

# electricity week's global green markets



## CDM board rewrites HFC 23 rule after credit value found 100x more than abatement cost

**1** The CDM (Clean Development Mechanism) Executive Board, at its fifteenth meeting, overturned its own rules on incineration of HFC 23 waste and said it would write a new set of rules on how HFC 23 burning rules will be allowed to earn greenhouse credits.

**HFC 23 polluters said:** What could happen as a consequence of HFC-23 destruction under the CDM rule was plants would get built

solely to pollute and earn credits. After a lively debate - after which it was pressured to publish confidential submissions - it was accused by big polluters of:

- reversion of decisions;
- extending Kyoto rules to the Montreal Protocol;
- application of Life Cycle analysis to Kyoto projects; and
- making projects account for end-user leakage.

### Impact of HFC 23 rule:

- increase of greenhouse gases;
- damage to the ozone layer;
- distorted national policies;
- nations to “achieve” national GHG (greenhouse gas) targets on HFC 23;
- shifted HFCF22 production between countries;
- increased production of the polluting process to earn CERs (Certified Emission Reductions); and
- possibly, production designed solely to make CERs.

At its 18th meeting the CDM Executive Board then allowed Ulsan, Korea, and Gujarat, India,

*cont. page 4*

## contents

- 4 CDM Executive Board short of cash: income US\$1.81 million one third of the budgeted US\$5.5 million required
- 4 Ulsan, Korea and Gujarat, India HFC 23 projects go ahead with modifications
- 6 Even at low price of US\$3 per CER and high abatement costs of US\$0.80/tCO<sub>2</sub>eq, production costs - 60pc less
- 7 At US\$10 per CER, revenue from HFC-23 destruction double value of product
- 7 Consequences of HFC-23 destruction under the CDM: plants built solely to pollute and earn emission credits
- 8 How CDM decision could delay the implementation of emission cuts in non-Annex I countries & increase GHG
- 9 International Emissions Trading Assoc opposes four CDM board decisions
- 10 Credits based on 4pc HFC 23 pollution from HCFC 22 manufacture would provide potential windfall profits

Find out more at the subscriber section of [www.erisk.net](http://www.erisk.net)

Published by EWN Publishing, PO Box 1419, Rozelle, NSW 2039. Ph: +612 9818 8877. Fax: +612 9818 8473. Editor: Laurel Fox-Allen.

## Round Up

### CDM Executive Board short of cash:

Its income was US\$1.81 million - one third of the budgeted US\$5.5 million required for the CDM activities in 2005; with US\$0.83 million spent in the first 2 months.

**60pc short on CDM funds:** The EU had yet to fulfill its promise from Buenos Aires in December to secure funding for the CDM Executive Board. The EB currently only has 30 per cent of the money it needs to implement the activities it has planned for 2005. The shortage of funding is a serious bottleneck for the CDM project pipeline, and leads to a restricted supply of CERs to the market. The CDM Board said it would cease approvals if the money did not appear.

**New head for CDM Boards:** New chair and vice-chair for CDM Board were Sushma Gera and Xuedu Lu.

**Call for new CDM experts:** New experts were needed to replace the CDM Accreditation Panel - and these were preferred to come from new regions of the world. Replacement members were also needed for five outgoing members of the Meth Panel.

**Turbulence at CDM Board:** The CDM Board overturned a rule: it rewrote a Kyoto credit rule (AM0001) for incineration of HFC 23 waste. The Ulsan, Korea and Gujarat, India HFC 23 projects were to go ahead but with modifications, believed to bar post-2003 plants. It had been generally agreed a revision of AM0001 was needed to avoid construction of new production plants with the sole purpose of generating CERs.

### Perverse incentive in HFC 23 rule:

Even at low price of US\$3 per CER and high abatement costs of 0.80 US\$tCO<sub>2</sub>eq, HCFC-22 production costs were lowered by about US\$1/kg HCFC-22, about 60pc, and at US\$10 per CER, under the rule, revenue from HFC-23 destruction would double the value of the product. What could happen as a consequence of HFC-23 destruction under the CDM rule was plants would get built solely to pollute and earn credits.

**And what's worse:** The HFC 23 CDM decision could delay the implementation of emission reductions in non-Annex I countries and lead to additional GHG emissions.

**IETA opposes changes to rule:** The International Emissions Trading Association opposed four CDM Board decisions.

**Profits from HFC 23 pollution:** The IFC said credits based on 4pc HFC 23 pollution from HCFC 22 manufacture would provide potential windfall profits - it was more effective to use continuous emissions monitoring.

**Another way to control HFC-23:** One way was to destroy HFC-23 outside the CDM by building combined HFC-23/POPs destruction facilities.

**DuPont HFC-23 low:** DuPont said the ratio between HFC-23 pollution and its HCFC-22 production was 1.37pc but the CDM rule allowed ballooning to 4pc. It listed a HFC-23 production rate of 1.37 per cent at DuPont's Louisville works plant in the United States.

**Dupont accused:** The representative of a competitor to Dupont accused Dupont of "institutionalized financial benefit over the rest of the world's producers" in proposing a 1.37pc rule.

**New rules afoot for biomass:** The CDM Board said it would rethink grid-connected electricity generation from biomass.

**New rule for methane from water:** The CDM Board said it would force methane extraction from organic waste-water treatment plants for grid-connected projects.

**Nine back for rewrite:** The CDM Board approved proposals for new baseline and monitoring methodologies but sent nine new baseline and monitoring methodologies back.

**No Annex I Party needed:** The new rule was the registration of a project activity can take place without an Annex I Party.

**Tree sinks not in from 2008:** The eligibility of CDM reforestation projects in the second phase of the EU ETS would be considered by the European Commission, in its review of the Linking Directive in 2006. However, the latest signals from the Commission are rather negative. 30,000 tCO<sub>2</sub>e annually in the Kyoto period.

**New Gold Standard (GS) website:** With the launch of the Gold Standard (GS) website today, all is set to certify the first CDM projects complying with the GS criteria.

**China passed renewable law:** China's Standing Committee of the National People's Congress passed a Renewable Energy Law.

**Vietnam expects \$250m from CDM:** Vietnam expects to cash in \$250 million from hosting CDM projects in the 2001-2010 period. The projects would reduce emissions by some 150 MtCO<sub>2</sub>e over the period in energy, agriculture and forestry.

**Japan Fund signs CDM deal with India:** Japan Carbon Finance signed a

Memorandum of Association with the Energy and Resources Institute (TERI), India, on 3 February 2005 with a view to developing Clean Development Mechanism projects across South Asia.

**Japan to spend big on CO<sub>2</sub> cuts:** A new government estimate said the Japanese Government and private sector must spend more than two trillion yen, or euro 14.3 billion a year, to reach the country's Kyoto target.

**SA Congo hydro for CDM trade:** South African power firm Eskom Holdings is planning to tame the Congo River in a hydropower project it hopes would qualify under the Clean Development Mechanism.

**One million tonne purchase:** Natsource buyers pooled for GG-CAP by committing to buy one million tonnes of carbon dioxide over 2005 to 2013.

**World Bank fund closes first round:** The World Bank's Community Development Carbon Fund (CDCF) last week closed its first round of financial commitments at \$128 million. Its capitalisation target was \$100 million.

**World Bank buys 30,000 tCO<sub>2</sub>e pa:** The World Bank Fund (PCF) has signed an emissions reduction purchase agreement (ERPA) with Bulgarian district heating company Toplofikatsiya Pernik.

**UK off to European courts to raise cap:** The UK Government has said that it would go ahead with issuing allowances to industry according to the cap approved by the EC last year - 736 million allowances. It said it would also pursue its right to allocate an extra 19.8 million through the European courts. The European Commission welcomed the decision by the UK Government to go

ahead with the lower allocation level of 736 million tonnes, it said in a statement.

**Czech Republic NAP set too high:** The European Commission has asked the Czech Republic to cut 17 million tonnes a year off its NAP - 51 Mt over the first phase of the EU ETS.

**Norwegian NAP approved:** The Norwegian cabinet today approved an allocation plan for the installations to be covered by the Norwegian emissions trading scheme in the 2005 to 2007 period.

**Coal squeeze follows EU-ETS:** New environmental legislation for CO2 allowances would impact the use of coal in the European Union, with tougher restrictions on emissions and the increasing role of renewables.

**Germany ready to trade:** The European Commission approved the final German allocation plan this week, meaning that the CO2 registry is now ready to go live, allowing German companies to participate in the EUA spot market.

**German registry delayed:** The start of the German registry has been delayed again. The national emissions trading authority said that the office had still not heard from Brussels, which was expected to give the green light 8 March.

**Spain cabinet meeting adds cogen:** The Spanish Government cabinet meeting on Friday approved a list of cogeneration plants with over 20MW capacity which had not been considered in the earlier list of installations, and which would have to join the ETS.

**'Unfair' say Austrian energy owners:** The Austrian energy sector feels disadvantaged by the Austrian Climate Strategy, where the energy sector has to reduce almost twice as

much than the industry. The Austrian Climate Strategy is being revised at the moment and the energy sector hopes to be able to prevent even higher burdens in future.

**Poland plans legal fight over NAP:**

Poland joined those countries threatening legal action over the European Commission's decision on their allocation plans, following a demand by the EC to cut its allocation by 16.5 per cent on Tuesday.

**EC rethinks UK NAP:** A spokesperson for the European Commission confirmed yesterday that the EC is to make a new formal decision on the UK national allocation plan NAP.

**Steel firm takes Slovak NAP to court:**

US Steel in Kosice is to go to court over the revised Slovak NAP, which sees the company left with 2.5 million tonnes less over the three-year period than in the countries, original proposal.

**Poland ordered to cut 46.9 MT year:**

The European Commission announced 9 March it has asked Poland to reduce its national allocation plan (NAP) under the EU ETS by 140 million tonnes over the 2005 to 2007 period.

**Bad news for Polish cement:** The Commission's decision to slash 141 million tonnes off Poland's NAP over 2005 to 2007 is bad news for the Polish cement sector, according to Gorazdze Cement.

**Polish Power Plants angry:** The Polish Power Plants Association (TGPE) was furious over the EC's decision to slash Poland's allocation plan by 47.1 million tonnes per year.

**11 March at \$10.50 and \$10.85:**

Nervousness over what the UK might announce in terms of its allocation slowed down trade somewhat today, as the price bounced between 10.50 and 10.85.

**Nord Pool 11 March:** \$10.63 and \$10.70: A busy morning saw 120,000 traded at Nord Pool before lunch, between \$10.63 and \$10.70. Things quieted down in the afternoon, and no more trades went through.

**10 March Nord Pool \$10.35:** Nord Pool reported 135,000 tonnes traded today on its exchange, with the market closing at \$10.35.

**New law for emissions trading in Spain:**

The law regulating for emissions trading in Spain came into effect today as it was published in the official State journal.

**8 March Nord Pool closed at \$9.71:**

Nord Pool closed at \$9.71 on 8 March, with 70,000 tonnes traded in total. 50,000 tonnes were 2005 delivery, in the range from \$9.61 to \$9.80.

**European Energy Exchange (EEX):**

The Leipzig-based European Energy Exchange (EEX) had its first daily spot auction for EU allowances, 15 March.

**9 March EEX at \$11.12:**

The EEX second daily spot auction closed at \$11.12 on 9 March with just 5,000 allowances traded.

**Sweden opens registry:** Sweden's energy agency was to launch its registry 16 March.

**Two new trading platforms:** Spanish Sendeco2 and Dutch New Values, two trading platforms for the EU ETS, have signed a Memorandum of Understanding to form a partnership in the European CO2 market.

**EU Emissions Trading for aviation:** The aviation sector may be included in the second phase (2008-2012) of the European Union's greenhouse gas (GHG) Emissions Trading Scheme (ETS).

**EU 15-30pc by 2020:** All developed countries must be asked to cut their greenhouse gas emissions by up to four-fifths within half a century, EU Environment Ministers said on Thursday. "Reduction pathways in the order of 15-30% by 2020 and 60-80pc by 2050 should be considered," they said, in a resolution on global climate strategy after 2012.

**EU aviation and shipping NAPS, 2008:**

Aviation and maritime sectors may get NAPs from 2008, according to European Commissioner for the Environment, Stavros Dimas.

**Bush Clear Skies Bill fails as no CO2:**

US President Bush's Clear Skies Bill failed to pass a vote in the Senate committee on environment and public works, on the grounds that it does not cover greenhouse gas emissions.

**Canada pollution cost crisis:** The cost for Canada to comply with its Kyoto target could surpass C\$10 billion (\$6.17 billion), according to new estimates.

**Korea drafts greenhouse cuts:** The Korean Ministry of Environment set up a task force to hammer out a strategy on how to cut greenhouse gas emissions.

**Endesa plan for 277MW wind:** Endesa would invest \$286 million in new wind farms and mini hydro plants in 2005, with a total capacity of 277MW. The utility's goal was to add 2,410MW of gross renewable energy capacity by 2009, triple the current level.

**21pc increase in global wind:** More than 8,000MW of wind power capacity was installed in the world in 2004, taking the global total to over 47,000MW. Spain saw the highest increase in capacity.

Cont. from p. 1

HFC 23 projects go ahead with modifications. The board made the changes after it was told projects applying its approved methodology AM0001, for HFCF22 destruction, would create pollution-destruction profits above the value of the underlying product. The manufacturing process - halogen exchange of chlorine to fluorine - which made the pollutant (HFC23) was made from creation of HCFC22 for use as air-con and cooling refrigerant and the chemicals to make fluorochemical polymers; for example, teflon.

**Positive feedback loop:** The problem raised was sale of CERs could trigger a positive feedback loop, encouraging the production of more HCFC 22 in order to generate more CERs. The production and usage of HCFC 22 is controlled by the Montreal Protocol. Products containing HCFC 22 can no longer be exported to the main markets (USA, EU, Japan, Canada, and Australia).

**Earn \$US10 for 30- 80 cents:** The value of the credit earned was very large (11,700 CO2 eq for each tonne of HFC 23), at \$US10 a tonne - the expected market price of CERs - \$117,000 a tonne for HFC 23. The cost of abatement was very low. HFC-23 abatement costs may vary between about US\$0.30 and 0.80 per t CO2 equivalent. As a result, the board was told air-con and cooling refrigerant production costs were lowered considerably and were likely to get even negative, and produced "perverse incentives". Even at a low price of US\$3 per

CER and high abatement costs of US\$0.80 per t CO2eq production costs were lowered by about US\$1/kg HCFC 22, about 60pc (*see story inside*). At the 18th meeting the board allowed the two projects to proceed but allowed only plant built prior to 2003 to apply the rule.

## CDM Executive Board short of cash: income US\$1.81 million one third of the budgeted US\$5.5 million required

**C**urrent income amounts to US\$1.81 million which represents approximately one third of the budgeted US\$5.5 million required for CDM activities in 2005. Expenditure to date in 2005 amounts to US\$0.83 million, with all of the remaining resources being obligated. Resources currently available for the CDM from the Kyoto Protocol Interim Allocation amount to less than 15 per cent of the budgeted figure for 2005.

**Board to cancel April meeting if no cash:** As a result of this gap in resources, the Board agreed to call the special attention of Parties to the need to continue making contributions, for the prompt start of the CDM to the UNFCCC (United Nations Framework Convention on Climate Change), Trust Fund for Supplementary Activities, in order to ensure the sustained availability of resources for the increased activity levels anticipated in 2005. If such resources are not made available in the

near future, a number of critical activities planned for 2005 will have to be cancelled. In this context, the Board agreed to cancel its meeting initially scheduled for April 2005. The Board met with registered observers for informal briefings on 25 February 2005 and agreed to continue with such meetings in the afternoon of the last day of its future meetings, unless otherwise indicated. These meetings are available on webcast. The Board took note of CDM-related events attended by Board members and alternates since the last meeting.

**Space for observers:** The Board further agreed to continue to meet with the same type of arrangement as at its eighteenth meeting, with space being made available for 70 observers, and to reconsider the issue when necessary. Observers to the nineteenth meeting of the Executive Board must register with the secretariat by 20 April 2005, no later than 17:00GMT. It will be strictly enforced by the secretariat.

Reference: <http://cdm.unfccc.int>

## Ulsan, Korea and Gujarat, India HFC 23 projects go ahead with modifications

**A**fter consideration of the report of the review team, the Board agreed to register the following two project activities with modifications that have been

incorporated by project participants and national offices of Japan, Korea and India.

- GHG emission reduction by thermal oxidation of HFC 23 in Gujarat, India (0001); and
- HFC Decomposition Project in Ulsan, Republic of Korea (0003).

At the 15th meeting the Board had agreed the methodology should therefore be put on hold and revision completed no later than four months. After complaints, the Board opened a call for public input from 22 September to 7 October 2004 on its first-ever application - numbered AM0001 - "Incineration of HFC 23 waste streams".

**Submissions came from:** Gareth Philips; SGS UK Ltd; Dk Seo, UPC Corp. Ltd; Axel Michaelowa; Sonja Butzengeiger Deepak Asher; Gujarat Fluorochemicals; Caroline van Tilborg; Rabobank; Yasuko Matsumoto; Deepak Mawandia; Keith Openshaw; Steven H. Bernhardt; Honeywell International; Fabian Gaioli; MGM International; Kimiko Hirata; Kiko Network; Manoj Mehrotra; SRF Ltd; Shende Rajendra; UNEP; Iliriana Mushkolaj; ICF Consulting; Andrei Marcu; L. Schneider; J. Graichen; E. Stricker; Oeko-Institut; Hans-Juergen Korte; Solvay; Ben Feldman on behalf of Richard Rosenzweig; Natsource LLC; Nicole North on behalf of Dr. Othmar Schwank and INFRAS.

**Who would have gained:** The HFC 23 burning Kyoto credit was based on a proposal from the HFC Decomposition Project in Ulsan, Republic of Korea, prepared by:

**Effect of AM0001 on the costs of HCFC-22 production in different scenarios**

Scenario		1	2	3	
Market price of CERs	US\$/ton CO2 eq	3,00	5,00	10,00	
HFC-23 mitigation costs	US\$/ton CO2 eq	0,80	0,50	0,30	
Ratio HFC-23/HCFC-22	-	4%	4%	4%	
<hr/>					
Net revenue from CERs	US\$/ton CO2 eq	2,20	4,50	9,70	
	US\$/kg HFC-23	25,74	52,65	113,49	
	US\$/kg HCFC-22	1,03	2,11	4,54	
<hr/>					
Cost of HCFC-22 production	without CERs	US\$/kg HCFC-22	1,70	1,70	1,70
	<b>with CERs</b>	<b>US\$/kg HCFC-22</b>	<b>0,67</b>	<b>-0,41</b>	<b>-2,84</b>
	<b>Relative cost reduction due to the CDM</b>	<b>US\$/kg HCFC-22</b>	<b>61%</b>	<b>124%</b>	<b>267%</b>

In scenario 1 we calculate the lower range of the potential impact of the CDM on HCFC-22 production costs. In this scenario we assume a relatively low price of 3 US\$ per CER and relatively high mitigation costs of 0.80 US\$ per ton of CO2 equivalent. As a result, the production costs are lowered by about 1 US\$/kg HCFC-22, or about 60 per cent. The ratio of HFC-23 to HCFC-22 depends on the plant and the process parameters applied. Based on the 1996 Revised IPCC Guidelines, a default factor of 4 per cent is considered in AM0001 if no plant specific factor is available. HFC-23 is a greenhouse gas and has a GWP

(Greenhouse Warming Potential) of 11,700. HFC-23 abatement costs are relatively low. The group calculated the effect of the CDM HFC-23 destruction projects on HCFC-22 production costs in three different scenarios, which reflect a range of possible impacts. For all scenarios, it used the default HFC-23/ HCFC-22 ratio of 4 per cent. Submission to the CDM Executive Board on HFC-23 CDM projects, Öko-Institut e.V. / Institute for Applied Ecology Energy and Climate Division: Lambert Schneider, Jakob Graichen, Eva Stricker l.schneider@oeko.de j.graichen@oeko.de

**Cost of HCFC-22 production with a HFC-23/HCFC-22 ratio of 2.0 per cent**

Scenario		4	5	6	
Market price of CERs	US\$/ton CO2 eq	3,00	5,00	10,00	
HFC-23 mitigation costs	US\$/ton CO2 eq	0,80	0,50	0,30	
Ratio HFC-23/HCFC-22	-	2,0%	2,0%	2,0%	
<hr/>					
Cost of HCFC-22 production	without CERs	US\$/kg HCFC-22	1,70	1,70	1,70
	<b>with CERs</b>	<b>US\$/kg HCFC-22</b>	<b>1,19</b>	<b>0,65</b>	<b>-0,57</b>
	<b>Relative cost reduction due to the CDM</b>	<b>US\$/kg HCFC-22</b>	<b>30%</b>	<b>62%</b>	<b>134%</b>

- NEOS Fluor Japan Limited (Japan);
- FoosungTech Corporation Co., Ltd. (Korea); and
- UPC Corporation Ltd. (Korea) .

**The plan which was refused:** HFC 23 (CHF3) waste streams from an HCFC 22 (an air-con and cooling refrigerant) production facility - in a nation where regulations did not restrict HFC 23 emissions - generated HFC 23. Some of the HFC 23 may be captured and sold, but the HFC 23 may also be released to the atmosphere.

**The abatement plan:** The project activity captures and decomposes the HFC 23 that would otherwise be released to the atmosphere (and any HCFC 22 present in this waste stream). The rule set the percentage at of HFC 23 from air-con and cooling refrigerant) production at 4 per cent. This figure was later questioned as about four times higher than - best practice (see story inside).

**The emission reduction proposed:** In the example of the Ulsan project activity proposal the destruction process would:

- decompose the HFC 23 by heating it to more than 1,200C in a thermal oxidation chamber with air and steam;
- using LNG as a supplemental fuel;
- this yielded CO2, HCl and HF as by-products in a hot stream of offgas that also contains nitrogen, oxygen, carbon dioxide and moisture; and

- the gas stream was cooled, the acids and moisture are absorbed in an aqueous solution and the acids in the solution are then neutralized with slaked lime to yield calcium chloride (CaCl2) and calcium fluoride (CaF2). The CaCl2 and CaF2 are disposed in a landfill. The remaining cooled and neutralised gas (now nitrogen/oxygen/ carbon dioxide with low levels of moisture) is vented to the atmosphere.

**For more information regarding the proposal and its consideration by the Executive Board please refer to case NM007: HFC Decomposition Project in Ulsan on <http://cdm.unfccc.int/methodologies/approved>. See also United Nations Framework Convention On Climate Change - Secretariat 25 February 2005 Executive Board Of The Clean Development Mechanism, Eighteenth Meeting Report. Date of meeting: 23 - 25 February 2005, Bonn, Germany.**

## Even at low price of US\$3 per CER and high abatement costs of US\$0.80/tCO2eq, production costs - 60pc less

**T**he proposed CDM HFC-23 destruction rule would have increased global GHG emissions (as the credit earnings were about 100x abatement costs), said Öko-Institut e.V. / Institute for Applied Ecology. HFC-23 is by product of HCFC-22 manufacture. HFC-23 is a greenhouse gas and has a Greenhouse Warming Potential of 11,700 CO2eq. HFC-23 abatement costs are relatively low and CER revenues would have large effects on HCFC-

22 production costs, said a submission to the CDM Executive Board on HFC-23 CDM projects. Lambert Schneider, Jakob Graichen and Eva Stricker, of the Öko-Institute for Applied Ecology, said the consequences of HFC-23 destruction under the CDM (under the now overturned AM0001 methodology) also touched on the protection of the ozone layer under the Montreal Protocol. The submission said HFC-23 was a by-product of HCFC-22 production, and equipping HCFC-22 plants with HFC-23 destruction technology could greatly aid efforts in mitigating climate change, as the annual emissions of such plants are typically in the order of several million tons CO2 eq.

**Pollution credit higher value than product:** According to information from a workshop held in Sanya City - International Workshop on HFC-23 Clean Development Mechanisms (CDM) Project Cooperation in China, 4-6 February 2004, the destruction of HFC-23 costs about US\$4 to 6 per kg HFC-23, including amortization of the required investments. This would result in abatement costs of about US\$0.34 to 0.51 per t CO2 equivalent. The US EPA (2001) estimates typical investment costs for thermal oxidation system at approximately US\$7 million per plant and operational costs of US\$200,000 per year. This results in somewhat higher abatement costs of US\$0.73 per t CO2 equivalent, assuming a discount rate of 8 per cent.

**Cost US\$30-80 cents/tonne:** In summary, HFC-23 abatement costs may vary between about US\$0.30 and 0.80 per t CO<sub>2</sub> equivalent. According to information from different companies, the market price of HCFC-22 amounts to about US\$1.5 to 2 per kg, depending on retail quantities and place of sale, at production costs of US\$1.7 per kg. The revenue from the destruction of HFC-23 under the CDM depends on the market price of CERs, HFC-23 mitigation costs, and the ratio HFC-23/ HCFC-22.

**Submission to the CDM Executive Board on HFC-23 CDM projects:** Öko-Institute Institute for Applied Ecology Energy and Climate Division. Lambert Schneider, Jakob Graichen, Eva Stricker [i.schneider@oeko.de](mailto:i.schneider@oeko.de) [j.graichen@oeko.de](mailto:j.graichen@oeko.de)

## At US\$10 per CER, revenue from HFC-23 destruction double value of product

As a consequence of the CDM project activities applying methodology AM0001, HCFC-22 production costs were lowered considerably and likely to get even negative. This had considerable effects and perverse incentives regarding both the protection of the climate and the ozone layer. At US\$10 per CER, the CER amounts to about US\$4.50/kg HCFC-22, outweighing the production costs of HCFC-22 by a factor of more than two. Even at a market price of US\$5 per CER and mitigation costs of US\$0.50 per ton of CO<sub>2</sub> equivalent, the

revenue from CERs is higher than the HCFC-22 production costs. At the current market prices for CERs of about US\$10 per CER (which corresponds to current future prices in the European Emissions Trading Scheme) and relatively low mitigation costs of US\$0.30 per ton of CO<sub>2</sub> equivalent, then the revenue from the CER amounts to about US\$4.50/kg HCFC-22, outweighing the production costs of HCFC-22 by a factor of more than two.

**Submission to the CDM Executive Board on HFC-23 CDM projects:** Öko-Institute Institute for Applied Ecology Energy and Climate Division. Lambert Schneider, Jakob Graichen, Eva Stricker [i.schneider@oeko.de](mailto:i.schneider@oeko.de) [j.graichen@oeko.de](mailto:j.graichen@oeko.de)

## Consequences of HFC-23 destruction under the CDM: plants built solely to pollute and earn emission credits

At CER prices about US\$4 per tonne, it would be economically feasible to build a HCFC-22 production plant with the only purpose of destroying the HFC-23 waste streams and without selling the actual product (HCFC-22) to the market. As a consequence, the production of HCFC-22 (and together with it the HFC-23 waste stream) may only be initiated because of the CDM. Low or negative HCFC-22 production costs may have the following consequences:

- Increased consumption of HCFC-22 due to lower market prices. Due to the high

economic revenue from CERs, the global market prices for HCFC-22 would decrease considerably and, as a result, the global production and consumption of HCFC-22 is likely to increase due to the CDM. This may occur due to different effects; e.g. the delay of substitution of HCFC-22 by other substances or the potential use of HCFC-22 in applications where currently also other substances are used. For example, a large fraction of new cooling appliances, in developing countries - e.g. in cars - could use HCFC-22.

- Under the Montreal Protocol, production and consumption of HCFC-22 in developing countries are only restricted from 2016 onwards to levels determined by the production and consumption in the year 2015.
- Developing countries are then allowed to remain at 2015 levels for the subsequent 25 years (i.e. until 2040).
- Increased production and consumption of HCFC-22 in developing countries, induced by the CDM would thus lead to an increased allowed level of HCFC-22 production and consumption for that period and beyond.
- Thus, the impacts would last well beyond the crediting period of any CDM project activity; and
- An increased level of HCFC-22 production would in the long-term lead to an increased level of HFC-23 emissions, where plants do not abate HFC-23 emissions;

- to an increased quantity of CERs from mitigation of HFC-23 emissions in new HCFC-22 production plants, which are only constructed due to the CDM. In the first case, the CDM would indirectly cause additional emissions in the future - in the latter case, additional emissions will be generated elsewhere due to the CDM. In addition to these leakage effects, any increased level of HCFC-22 production will have long term damaging effects on efforts to protect the ozone layer.

#### **Production shifts from Annex I countries:**

As a result of the CDM, the HCFC-22 production was likely to move from Annex I Parties to non-Annex I Parties, as the production was economically more attractive under the CDM in non-Annex I Parties. Such production shifts were unlikely to occur directly by dismantling a plant in an Annex I country and reconstruction of the same plant in a non-Annex I country, but were rather likely to occur indirectly in the long term, with plants in Annex I countries closing down, as they are not competitive against production with the CDM in non-Annex I countries, and new plants in non-Annex I countries being constructed as they were very competitive, due to the CDM.

#### **Double counting global GHG emissions:**

These production shifts do not result in any real emission reductions, but Annex I countries would:

- account the reduction of emissions in their GHG inventories, and, in addition,

- CERs would be generated by the new plants in non-Annex I countries;
- consequently, due to such double counting, global GHG emissions would increase by the amount of CERs generated.

**New plants may shut down:** Due to the high economic revenue from CERs, plants already applying advanced technologies to reduce or destroy HFC-23 have a severe economic disadvantage compared to plants with out of date technology that implement these standards through a CDM project. As a consequence:

- environmentally advanced production plants may be shut down due to their higher production costs;
- if they are replaced by new HCFC-22 production plants built under the CDM, the generated CERs would not correspond to real emission reductions either.

#### **New HCFC-22 production plants appear:**

After the end of the crediting period, HCFC-22 production plants may shut down the thermal HFC-23 destruction in order to save operation costs. Although the approach from AM0001 builds on the approach of historical/existing emissions, the methodology does not clearly exclude the application to new HCFC-22 production plants. Although HCFC-22 is controlled under the Montreal Protocol and not one of the Kyoto gases, it has a GWP (Global Warming Potential) of 17.007.

- The increased production and consumption of HCFC-22 due to CDM projects would also directly lead to increased concentrations of GHG in the atmosphere;
- the increased use of HCFC-22 leads indirectly to additional HFC emissions with high GWPs because HCFC-22 will mostly be substituted by HFC in the future.

**Submission to the CDM Executive Board on HFC-23 CDM projects:** Oko-Institute Institute for Applied Ecology Energy and Climate Division. Lambert Schneider, l.schneider@oeko.de

## How CDM decision could delay the implementation of emission cuts in non-Annex I countries & increase GHG

**A**M0001 provides strong incentives for governments in non-Annex I countries not to implement policies and measures to reduce HFC-23 emissions. As a consequence, the CDM was likely to delay the implementation of emission reductions in non-Annex I countries, leading to additional GHG emissions.

#### **CERs will influence the global market price:**

The CDM methodology AM0001 does not take into account any of these effects, which result in significant leakage. These leakage effects were likely to be very large, in particular regarding the first three aspects described above, as the CERs will influence the global market price for HCFC-22 considerably.

**Bad effects worse than good effects:** One further should take into account that, due to the large influence of CERs on HCFC-22 production costs, for plant operators there was practically no choice but to use the CDM for the reductions of HFC-23 emissions in order to be competitive in the market. Taking this and all the different effects described above into account, it was estimated that leakage effects are probably larger than direct emission reductions through abatement of HFC-23.

**Submission to the CDM Executive Board on HFC-23 CDM projects:** Oko-Institute Institute for Applied Ecology Energy and Climate Division. Lambert Schneider, l.schneider@oeko.de Jakob Graichen j.graichen@oeko.de

## International Emissions Trading Association opposes four CDM board decisions

**A**ndrei Marcu, president and CEO of the International Emissions Trading Association, has argued against four CDM board actions which he said had “very significant implications for the future of the CDM and JI (Joint Implementation) from CDM board decisions”. The four decisions were:

- reversion of decisions;
- extension to Montreal Protocol;
- application of Life Cycle analysis to projects; and
- accounting for end-user leakage.

**Reversion of decisions opposed:** Marcu wrote to the Board: “Following your decision to put on hold methodology AM001 we seek confirmation that the projects validated under methodology AM001, prior to it being put on hold, will not be affected by any changes that may or may not be made to AM001. We feel that if this would not be the case, the already limited confidence in structuring forward transactions will disappear. This will have a negative impact not only on this or other transactions but on the CDM itself as a market mechanism.

**Extension beyond six gases opposed:** “With reference to the position that the definitions from the UNFCCC apply to the Kyoto Protocol, and that therefore emissions of GHG gases outside the Kyoto basket, including gasses controlled under the Montreal Protocol, should be considered, we understand that this is a possible interpretation.

**Extension to Montreal Protocol opposed:** “We do not agree with this interpretation. A decision to apply this broader definition has several very significant impacts:

- there is the implication that emission reductions may be claimed for activities that result in reduced emissions of any GHG and precursors;
- this broadens the scope of the CDM very substantially and takes crediting into areas where scientific knowledge is limited. There are many GHGs and GHG precursors and we believe that some restriction / list of allowed gases would be required; and

- we could foresee a conflict between the inclusion of all gases and the provision for Joint Implementation Projects. JI project accounting would be based on the broader definitions, but the AAUs (Assigned Amount Units) that are transferred between Annex B Parties to match a JI transaction would be based on accounting of the Kyoto gases only. This will negatively impact the environmental integrity and viability of Kyoto Protocol units.

**Accounting for end-user leakage opposed:** “The concept that the project must also account for the leakage associated with the eventual release of the manufactured product to atmosphere is troubling. The CDM project does not release HFC 22 to the atmosphere except in abnormal events or accidents. Release is caused by the end-users. Extending the accounting of leakage to indirect emissions that are beyond the control of the project is a very significant step.

**Opposes life cycle analysis to projects:** “Applying indirect leakage could mean that CDM projects would effectively have to apply a life cycle analysis to the project. This would again require significant revision to existing methodologies”.

**Reference:** <http://cdm.unfccc.int>

## Credits based on 4pc HFC 23 pollution from HCFC 22 manufacture would provide potential windfall profits

**L**iriana Mushkolaj, ICF Consulting, said HFC-23 formation was dependent upon the conditions used in the manufacturing process and varies between 1.5 to 4.0 per cent of the production of HCFC-22. Emission reduction credits based on 4pc HFC-23 pollution from HCFC-22 manufacture would provide potential windfall profits.

### 4pc represents a worst case baseline:

Practice default value of 4 per cent represents a worst case baseline, not the scenario that is most likely in the absence of the CDM project. In fully optimized processes, the likely range of emissions is about 1.5 to 3 per cent of production, with 2 per cent being a reasonable average estimate. Current Best Available Technology has been documented to operate at below 1.4 per cent (e.g. June 2004 DuPont submission to IPCC Emission Factor Database) of production of HCFC-22. And in case of the absence of monitoring data, or in the case of new facilities, a mass balance cap of 2pc or less should be used. The reason was the upper bound for HFC-23 emissions is in the order of 3 to 4 per cent of HCFC-22 production, but the actual quantity of HFC-23 produced depends in part on how the process is operated and the degree of process optimisation that has been performed.

**Improving the process:** There are a number of factors that affect halogen exchange of chlorine to fluorine and thus affect the generation of HFC-23 in the reactor, and significant reduction in HFC-23 formation can be achieved by adjusting process operating conditions, including modifications to process equipment. Possible alternative approaches to assessing the baseline scenario for destruction of HFC-23 in the HCFC-22 industry exist.

**New baseline:** Mushkolaj argued the 4 per cent worst case default baseline should be eliminated in favor of a baseline that rewards process optimization and investment in best available technology. Thus, all project baselines should require use of continuous emissions monitoring by methods such as approved monitoring methodology AM0001, or mass balance with a cap of 2 per cent or less. Monitoring methodology is based on direct measurement of the amount of HFC-23 waste destroyed and of the energy used by the destruction process.

### 4pc rule an incentive for inefficiency:

“Providing a default value of 4 per cent, thus, could be an incentive to maximize production of HFC-23 and to invest in less than state-of-the-art technology. Emission reduction credits based on 4 per cent would provide potential windfall profits.

## Alternative: destroy HFC-23 outside the CDM: build combined HFC-23/POPs destruction facilities

**O**ne of the options for the CDM Board and the UNFCCC was to change rules to destroy HFC-23 outside the CDM. In this case, the abatement of HFC-23 emissions from HCFC-22 production would not take place under the CDM, but would be financed through other financial resources and institutions, such as the Global Environment Facility (GEF) or the Multilateral Fund (MLF). The main advantage of this approach is that there would not be any perverse incentives - neither under the Kyoto Protocol nor under the Montreal Protocol. The costs for the global abatement of HFC-23 from HCFC-22 production would be rather low and the abatement of HFC-23 would be additional to commitments under the Kyoto Protocol. Multilateral financial resources to deal with the abatement of HFC-23 would also allow for a significant amount of additional CDM investment in other sectors, in which the contribution to national sustainable development objectives of developing countries may be higher.

**GEF, MLF support programmes:** Both the GEF and the MLF support programmes with high potential synergy effects for the destruction of HFC-23. The GEF is supporting

projects addressing global environmental problems which can include HFC-23 destruction projects. The GEF is designated as the interim financial mechanism of the Stockholm Convention, which targets persistent organic pollutants (POPs) like DDT. The destruction of POPs and HFCs can be achieved by similar processes and it is possible to build combined HFC-23/POPs destruction facilities. This would be an economically attractive way of addressing two different environmental issues at the same time. A combined destruction of HFC-23 with other pollutants could be an attractive course of action for plant operators as well, as they might charge fees for the destruction of those substances for third parties. A disadvantage of this option is that the provision of multilateral financial resources may delay the implementation of HFC-23 abatement.

**Submission to the CDM Executive Board on HFC-23 CDM projects:** Oko-Institute Institute for Applied Ecology Energy and Climate Division. Lambert Schneider, l.schneider@oeko.de Jakob Graichen, j.graichen@oeko.de

## Revision of AM0001 needed to avoid construction of new production plants with the sole purpose of generating CERs

**T**he use of AM0001 could be limited to HCFC-22 production plants that have started production prior to a certain date

(e.g. April 2003, when AM0001 was originally submitted). Such a provision would mostly prevent new plants being built as a result of the CDM, which may occur as described above through:

- (a) a globally increased HCFC-22 production due to the CDM;
- (b) production shifts from Annex I to non-Annex I countries;
- (c) market distortion effects; and
- (d) construction of new production plants with the sole purpose of generating CERs.

With the limitation of AM0001 to existing plants, these potential leakage effects would mostly be avoided.

**Reduced Facilities Costs:** However, to a smaller extent, an increase of the global HCFC-22 production level may occur also due to reduced costs in existing facilities, which then also leads to additional radiative forcing due to HCFC-22 and its substitutes. As a consequence of the limitation of the applicability of AM0001 to existing plants, new HCFC-22 production plants in developing countries may not install a HFC-23 abatement technology and continue to emit HFC-23 emissions.

**22 demand to rise:** The HCFC Task Force Report of the Technology and Economic Assessment Panel under the Montreal Protocol estimates that the demand for HCFC-22 in developing countries will triple between 2002 and 2015. In addition, HCFC-22

manufacturing will continue beyond 2040, as HCFC-22 used as feedstock is not limited by the Montreal Protocol. An option would be to address these emissions by multilaterals sources as discussed above.

**4.2.2 HFC-23/HCFC-22 ratio:** Currently, AM0001 suggests, based on the 1996 Revised IPCC Guidelines, an upper limit for the HFC-23/HCFC-22 ratio of 4 per cent. However, taking into account more recent information, this default value is not conservative, but reflects the upper value of the possible range.

**Submission to the CDM Executive Board on HFC-23 CDM projects:** Oko-Institute Institute for Applied Ecology Energy and Climate Division. Lambert Schneider, Jakob Graichen, Eva Stricker l.schneider@oeko.de j.graichen@oeko.de

## DuPont ratio between HFC-23 pollution and HCFC-22 product 1.37pc: CDM rule allowed 4pc

**T**he IPCC states in its Third Assessment Report, under the heading Optimization of the HCFC-22 production process, to minimize HFC-23 emissions. This technology is readily transferable to developing countries. Process optimization is relatively inexpensive and is demonstrated to reduce emissions of fully optimized plants to below 2 per cent of HCFC-22 production. Nearly all plants in developed countries have optimized systems.

**Previous study:** Harnisch and Hohne (2002) analyzed atmospheric measurements and

reported emissions of HFC-23 as well as HCFC-22 production data. Based on the comparison, they came to the conclusion that a 4 per cent by-production factor around 1990 does not seem to be supported by atmospheric measurements, while 2 per cent in 1990 and less thereafter seems possible.

This indicates that, on a global scale, most plants have likely already a significantly lower ratio than 4 per cent. In contrast, the default value of 4 per cent seems to reflect the upper end of the possible range, which Harnisch and Hohne (2002) estimate to be between 0 per cent and 4 per cent.

**Dupont example set:** At their Louisville plant, DuPont achieves a ratio between HFC-23/HCFC-22 of 1.37 per cent. The company states that this ratio is economically attractive due to higher production efficiency. While such a low ratio might not be applicable to all plants, especially in developing countries, it proves that the default factor of 4 per cent can be considered as worst practice, and that a better process optimization is in most cases economically attractive. In summary, the default value of 4 per cent seems not appropriate. The CDM methodology should take into account that optimization of the HFC-23/HCFC-22 ratio to a lower level than 4 per cent through process optimization is an economically attractive course of action.

#### **Preventing 'perverse' incentives:**

Furthermore, the introduction of an upper ratio of 2 per cent, based on estimates by Harnisch and Hohne (2002), would reflect recent technological developments and research

results which indicated that 4 per cent is far too high as a default value. Such a maximum value should also be supported to limit market distortions and avoid perverse incentives for plant operators: with a high maximum value of 4 per cent, companies applying already plant optimization in order to reduce HFC-23 emissions would be punished, as they may get less CERs than companies not applying any HFC-23 abatement measure. In addition, with a default value of 4 per cent, it would be a sensible approach for companies to build or plan HCFC-22 production plants with a very high HFC-23/HCFC-22 ratio in order to increase their revenues from CERs.

**Other CDM experience:** Finally, in selecting an appropriate HFC-23/HCFC-22 ratio, experiences from similar CDM projects should be taken into account. By limiting the maximum value to the values used in previous CDM projects, the dynamic technological development over time is taken into account and future revisions of the methodology may not be required.

**Reference:** <http://cdm.unfccc.int>

## HFC-23 production rate of 1.37 per cent at DuPont Louisville Works plant in United States

**T**om Jacob, senior advisor, Global Affairs DuPont, told the CDM Board the existing IPCC Good Practices Guidance has a 4 per cent default value for the production of

HFC-23 as an emission by-product associated with HCFC-22 production.

**State-of-the-art:** "The DuPont IPCC submission and related 3rd party Audit Report, documents cost-effective achievement of an HFC-23 production rate of 1.37 per cent at our Louisville Works plant in the United States, the largest such facility in the World. We believe this constitutes the current state-of-the-art in process efficiency for HCFC-22 production, and should be considered as an appropriate baseline in the calculation of emission reductions for HFC-23 projects proposed under approved methodology AM-0001".

**Two thirds reduction:** "This could effectively reduce by up to 2/3 the CO<sub>2</sub>-equivalent emissions calculated for HFC-23 reduction by thermal destruction in such operations. The Methodology Panel and DOEs (designated operational entities) may conclude that this reflects a more appropriate baseline and therefore more appropriate level of creditable emission reductions. Additionally, this enhanced process efficiency can also contribute to sustainable development benefits, as it enables such projects to utilize smaller thermal destruction capacity and thereby reduces energy use and secondary waste from the thermal destruction phase of such projects".

**DuPont . Thomas R. Jacob, Senior Advisor, Global Affairs** [tom.jacob@usa.dupont.com](mailto:tom.jacob@usa.dupont.com) **Mack McFarland:** [mack.mcfarland@usa.dupont.com](mailto:mack.mcfarland@usa.dupont.com) <http://cdm.unfccc.int>

## Dupont accused of “institutionalized financial benefit over the rest of the world’s producers”

**I**liriana Mushkolaj, ICF Consulting, said DuPont had indicated that their system has performed in such a way as to enable them to achieve an HFC-23 production level of less than 1.4 per cent. “It suggests they have operating flexibility not available to other producers. The DuPont production system is massive. Their single line production unit at Louisville, KY, makes them the largest global HCFC-22 producer. This oversized unit allows them the luxury of operating at the low temperature and pressure conditions that others cannot enjoy while still being able to dominate global supply. They have the ability to have low STY and still operate profitably due to overwhelming benefits of scale and the fact that their old investment is fully depreciated.”

**Baseline agenda:** “Their proposal to establish this low level as a baseline is a way to institutionalize financial benefit over the rest of the world’s producers by requiring others to destroy more HFC-23 without allowing others the associated benefit of a baseline appropriate for individual facilities.”

**A better way to count pollution:** Mushkolaj argued the way to do it was to set the baseline at historical levels for the site in question. “The baseline for a site can be set by examination of historical data over a set period of time, e.g. past two years, and utilize that

level as the baseline. This allows for the reality that all systems are unique and that there is a realistic trade-off between HFC-23 generation rate and unit productivity. It requires that such data are available and have been collected in a manner consistent with IPCC protocol.”

**Set baseline by current operation:** “In the event historical data are absent or not reliable, proper protocols can be established to make on-line measurements of system performance utilizing reasonable operating criteria of production rate and conditions. This again is a direct measure of actual system performance rather than comparison with a standard that cannot be achieved by most producers.”

**Use default HFC-23 co-production rate:** “If it is not possible to measure HFC-23 production rate from a facility, one could resort to a default rate estimate. It is not appropriate to utilize one of 1.4 per cent; rather, one of 2-4 per cent would be more representative of the global condition.”

**Others lack Dupont resources:** “A survey of current HCFC producers might be illustrative of HFC-23 production percentage before efforts to sequester or destroy by-product could suggest a good default level. One would expect 3 per cent might be a reasonable average. Selection of such a level should take into the account that the majority of HCFC-22 producers do not have the resources DuPont can call upon to have a successful business and produce HCFC-22 with an HFC-23 production rate of 1.4 per cent.”

**Reference:** <http://cdm.unfccc.int>

## New chair and vice-Chair for CDM board - Sushma Gera and Xuedu Lu: 5 new assessors

**T**he CDM Accreditation Panel intended to appoint new experts for desk reviews and on-site assessments. At the last meeting the CDM Accreditation Panel (CDM-AP), presented by Marina Shvangiradze, vice chair of the CDM-AP summarized information relating to the work and number of the meetings of the CDM-AP and listed “indicative letters”. These were issued by the CDM-AP if it concluded that desk reviewers and on-site assessor had satisfied the desk review and on-site requirements.

### Five new assessors appointed for test-run:

- JACO CDM Ltd. (previously JACO);
- KPMG Sustainability B.V
- Spanish Association for Standardization and Certification Systems (RWTUV); and
- Lloyds Register for Quality Assurance.

### Letters of approval issued to:

- Det Norske Veritas (DNV) for scope 15 (agriculture);
- TUV Industrie Service Sud Gruppe (TUV Sud) for scopes 14 and 15 (afforestation and reforestation and agriculture);
- JACO CDM, Ltd. (previously JACO), for the sectoral scope energy industries (renewable - / non-renewable sources, and energy distribution and energy demand;

- TUV Industrie Service Sud Gruppe (TUV Sud) for the waste handling and disposal, and agriculture; and
- Societe Generale de Surveillance UK Ltd. (SGS UK Ltd.) For the sectoral scope for energy industries (renewable - non-renewable sources), and energy distribution and energy demand.

Reference: <http://cdm.unfccc.int>

## New experts appointed to replace CDM Accreditation Panel to come from new regions of the world

The first meeting of national organisers - designated operational entity (DOEs) - took place in Buenos Aires in December 2004. And it was followed by a call for experts in March 2005, in order to replace two outgoing members of the CDM Accreditation Panel (AP) with a view to prepare a shortlist of experts for consideration by the Board not later than at its nineteenth meeting.

**New regional experts wanted:** The Board noted that, in accordance with the Board's decision at its thirteenth meeting, experts appointed to replace AP members shall, if possible, not come from the same region as the members that remain in office. The Board encourages, however, candidates from all regions to apply.

### Nations need to ramp up national expertise:

Approved methodologies (including for small-scale CDM project activities and consolidated methodologies) may be linked to several sectoral scopes, and the Board agreed to clarify that:

- a DOE, in order to assume its functions for validation and registration for a proposed CDM project activity has to be accredited for all sectoral scopes to which the project activity is linked.

The Board requested the CDM-AP to submit to the Board, at its nineteenth meeting, a proposal on means to enhance the performance of DOEs.

Reference: <http://cdm.unfccc.int>

## Replacement members needed for five outgoing members of the Meth Panel

The Board announced that a call for experts will be made from 14 March 2005 to 11 April 2005 (17.00GMT) in order to replace five outgoing members of the Meth Panel, with a view to preparing a shortlist of experts for consideration by the Board at its nineteenth meeting. Members currently serving the Meth Panel shall be included in the short list. The Board noted that experts appointed to replace Meth Panel members shall, if possible, not come from the same region as the members that remain in office. The Board encourages, however, candidates from all regions to apply.

Reference: <http://cdm.unfccc.int>

## CDM Board rethinks grid-connected electricity generation from biomass

The Board agreed with the need to develop the consolidated methodology for grid-connected electricity generation from biomass project activities, and requested the Meth Panel to prepare a draft consolidated methodology for the consideration of the Board at its nineteenth meeting. The Board acknowledged the need for revising methodology AM0004 (Grid-connected biomass power generation that avoids uncontrolled burning of biomass) in order to:

- explicitly stipulate that for power generation capacity of more than 15MW;
- a combined margin should apply; and
- system average may be used only by project activities with power generation capacity of less than 15MW.

# 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: Bhabha Atomic Research Centre (India) - Internal Electrification of Seismic Lab. at KAPS Kakrapar (Gujrat).** No: CSS/PW/03/05. Contact: Bhabha Atomic Research Centre, ph: +91-25595400, website: www.barc.ernet.in *Closing: 18 March 2005*

**INT: Combat Vehicles Research & Development Establishment - Radiator-Heat Transfer Test Rig as Per Cvrde Specifications, Drawings and Layout-1Set.** No: WT562. Contact: Combat Vehicles Research & Development Establishment, website: www.drdo.org *Closing: 22 March 2005*

**INT: Department of Nuclear Energy - Laying of Optical Fiber cable.** Contact: Department of Nuclear Energy (India), website: www.bhaskartenders.com *Closing: 22 March 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: Nuclear Power Corporation of India Ltd - Supply of Remote Operated Vehicle.** No: 01/2005-02. Contact: Nuclear Power Corporation of India Ltd, website: www.npcil.org *Closing: 29 March 2005*

**INT: Ordnance Factory Board – Heating-Elements for 560 KW bogie Hearth Furnace.** No: 04/1446/ND-56. Contact: Jointer General Manager, Gun Carraige Factory Jabalpur, 482001, website: www.worldtenders.com *Closing: 21 March 2005*

**INT: Vehicle Research & Development Establishment (India) - Supply, Installation and Commissioning of Facilities for Emission Measurements.** No: WT566. Contact: Vehicle Research & Development Establishment (India), ph: 0241 2548401, fax: 0241 2548410, email: vrde@Saancharnet.in *Closing: 17 March 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: Brunel Energy Europe - Pipeline Engineer.** Should have experience in both design and construction of onshore transport pipelines, ideally high pressure Gas and also be fluent in Dutch and/or German as well as English. Contact: Aaron Dowds, ph: +0031 (0) 10 2666 406, email: a.dowds@brunel.nl *Closing: 18 March 2005*

**INT: Brunel Energy Europe - Senior Reservoir Engineer.** No: J9441. Responsible for the recovery processes for fractured rocks, Unconventional resources, Smart wells-fields, Enhanced Oil Recovery, Water Injectivity and water management, Special core analysis, Reservoir simulation and Integrated Reservoir Modelling, Reservoir and well surveillance and subsurface Uncertainty modeling. Should have a

university degree in Science, Petroleum Engineering or equivalent.  
Contact: Aaron Dowds, ph: +0031 (0) 10 2666 406, email:  
a.dowds@brunel.nl *Closing: 18 March 2005*

**INT: Carmanah Technologies - Field Service Engineers.** No: EJFLDENG-0503. Carmanah Technologies Inc. is an industry leader in the design and manufacture of commercial solar-powered LED lighting and illumination products. Should have experience with solar/LED systems and working knowledge of microprocessor operation and data acquisition. Contact: Mark Harold, email: mharold@carmanah.com website: www.carmanah.com *Closing: 1 April 2005*

**INT: Carmanah Technologies - Mechanical Designer.** No: EJMECHDS-0503. Carmanah Technologies Inc. is an industry leader in the design and manufacture of commercial solar-powered LED lighting and illumination products. Should have experience designing electronics enclosures for outdoor use and experience with solar/LED systems. Contact: Mark Harold, email: mharold@carmanah.com website: www.carmanah.com *Closing: 1 April 2005*

**INT: Centre for Alternative Technology - Consultancy Coordinator.** CAT Consultancy offers advice in the areas of energy efficiency, renewable energy, sustainable building, water treatment, sewage treatment and eco-centre feasibility and design. To input from other CAT departments and specialists or sub-contract consultants. Contact: Sandra Cutler, ph: +01654 705950, website: www.cat.org.uk *Closing: 24 March 2005*

**INT: Centre for Alternative Technology - Supporter Coordinator.** To help develop opportunities and raise funds for CAT particularly from individuals, trusts and foundations, as well as playing an active role in CAT's co-operative management structure. Contact: Sandra Cutler, ph: +01654 705950, website: www.cat.org.uk *Closing: 24 March 2005*

**INT: Centre for Sustainable Energy - Communications & Publicity Manager.** No: CPM 298740. Should have experience of producing publicity materials for a range of audiences. Contact: Sarah Frankish, ph: +0117 929 9950, email: sarah.frankish@cse.org.uk website: www.cse.org.uk *Closing: 21 March 2005*

**INT: CETCON - Project Coordinator/Emission Testing.** No: 51127. To conduct air emission tests on sources located at refineries, natural gas transportation facilities, electric utilities, pulp & paper mills as well as many other chemical related facilities. Should have three to five years of previous emission testing experience using EPA Reference Methods and field related equipment. Contact: Personnel, CETCON, Inc/Tulsa, Oklahoma, PO Box 702800, Tulsa, Ok 74170, fax: +918-743-2286

**INT: Consultative Group on International Agricultural Research - Advisor on Governance.** To provide oversight and policy advice on the CGIAR System's work on governance and institutional issues. Should have a minimum of 12 years of relevant operational experience. Contact: Consultative Group on International Agricultural Research, email: govadvisor@cgiar.org website: www.cgiar.org *Closing: 31 March 2005*

**INT: Government Economic Service - Economic Advisers.** Should have a minimum of three years' experience as professional economist within the last five years. Contact: Anne Bateman, ph: +020 7270 5073, email: anne.bateman@hm-treasury.gov.uk website: www.ges.gov.uk *Closing: 18 March 2005*

**INT: HortResearch - Environmental Scientist.** No: 877. Responsible for the research on the transport and fate of water and agrichemicals used in horticultural production. Should have a PhD in soil science, environmental studies, physics, physical chemistry or mathematics. Contact: Human Resources, HortResearch, Private Bag 93 169 Auckland, email: vacancies@hortresearch.co.nz website: www.hortresearch.co.nz *Closing: 18 March 2005*

**INT: SEA/RENUE - Senior Manager, Installation and Project Management Team.** No: IPMSS/05. SEA/RENUE is a not-for profit company delivering sustainable energy solutions and environmental programmes across Greater London. To lead and shape the Installations and Project Management team. Should have relevant qualification and extensive experience in the establishment. Contact: Mel Francis, ph: +020 7820 3150, email: melanief@sustainable-energy.org.uk website: www.sustainable-energy.org.uk *Closing: 24 March 2005*

**INT: Solarcentury - Development Engineer - Off Grid Systems.** To manage product development activities from the brief, through design and development to manufacture. Should have a methodical design approach plus a good level of basic engineering skill. Contact: Richard Mantell, ph: +020 7803 0100, email: recruitment@solarcentury.co.uk website: www.solarcentury.co.uk *Closing: 25 March 2005*

**INT: The Moray Council - Energy Officer.** No: 42296849. Responsible for monitoring energy and water consumption in Council premises, implementing energy efficiency initiatives and identifying cost effective opportunities to reduce energy and water consumption. Should have a minimum of 2 years experience in energy management. Contact: Kim Smith, ph: +01343 563281, website: www.moray.gov.uk *Closing: 18 March 2005*

**INT: U.S. Department of Energy - Energy Services Specialist.** No: UGP-05-22-MP. Responsible for planning, developing, coordinating and implementing Upper Great Plains Region's (UGPR) Energy Services Program. Should have experience working in an electric utility environment with job responsibilities or experience involving energy services. Contact: Nancy L. Goddard, ph: +406 247-7418, email: goddard@wapa.gov *Closing: 23 March 2005*

**INT: U.S. Department of Energy - Power System Dispatcher.** No: SW-2005-08. Responsible for transmission dispatching, generation dispatching, and reliable operation of the Southwestern Power Administration (Southwestern) transmission system and control area. Should have experience as a dispatcher on a large, high-voltage (161-kV or above) power generating and transmission system. Contact: Lynn King, ph: +918 595-6617, email: Lynn.King@swpa.gov *Closing: 17 March 2005*

## 3 Conferences & Events

**21-23 March 2005. Second International Forum on Partnerships for Sustainable Development: Advancing Implementation on Water and Energy.** Marrakech, Morocco. Contact: Moroccan Ministry of Territory Planning, Water and Environment, ph: +212-3777-2662, fax: +212-3777-2640, email: forum@minenv.gov.ma website: www.minenv.gov.ma

**23-25 March 2005. International Expo on Electrical Power Tech&Equipment.** Shanghai Exhibition Center, Shanghai, China. Contact: Shanghai Zhongmao Exhibition Service Co., Ltd, ph: +8621-54592323, fax: +8621-54253480, email: zmes@zhongmao.com website: http://www.epetee.com

**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

**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

**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

**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

**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

**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: bchow@ases.org website: http://www.swe2005.org

