 2009

Linc Energy Limited has opened the world's first demonstration plant in Chinchilla designed to educate the industry about the advantages of Underground Coal Gasification (UCG) technology – a coal-to-liquids process to convert vast 'stranded' coal deposits into ultra clean liquid fuels.

Linc Energy's Chinchilla Demonstration Plant in Queensland is now producing clean synthetic diesel and jet fuel from gas sourced from deep underground coal reserves, following the plant's first production in October 2008. The facility has gained huge attention from media and government – both local and from overseas – which have hailed the plant as "unique" and "world-class".

Vietnamese Government Ministers and Vice Ministers, representatives from Japan's Marubeni Corporation and business supporters from South Africa and the United States gathered in Chinchilla to mark the official opening of the world's first Underground Coal Gasification (UCG) to Gas to Liquids (GTL) facility.

"Linc Energy's facility is truly unique; the only one of its kind, complete with UCG gas field, a Fischer-Tropsch (FT) GTL plant and an on-site, world-class laboratory," said Linc Energy's chief executive officer, Peter Bond.

Linc Energy is an Australian-owned energy company and a leader in clean coal technology. The company's vision is to become a dominant player in the supply of more environmentally-friendly power, diesel and jet fuel. The company's facility brings together, for the first time anywhere in the world, the two proven production processes known as Underground Coal Gasification (UCG) clean coal technology and Gas to Liquids (GTL). These processes will economically convert vast 'stranded' coal deposits into ultra clean liquid fuels.

Linc Energy will also use the Syngas produced from UCG clean coal technology as feedstock for gas turbines to generate much needed environmentally friendly electricity.

The Minister for Resources and Energy, Martin Ferguson AM MP, officially launched the demonstration plant this month. "Australia is coal and gas rich, with hundreds of years of reserves. Technologies that convert coal and gas to ultra-clean diesel and jet fuel have the potential to replace Australia's declining oil reserves and make us self-sufficient in liquid transport fuels once again," he said.

"A domestic synthetic fuels industry would reduce - and maybe even one day remove - our growing trade deficit in petroleum products which last year grew to almost \$15 billion. This technology unlocks energy from Australia's significant stranded

and uneconomic coal reserves and has the potential to dramatically reduce Australia's dependence upon imported oil and refined products."

According to Linc Energy, the technology could increase Australia's energy security, by producing environmentally-friendly fuels containing almost zero sulphur and no aromatics, with a carbon footprint comparable with the production of conventional fuels. If gas-to-liquids takes off, it could open-up opportunities for jobs, exports, revenue and economic growth – particularly in regional communities, Ferguson said.

Liberty completes Queensland acquisition

By: Esmarie Swanepoel 23rd April 2009
(miningweekly.com)

Perth-based Liberty Resources reported this week that it had completed the acquisition of Queensland tenements covering shallow and deep coal, potentially suitable for underground coal gasification (UCG). Liberty now owns 100% of tenement areas covering about 26 000 km² in the Surat, Galilee, and Bowen basins. "This heralds a new phase of growth for the company. While we acknowledge the challenges that lie ahead, we also see the substantial growth opportunity in joining the leaders of a rapidly developing, clean energy industry in Australia," said company MD Andrew Haythorpe.

The transaction followed the acquisition of four Australian private companies that held exploration permits for coal applications (EPCAs) and exploration permits for coal (EPCs), in Queensland. Liberty now hold 11 granted EPCs, a mineral development lease (MDL) and 28 EPCAs awaiting offer for grant. An estimated 4, 2-billion tons of coal occurs within the shallow part of the Surat basin, adjacent to the EPCA areas. The MDL application covers inferred resource of an estimated 338-million tons of thermal coal in its Galilee project.

Cougar, Ignite talk UCG joint venture

Source: News Bites

Cougar Energy Ltd and Ignite Energy Resources are negotiating a joint venture over the phased development of potential underground coal gasification (UCG) project in Victoria's Gippsland region. Cougar and Ignite had previously worked on the project under a memorandum of understanding.

The proposed joint venture is expected to be in the form of a farm-in agreement which will enable Cougar to carry out a drilling program on mutually agreed areas within EL4416 to define suitable UCG deeper coal resources that would not normally be exploited by Ignite on a conventional mining basis.

Underground coal gasification is the process by which coal is converted in situ into a combustible gas that can be used as a fuel or a chemical feedstock. It has the potential to exploit coal resources that are either inaccessible or uneconomic using conventional mining methods.

Cougar Energy has 2009 milestone for Kingaroy UCG plant

Monday, June 15, 2009

Cougar Energy is on track with its Underground Coal Gasification (UCG) project near Kingaroy in Queensland. Work is progressing on a pre-production burn being commissioned later in 2009, as the first stage in development of a 400MW power plant using UCG gas as the fuel source. Recently, Cougar raised \$4.2 million to primarily advance the Kingaroy UCG project and specifically for the construction of the UCG Pilot Plant facility due to commence operations later this year.

The UCG process converts coal in-situ into a gas which can be used as a fuel for power generation or for conversion into a range of petrochemical products and gas-to-liquids solutions. The Kingaroy power station will generate an electricity supply for 400,000 homes for at least 30 years. Costs of producing the power are significantly lower than natural gas supplied power stations and carbon emissions are estimated to be 25% lower than conventional coal-fired stations. Final development timetable and go ahead for the construction and commissioning of the proposed power plant at Kingaroy is dependent on Queensland Government approval of underground coal gasification and Cougar Energy Limited's program of commercial development. A second Queensland UCG project is targeted by Cougar, with a new drilling program having commenced at the company's Wandoan lease (EPC 1118) in the Surat Basin. The Wandoan drilling program is designed to establish an initial JORC compliant coal resource of between 200 million and 300 million tonnes.

Eneabba leads the pack in bid to provide "clean" energy

Newstore, com.au, 29 Apr 2009

Western Australian based energy company Eneabba Gas Limited, has, as a result of careful planning and a number of recent significant company generated developments, further cemented its position as the only viable provider of cost effective "clean" energy to the Mid West region of Western Australia. Since 2005 Eneabba Gas and its technical consultants have diligently progressed plans for its proposed 168MW Centauri 1 gas fired power station project, located on company owned land eight kilometres east of Dongara and approximately 365 kms north of Perth in Western Australia.

These activities have at all times centered on the objective of becoming the leading supplier of cost effective, low carbon emission, "clean" energy to companies and organisations wishing to develop major mining and industrial projects in Western Australia's rapidly developing Midwest region, not limited to but likely to include a range of iron ore mining companies developing projects in the region.

In the past twelve months the Company has stepped up its activities regarding the development of the Centauri 1 power station and to date is the ONLY energy company in the region to receive the various Government approvals needed for the rapid development of this vital piece of infrastructure, including Planning Approval from the Shire of Irwin, Environmental Protection Authority

(EPA) and Department of Industry and Resources (DoIR).

In addition, Eneabba Gas is also the ONLY holder of an Economic Regulation Authority (ERA) generation licence in the Mid West region - a licence needed to commence power generation. A vital milestone in the development of the Centauri 1 Power Station has at all times been access to an uninterrupted gas supply. This was confirmed on 1 April 2009, when the Company reached agreement with fellow Australian company Carbon Energy Limited to jointly develop an underground coal gasification ("UCG") project to supply the power station.

Under the terms of this agreement, Carbon Energy will acquire a substantial coal exploration area in Western Australia from Eneabba Gas, and will execute a 30 year Gas Supply Agreement with Eneabba Gas to supply a minimum of 15 TJ per day (up to 45 TJ per day) of UCG Syngas for the Centauri 1 Power Station. This agreement, which is subject to due diligence and the final results of a drilling programme, is expected to be finalised by mid-year.

Cooking with gas and looking like a winner

Article from: The Australian May 20, 2009

After passing through the Maryborough cane fields and Bundaberg Rum distilleries, the Bruce Highway travels north to Gladstone, home of Queensland's next important industry. Nominated to host liquefied natural gas processing plants proposed by the likes of Santos, Origin Energy, Arrow Energy and British Gas, the region is set to become a leading natural gas export base. According to analyst Tim Morris, these projects will open up new market opportunities for local gas producers: "To date, a lack of infrastructure has suppressed east coast gas prices below regional benchmarks in Asia. However the construction of LNG processing facilities in Queensland could see international demand start to influence local gas prices."

Underpinning these LNG proposals are gas resources in underground coal seams. Morris says there are two main methods for extracting the gas, which is usually too deep for mining. "After years of trial and error, coal seam gas has now become a well-accepted production method. Less established is underground coal gasification, which is being pioneered by Carbon Energy." With a 668 million-tonne coal resource in the Surat Basin, Carbon Energy aims to commercialise the contained gas using technology developed by the CSIRO. Morris says that production trials are proving successful. "Extraction rates averaging 20 gigajoules of gas per tonne of coal have been achieved using the UCG technology. These initial production rates are on par with existing CSG producers, confirming the company's potential to establish commercial energy supplies," he says. Carbon Energy isn't relying on big LNG projects for gas sales. Instead it is targeting incremental production growth in domestic power markets, Morris says. "Given the size of its Surat Basin resource and the modular nature of the CSIRO technology, production is very scalable while capital requirements are modest," he says. "As gas pipelines already run through its tenements, infrastructure isn't a problem."

Further upgrade to Rey Resources' Duchess Coal resource cheered by investors.

Wotnews.com Monday, June 01, 2009

Total JORC resources at Rey Resources Ltd (have been at been upgraded to 511 million tonnes (up from 498 million tonnes) at the Duchess Paradise coal project in the Canning Basin, Western Australia. Investors liked the news with the shares up 12%. The area has been chronically under-explored for major coal systems; this is the first systematic exploration of the area by Rey Resources. Indicated resource increased by 51% to 144 million tonnes thermal coal.

A pre-feasibility study, to evaluate if a commercial mining operation can be sustained on the resource. The study is focusing initially on selecting the higher quality, near surface areas of coal within the approximately half billion tonnes of resource that has been reported. The study is due for completion by the end of 2009.

Rey Resources believes that an initial open pit operation of approximately 2Mtpa coal can be exported via the port of Derby with production commencing in 2012. A larger exporting operation using a new deepwater port site at Point Torment, 180 kilometres to the north will be evaluated. The Underground Coal Gasification (UCG) potential of the deeper coals is also being investigated.

Significant opportunity at our doorstep, says Devco president

Greg McNeil, Cape Breton Post

SYDNEY — Eggs, sausage and the clean energy potential of the Sydney coalfields were on the menu of the Scotiabank Breakfast Series hosted by the Sydney and Area Chamber of Commerce, Wednesday.

Ross McCurdy, president and CEO of the Cape Breton Development Corp., was the guest speaker for the event and spoke of opportunities other than mining. "We have a significant opportunity at our doorstep," he said of energy potential equal to the Alberta oil sands. "Most of the coal is offshore, so underground mining is not practical. We are advocating mining the energy, not the coal — leave the coal in the ground." McCurdy pointed to methane gas, biomining and the most practical local application, underground coal gasification, as potential opportunities. There are currently six major players in the underground gasification industry, he said.

One of the two that has expressed interest in the Sydney coalfields has already visited the area. "When they were made aware of the Sydney coalfield, its potential and the extent of it, they became very interested," McCurdy said without revealing the company name. "I guess really they can see there is a potential to have a viable business here and it probably makes sense." Similar systems are already at work in Alberta, Russia and Australia. As for cost, a Wyoming underground coal gasification plant began with a \$600-million capital investment and is employing 90-150 people full-time. Funding of any local ventures is purely speculative at this point. McCurdy said a company would first

have to step forward and develop their business case.

If a company does decide to proceed, coalfield development could begin as early as 2010. "I think technology is far enough advanced today that allows us to mine the energy and not necessarily the coal. We can do this in a way to create some of the cleanest energy that exists in the world today." Knowledge-based skills will be required during the development of these opportunities, he said.

Once Devco ceases to exist in five years, Cape Breton University and local community colleges will be key players in the process. "It is part of our legacy program to see that something is to be developed here. We want to do everything within our power to help it gain momentum as we leave. Then, in fact, this is really something that will take the place of us."

International Resource to buy Clean Global Energy

Sydney - Thursday - April 30: (Australian Business News)

International Resource Holdings Ltd has entered a conditional heads of agreement to acquire Clean Global Energy Pty Ltd (CGE) for the issue of up to 300m IRH shares.

CGE is a private company with a vision of becoming a significant provider of low-cost energy through converting vast sub-economic coal deposits into a cheap, useful energy in the form of Syngas. In exploiting coal deposits that are traditionally uneconomical to mine, CGE will use its proven in-situ extraction method, Underground Coal Gasification (UCG), to turn these resources into a Syngas that is suitable for feedstock for power generation, the production of chemicals and fertilisers, and for use in Gas to Liquids technology that produces petrochemical products. UCG is a process whereby coal is converted to gas in-situ and brought to the surface for further use.

The UCG technology to be used by CGE has been developed over the last 20 years by technical director Dr Michael Green and proven most recently in a successful European UCG trial conducted in Spain between 1992 and 1999. Dr Green has continued to develop the process used in the trial. CGE has four coal leases including EPC 1506, 1508 & 1539 located in the Clarence-Moreton Coal Basin in southeast Queensland and EPC 1507 in the Biloela Coal Basin in central Queensland. It has applied for three additional coal leases including EPCA 1592 in the Bowen Basin, EPCA 1612 in the Clarence-Moreton Basin and EPCA 1637 in the Galilee Basin. If these additional leases are granted, the seven leases will cover an area of about 1895 sq km.

METROCOAL'S SECOND DRILLING PROGRAM COMPLETED ON QUEENSLAND UCG PROJECT

ABN Newswire, 8th May 2009

Metallica Limited has announced through its 84% holding in MetroCoal Ltd, the successful completion of a second drilling program on MetroCoal's wholly owned **underground coal gasification (UCG)** project in the Surat Basin, northwest of Brisbane.

The program, focused within the Juandah project (MDLA 406), has confirmed expectations of coal seam continuity and

thickness. Modelling and resource evaluation is ongoing with a maiden resource estimate expected early in June, 2009.

MDLA 406 has no overlapping petroleum tenure issued under the P&G Act and, in accordance with the recently announced State policy regarding overlapping tenure, MetroCoal will be granted exclusive tenure over the MDLA 406 area.

Juandah Project Highlights

16 drill holes (for a total of 4,893 m) within MDLA 406 completed (See Table 1). 4 Core holes completed for 64.4m of core. Coal intercepts confirm preliminary geological model. Exploration expected to bring target resource to JORC Inferred and Indicated status. Maiden resource statement expected early in June 2009

Figure1 - MetroCoal Tenements and Setting

The 16 hole drill programme within MDLA 406 was completed on 30 April 2009. This second drilling program follows the first phase of drilling completed in October 2008. A geological model constructed over large parts of EPC's 1164, 1251 and 1164 was used to plan the program and will form the basis for future resource estimation in the area. A 1x1 km grid was established over MDLA 406 to provide a base for systematic exploration. Twelve (12) pilot holes were rotary drilled, also referred to as "open" holes, and four holes were 'twinned' to recover core samples through the Macalister Seam section for coal quality purposes. All holes were wireline logged for density and gamma. This relatively widely spaced drilling is the first step towards establishing a UCG resource. The Juandah MDLA 406 60km tenement area near Wandoan has an exploration target of between 125 Mt and 155 Mt within the initial area of drilling. This target could be capable of supporting a coal gas-to-liquids (GTL) plant producing 20,000 barrels of liquid fuels per day for more than 20 years and is expected to increase as the drilling program expands. Drilling targeted the Macalister Seams as the main priority. Initial results confirm that the Macalister seams are continuous across the MDLA area with working sections between 3.0m and 12.02m in thickness. The Kogan seam, stratigraphically located above the Macalister seam, has also been intersected in a number of holes and may provide an additional resource.

Jobs boom in SW Qld energy sector

Sat Apr 25, 2009 11:23am AEST

There are more jobs than people available in Queensland's booming energy sector in the Surat Basin in the state's southern inland. Coal seam gas, underground coal gasification projects and open-cut coal mining are being developed across the region from Toowoomba and Dalby out to Roma, Moonie and Chinchilla. Dalby Regional Mayor Ray Brown says there is no reason for anyone to be unemployed. "I think anybody who lives in this area at the moment that doesn't have a job really doesn't want a job because the papers are still full of vacancies," he said. "I know most of the coal seam gas producers are still looking for staff here, some of them qualified staff but a lot of them are just minimal qualifications. "It's such a major growth region here at the moment."

East Coast Minerals arrives in the underground coal gasification sector

Proactiveinvestors.com 15.05.09

An option to acquire 51% of Energy Future has been exercised by East Coast Minerals dealing shareholders of ECM into the fast moving Underground Coal Gasification sector and a new value adding platform for growth.

ECM will issue 1,000,000 East Coast shares to the principals of Energy Future and the obligation for East Coast to fund \$1.5 million of Energy Future's costs.

Energy Future has applications for mineral exploration licences over an off shore area of 6,000 km² that stretches from Wollongong to Newcastle. In 1981 the Coal Strategy Division of the Department of Mineral Resources, Sydney estimated that this area could contain up to 28 billion tonnes of coal down to a depth of 600 metres assuming conventional mining techniques. The company said, "this offshore opportunity has the potential to supply more energy than all of the known Queensland coal seam gas production combined."

Access to required technology and UCG expertise to move to production is crucial and here Energy Future has an MOU to enter into a partnership with a world leader in gas to liquids technology, Energy Technology Partners, which will licence Energy Future with their Fischer Tropsch technology exclusively for Australia and Raven Ridge Resources, a firm that has a large number of successful UCG trials to its name around the world.

It is understood that both Energy Technology Partners and Raven Ridge Resources will acquire as part of the transaction a significant equity interest in Energy Future via a joint venture vehicle, InSitu Energy.

Ultra Clean Fuel Potential for Northern Territory Boarder Coal Seams

Brr.com.au 9th June 2009

Vast potential resources of coal described as a viable Exploration Target in an area of the Simpson Desert straddling the South Australian-Northern Territory border could yield a major source of highly marketable "ultra-clean" middle distillate fuels through modern underground coal gasification technologies, according to an independent report by Mulready Consulting Services.

The report, prepared for Perth-based Central Petroleum Limited estimates that a "best" case recoverable prospective resource of 1.25 trillion barrels of liquid petroleum products produced by "syngas" in a Gas to Liquids (GTL) process may be possible from Central's tenements, which cover a large portion of the Pedirka Basin. Central said the findings added weight to its goal to develop a large-scale GTL processing plant in Alice Springs, to produce "ultra-clean" diesel, jet fuel or naphtha for a global market driven by the trend to more energy-efficient vehicles.

"The recent emergence of sophisticated Underground Coal Gasification (UCG) and GTL technologies in Australia is paving the way for us to possibly unlock a huge unutilised potential

resource in Central Australia, and create a UCG/GTL operation of major national significance," Central Petroleum's Managing Director, Mr John Heugh, said.

Today's report follows Central's announcement earlier this year of a one-trillion-tonne plus black coal Exploration Target at between 200 and 1,000 metres depth within the Early Permian Purni Formation of the Pedirka Basin, including significant coal thicknesses of well over 100 metres of cumulative coal seams. "The Mulready report estimates that the "best" case (mid-case) syngas prospective resource which may be available via UCG processes in our Pedirka Basin petroleum acreage could produce about 1.25 trillion barrels of liquid gas in a GTL plant or plants, which would be sufficient to fuel a 140,000 barrel-a-day gas-to-liquids plant for about 27,000 years," Mr Heugh said. "The UCG technology has not been proven at large commercial scale in the west however and the Exploration Target remains just that until more wells are drilled." "In this era of growing energy efficiency and the desire for ever cleaner fuels, liquid hydrocarbons are commanding a premium over gas and are much simpler to transport and easy to sell not only for transport and electricity, but for the manufacture of chemicals, solvents, fertilizers, and numerous other consumer products. "We are looking at the findings of this report alongside our pre-feasibility study into the potential for a large-scale GTL plant, which we believe could attract commercial interest from one of the larger global petroleum corporations," Mr Heugh said.

"With global markets of clean liquid petroleum products growing by the day, and the potential for our domestic market to also grow rapidly if gas sales prices rise, we believe there is a huge market for these products and certainly these factors may be enough to justify construction of a GTL plant or plants if such resources are eventually defined by further drilling." "Our early drilling results also suggest that the coals in the Pedirka Basin have reasonably fit for purpose qualities and adequate macro and micro permeability, which are fundamental parameters for UCG production," he said.

Bangladesh

Bangladesh's untapped coal potential - Solution to energy crisis?

Mark Muller with Roger Moody

THE Bangladesh Ministry of Power and Energy recently asserted that the country must more than double delivered power within the next five years (from around 4,000 MW to 9,000 MW per day). With the installation and operation of four new coal-fired power stations, it is claimed that the current daily gap between generation and demand would be reduced to 1,500 MW.

According to Bangladesh's National Energy Policy 2004 total coal reserves are 2,527 million tonnes, contained in four fields: Barapukuria with around 300 million tonnes; Phulbari with 400 million tonnes; Jamalganj containing 1,000 million tons, and 450 million tonnes at Khalaspir. Of these resources, 492 million tonnes are estimated to be recoverable by mining.

The mining recovery estimate seems highly optimistic. Mark Muller, as an experienced mining geophysicist, recently car-

ried out an independent technical review of Bangladesh's coal reserves. Based on existing surveys, he concluded that they amount to between 3,200 and 4,700 million tonnes, using the most optimistic figures found. Bangladesh's only operating coalmine, at Barapukuria, has so far delivered less than 3 million tonnes. This is despite the 1992 projection that it would be able to produce 60 million tonnes.

The Phulbari open-cast project is beset by heated debate over its likely impacts on local communities, its dependence on a foreign company, and by major doubts about its economic viability This leaves the hardly-investigated Khalaspir field, and Jamalganj, cited by the ministry as potentially the largest source of coal, comprising more than a third of the country's "cache." However, research now strongly suggests that the majority of the Jamalganj resource is too deep to be mined: 96% of it is deeper than 700 m.

Research has identified two potential sources of coal-generated energy that have four significant virtues. They are comparatively cheap, can deliver power to nearby power stations, are relatively clean in terms of pollution emissions; and they don't necessitate the disturbances of land and people that are associated with conventional mining. Coal Bed Methane (CBM) and Underground Coal Gasification (UCG) -- have already proved viable in several countries, including the USA, Canada, China, Australia, South Africa and Uzbekistan, with pilot projects now underway in the UK, Spain and Belgium.

We don't claim that CBM and UCG will solve all Bangladesh's energy problems; nor that they are "trouble free." They can have adverse impacts on land and water, interrupt agriculture, and be unsightly. Yet the energy return from UCG can be as high as 75% of that delivered directly by coal. Coal-seams not accessible by mining are well within reach of both CBM and UCG, and can add significantly to the recoverable resource. Their surface impact, and that on hydrology, is significantly lower than with mining. Loss of valuable agricultural land is greatly reduced. The need for solid waste-rock and coal-ash management on the surface is entirely removed. There is no subsidence risk at all for CBM, and little for deep-seam UCG.

Apart from two studies -- one carried out by M.B. Imam, M. Rahman, and S.H. Akhter in 2002 at Jamalganj; and the other at Barapukuria by M.R. Islam and D. Hayashi in 2008 -- no concerted investigation has yet been undertaken into the potential of these two technologies for Bangladesh. Nor -- despite the Asian Development Bank recently listing CBM as a "clean development" mechanism -- are these methods currently being considered as part of the country's future "energy mix."

Canada

Nordic Oil and Gas to apply to build underground coal gasification project

The Canadian Press, 02.07.09

Nordic Oil & Gas Ltd and partner Western Warner Oils Ltd. said they plan to apply to the province of Alberta for permits to build an underground coal gasification project at a

Drumheller, Alta. property. The companies are making preparations to submit an application for what would be the second such UCG project in Canada, Nordic chairman and CEO Donald Benson said in a statement. Coal gasification involves injecting oxygen and saline water into the deeply buried coal to turn it into synthesis gas. "The basic UCG process involves drilling two wells into the coal - one for injection of the oxidants (water/air or water/oxygen mixtures), and another some distance away to bring the product gas to the surface," Benson said. "The technique offers an alternative to conventional coal mining methods." In March, the Alberta government announced it will provide \$8.83 million to Swan Hills Synfuels of Calgary towards a \$30-million project near Swan Hills in north-central Alberta. The Alberta government says that will be the deepest underground coal gasification conducted in the world - more than 1,000 metres below the surface.

It's hoped the project will eventually lead to using the coal seams to capture and store carbon dioxide, which is pumped into the ground to help push oil out of aging reserves. The gas can be used as fuel for clean power generation, further processed into gas for home heating, or for other products like hydrogen, methanol or transportation fuels. Underground coal gasification does not use fresh water in its operation and is significantly different than other processes, such as those used in oil sands development. It's used at depths where conventional coal mining is not economic or currently possible. Copyright © 2009 The Canadian Press. All rights reserved.

Clean coal? Go underground, Alberta

by Thomas Homer-Dixon and Julio Friedmann, Toronto Globe and Mail. May 4, 2009

Alberta appears to be in a box - an energy box - that constrains policy options in every direction. The province's wealth is critically tied to exploitation of its vast hydrocarbon resources. But faced with declining reserves of conventional oil and natural gas, it has been forced to turn increasingly to the tar sands, which pack a huge carbon punch. And in a warming world, carbon is seen as a menace. The strategy could severely crimp Alberta's ability to sell energy at home and abroad, even make it a pariah.

There is an alternative: coal.

What? Impossible, you say - measured in carbon emitted per unit of usable energy generated, coal is as dirty as the tar sands, or even dirtier.

Coal's many problems are well known. They start with the damage caused by mining. Mountaintops are sliced off in coal-rich zones in the United States. And burning it creates pollution from sulphur, ash and heavy metals. Although we can sequester coal's greenhouse-gas emissions underground with a technology called carbon capture and storage, it sharply boosts costs. But can we get coal's energy without the carbon, ash and ruined landscapes? Yes - if we don't mine it. Engineers have long known how to gasify coal above ground - turn it into syngas, a mixture of hydrogen, carbon monoxide and carbon dioxide. The same is accomplished with **underground coal gasification**, but without the mining or the gasifier machinery. Air or oxygen is injected into wells that penetrate a deep coal seam, where

controlled partial combustion drives gasification. The gases are brought to the surface, leaving behind many of the objectionable components, including roughly half the coal's sulphur, ash, tar, mercury and arsenic. On the surface, this operation looks like nothing more than a network of wellheads and pipes. But the huge quantities of gas produced can either be burned to generate electricity on site or piped off to make hydrogen, heat or synthetic fuels.

UCG uses an inaccessible, dirty resource for largely clean energy. It allows us to reach coal seams that are too deep for conventional mining, effectively tripling or even quadrupling Canada's reserves. It's also relatively cheap - under ideal conditions, UCG syngas costs as little as \$1 per million BTU. More realistically, the technology can produce raw syngas deliverable to most markets at less than \$3 per million BTU. By contrast, Alberta and U.S. natural gas traded between \$7 and \$11 per million BTU in 2008 and early 2009.

Because the price is low, it becomes cost-effective to couple UCG with sequestration technology. The carbon content of UCG syngas is similar to that of burned coal. If Canada's deep seams were developed without sequestration, their emissions could exceed those of the tar sands. But UCG's carbon footprint could easily be less than that of a single natural gas plant if combined with partial or complete sequestration programs. All commercial projects proposed for the U.S. and Canada will capture and sequester most or all of the carbon dioxide they produce. The decarbonized syngas, in turn, could be used to produce power or low-carbon fuels. Several countries have already deployed and even commercialized UCG. Most such projects were built in the Soviet Union during the 1950s and 1960s and in the U.S. after the oil shocks of the 1970s and early 1980s. But the later flood of low-cost natural gas undermined these projects' economic viability. Nonetheless, one plant in Uzbekistan has burned UCG syngas continuously since 1959. Today, commercial projects are ramping up in Australia and China. www.homerdixon.com

China

China Outpaces U.S. in Cleaner Coal-Fired Plants

By KEITH BRADSHAW Published: May 10, 2009

China's frenetic construction of coal-fired power plants has raised worries around the world about the effect on climate change. China now uses more coal than the United States, Europe and Japan combined, making it the world's largest emitter of gases that are warming the planet.

But largely missing in the hand-wringing is this: China has emerged in the past two years as the world's leading builder of more efficient, less polluting coal power plants, mastering the technology and driving down the cost.

While the United States is still debating whether to build a more efficient kind of coal-fired power plant that uses extremely hot steam, China has begun building such plants at a rate of one a month.

While the United States is still debating whether to build a more efficient kind of coal-fired power plant that uses extremely hot steam, China has begun building such plants at a rate of one a month.

Linc Energy ends talks with Yanzhou over sale

By Elizabeth Fry in Sydney June 24 2009 06:44

Linc Energy revealed on Wednesday it had ended talks over the sale of its Queensland coal assets with China's Yanzhou Coal Mining after the two sides failed to agree a deal. Peter Bond, chief executive of Linc, said negotiations over the assets were taking far too long, undermining confidence in the sale process. Linc has hired UBS to start a formal sale process of its Emerald, Galilee and Pentland coal tenements in Queensland, which analysts have estimated could be worth in excess of A\$1bn (US\$800m).

Yanzhou is the latest in a long line of Chinese suitors to consider buying Australian mining assets – not all of which have been successful. However, Oz Minerals shareholders recently accepted an offer from Minmetals to purchase the company's mining assets after the Chinese group raised its offer in a pre-emptive move to head off opposition. Brian Flannery, managing director of Felix Resources, said the company was in discussion with a number of people about buying coal and a few of them had expressed interest in taking an equity position.

Felix's shares have more than doubled to A\$13 on the back of takeover speculation that Yanzhou would launch a A\$3bn-plus take-over bid – after a previous attempt to engage with the company in December was unsuccessful. It is understood that Yanzhou executives returned to Australia two weeks ago to re-examine the miner's assets. Xstrata Coal is also understood to have looked at Felix. The London-listed miner said on Wednesday it would not comment on speculation. Analysts said a tie-up with Xstrata made sense for Felix because the groups' operations were adjacent and Felix had port allocation in place courtesy of the new 30m tonnes per annum-coal port being built at Newcastle by Xstrata and BHP Billiton.

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India

Cleaning Up Coal

SAUMIL SHARMA, Tehelka Magazine, Apr 25, 2009

Current energy consumption levels in India are heavily dependent on conventional coal mining, making it the most important energy source in India. About 70 percent of total electricity generation in India uses coal. It is also the most carbon-intensive fuel. The sector, therefore, continues to bear the blame for the maximum emission of greenhouse gases and for polluting water under and over the surface.

While it is hard to replace the need for coal, it is possible to develop and promote alternative technologies to produce cleaner fuel from the abundant coal deposits in the country. A good beginning is already on the cards, with power sector reform initiating

the new paradigm of extracting fuel in ways other than conventional coal mining.

A US firm specialising in technical expertise and management of an alternative coal extraction process — Underground Gasi-fication of Coal (UCG) — has now proposed a pilot project in Jharkhand. Negotiations between a set of companies under the banner Clean Coal Resources (CCR) and the Jharkhand Government are set to start soon after the Lok Sabha elections are over. The two parties will be looking to work out the operational details of the proposed project and a possible collaboration with the public sector, Coal India Limited, or its subsidiaries. Graham Chapman, CEO of Clean Coal Ltd, strategic alliance partner of CCR, says: "We have identified our target countries by assessing the prevalence of coal resources that are difficult to mine and a requirement for power, which India meets." After negotiating a workable project and successful testing of the pilot phase, CCR will move to commercial installation, generating enough syngas for supporting gas-fired power plants generating 300- 400MW of electricity. An estimated 46 percent of the coal deposits in India are concentrated in the Damodar river basin in Jharkhand, making it an attractive location for such an initiative.

The state also offers a commercially viable market for syngas because it has many coal-fired power plants in the same belt. The technique has been incorporated in the research and development phase by Indian energy firms like Reliance Industries Limited (RIL) and Oil and Natural Gas Corporation (ONGC). India has about 51.8 billion tons of estimated available coal reserves for UCG, which make this alternative technology investment in India commercially attractive in the long term.

As a part of the Indian alternative energy policy, Indo Australian collaboration in UCG was announced in January 2009 and coal blocks in India are being allotted for UCG pilot and commercial projects to foreign and Indian companies.

Coal regulatory authority up and running in 100 days

Nandini Goswami / DNA, June 25, 2009

Kolkata: The coal ministry, in a fast track development, will institutionalise a coal regulatory authority in 100 days' time.

This seems to be a precursor to bigger changes, including private participation in coal mining, expected in the industry in the next few months.

Sriprakash Jaiswal, minister of state for coal, said, "This is one of the top priority areas, along with some other issues for the coal industry." It is also part of the T S Shankar Committee recommendations on coal sector reforms that the ministry is implementing in phases.

Currently, coal mining in India is restricted to private players only for captive use. If the sector is opened up in a major way, competition among mining companies will increase and a regulator will be needed. Jaiswal, who was in Kolkata on Wednesday, came down heavily on project delays and said over 80% of the coal blocks allotted by the ministry for end use by captive industries have not started production.

"There are a number of coal blocks that have been allotted but production has not yet begun. Out of estimated reserves of 40 billion tonnes given to 190 allottees, only 13 blocks are in production. Almost 3-4 years have passed and mining has not started in these areas. This cannot go on. There has to be a solution to issues on land acquisition and compensation," the minister said. He said he will talk to the chief ministers and governors of states and "decide on a fast track system". "Environmental clearance is also a crucial issue. We have decided that the central clearance should come within six months for any project. Even the states should fix up a time, take a clear stand and say a yes or no," Jaiswal said.

The minister and his officials will be visiting the entire coal belt and the subsidiaries of Coal India over the next few days. As part of its 100-day agenda, the ministry will bring in, for the first time, competitive bidding for coal blocks and latest technology for underground coal gasification. Jaiswal said the target for coal production in the year will be decided after the rainy season as output during this time is generally lower. The minister will be reviewing all the subsidiaries of Coal India separately. While admitting an increase in domestic coal prices was imminent, he did not elaborate on the matter. Jaiswal ruled out any immediate price increase and said, "My immediate concern is increasing coal production and there is no question of price increase now. It will be done when it will be required."

Jaiswal said the Union government was not against disinvestment of 5-10% but shares would be allotted to employees and people who have given their land. The ministry, however, has not taken any in-principle decision to go in for disinvestment. Note: chapter 5 of the action report.

Publishing guidelines for Underground Coal gasification projects Government has notified coal gasification (both surface and underground) as end use under captive mining policy for allotment of blocks to potential entrepreneurs. This being a new activity/technology, Operational guidelines are required to be framed for proper exploitation. Keeping this in view, it is proposed to bring out appropriate guidelines for implementing underground coal gasification projects in the country.

Ireland

New drill in exploration sector as firms go in search of less risky opportunities

A lack of appropriate financing and major discounting has left the Irish oil exploration sector gasping for air, writes John Reynolds, Irish Independent Sunday June 21 2009

Budgets have been compounded by the gap that has opened up between the projected costs of developing a field -- especially offshore, where operating a rig can cost €500,000 a day -- and the potential payoff, which isn't as great now that the oil price has fallen from its previous high. Any investor or potential new entrant might therefore think twice before they sink a few holes -- and perhaps tens of millions of euros -- anywhere near our shores, particularly when they could be getting a more lucrative piece of the action.

Opportunities exist during every downturn, however, and another small exploration company believes it may have found one off the coast of Dublin.

O'Leary managing director of VP Power will know later this year whether he has been proved right. A team of geologists and geophysicists recently spent six weeks conducting a seismic exploration of the Kish basin, where he believes that underground coal gasification (UCG) technology can be deployed to pump gas from a huge billion-tonne coal seam. Raglan Capital is believed to be raising money for the firm, and O'Leary claims the board's combined experience means it is well-versed in the highs and lows of the exploration sector. "The way I see it, the oil price is at around \$70 at the moment, up from its low of \$38 a barrel. So in that respect it's risen. It's forecast to rise further by Christmas, which I would see as helpful." He's also adamant that there is something of an upside to what seems to be a wider downturn in the sector. "We're finding that the market for equipment such as drilling rigs has collapsed. They're readily available and the cost of hiring one is considerably lower than it was.

"O'Leary anticipates capital expenditure of about €3m, and his project, the later stages of which may involve Bord Gais, will only be commercially feasible as long as the oil price stays above \$35 per barrel. Although the technology that VP's project would involve is relatively ancient -- Dublin's old Ringsend gasworks used to heat up coal to produce 'town gas' when it was in operation -- many countries with large coal deposits, such as China, South Africa and India have recently invested billions in UCG plants, recognising that the technology is cleaner than mining a coal seam and then burning the coal.

USA

Linc Energy Signs Contract With GasTech Inc To Acquire Powder River Basin Coal Tenements In The USA

Brisbane, May 14, 2009 (ABN Newswire)

Linc Energy has announced that it has signed a purchase agreement to acquire a 100% interest in 92,059 acres of coal tenement lease areas in the Powder River Basin in Wyoming USA from GasTech Inc, a company based in Casper Wyoming.

The 92,059 acres being acquired have a coal deposit exploration target range of 7 to 8 billion metric tonnes (non-JORC Code standard) based on existing drilling data.

The Powder River Basin is the largest coal producing region in the United States with current production from surface mines representing over 45% of the total US production. The area being acquired by Linc Energy contains multiple subbituminous coal seams ranging from 6 to 15 metres thick and occurring at depths in excess of 150 metres, making them excellent targets for Underground Coal Gasification (UCG) operations.

Linc has agreed to pay US\$5 million for the purchase of the GasTech coal tenements. This agreement follows the Letter of Intent between Linc Energy and GasTech which was announced on 3rd December 2008 and completes the first phase of the proposed GasTech purchase, with the remaining area subject to

subject to a further transaction pending resolution of pre-emptive rights held by a major petroleum company. The relevant coal tenements are now subject to the satisfactory completion of Linc Energy's remaining due diligence enquiries, with settlement of the transaction expected in approximately 60 days. Immediately after settlement Linc will commence the permit and approval process required in order to undertake a UCG pilot programme to produce syngas, which it has committed to completing within 24 months of the acquisition.

Vietnam

Vietnam Min: Gazprom to Supply Coal Gasification Technology

By Vu Trong Khanh, Dow Jones Newswires, 15.05.09. Copyright (c) 2009 Dow Jones & Company, Inc.
 HANOI - (Dow Jones) - Russia's OAO Gazprom (GAZPRS) signed an agreement to supply its underground coal-gasification technology to Vietnam, Vietnam's Ministry of Natural Resources and Environment said. The agreement was signed in Hanoi with Vietnam's Dong Duong Co., the ministry said in a statement. Dong Duong will use the technology for gas production in the Red River coal basin in northern part of the country, it added. The ministry said it supports the idea of using Gazprom's gasification technology to extract gas from the Red River coal basin as it is environmental friendly. Details about the agreement weren't provided.

Below are two articles that offer food for thought

A Microbe That Could Keep Coal in the Ground

By Chris Morrison | June 29th, 2009 Bnet

Craig Venter already famous as the first person to completely map his own DNA now claims to be working with British oil giant BP on bacteria that can break down coal into methane, making it cleaner and removing the need for mining. Using modified bacteria, coal miners could presumably just "infect" a coal seam, harvesting the resulting natural gas as it seeped upward through the ground.

Venter announced his discovery of the coal-eating bacteria this weekend, and the Times of London, along with other sources, promptly reported it as something entirely new. Like most things under the sun, it's not. A startup called Luca Technologies, for instance, was funded with \$76 million last year for the same idea, though the specific bacteria Luca uses are probably different.

The bacterial approach itself is only part of a larger concept called "underground coal gasification" (UCG). Companies and governments around the world are looking at UGC as a way to avoid sending miners underground, which often results in deaths. UGC can't come fast enough for places like Utah, for instance, where a mining accident two years ago left nine dead and is today leading to tougher, more expensive regulation on the industry. The more typical method of UGC, is creating a controlled burn along a coal seam, allowing a utility to harvest heat energy and

methane without ever extracting the coal. Projects of this sort are further along than using microorganisms to break down the coal. Neither method is well tested, so for the moment we're still mining and burning coal the usual way. The technology for doing that, from boring holes and collecting the coal to transporting to coal-burning plants, has been perfected over decades, so it's not likely that UGC will be a competitor on price alone for some time. Later, the balance may shift toward UGC. Using microbes is promising because it's possible that the bacteria in question are already well-optimized by nature to convert coal to methane. It's not clear where all naturally-occurring natural gas comes from, but at least some might be the remnants of coal eaten by microorganisms. Assuming that process could be sped up a bit, coal miners could have a cheap new extraction method on hand. The question is how long it will take. My guess is that UGC will become important sooner rather than later. Pressure from environmentalists to stop building traditional coal-burning plants is growing, and new technologies like carbon capture and sequestration (CCS) will only raise prices for coal plants. Coal itself, on the other hand, won't change: Environmentalists can't force its energy potential to go away. All that's needed is a new way to tap into that value.

China recruits algae to combat climate change

Chinese firm behind ambitious plan to breed microalgae in greenhouse with the potential to absorb carbon emissions

Sunday, 28 June 2009

The garish gunk coursing through a greenhouse filled with transparent pipes appears to belong on the set of a particularly slimy episode of Star Trek. Multiplying rapidly as it flows through tubes, stacked 14 high in four long rows, the organism thickens and darkens like the bioweapon of a deranged scientist. But this is not a science fiction horror story, it is one of humankind's most ambitious attempts to recruit algae in the fight against climate change. Developed by a groundbreaking Chinese firm, ENN, the greenhouse is a bioreactor that breeds microalgae, one of the fastest growing organisms on the planet, with carbon captured from gasified coal.

Algae may be the answer. The organism can absorb carbon far more quickly than trees, foreign experts are enthusiastic. "Algae biofuels and sequestration are being tried in a bunch of places, but never with such an innovative energy mix," said Deborah Seligsohn, of the World Resources Institute, who visited ENN recently with a group of international energy executives. "It is really interesting and ambitious."

Researchers at the algae greenhouse plan to scale up the trial to a 100 hectare (247 acre) site over the next three years. If it proves commercially feasible, coal plants around the world could one day be flanked by carbon-cleaning algae greenhouses or ponds.

"Algae's promise is that its population can double every few hours. It makes far more efficient use of sunlight than plants," said Zhu Zhenqi, a senior advisor on the project. "The biology has been proven in the lab. The challenge now is an engineering

one: We need to increase production and reduce cost. If we can solve this challenge, we can deal with carbon." The algae must be harvested every day. Extracting the oily components and removing the water is expensive and energy intensive.

ENN is experimenting with different algae to find a hybrid that has an ideal balance of oil content and growth speed. It is testing cultivation techniques using varying temperatures and acidity levels. Algae tests are also being carried out at the University of Ohio. In Japan, algae is farmed at sea where it absorbs carbon from the air. Elsewhere carbon is sprayed or bubbled into algae ponds. But ENN is focusing on a direct approach.

"Here we can control it, like in a reactor," said Gu Junjie, a senior advisor. "Theoretically we can absorb 100% of carbon dioxide emissions through a mix of microalgae and chemical fixing with hydrogen." The advanced algae, solar and coal gasification technology is the latest stage in the rise of ENN, which has been spectacular even by modern Chinese standards. The private company now employs about 20,000 people, and owns a golf course and hotel near its headquarters in Hebei province, where a new research campus is under construction.

In the short term, ENN's advanced underground coal gasification technology is likely to prove more significant than its algae work. This technique enables extraction of fuel from small, difficult-to-access coal seams, and could double the world's current coal reserves. It also avoids the release of the pollutants sulphur dioxide and nitrogen dioxide.

ENN executives have talked to the US department of energy about joint research, a sign that the transfer of low-carbon technologies is no longer a one-way street from west to east. Recognising the continued role of the fossil fuel in China, the European Commission proposed a plan this week to co-finance a demonstration coal plant that aims to have near zero emissions through the use of carbon capture and storage technology. If members states and the European parliament agree on the €50m plan, the facility would be operational by 2020.
guardian.co.uk © Guardian News and Media 2009

Eating carbon - a type of rock with a voracious appetite for carbon dioxide

From The Economist print edition

ONE way of helping to reduce emissions of carbon dioxide into the atmosphere is to pump the gas into underground caverns or old oil fields. But there is also a rock that is happy to gobble it up, and according to the latest research its appetite for the greenhouse gas is not only massive but could also be increased by a little human intervention.

The rock is peridotite, which is one of the main rocks in the upper mantle, an area that provides a girth below the Earth's crust. The rock occurs some 20km or more down, although in areas where plate tectonics have forced up some of the mantle, peridotite reaches the surface. This happens in part of the Omani desert

Geologists have long known that when peridotite is exposed to the air it can react quickly with carbon dioxide to form carbonates like limestone or marble. Some people have looked at the idea of grinding up peridotite and using it to soak up emissions from power stations, but the process turns out to be expensive, partly because of the costs of transporting all the rock. The transportation would also create emissions. though an alternative: would be to pump the gas from places where it is produced and into underground strata of peridotite.

Peridotite absorbs tens of thousands of tonnes of carbon dioxide a year, far more than anyone had thought. By drilling and fracturing the rock they believe they can start a process to increase the absorption rate by 100,000 times or more. They estimate this would allow the Omani outcrop, which extends down some 5km, alone to absorb some 4 billion tonnes of carbon dioxide a year, which is a substantial part of the annual 30 billion or so tonnes of the gas that humans send into the atmosphere, mostly by burning fossil fuels.

With such rocks situated in an area of the world where an increasing amount of energy is produced and consumed, it potentially provides a convenient carbon sink for the region's energy industry. Peridotite can also be found at the surface in other parts of the world, including some Pacific islands, along the coasts of Greece and Croatia, and in smaller deposits in America. Nor is it the only rock with carbon-eating potential. The researchers are now looking at volcanic basalt in a new project in Iceland.

Global CCS Institute launch - L'Aquila, Italy 9th July

A very public and strong statement of support was delivered by the President of the United States of America, Barack Obama, at the international launch of the Global CCS Institute at the G8 meeting held in L'Aquila, Italy today.

The Prime Minister of Australia, Kevin Rudd, launched the Global CCS Institute at a special briefing session during the G8 meeting, hosted by the Italian Prime Minister Silvio Berlusconi.

With growing worldwide interest in CCS, international media focused on the new Global CCS Institute and our role in accelerating the commercial deployment of CCS and its valuable contribution in reducing carbon dioxide emissions.

Details of the launch including the official media release and promotional footage from the event are available on our website at www.globasccsinstitute.com.

Carbon Capture Center coming to Wilsonville by Cassandra Mickens (Contact) | Shelby County Reporter May 27, 2009

WILSONVILLE —Southern Co., the parent company of Alabama Power, announced Wednesday it will manage and operate the U.S. Department of Energy's new National Carbon Capture Center at the Power Systems Development Facility in Wilsonville. The center, a partnership between DOE and leading energy companies, will focus on researching and developing technologies to reduce carbon dioxide emissions from coal-based electricity generation, said Randall Rush, Southern Co. general manager of gasification technology.

"Over half of the electricity in America and in the world is produced by coal, and it's extremely important for us as a world to find more cost effective ways to control carbon emissions," Rush said at an afternoon press conference. "Here we will evaluate chemical and engineering processes to capture carbon dioxide when you take coal and turn it into electricity."

The center will work with scientists and technology developers from government, industry and universities to create the next generation of enhanced carbon capture technologies. Existing facilities at the PSDF will be modified to conduct the pre-combustion carbon dioxide component of the project. New facilities to conduct post-combustion testing will be at the nearby Alabama Power Gaston Plant, also in Wilsonville. The five-year project is expected to create or sustain nearly 170 jobs, according to a DOE news release.

By conducting analyses in a power plant setting, the center will provide meaningful performance data under real operating conditions to enable scale-up of the technologies, said David Ratcliffe, Southern Co. president and CEO. "This center will serve as a crucial bridge that takes emerging carbon capture technology from the laboratory to commercial demonstration," Ratcliffe said. "The National Carbon Capture Center, along with other research initiatives under way across the country, will play a major role in

ensuring that the United States can continue to utilize coal resources in a cleaner, economical way." Southern Co. also recently announced plans to build a demonstration facility to capture carbon dioxide emissions from Alabama Power's Plant Barry near Mobile. Beginning in 2011, between 100,000 and 150,000 tons of carbon dioxide per year would be transported by a pipeline from the plant and stored underground at a site about 10 miles from the plant. The center in Wilsonville, expected to be fully operational by 2010, is the first of its kind in the world, Rush said.

Vattenfall applies for permission to store CO2 underground in North Jutland 29 June 2009:

Vattenfall has applied to the Danish Energy Agency today for permission to establish a CO2 store underground in Denmark. The application relates to the Vedsted structure in Jammerbugt Municipality – an area that has previously been investigated thoroughly in connection with oil exploration. Preliminary geological surveys in 2008 indicated that the structure is suitable for storing CO2 at a depth of 1000-2000 metres.

"We want to have a decision from the authorities about whether a permit to store CO2 can be obtained and – if so – under what conditions," says Erland Christensen, Head of Vattenfall, Nordic Heat. Vattenfall plans to conduct a number of new seismic surveys of the area in 2010. The surveys had been scheduled for 2009, but were postponed so as to allow for extended local dialogue. Erland Christensen emphasises that safety is crucial, this will include a comprehensive environmental impact assessment (EIA), which will involve a public consultation, among other things. Furthermore, the final permit presupposes that the case has been submitted to the Energy Policy Committee of the Danish Parliament. "The target in North Jutland is a climate-positive solution that, on the whole, will 'tap' half a million tonnes of CO2 from the atmosphere every year. We will achieve this by combining CO2 storage with using climate-neutral biomass as fuel," says Erland Christensen. The solution is planned to be put into operation by the end of 2014.

Breaking the Climate Deadlock

The 'Breaking the Climate Deadlock' initiative, co-sponsored by former British Prime Minister Tony Blair and The Climate Group policy think-tank, released a new report focusing on 'Technologies for a Low Carbon Future'. The report has been released to coincide with the start of the meeting of G8 leaders in Italy and to encourage the development of technology roadmaps ahead of this year's UN Climate Change Conference in Copenhagen. WCI Chief Executive Milton Catelin has played an important role on the advisory group to the initiative.

The report examines the mitigation potential of a range of technologies in power, transport, buildings and industry, and the contributions they can make by 2020 and 2050. The 17 technologies covered by the report include CCS for fossil fuels and industry, nuclear, biofuels, energy efficiency measures and the full suite of renewable sources.

The full report, which includes an annex detailing current status and abatement potential for each technology, can be downloaded from http://www.theclimategroup.org/news_and_events/breaking_the_climate_deadlock_technology_report/.

U.S. gives up to \$408 million to “clean coal” projects

Reuters, July 1 2009

The U.S. Energy Department has said it will provide up to \$408 million in funding for two projects aimed at developing advanced clean coal technologies. The department said it will provide up to \$308 million to Hydrogen Energy International LLC in California and up to \$100 million to Basin Electric Power Cooperative in North Dakota as part of the department’s Clean Coal Power Initiative. This is the third round of funding from the program, which was created to increase investment in low-emission coal technology through a cost-sharing partnership between the federal government and private industry. The program was allocated an additional \$800 billion under the U.S. economic stimulus package passed this year.

EU mulls €7 billion subsidy for carbon capture

Euroactive, 7th July 09

The European Commission has estimated that up to €7 billion could be made available to fund CCS technology from the EU’s emissions trading scheme (EU ETS). Meanwhile, renewables projects would get around €5 billion. The assessment is based on projects that have been presented to the Commission so far. The new entrants reserve is intended to pay for the incremental investments that utilities make in CO₂ capture facilities, or for setting up renewable energy projects that are not yet commercially viable. As the ETS puts a price on CO₂, the free allowances thus become direct subsidies to industries, provided that they share their knowledge with new businesses to get pioneering technologies off the ground on a commercial scale.

Alberta to back three carbon capture projects

Reuters, Tue Jun 30, 2009

The Alberta Government has said it will support three CCS projects from a C\$2 billion (\$1.7 billion) fund set aside last year as the province looks to cut emissions from coal-fired power plants and oil sands projects. The province said it expects to provide up to C\$100 million this year for design and engineering work on the three proposals, selected after a year-long competition, and expects to have letters of intent signed with the backers next month. The three projects being backed by Alberta include carbon capture and storage at Royal Dutch Shell Plc’s Scotford oil sands upgrader; a carbon-capture facility at a power plant owned by Epcor, Edmonton, Alberta’s municipally owned utility and backed by Enbridge Inc; and a project to take carbon dioxide from an Agrium Inc fertilizer plant as well as a planned upgrader and ship it by pipeline to oilfields, where it will be used to boost output.

The province said in a release it expects the three projects to achieve annual carbon dioxide reductions by 2015 equivalent to taking about a million vehicles off the road.

Australia announces May Budget

Earlier this week the Australian Government announced its May 2009 budget. As part of the budget, details of a new Clean Energy Initiative (CEI) were outlined. The CEI has been developed to support the Carbon Pollution Reduction Scheme (CPRS), which will seek to implement a cap-and-trade system in Australia.

The CEI is made up of three components; a CCS Flagships Programme, Solar Flagships Programme, and plans for a new “Renewables Australia” body. The CCS Flagships Programme will see the government provide A\$2.425 billion worth of funding over 9 years, with a target of creating 1000MW of low emission fossil fuel generation from 2 to 4 projects demonstrating the full range of capture and storage technologies.

The Australian CCS flagship projects will contribute to the global portfolio of projects supported by the Global Carbon Capture and Storage Institute (GCCSI). It is hoped that the development of these flagship projects will aid the transition to a low-carbon economy not only in Australia but worldwide, through the sharing of economic and technical learning.

The projects deemed eligible for funding will be determined in early 2010 and it is hoped that construction will begin in 2012 with commissioning from 2015. Projects are expected to be on an industrial scale and to make a significant contribution to the 1000MW target. Coal gasification, post-combustion capture and oxyfuel will all be considered as suitable capture technologies. Further details of the legislation connected to the CCS Flagships Programme are expected to be released in the coming months.

Cleaner Coal in China

WCI, April 2008

The International Energy Agency has just released a new report entitled ‘Cleaner Coal in China’. The report is designed to provide policy advice in a number of key areas of China’s coal sector in order to help improve resource recovery, mine safety, environmental performance and economic efficiency. The report has been simultaneously released in English and Chinese.

IEA Executive Director Nobuo Tanaka noted that China’s coal currently provides the world’s economy with more energy than Middle Eastern oil, and the report serves as a timely reminder that it is in everyone’s interests to deal with the environmental impacts of coal use on this kind of scale through the development and deployment of clean coal technologies. Full details of the report can be found at <http://www.iea.org/w/bookshop/b.aspx>.

Events

2009

September

COAL-GEN Europe

Silesia, Katowice, Poland, 1st – 3rd September

UCGP Members receive a 20% discount on registration fees

<http://cge09.events.pennnet.com/fl/index.cfm>

26th Annual Pittsburgh Coal Conference

Westin Convention Center, Pittsburgh, PA, USA

20th – 23rd September

UCGP will be running a one day UCG tutorial on the 20th September.

Rohan Courtney and Julie Lauder presenting

<http://www.engr.pitt.edu/pcc/ugctutorial.html>

October

Global UCG Summit

Meridian Piccadilly, London, 5th and 6th October 2009

Post-event Workshops: 7th October 2009

Julie Lauder will present and run a UCGP Workshop

UCGP Members receive a 10% discount on registration fees

<http://www.iqpc.com/Event.aspx?id=194306>

UCGP Visit to Australia

26th October- 6th November

Julie Lauder will be visiting the Brisbane area for two weeks to meet with interested parties and members to begin work on the forthcoming UCG Australia Conference 2010 and to attract new UCGP members.. Please contact Julie should you wish to arrange a meeting or have suggestions or contacts that you feel would benefit either the partnership and/or the event.

julie.lauder@ucgp.com

IEA, International Conference on Coal Science & Technology (ICCS&T)

Cape Town, South Africa 26th 29th Oct 09,

<http://www.iccst.info/live/index.php>

2010

March

5th UCGP International Conference & Workshop

London 23rd - 24th March 2010

October/November

1st UCGP International Conference, Brisbane, Australia

October/November 2010.

UCG Chapters and Membership Expansion

We continue to work towards establishing UCG chapters in key global locations, namely, USA, South Africa, Australia and China. We have been offered considerable support from members in these regions and will update you on any significant developments. However, we are requesting that members please pass on any contacts they may know or have worked with who may benefit from joining the Partnership. We are especially keen to engage with those that we see as integral to the supply chain. Please pass on any details and contacts to Julie Lauder – julie.lauder@ucgp.com

UCGP to change legal status to a charity

As we reported in the last Newsletter, the UCG Partnership with the support of the Advisory Council has been looking at changing its status to a UK Registered Charity. We are delighted to have the assistance and help of the legal firm Nabarro LLP who have joined us as a Founding Member and kindly agreed to undertake this work on a pro bono basis. A new company has been formed, limited by guarantee and without shares, named UCG Association. So far most of the legal documentation has been completed and all the necessary forms signed by the new Trustees:

Rohan Courtney OBE, Clean Coal Ltd (Chairman)

Kenneth Fergusson, UCG Partnership

Dr Michael Green, UCG Engineering

Don Kinnersley, Deloitte

Dr Cliff Mallett, Carbon Energy

Prof. Peter Styles, Keele University

UCGP Research Group

Due to growing work commitments, Dr Michael Green will be temporarily stepping down as Chair of the Research Group. Prof Peter Styles, who has been working closely with other research members on several EU funding initiatives for UCG will take over as Acting Chair of the group. Email contact: Prof. Styles: p.styles@keele.ac.uk

UCG Reserves Initiative

Those of you involved with raising commercial interest and attracting investment will no doubt be familiar with the need to supply would be investors with information as to how much Syngas can be produced from coal deposits using UCG and what valuation can and should be placed on the coal resources. In most countries there exists a valuation framework for coal deposits that enable valuations of a resource, however, these vary dependent on location, JORC in Australia, is a good example. UCGP is currently working with a selected group of members, all of whom have experience in this area, to research a method and criteria to put in place a reliable standard method of valuation on any potential UCG resource. If you have any information, research or wish to share comment or knowledge please let us know as we are keen to obtain any information that may assist. The findings will be made available to members and there will of course be scope for discussions and further input. This is a new initiative, again developed by levels of enquiry.

Chairman of the working group: Ray Pilcher email: pilcher@ravenridge.com

UCGP Notice Board on Website

The website continues to evolve and we have now added a UCGP Notice board. This is due to the increasing number of enquiries and questions from members that come into the centre. The notice board will allow you to contact all members with questions, information, share research or offer advice - please do make use of this, If you wish to keep your enquiry confidential it can be placed on the notice board by the centre as a general enquiry, **but do please use this as a valuable tool to keep in touch with each other.**

UCG Freelance Writers

We have been contacted by Suzanne McElligott, from Carbon Energy Research Res. (CERR) who previously worked with Gasification News and has in the past attended and reviewed many of our events, so is very familiar with UCG. They are offering a service that may be of interest to members. The contract energy writers at Carbon Energy Research Res. (CERR) can help you get your message across. Our contract writers/researchers, who have more than 75 years of combined energy experience, are some of the very few who have written extensively about Underground Coal Gasification. Whether it is informational packets regarding the process, the state of the industry or your project, CERR is the right team to help you get the word out. Please contact Suzanne McElligott at 1-(703) 865-4099 or send us an email at: info@CarbonEnergyResearch.com. You can always visit our website at: CarbonEnergyResearch.com for more information about us. **If you have written an article, paper, presented or come across an article of interest please do share it.**

UCGP Event Reports

Coal Research Forum Meeting

22nd April, Houldsworth Building, Leeds University

Kenneth Fergusson reports meeting had about 35 attendees, several of whom were Leeds students, so our target audience was perhaps 25 strong. My UCGP presentation was well received and prompted several pertinent questions. Grant Budge, who presented on progress of the UK Hatfield project reported that they have now selected GE gas turbines for Hatfield, because only GE would offer a design to burn natural gas as a CCGT at start-up and later switch to IGCC gas from their Shell gasifiers. I noted this as a major point for future UCG presentations in UK, and elsewhere because, while we have always said that a coal-fed IGCC could later switch to very similar UCG gas, the Hatfield contract shows that it is possible to convert a CCGT to burn UCG gas. While it may need a turbine change on an existing plant, it would appear that a new plant could be built to facilitate such a switch. So we, UCGP, should have no reservations at more gas-fired CCGT's being built in the next few years, if we make the representations that they could later be switched to UCG, which can be easily CO₂-stripped, and would thus give them cheap CCS, and a domestic, lower-cost fuel.

3rd South Africa-EU Working Group on Coal Meeting

5th – 6th May 2009, Pretoria, South Africa

Julie Lauder and Rohan Courtney both presented papers to this meeting attended by senior representatives of the European Commission, Department of Minerals and Energy, South Africa and energy businesses from both South Africa and the EU. UCGP is a member of the EC Coal Working party and have previously attended Bilaterals for EU- China, EU-India and EU-South Africa. The two day agenda covered South African energy plans and the current position on Petroleum, Coal, Nuclear, Renewable Energy, Climate Change and energy efficiency initiatives. UCG continues to climb up the agenda at these meetings and in addition to our own presentations. Eskom gave an update on their current UCG project, which is going to plan. EU representatives included visiting senior personnel from AFD, Areva, Alstom Power, Babcock, BP, Schlumberger, Shell, Siemens, Total, Tucotbus and the Zero-Emission Platform. South African representatives included Anglo Coal, Eskom, Exxaro, Saneri and Sasol. Future bi-lateral meetings are planned and we continue to forge firm relationships with leading SA energy organisations and government departments.

Whilst in South Africa we visited the Sasol visitor site in Sasolburg, accompanied by the Head of Delegation, Dr. Derek Taylor. 20 senior members of the Sasol team attended a four hour workshop on UCG. Dr Taylor presented an EU overview of carbon emissions limits and controls and how the EU hope to work with SA to help achieve the global reductions required by 2015.

We also took the opportunity to meet up with UCGP members based in the region, MegChem, who had just returned from a visit to Chinchilla, Analytika Holdings, who are busy in Botswana promoting UCG and Drillcom, who are actively promoting the partnership and trying to engage with others to join us and further UCG in South Africa.

SMi Gasification Conference

London 17th -18th June – UCG Half Day Workshop 16th June.

The half Day workshop, whilst excellent in content had a very disappointing number of attendees. The programme had been structured to give an overview of UCG - technology, history, applications, Geology, Drilling. The competent team led by Julie Lauder included, Shaun Lavis, Clean Coal, Peter Sallans, Unconventional Energy and Bob Godbolt, Scientific Drilling. (All presentations will be available to members on the UCGP website) UCGP would like to extend their sincere thanks to all the presenters for their support, technical expertise and enthusiasm. This two day conference had a wide range of gasification topics and UCG was well represented with presentations from Alan Borrowman and Steve Walters - BCG Energy, this was an overview of various legislative and planning requirements associated with implementing a UCG project, plus the information and requirements to engage interest and investment. Cliff Mallett - Carbon Energy presented on the progress, expansion and successful trials at Bloodwood Creek and Len Walker - Cougar Energy on Kingaroy and Cougars expansion plans.

Julie Lauder presented on the issues concerning the Public Perceptions of UCG and Clean Coal. This was a timely topic as most of the previous presenters had expressed how public opposition was hindering both progress and investment in projects this also included new public concerns where many are not allowing any seismic surveys in their areas, in case carbon could be stored under their homes! Judith Shapiro, from the CCSA, presented on the issues of informing the public of CCS, which also faces opposition. A lively panel discussion on public perceptions then followed. Though no finite conclusion was reached it was certainly identified that there needs to be a concerted move to engage and inform the public on Clean Coal and CCS. Another presentation of note was research into UCG/CCS given by Univ.-Prof Dr. Dr. h. c. Rafiq Azzam, Head of Department, Engineering Geology and Hydrogeology, RWTH Aachen University. They have a dedicated team who are researching this topic - well worth a look. http://www.co2sinus.org/index_en.html. Overall the conference offered an opportunity to engage with many, previously unfamiliar with UCG, who realized felt they had products, services and skills which could be used in the UCG industry of the future. Other presenters included: RWE, Nuon, Mann, Jacobs, Prozap, Progressive Energy.

Some of the benefits of Membership

- A network of contacts of individuals, companies and public organizations involved in UCG
- Regular newsletter and updates on new and existing UCG projects around the world
- Employment Register and Job opportunities in UCG
- Investment Opportunities described on the website
- Access to a complete and unique online archive information on all UCG from early days
- Focal point for all information relevant to UCG for members through email, website and seminars, and access to an inter-active website.
- Public and independent information service on UCG and representation at the highest level
- Early advice and “clearing house” for UCG on nancial and technical aspects of UCG projects, through contacts with energy companies, banking and project nance specialists
- Feasibility studies, collaborative development and other study programmes on UCG
- Tailored support from UCG Partnership for seminars, training courses, work shops (at additional cost)
- Listings of member companies through consultancy les and website exposure

Membership Fees:

Free Conference Places	Annual Membership Fee
Founder Members - Unlimited	negotiable
Academic Members - Two places	£1,000 + VAT
General Members (100 + employees) - Six places	£5,000 + VAT
(50 – 100 employees) - Four places	£3,000 + VAT
(20 – 50 employees) - Three places	£2,000 + VAT
(10 - 20 employees) - Two places	£1,500 + VAT
(Individual or less than 10 employees) - One place	£750 + VAT
Reciprocal - One place	nil

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