

electricity week's global green markets

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China Jincheng Coal Mine prepares to earn EU126 per tonne of CSM via Kyoto credit

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An application for Kyoto credits by Jincheng Coal Mine Methane Power, by the World Bank, Climate Experts Ltd and EcoAdvantage, for a project at Beishidian Town, near the city of Jincheng in the Shanxi Province of China, plans to burn methane - m³ methane (CH₄) - in 32 to 96 internal combustion engines with a total installed capacity of up to 120MW.

New rules proposed: The United Nations Framework Convention on Climate Change has received a new methodology titled "*Generalized Baseline Methodology for Coal Mine Methane Power Generation*" (details in F-CDM-PDD-NMB. B.1.1), from the World Bank, Climate Experts Ltd and EcoAdvantage.

Electricity to Beijing: The aim is electricity production to the Shanxi Power Grid (SPG). SPG is a power exporting grid with total installed capacity of 15,772MW as of the end of 2003, out of which 3,302MW worth of power was exported to the North Power Grid. The grid operator of SPG has the full control of its total dispatch system, and the surplus electricity from the Project's activity will be fully handled by the SPG as well.

EU126 per tonne of methane until 2012: If the application for the project and the proposed method is approved for electricity production - instead of venting the gas to air - it would earn the project EU126 per tonne of methane until 2012, at today's price of EU13/CO₂ eq. The mine gas - 50 per cent to 98pc CH₄, would have been vented to the atmosphere and the JMC would have purchased power from the grid, of which 93.9 per cent consists of coal-fired power plants. Methane's greenhouse warming potential (GWP) is 21 times that of carbon dioxide. The

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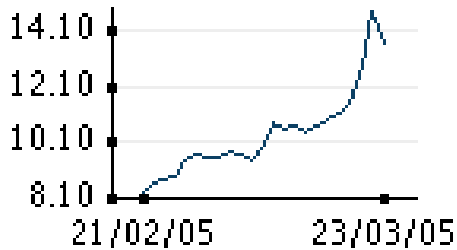
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Round Up



1 April *14.70: 100 allowances (100 tonnes of CO₂) were traded on the exchange, at a price of *14.70.

PRICE - NORD POOL

30 March: Norwegian power bourse Nord Pool saw little carbon trading on its electronic exchange on Wednesday with its 2005 forward contract seeing 15,000 allowances trade and its 2006 instrument just 5,000.

29 March: Like the OTC market, Nord Pool saw a relatively slow opening day after the break, with only two trades through but the price climbed from Wednesday.

23 March: *13.90 to *12.90: Nord Pool saw 11 trades today all in 5,000 tonne clips with trading opening at *13.90 before falling

down to *12.90 for forward delivery in 2005, before rebounding back to *13.65.

22 March: This mornings spot auction at EEX saw 14,000 allowances trade at *14.32, reflecting the strong bull trend in the EU ETS.

PRICE - EU ETS

29 March up to *14.12: European carbon prices in the EU ETS opened the week at around *13.50 before moving sharply up to *14.12 in early morning trade on Tuesday

25 March: ETS trades pass 15mt: Volume of allowances traded in March break the 15 million tonne mark today making the third month of the year the most liquid and most volatile yet Carbon prices were choppy in early morning trade on Wednesday. EUAs traded as high as *14.55 before falling sharply to around *12.75 for 2005 forward contracts before rebounding up to *13.85 and holding there.

Brent crude to \$55/bbl: All energy commodities, including carbon, rallied today on what was largely seen as a US gasoline

price hike. With gasoline prices spiking, Brent crude rocketed to \$55/bbl, in turn hauling gasoil and gas prices higher for 2006 and 2007.

ASIA CDM - JI

China, World Bank seek CDMs: The World Bank proposed China's new rules for coal mine methane credits to the UNFCCC as the China Jincheng Coal Mine prepared to earn perhaps EU126 per tonne of CSM via the Kyoto CDM scheme. The technology plan for China's methane abatement billions saw big banks rush to assist the China coal seam gas electricity plans. The case was China had pioneered large scale 120 MW capture and use of coal mine methane gas and if only 10pc of China coal methane used for electricity this would prove equivalent to 100 years of China natural gas production. China policies promoted renewable energy, energy efficiency and landfill projects, as CDM potential projects and the CDM methodology proposed by the Jincheng Anthracite Coal Mining Group Co., Ltd. (JMC) was based in Shanxi Province - host to 13 of

30 most polluted cities in China: where standards for particulates were met for only 29 days during 2001, and 59 days in 2002. The argument was the huge Jincheng Anthracite Coal Group (30,000 staff) had plenty of experience in gas turbines for power generation. JMC was to tender globally for safe 1-3MWe gas engines. This was proposed as methane explosions had killed 2,000 miners in China in 2003.

Simpler CDM wanted: At a CDM workshop in Tokyo, IETA chair Andrei Marcu criticized the current high price level under the EU ETS and called for a more business-friendly CDM to provide cheap reductions that would drive down EUA prices. Marcu stressed that the EU system was the only mandatory one in the world and would drive EU industry to relocate if EUA prices stay too high in the long term.

Japan goes for energy efficiency: Japanese DNA member Hiroshi Yamagata from the Ministry of Economy, Trade and Industry (METI) stressed at a CDM workshop in Tokyo that Japan prefers energy efficiency projects in its CDM portfolio.

Austria and Bhutan CDM deal:

Austria and Bhutan agreed to carry on their cooperation in bringing electricity to rural areas of Bhutan. The cooperation will also promote clean development mechanism (CDM) projects.

China landfill back to CDM:

Following the rejection of one landfill gas recovery and utilization project in Meizhou, Guangdong Province, the Chinese Government has turned back another landfill project in Nanjing on the 11th March 2005 during the evaluation meeting for the project.

FUNDS

World Bank signs Mexico: The World Bank's Prototype Carbon Fund (PCF) and Mexico signed an emissions reduction purchase agreement (ERPA) earlier this month, which will see the PCF purchase 2 MtCO₂e of emissions reductions up to 2012 from a Mexican waste management and carbon offset project under the CDM.

World Bank's BioCarbon Fund:

Three Japanese companies and the Canadian government have decided to invest in the World Bank's BioCarbon Fund, adding \$43.8 million to the fund's capital.

EU CDM - JI

Ukraine's rush OK for JI:

Ukraine's Ministry of Environmental Protection issued its first letter of approval to a Joint Implementation (JI) project this week. This was despite the fact that JI project approval procedures are not yet in place and are still being discussed.

ASIA POLICY

Japan emissions policy plan: A governmental panel in Japan has approved a plan to reduce emissions of greenhouse gases that will rely heavily on sinks, renewable energy and energy-efficiency. The plan will now go to consultation before the government votes on it in a months time.

EU POLICY

EC wants 15-30 per cent cut:

The European Council today agreed that it will be seeking to negotiate a 15-30 per cent reduction in greenhouse gas emissions for developed countries by 2020.

20pc fuel from alternate sources:

The European Union has

mandated that 20 per cent of fuel should come from alternate sources by 2020.

22pc building CO2 savings possible:

Buildings accounted for 42 per cent of Europe's carbon dioxide (CO₂) emissions and with increased energy efficiency, a consumption saving of 22 per cent was possible.

EU CO2 emissions down: EU carbon dioxide (CO₂) emissions from the burning of fossil fuels and peat fell by 5 per cent to 67 million tonnes in 2004 from the previous year's record high.

France to cut wind power:

France has proposed a law on wind power, causing fury in the renewable energy society and claims that France jeopardises the EU renewables target.

CZECH REPUBLIC

Czech doubles target: The Czech Republic committed to doubling its electricity produced from renewables sources by enshrining the European Union renewables directive into national legislation.

UNITED KINGDOM

UK plans Climate Change minister:

The UK should create a post of Climate Change minister to ensure the country meets its targets for cutting greenhouse gas emissions, a parliamentary committee has stated in a report.

UK meets Kyoto target: The UK met its Kyoto target of reducing its greenhouse gas emissions from 1990 levels by 12.5 per cent in 2004, according to provisional figures released by the government.

Britain freezes levy: The British Government announced it would freeze the climate change levy, an energy tax on business, in its budget announced last month

UK moots more nuclear: A group of MPs within the UK government is examining proposals to construct up to 10 nuclear power stations in order to reduce carbon emissions from the power sector, the national newspaper the Independent on Sunday reported.

UK still storming on green policy:

The UK government has come under fierce criticism from a group of members of parliament over its role in climate change policy and

has slammed ministers for believing that new technology and market mechanisms alone will reduce greenhouse gas emissions.

SWITZERLAND

Swiss voluntary Climate Penny: The Swiss Government has given green light to the introduction of a CO2 tax on fossil fuels. Regarding transport fuels a voluntary Climate Penny will be introduced on a trial basis, making a large amount of money available for the purchase credits from CDM and JI projects.

GERMANY

Saxony-Anhalt lawsuit: The state government of Saxony-Anhalt is to file a lawsuit against the German NAP with the country's constitutional court "within the next few days". The original announcement of this move dates from November last year, but a spokeswoman for the state's economic.

Electricity & transport footprints: The majority of the houses environmental footprints came not from the construction materials used but from incurred electricity and transport impacts.

SWEDEN

Swedish traffic congestion levy: A Swedish firm has proposed a high-tech tariff as a way to reduce traffic congestion and emissions, where cars are photographed and charged a 'congestion levy', even at 160kmph.

Waste systems windfall: Swedish automated waste systems company Envac had cashed in on the huge amount of waste produced in developed countries.

Automatic waste collection boom: Envac automatic waste collection systems have experienced sudden popularity after more than 40 years in the business, with sales doubling in four years.

Four wheels and flies: Automated waste collection systems cut costs, emissions, smells and eliminate garbage trucks. .

Zero-emissions cargo ship: A European ocean transport company has developed a revolutionary zero-emission container ship powered completely by renewable sources.

NEW ZEALAND

Landfill to swimming pool: In New Zealand a Christchurch City Council plan to collect methane gas from the Burwood landfill site to fire the boilers at the QE2 swimming pool has been awarded 200,000 emissions units under the government's Projects to reduce Emissions program.

NZ wind farm gains CERs: Eastland Network Limited's proposed Mokairau wind farm became the first to be awarded emission units under the second round of the New Zealand government's Projects to Reduce Emissions program. Last year's wet summer brought considerably hydro generation in Germany, the country's statistics office said Monday. With 27TWh, the hydro output was 12 per cent higher than in 2003.

AUSTRALIA

Qld opposes emissions trading: Queensland could put a stop to the plans to establish a state-based domestic emissions trading scheme in Australia, according to media reports.

NSW energy directions green paper: New South Wales Premier

Bob Carr has expressed support for the Greenhouse Advisory Panels recommendations that the state cut its greenhouse gas emissions by 60 per cent by 2050. This is in response to the NSW energy directions green paper.

Nuclear warning issued: One of Sweden's foremost sustainability experts warned Australia against developing nuclear energy, advising the nation to make use of renewable energy options first

NORTH AMERICA

Canada climate Bill tabled: Minister of Finance Ralph Goodale last Thursday tabled a bill in the House of Commons to implement measures proposed in the 2005 Budget Plan to establish a new agency under Environment Canada to manage the \$1 billion Climate Fund, which will provide incentives for the reduction and removal of greenhouse gases.

Canadian car makers deal with govt: Canadian car makers have signed a voluntary agreement with the federal government to reduce their greenhouse gas emissions by 5.3 million tonnes by 2010.

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proposal - to earn tradable credits under the Clean Development Mechanism has a deadline for comment of 18 April.

12 billion cubic meters in 2003: It is estimated that in 2003, about 12 billion cubic meter (m³) of coal seam methane, which was produced by coal mines in the People's Republic of China, was vented into the atmosphere. With increasing depth of underground coal mining operations in the PRC, this volume is expected to increase in the future.

Shanxi Province provides Beijing grid: The Shanxi Province is also a major electricity exporter; providing, for example, a quarter of the power consumed in Beijing. In 1999 Shanxi Province had a power surplus; however, this has changed drastically since then. In 2003 the first power shortage appeared in the SPG and power shortages have become more serious in 2004. The installed power generating capacity of the SPG was 15,772 MW as of 2003, out of which 14,990MW consisted of coal-fired power and the remaining 782MW of hydro power. Given the dominance of coal mining in the region, the fuel at the margin is coal, counting for approximately 95 per cent of the installed capacity.

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Jincheng Mine economics

Input data	Value	Unit
Combined factor	0.825	tCO ₂ /MWh
ELin	30	GWh
TGEN	6,561	GWh
EFin	unknown	tCO ₂ /MWh
ELout	427	GWh
EFout	0.825	tCO ₂ /MWh

Total project costs: US\$235mil equivalent.

Electricity Tariff: 0.234Yuan/kWh, depreciation over 20 years. As can be seen from the above, for the component of coal seam methane (CSM) production in the base case, the project shows a forecasted project financial internal rate of return of 5.3 per cent without entity relationship revenue. The Financial Internal Rate of Return (FIRR) goes up significantly to 14.8 per cent with ER revenue as an additional revenue stream. The impact of the carbon finance on the project is also indicated by the net present value, which changes from 3.1 million Yuan without carbon revenue to 211.3 million Yuan with carbon revenue, using the project weighted average cost of capital of 4.96 per cent as the discount rate. For the component of the 120MW captive power plant, the project shows a forecasted Project FIRR of 6.6 per cent without ER revenue. The FIRR goes up significantly to 8.2 per cent with ER revenue as an additional revenue stream. The impact of the carbon finance on the project is also indicated by the NPV, which changes from 152.9 million Yuan without carbon revenue to 288.7 million Yuan with carbon revenue, using the project WACC of 4.96 per cent as the discount rate.

From worldwide reliability point of view: The additional revenue brought in as a CDM project shall enhance worldwide coal producers in utilizing the CSM in a more effective manner. According to the US-EPA's study, 30.8 billion m³ of CSM had been emitted into the atmosphere in the year 2000. This accounts for approximately 440 million tons worth of CO₂ equivalent.

Impact of imports	Value	Unit
Using a low EFin (0,001)	0.825	tCO ₂ /MWh
Using a high EFin (0,999)	0.830	tCO ₂ /MWh
Max range impact on Combined factor*	0.005	tCO ₂ /MWh
	0.55	%

*Thus imports are negligible

Largest CSM emitters in 2000:

- China (40 per cent);
- US (16 per cent);
- North Korea (8 per cent);
- Russia (7 per cent);
- Ukraine (7 per cent);
- India (7 per cent);
- Australia (4 per cent); and
- Poland (2 per cent).

The future predictions are that this amount shall increase to 39.3 billion m³ by the year 2020, accounting for approximately 561 million tons of CO₂ equivalent. Relevant activities in these countries are taking place; however, lack of financing for underlying projects is the key issue for the absence of more efficient use of coal seam methane, although it had been dealt with since the early 1980s. The impact of CDM revenue flow, hence, will become the key factor in triggering the more efficient utilization of CSM worldwide.

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New baseline and monitoring methodologies to the CDM Executive Board: 29 March 2005 - 18 April 2005 deadlines

The following proposals on new baseline and monitoring methodologies have been submitted to the CDM Executive Board for its review and are available for public input from 29 March 2005 -18 April 2005:

- **NM0096:** Energy Efficiency Improvements - Hou Ma District Heating, Shanxi Province, P.R.C.
- **NM0097:** Improvement in recovery of black liquor solids through Oxygen-Delignification and Free Flow Falling Film Evaporator and its use for steam generation in Soda Recovery Boiler.
- **NM0098:** Nobrecel Fossil-to-Biomass Fuel Switch Project in Brazil.
- **NM0099:** Energy Efficiency Improvement in a Cement Plant at Jaypee Associates (Cement), Madhya Pradesh, India.
- **NM0100:** Electric motor replacement program in Mexico.

- **NM0101:** Grasim baseline methodology for the energy efficiency improvement in the heat conversion and heat transfer equipment system.
- **NM0102:** China Jincheng Coal Mine Methane Power Generation Project.

Re-submitted for consideration:

- **NM0041-rev2:** Khorat Waste to Energy Project, Thailand, and
- **NM0045-rev2:** Birla Corporation Limited: CDM project for "Optimal Utilization of Clinker".

All documentation is available under the following link: <http://cdm.unfccc.int/methodologies/process>

Technology plan for China's methane abatement billions

Jincheng Anthracite Mining Group Co has installed small scale gas turbines from 1995 to 2000 (from 120 up to 2,000kW) and has been a successful pioneer of CSM/ coal seam methane technologies in China. The proposed largescale Jincheng coal seam methane Power Project will install internal combustion engines using combined cycling at the Sihe Mine.

Built incrementally by;

- 50 per cent of the capacity by December 2005; and
- adding the remaining 50 per cent by the end of 2007.

Proposed activities: The basic proposed construction and operational activities of the Project include:

- directional drilling of long in-seam boreholes to capture and recover coalmine methane;
- installation of 32 to 96 internal combustion engines with a total installed capacity of up to 120MW; and
- power grid retrofitting to supply the electricity from its current on-site coal and coal-waste fired power plants.

Gas extraction and delivery: There are several technologies to be used in the project, which differ from the normal technology in use in China today.

Steerable downhole motors: As to the gas extraction and delivery, the Jincheng Mining Group is considering using long borehole steerable downhole motors to extend the reach of the gas drainage.

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Big banks rush to assist China coal seam gas electricity plans

The Asian Development Bank (ADB) and the Japan Bank for International Cooperation (JBIC), both as financiers, and the relevant ministries of the PRC, would assist JMC to develop this pilot demonstration project with the long-run goal of making coal seam methane an integral element of the country's energy mix and reducing its reliance on high-greenhouse gas fuels.

How the finance works: The foreign portion of the underlying financing for this project will be provided by the Asian Development Bank as well as by the Japan Bank for International Cooperation; however, these financings are not part of an international Official Development Assistance (ODA) effort and will not be utilized to purchase emission reductions.

The shape of the plan: Under the plan, the gas would:

- fuel 120MW of on-site power production; to
- displace imported grid electricity; with
- intention to export the surplus electricity to the power grid.

The proposed Clean Development Mechanism (CDM) project is at the Sihe coal mine located near the city of Jincheng in the Shanxi Province of the Peoples Republic of China (PRC).

Name	Technology	Fuel Type	Date of Installation	GWh	Accumulate	%of Capacity
El Canada	Hydro	RE	nov-03	13.0	13.0	0.2%
Electrogeneración	IC Motor	Bunker	nov-03	3.9	16.9	0.3%
Amatex	IC Motor	Bunker	2003	14.8	31.7	0.5%
Arizona	IC Motor	Bunker	apr-03	561.4	593.1	9.0%
Calderas	Geothermal	RE	dec-02	32.7	625.8	9.5%
Matanzas	Hydro	RE	jul-02	62.4	688.2	10.5%
San Isidro	Hydro	RE	jul-02	0.7	688.9	10.5%
La Esperanza	IC Motor	Bunker	may-02	740.0	1,428.9	21.8%

FIRR and NPV is compared herewith for both with and without the carbon revenue case.

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New China safety laws an extra driver:

Methane gas in underground coal mines is an extremely explosive gas that takes thousands of lives annually in coal-producing countries. To ensure miners safety, coal mining operations must collect and vent to the atmosphere some of the methane from coal seams. As required by Chinese mine safety laws, the Jincheng Anthracite Mining Group Co. Ltd. (JMC) has installed a gas collection system in all of its mines to capture a certain portion of the methane. With the exception of a small portion utilized for generating electricity and steam, the captured gas is vented directly to the atmosphere, thereby releasing a highly potent greenhouse gas.

Project to capture gas: The proposed CDM project activity will capture and use a majority of the mine's vented gas to fuel the proposed 120MW power plants and displace its purchase of electricity from the Shanxi Power

Grid (SPG) where coal counts for 93.9pc of its fuel source.

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China pioneers large scale 120MW capture and use of coal mine methane gas

The Jincheng Anthracite Mining Group Co. Ltd. Project represents the first-ever large scale (120MW) capture and

use of coal mine methane gas for power generation in the PRC and in the Asia-Pacific region. Given the strongly increasing power demand in the PRC, annual coal production at the Sihe mine is to increase from the current 5 million tons to nearly 11 million tons by the year 2010. Parallel to this increase in coal production, power demand at the Sihe mine site will also increase.

China laws on methane: Chinese law requires mining operations only to collect and release a certain amount of coalmine methane to the atmosphere to reduce in-mine methane to safe levels for miners' protection. Such regulatory standards do not require coal mines to flare (burn off) or use any of the vented gas. The JMC is currently using a small portion of its vented methane for fueling minor electricity needs, but the majority of the gas goes directly to the atmosphere

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If only 10pc of China coal methane used for electricity: equivalent to 100 years of China natural gas production

The replicable nature, technological advancements and environmental importance of a coal seam methane CDM activity to China and other coal producing countries are enormous. Coal currently accounts for about 67 per cent of primary commercial energy consumption in the PRC. In 2003, about 12 billion cubic meters (m³) of coal seam methane was produced and vented into the atmosphere by coal mines in China. If only 10 per cent of the country's coal seam methane resources - about 3.0-3.5 trillion m³ - could be economically used, this amount would provide a new GHG reducing energy supply equivalent to 100 years of China's current natural gas production rate.

Other coal mines to follow pilot: Coal mines in the vicinity of the Sihe mine have expressed interest in the construction of coal seam methane-fired power plants similar to the one to be constructed under the Project. Also, the Project can lead to wide-scale use of coal seam methane and displacement of coal-fired electricity by residential, commercial, and industrial consumers.

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China policies promote renewable energy, energy efficiency and landfill projects, as CDM potential projects

The Peoples Republic of China has placed coal methane projects as one of the top priority categories among renewable energy, energy efficiency and landfill projects, as CDM potential projects. The most important project benefits will be the methane capture and phase-out of reliance by the mining industry of imported coal-fired grid electricity and on-site coal or coal-waste use. The use of coal seam methane at the 120MW Jincheng power plant will create an avoidance of coal burning by the grid and the latter's associated pollutants of SO₂, CO₂, NO_x, and total suspended particulates (TSPs). The improvement of air quality will reduce the morbidity and mortality rate of air-related diseases and associated medical costs, loss of healthy working days, as well as human suffering.

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All about Jincheng Anthracite Coal Mining Group Co. (JMC)

JMC is the project developer and the operator for the Project, which will be conducting the coal seam methane capture from its Sihe coal mines and building the power plant using coal seam methane as its primary fuel source.

The Prototype Carbon Fund (PCF): The PCF is a CDM project facility. The International Bank for Reconstruction and Development is the Trustee of the PCF, and purchases Certified Emission Reductions on behalf of the Participants in the Fund, comprised of several Annex I Parties and international corporations.

30,000 employees: The JMC currently has 30,000 employees and, with dependants, around 100,000 people directly rely on the mine for their livelihoods. Furthermore, 60 per cent of the output of the mine is used in supplying energy for fertilizer production, which is a crucial aspect for China's agricultural development. The construction of

the Project is expected to create about 1,200 full-time employment opportunities during the Project construction phase and 845 during the operation of the Project. Of these jobs, poor rural and urban workers are expected to fill 780 full-time employment opportunities. An estimated CNY8.5 million in wage payments will go to the poor and women during the Project construction period. The operational employment opportunities are for 420 people with CNY4.6 million of the wage payments per year, much of which are expected to go to the poor and women according to the Asian Development Bank. In addition, local procurement of the materials required for the program is also expected to create additional jobs in the area. From the sustainable development point of view, this area includes about 220,000 rural poor people based on the CNY1,000 a year and about 96,950 urban poor who have an annual per capita income of not more than CNY1,800 (the weighted average) in the urban areas of Jincheng and other cities in the project area.

Site of the pilot: The Sihe mine, owned by the JMC, is located in the Beishidian Town, near the city of Jincheng in the Shanxi Province of the PRC. The city is located southeast of the province, apart from the heart of the country's major coal mining region. Producing anthracite, the coal's seams are extremely gassy and abundant (4-8 m coal seam widths). The Shanxi Province possesses the largest coal reserves in the PRC, and in 2003 the Shanxi Province produced about one quarter

of the PRC's total coal production (about 1.67 billion tons). Hence, location of the first, large-scale coal seam methane CDM power generation project in this province is of vital importance to PRC's plan for reducing industry-associated GHGs while also making its coal industry cleaner and energy self-sufficient.

World Bank, Climate Experts Ltd and EcoAdvantage 1. Masaya Inamuro, Prototype Carbon Fund, c/o World Bank, 1818 H Street, NW, Washington D.C., 20433, USA, Tel: +1-202-473-2928; Fax: +1-202-522-7432; minamuro@worldbank.org) with Marcia Gowen Trump, President, EcoAdvantage, 9713 Rambling Ridge Court, Fairfax, VA 22039 USA. Tele: +1-703-4550400; Fax: +1-703-4550099; cm.trump@att.net). Development of the New Methodology: and Dr. Naoki Matsuo and Mr. Kazuo Sasaki, Climate Experts Ltd.; RATIO 701, Tsukiji 1-10-11, Chuo-ku, Tokyo 104-0045, Japan (n_matsuo@climate-experts.info)

Shanxi Province host to 13 of 30 most polluted cities in China: standards met only 29 days during 2001, 59 in 2002

Coal production and construction of large coal-fired power plants for export of the produced electricity to other provinces constitute its main sources of income that continue to cause extensive air, water, and soil pollution. The Project is located in an area dominated by heavy industries where environmental quality has deteriorated significantly over the past several years. Air

quality is poor, with Class II standards for total suspended particulates (TSP) being achieved for only 29 days during 2001, and for 59 days during 2002.

Some action taken: The Blue Skies program of the Jincheng Municipal Government is a key initiative that includes closure and relocation of heavily polluting enterprises, stricter enforcement of pollution control standards, establishment of district heating systems, and introduction of cleaner fuels including coal seam methane for use by industrial, commercial, and residential consumers.

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Jincheng Anthracite Coal Group experience in gas turbines for power gen

As early as 1995, the Jincheng Anthracite Coal Group utilized two 120kW gas turbines for power generation to consume the coal bed methane extracted from surface demonstration wells. Another two

120kW coal bed methane fired power generating units were put into operation in its mines at Panzhuang in 1997 for power supply to surface gas extraction operation. It also constructed four 400kW and two 2,000kW coal bed methane-fired power plants in 1997 and 2000, respectively. The four 400kW power plants generated an accumulated total power of 4.16 million kWhs in 1999 at an annual coal bed methane consumption of approximately 2.0 million m³ methane (CH₄). The two 2,000kW power plant was put into production in October 2000 and it consumed coal bed methane at an annual rate of about 14.40 million m³ CH₄.

Improving cementing of borehole collar: Using high density polyethylene (HDPE) piping with fused seals reduced the possibilities of air ingress into the drainage system and also leakage into the mine. This is more expensive than the current technology used. Upgrading gas and pressure control during drilling allowed for safer drilling of longer boreholes under gassy conditions.

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JMC to tender globally for 1-3MWe gas engines

The JMC will procure through international bidding the gas engines of the order of 1-3MWe in size. This would be the first time such technology has been used in a coal seam methane scheme in China in commercial scale. The alternative gas turbines, which are locally made, were considered, but are not preferred due to safety concerns with the coal seam methane gas conditions, as it needs to deal with the concentration level of CH₄ (lower than the Lower Explosive Limit and higher than the Upper Explosive Limit).

Other balance of plant, e.g. grid connection, compressor and gas storage tanks, and piping, is conventional and sourced locally. The JMC will be following all ADB procurement and operational procedures for construction and operation of the power plant.

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Methane explosions killed 2,000 miners in China in 2003

In 2003, total coal production in the Peoples Republic of China was about 1.67 billion metric tons, which represented an increase of about 15 per cent over 2002 production. Many coal mines in the PRC have very high methane content, and inefficient coal seam methane drainage is the main cause of frequent underground explosions. In 2003, such explosions resulted in the death of more than 2,000 miners, about one third of the total death of miners in China. China has a stated policy objective to make its coal industry cleaner and energy sustainable by using the vented methane gas for energy use where feasible.

World Bank proposes China's new rules for coal mine methane credits to UNFCCC

The UNFCCC has received a new methodology titled "Generalized Baseline Methodology for Coal Mine Methane Power Generation" (details in F-CDM-PDD-NMB. B.1.1), from the World Bank, Climate Experts Ltd and EcoAdvantage. For the grid power displacement portion, the proposal follows the "Consolidated methodology monitoring for grid-connected electricity generation from renewable resources" (ACM0002).

Twelve conditions: Twelve conditions were set out in the new methodology, and the World Bank, Climate Experts Ltd and EcoAdvantage justified why this new methodology was applicable.

The group argued:

- **One:** The status quo was that some portion of coal seam methane (CSM) was released, while the other portion is utilized as in-house energy source (in-house energy use is optional): In 2003, JMC extracted 85 million m³ of CH₄ out of which 25.5 million m³ had been utilized as inhouse energy use, while the remainder is released to the atmosphere. This utilization comes from 4 sets of 2MW and 1 set of 3MW engines, as well as another 2 sets of 2MW gas turbines, a total of 15MW in capacity.
- **Two:** The coal production is planned to increase in the coming years. To fuel the lack of energy in China, JMC also is in high gear to increase coal production over the years. Production in 2003 was 5.5 million MT, which is scheduled to increase up to 11 MT by the year 2010, according to the Sihe Mines long term mining plan.
- **Three:** The project captures some portion of such released methane and introduces (a) coal seam methane (CSM)-based power station(s) to meet the increasing demand of electricity of the company: The electricity demand of the Sihe mine was 63.3MW in 2003, which will increase in parallel to the increase of coal production. The demand is anticipated to increase to

74.3MW in 2007, and to 109.3MW in 2010 and on. To meet such demand, coal seam methane is utilized to some extent.

- **Four:** Current, planned 10 as well as the project power plant(s) in the project scenario and in the baseline scenario connected to the in-house grid are expected to operate fully. For example, in many cases, coal seam methane (CSM) power plant is constructed partly because of the need to treat increasing coal seam methane through growing demand of coal.
- **Five:** Maintenance period, i.e., prioritized to be operated rather than purchasing from the external grid, except for back-up and/or emergency plants: There are two aspects to this situation. The first is that the cost of in-house power generation is lower compared to purchasing electricity from the external grid, while the second aspect is that, due to the lack of power within and out of the Shangxi province, rolling blackouts had been occurring and that relying on external power is not favored from the stable supply point of view. From this given situation, even when the Project coal seam methane (CSM) generators commence operations and create an over supply of electricity for the coal company, all of the power generators in JMC will be operated at full capacity to match their in-house electricity needs in a stable manner, as well as selling the remainder to the external grid to feed the lack of energy within the country whilst generating revenue for JMC.

- **Six:** The increasing demand of heat, which makes CHP (combined heat and power) a promising option, is not expected in the near future, taking technical and/or other barriers into consideration: There exists a strong demand for heat in the nearby vicinity of the coal mining complex JMC owns and operates. However, the plan is to provide heat with Coalbed Methane (CBM) which is predrained from the Sihe mine as well as its surrounding mines and other coal mines belonging to other coal companies. CBM, with its high CH₄ content as high as 98 per cent with a high heating value, needs not to be purified for household heating purposes. Given such a situation, it turns out not to be a feasible option for JMC to construct a CHP plant at their mine site and transport heat through a heating system which actually loses its heat value as it travels through the pipeline. On the other hand, CBM being transported to the end user and then utilized becomes a more feasible option for the entire vicinity.
- **Seven:** Coal wastes are economically feasible options for the host company to fuel supply to generate electricity: Utilization of coal waste to generate power is a feasible option for JMC. Coal waste is a by-product when the raw coal is washed at the washing plant, and if it were not to be utilized, it will end up at a dump, tailings pond or be brought back into the mining pits. The carbon content of the Sihe mines coal waste is relatively high, sufficient

enough to generate power, and given the Sihe Mine's long term mining plan to double its production level by 2010, the amount of coal waste will increase in parallel. As coal waste, being a by-product of coal, basically incurs no additional cost to be produced, the entire cost for generating power becomes considerably lower compared to utilizing other fuel.

- **Eight:** There exists no plans to shut down existing power plants affected by the project: As mentioned in above (4), although the Sihe Mine will be in an over supply situation of power once the project becomes on line, all of the existing and scheduled additional power plants are planned to continue its operations to fuel the external grid and contribute to the province's and the nation's lack of energy.
- **Nine:** The project does not affect the internal/external fossil fuel supply: Although a total of 120MW of power is scheduled to be supplied by the project, the internal/external fossil fuel supply will not be affected given the lack of energy within the province and in the country. China is under a severe shortage of coal, both for metallurgical and steaming coals, due to its strong domestic coal demand from the utility and steel producing sectors, and also by the historical price hike of the international market price.
- **Ten:** Utilization of abandoned-mine methane is not expected: Given the still

uncertain success of combusting coal seam methane (CSM) at full scale, and that usually abandoned-mine methane is deemed to fluctuate in its quality of methane affected by the underground water situation, utilization of abandoned-mining method is not scheduled to take place.

- **Eleven:** The utilization of coal seam methane (CSM) as a feedstock is not planned/expected in the foreseeable future: Since there has been no studies conducted to utilize coal seam methane (CSM) as a feedstock, this option is deemed not to take place in the foreseeable future.
- **Twelve:** Flaring coal seam methane (CSM) is not a feasible option in the foreseeable future: Following the Shanxi provincial government's energy strategy in terms of fully utilizing energy sources if the economics makes sense, JMC is not planning to flare the coal seam methane (CSM) it recovers at the Sihe mine, but to utilize it as an energy source.

World Bank, Climate Experts Ltd and EcoAdvantage
1. Masaya Inamuro, Prototype Carbon Fund, c/o World Bank, 1818 H Street, NW, Washington D.C., 20433, USA, Tel: +1-202-473-2928; Fax: +1-202-522-7432; minamuro@worldbank.org) with Marcia Gowen Trump, President, EcoAdvantage, 9713 Rambling Ridge Court, Fairfax, VA 22039 USA. Tele: +1-703-4550400; Fax: +1-703-4550099; cm.trump@att.net). Development of the New Methodology: and Dr. Naoki Matsuo and Mr. Kazuo Sasaki, Climate Experts Ltd.; RATIO 701, Tsukiji 1-10-11, Chuo-ku, Tokyo 104-0045, Japan (n_matsuo@climate-experts.info)

global green tenders and events

Tender

INT: Bhabha Atomic Research Centre (India) - Fabrication, Supply and Installation of Stainless Steel/ Aluminum Platform for Mounting of Condensing Units of Split Air Conditioners on Extended RCC Beams at 7th floor, Central complex, BARC, Mumbai-85. No: TSD/11/2005. Contact: Bhabha Atomic Research Centre, ph: +91-25595400, website: www.barc.ernet.in *Closing: 22 May 2005*

INT: Department of Food and Environment Hygiene (Hong Kong) - Provision of Roving Teams for Environmental Improvement Works in Hong Kong, Kowloon and New Territories Districts. No: FEHQ5056/04. Contact: Ryan Lo, ph: +852 2923 5313, fax: +852 2834, email: cylee@fehd.gov.hk *Closing: 13 May 2005*

INT: Department of Food and Environment Hygiene (Hong Kong) - Provision of Waste Collection Services for Islands, Kwai Tsing and Sai Kung Districts. No: FEHQ1044/04. Contact: Cecilia Wong, ph: +852 2323 5310, fax: +852 2834 8401, email: cylee@fehd.gov.hk *Closing: 18 May 2005*

INT: Greater Manchester Waste Disposal Authority - Design, Build, Finance and Operation of Certain Waste Reception, Treatment and Disposal Facilities and Other Waste Disposal Services. No: 2005/S 26-025219. Contact: Bill Spencer, ph: +0161 911 4887, fax: +0161 9114907, email: ce.procurement@oldham.gov.uk *Closing: 29 April 2005*

INT: NamPower - Pre-Qualification: Kudu 400/220kV GIS Substation. No: NPWR/2005/02. Contact: Walter Cloete, ph: +26461 2052396, website: www.nampower.com.na *Closing: 7 April 2005*

INT: Nuclear Power Corporation of India Ltd - Construction of Civil Structure and Metal Structures of the Central Diesel Oil

Storage and Smoke/Ventilation Stack at KKNPP. No: NPCIL/KKNPP/CIVIL/93/2005. Contact: Nuclear Power Corporation of India Ltd, website: www.npcil.org/tenders *Closing: 15 April 2005*

INT: The European Commission - Study on the Cumulative Long-term Effects of Genetically Modified (GM) Crops on Human/Animal Health and Environment: Risk Assessment Methodologies. The deadline for requesting tender documents is 29 April 2005. Contact: European Commission, ph: +32 2 296 0008, fax: +32 2 299 4449, email: env-tenders@cec.eu.int *Closing: 17 May 2005*

INT: Vehicle Research & Development Establishment (India) - Supply, Installation and Commissioning of Facilities for Emission Measurement. No: VRDE/MMG/GLB/15/2004-2005. The tender document is to be obtained from this Estt between 14/03/2005 to 15/04/2005. Contact: Vehicle Research & Development Establishment, ph: +0241 2548401, fax: +0241 2548410, email: vrde@Sancharnet.in *Closing: 17 May 2005*

INT: Vehicle Research & Development Establishment, Government of India - Supply, Installation and Commissioning of Facilities for Emission Measurements from IC Engines on Engine Dynamometer as per Bharat Stage III Emission Norms (Equivalent to Euro-III). No: VRDE/MMG/GLB/15/2004-2005. Contact: Vehicle Research & Development Establishment, Government of India, ph: +0241 2548401, fax: +0241 2548410, email: vrde@Sancharnet.in *Closing: 15 April 2005*

Employment

INT: Allen & York - Emission Monitoring Team Leader, North East, UK. Responsible for client liaison, managing site work, training and mentoring more junior members of staff, report writing and assisting with the company's ongoing accreditation into the MCERTS scheme. No:

EW/G/13649. Contact: Environment Team, ph: +0870 870 8986, email: environment.ew@allen-york.com website: www.allen-york.com
Closing: 30 April 2005

INT: Allen & York - Environmental Engineer, Inverness.

Responsible for the implementation and maintenance of the Environmental Management System. Should have at least 5 years relevant experience. Contact: Environment Team, ph: 0870 870 8986, email: environment.ew@allen.york.com website: www.allen.york.com
Closing: 22 April 2005

INT: Allen & York - Environmental Scientist, East Midlands. To undertake CLEA assessments on contaminated land and sample descriptions in the field. Should have 5 years subsequent experience, including CLEA assessments on contaminated land. Contact: Environment Team, ph: 0870 870 8986, email: environment.ew@allen.york.com website: www.allen.york.com
Closing: 22 April 2005

INT: Beresford Blake Thomas - Senior Geo-Environmental Specialist. No: PF222. To undertake investigation, design, PPC permitting and contract preparation for landfills and contaminated land remediation projects including closed landfills. Should have experience in stability analysis and engineering design for landfills. Contact: Paul Farnell, ph: +0121 265 2543, email: env@bbt.co.uk website: www.bbt.co.uk
Closing: 30 April 2005

INT: Beresford Blake Thomas (BBT) - Senior Waste Management Scientist. To provide technical advice across the whole company on waste management and contaminated land risk as part of a 6-person section. Should have minimum of 5-10 years of relevant experience in consultancy or industry dealing with waste management and/or contaminated land issues. Contact: Greg Cordell, ph: +0121 265 2555, email: gcordell@bbt.co.uk website: www.bbt.co.uk
Closing: 21 April 2005

INT: BTC Pipeline Company - Waste Manager. To progress delivery of a hazardous waste landfill (at a previously selected location) through permitting, design and construction. Should have good

knowledge and understanding of the EU Waste and associated directives and their implications for the development of new facilities. Contact: Greg Cordell, ph: +0121 265 2555, email: gcordell@bbt.co.uk website: www.bbt.co.uk
Closing: 14 May 2005

INT: CT & Associates Engineering Inc - Geotechnical & Geo-Environmental Engineers. To provide geotechnical and geo-environmental engineering services. Should have good communication and business development skills. Contact: CT & Associates Engineering Inc, email: mwithkos@ctaengineering.com
Closing: 30 April 2005

INT: Green Energy Jobs - Business Development Manager. No: 001. Responsible for business development including marketing and sales of wind power systems. Should have a degree in Engineering and 5 years' minimum relevant sales experience. Contact: Search Dept, email: jobs@greenenergyjobs.com website: www.greenenergyjobs.com

INT: Green Energy Jobs - Regional Manager. No: 002. To oversee wind turbine sites within a designated geographical area. Should have a minimum of 5 years' experience in a customer relations background, preferably in the wind industry. Contact: Search Dept, email: jobs@greenenergyjobs.com website: www.greenenergyjobs.com

INT: Greenpeace - Chief Executive Officer. No: 24959MG. To ensure effective environmental programs are implemented within the diverse culture of the Australian-Pacific region and working within the international Greenpeace movement. Should have environmental credentials and can demonstrate senior management and strategy experience in a dynamic environment. Contact: Michael Green, Managing Director, Bradman Recruitment, ph: (02) 8243 0500, fax: (02) 8243 0599, email: brg_3a@bradmanrecruitment.com

INT: Monarch Earth Sciences - Environmental Consultant. No: SP0903EC/M. To assist in the delivery of land quality assessments and related environmental consultancy services to a client base across the North and North West of England. Should have a sound understanding of ground investigation design and geoenvironmental report writing and reviewing. Contact: Stuart Pillans, ph: +0121 237 3185, email: spillans@monarchrecruitment.co.uk
Closing: 9 April 2005

INT: Monarch Recruitment - Principal Waste Specialist, South West, Bristol, Bath. No: 39pwsf. To provide a hands on lead in areas such as waste strategy, regulation, logistics and recycling, to the team you are managing. Should have proven business winning skills, and must be able to demonstrate excellent technical waste know-how. Contact: Monarch Recruitment, ph: +0870 603 9071, email: sfung@monarchrecruitment.co.uk website: www.monarchrecruitment.co.uk *Closing: 11 April 2005*

INT: Monarch Recruitment - Waste Consultant, East Midlands, Nottingham Mansfield. No: 25sfwc. Responsible for projects within waste plans/strategy and IPPC licensing application. Should have 5 years postgraduate waste experience. Contact: Monarch Recruitment, ph: +0870 603 9071, email: sfung@monarchrecruitment.co.uk website: www.monarchrecruitment.co.uk *Closing: 21 April 2005*

INT: Monarch Recruitment - Waste Consultant, Thames Valley, Reading, Maidenhead. No: 23wc. Should have a solid background in waste management, with particular focus on legislation, landfill and consultancy. Contact: Monarch Recruitment, ph: +0870 603 9071, email: sfung@monarchrecruitment.co.uk website: www.monarchrecruitment.co.uk *Closing: 10 April 2005*

INT: Monarch Recruitment - Waste Management Engineer. To undertake conceptual designs and technology assessments and to assist in the planning and permitting of municipal waste treatment centres and landfills. No: SF1503WASTE. Contact: Monarch Recruitment, ph: +0870 603 9071, email: sfung@monarchrecruitment.co.uk website: www.monarchrecruitment.co.uk *Closing: 15 April 2005*

INT: Monarch Recruitment - Waste Strategy Consultant, North West, Liverpool, St Helens. No: 23sfws. Responsible for the development of waste strategies from planning, to forecasting and execution. Should have a good understanding of the waste management sector within the UK, as well as experience within waste legislation and policies. Contact: Monarch Recruitment, ph: +0870 603 9071, email: sfung@monarchrecruitment.co.uk website: www.monarchrecruitment.co.uk *Closing: 21 April 2005*

INT: Organization of the Petroleum Exporting Countries - Financial Economist. To monitor financial market development in the work economy. Should have experience in stock exchanges and oil paper markets. Contact: OPEC, website: <http://www.opec.org> *Closing: 14 April 2005*

INT: Organization of the Petroleum Exporting Countries - International Relations Analyst. To follow, assess and provide advice on subjects concerning international relations. Should have eight years of analytical work in the file of Energy Economics or Petroleum Industry. Contact: OPEC, website: <http://www.opec.org> *Closing: 8 May 2005*

INT: Organization of the Petroleum Exporting Countries - Oil Demand Analyst. To monitor factors which have major impact on short-term world oil demand and to undertake periodic revisions of world oil demand estimates on the basis of most recent data. Should have eight years of professional experience in analysis of the oil market. Contact: OPEC, website: <http://www.opec.org> *Closing: 19 May 2005*

INT: Organization of the Petroleum Exporting Countries - Petroleum Analyst. To monitor and analyze oil stocks. Should have eight years work experience. Contact: OPEC, website: <http://www.opec.org> *Closing: 8 May 2005*

Conferences & Events

11-13 April 2005. Conference on Sustainable Building South-East Asia. Kuala Lumpur, Malaysia. Contact: The Conference Secretariat, ph: +60-7-5531935, fax: +60-7-5542669, email: sb04sea@hotmail.com

11-22 April 2005. 13th Session of the Commission on Sustainable Development. New York, United States. Contact: UN Economic and Social Development, website: <http://www.un.org>

13-15 April 2005. Energy Talks Ossiach 05 Guiding Theme: "Eastern Energy". Stiff Ossiach, Austria. Contact: Energy Talks, ph: +43 1 409 79 3666, fax: +43 1 409 79 3669, email: office@energytalks.com website: <http://www.energytalks.com>

13-15 April 2005. International Congress and Exhibition for Energy Efficiency and Renewable Energy Sources in Buildings and Industry Sectors. Plovdiv, Bulgaria. Contact: Via Expo, ph: +00359/32/960011, 960012, 945459, email: office@viaexpo.com website: <http://www.viaexpo.com>

14-15 April 2005. Fourth International Conference on Business and Sustainable Performance. Aalborg, Denmark. Contact: Hans Jorgen Brodersen, Organizing Chair, email: ehe@akkc.dk website: www.euro-environment.dk

19-21 April 2005. 16th Global Warming International Conference & Expo. Global Warming International Center, USA. Contact: Sinyan Shen, email: gw16@globalwarming.net website: globalwarming.net

24-29 April 2005. World Geothermal Congress - 2005. Antalya, Turkey. Contact: World Geothermal Congress, website: <http://www.wgc2005.org>

26-27 April 2005. Green Power Mediterranean. Rome, Italy. Contact: Green Power Conferences, ph: +423 663 029 144, email: matthew.probyn@greenpowerconferences.com website: <http://www.greenpowerconferences.com>

2-3 May 2005. OECD Forum 2005 - Fueling the Future: Security, Stability, Development and CECD Ministerial Summit. Paris, France. Contact: John West, Forum Director, ph: +33-1-45-24-80-25, fax: +33-1-44-30-63-46, email: john.west@oecd.org website: <http://www.oecd.org>

7-9 May 2005. Saudi Energy Mega-Projects. Dammam, Saudi Arabia. Contact: Angela Williams, ph: +00 44 207 089 4200, fax: +00 44 207 089 4201, email: events@thecwcgroup.com website: <http://www.thecwcgroup.com>

9-12 May 2005. Climate Change Technology: Engineering Challenges and Solutions in the 21st Century. Ottawa Congress Centre, Ottawa, Ontario, Canada. Contact: EIC Climate Change Conference, ph: +613-839-1108, fax: +613-839-1406, email: EICCC2006@ieee.org

10-12 May 2005. UN Symposium on Integrated Implementation of Sustainable Development Goals. Nanchang, China. Contact: Zhu Juwang, Senior Economic Affairs Officer, DESA, ph: +1-212-963-0380, fax: +1-212-963-4260, email: zhu@un.org website: www.un.org/esa

17-18 May 2005. Third Annual CWC-EIEF Egypt Gas Conference: Energizing Egypt's Future Growth. Cairo, Egypt. Contact: Michael Travers, ph: +00 44 207 089 4200, fax: +00 44 207 089 4201, email: events@thecwcgroup.com website: <http://www.thecwcgroup.com>

19-21 May 2005. SOLAREXPO. Vicenza Fair Trade Center, Italy. Contact: Chiara Borsato, Public Relation manager, ph: +39 0439 849 855, email: press@solarexpo.com

24-25 May 2005. Energy Trading Central & Eastern Europe 2005. Budapest, Hungary. Contact: Synergy, ph: +31 346 590 901, fax: +31 346 590 601, email: info@synergy-events.com website: <http://www.metering.com>

25-27 May 2005. Second Meeting of Parties to the AARHUS Convention. Almaty, Kazakhstan. Contact: Ella Behlyarova, Environmental Affairs Officer, ECE, ph: +41-22-917-2376, fax: +41-22-917-0107, email: Ella.Behlyarova@unece.org website: www.unece.org

26-27 May 2005. 11th International Cogeneration, Combined Cycle and Environment Conference & Exhibition. Istanbul, Swissotel. Contact: Feraye Parcah, ph: +90 212 275 8359, fax: +90 212 288 2614, email: feraye@iccconference.com website: <http://www.iccconference.com>

1-3 June 2005. Policies for the Diffusion of Innovative and Sustainable Transport Technologies. The workshop is organized in collaboration with the Center of Energy Policy and Economics of the Swiss Federal Institute of Technology and will involve and excursion with the title "past, present and future policies in transport energy decisions". Zurich, Switzerland. Contact: Peter Finckh, email: finckh@swissinfo.org website: <http://www.iea.org>

5-10 June 2005. 3rd Dubrovnik Conference on Sustainable Development of Energy, Water and Environment Systems. Dubrovnik, Croatia. Contact: Secretariat, fax: +385 1 6156940, email: Dubrovnik2005@fsb.hr website: <http://www.dubrovnik2005.fsb.hr>

8-12 June 2005. World Fair of NGV & H2V and 11th Annual ENGVA Conference. Bolzano, Italy. Contact: NGV World Fair, email: info@ngvworldfair.com website: <http://www.ngvworldfair.com>

15-16 June 2005. Renewable Energy Finance Asia. Hong Kong. Contact: Sarah Ellis, Green Power Conferences, email: sarah.ellis@greenpowerconferences.com website: <http://www.greenpowerconferences.com>

12-14 July 2005. 2005 IASME/WSEAS International Conference on Energy, Environment, Ecosystems and Sustainable Development. Bouliagmeni, Athens, Greece. Contact: WSEAS, email: info@wseas.org website: <http://www.worldses.org>

6-12 August 2005. Solar World Congress 2005. Orlando, Florida, US. Contact: Becky Campbell-Howe, ph: +1-303-443-3130, fax: +1-303-443-3212, email: bchowe@ases.org website: <http://www.swe2005.org>

7-9 September 2005. Green Power Central & Eastern Europe. Prague. Contact: Sarah Ellis, Green Power Conferences, email: sarah.ellis@greenpowerconferences.com website: <http://www.greenpowerconferences.com>

20-22 September 2005. Metering, Billing & CRM/CIS Europe 2005. Barcelona, Spain. Contact: Synergy, ph: +31 346 590 901, fax: +31 346 590 601, email: info@synergy-events.com website: <http://www.metering.com>

21-23 September 2005. Verbund-Conference "Energy 2020". Fuschl, Austria. Contact: Brainbows, ph: +43 1 796 544 415, fax: +43 1 796 544 485, email: office@energy2020.at website: <http://www.energy2020.at>

27-28 September 2005. Fifth Annual Workshop of Greenhouse Gas Emission Trading. IEA, Paris, France. Website: <http://www.iea.org>

4-5 October 2005. ESCO Europe 2005. Vienna, Austria. Contact: Elisabeth Brusse, ph: +31 346 590901, fax: +31 346 590601, email: info@synergy-events.com website: <http://www.esco-europe.com>

17-21 October 2005. 14th European Biomass Conference and Exhibition. Palais des Congres, Paris, France. Contact: Biomass Conference, email: biomass.conf@etaflorence.it website: <http://www.conference-biomass.com>

25-29 October 2005. International EcoEnergy Conference 2005. Kyiv. ph: +380 97 6840135, fax: +380 44 5596059, email: conference05@ukrpost.net

7-18 November 2005. UNFCCC Eleventh Session of the Conference of the Parties (COP-11). Conference Place is to be decided. Contact: FCCC Secretariat, ph: +49-228-815-1000, fax: +49-228-815-1999, email: secretariat@unfccc.de website: <http://www.unfccc.de>

9-10 November 2005. EMART Energy 2005. Nice, France. Contact: Synergy, ph: +31 346 590 901, fax: +31 346 590 601, email: info@synergy-events.com website: <http://www.metering.com>

14-16 November 2005. Green Power Mediterranean. Rome, Italy. Contact: Nad Chaudhry, Green Power Conferences, email: nadim.chaudhry@greenpowerconferences.com website: <http://www.greenpowerconferences.com>

15-18 November 2005. The 2nd International Exhibition of Energy Production Equipment. Kish Trade Free Zone, I.R. of Iran. Contact: Secretrate Of Emermid 2005, ph: +98 21 7529241, fax: +98 21 7634718, email: info@expokish.com website: <http://www.expokish.com>

3-6 January 2006. 2nd International Conference on Thermal Engineering Theory and Applications. Al Ain, United Arab Emirates. Contact: Yousef Haik, ph: +971 3 7621702, fax: +971 3 7623158, email: yhaik@uaeu.ac.ae website: <http://www.engg.uaeu.ac.ae>

6-7 February 2006. Sustainable Development and the WTO. Chatham House, London, England. Contact: Chatham House, ph: +020 7957 5753, email: dribeiro@chathamhouse.org.uk website: <http://www.riia.org>

12-16 June 2006. The 11th International Energy Conference and Exhibition. Stavanger, Norway. Contact: Energex 2006, email: info@energex2006.com website: <http://www.energex2006.com>

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