

## **E-news update January 9 2006**

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### **POLICY**

- 1.1. Climate Change and Energy - review of the year 2005

4 January 2006, edie newsroom

Climate Change and Energy issues dominated the headlines in both the environmental and mainstream press during 2005, with positive moves such as the start of emissions trading in Europe, the formal ratification of the Kyoto Protocol and expansion of renewable capacity showing the ways towards mitigating the effects of climate change, while hurricanes, droughts, floods and famines highlighted the dangers of complacency. Kyoto survived intact in 2005, but for how long? The start of the year saw the formal start to the European emissions trading scheme with threats of legal action from the UK over its watered down national allocation plan and allegations that the World Bank was using its size to crowd out private sector players on emissions reduction projects in the developing world. Legal action also continued against several EU countries for failing to transpose the emissions trading directive, with cases being brought against Italy, Finland, Greece and Belgium while lobbying from the Spanish coal industry seemed to pay off as the government released its NAP with extra pollution rights for coal fired stations at the expense of gas fired ones. On the international stage, there was jubilation all round as the Kyoto Protocol formally came into force and marked the start of a global rather than just European carbon market, and heralded the start of the Protocol's other flexible mechanisms - Joint Implementation and the Clean Development Mechanism. The coming into force of the Protocol immediately sparked debate about what emissions targets would be set for the period after the first phase of the Kyoto era ends in 2012. The European Commission outlined its basic plans for this period which would see aviation and maritime transport in the trading sector to predictable howls from the transport sector despite the transport sector being found to be the main source of air pollution. In addition, both Claude Mandil, Executive Director of the International Energy Agency and Gordon Brown the UK Chancellor said that energy efficiency measures would be the best way to cut emissions with very little investment needed in new technology, just a bit of common sense. However, the UK Energy Efficiency Review had found that, so far, very few of these measures were being practiced. With a general election in the air as well as the UK holding the European Presidency and the head of the G8, Prime Minister Tony Blair spent a large part of the year trying to convince the world he would hold all the answers to global warming and would make it his priority to get results. Unfortunately, this proved to be largely just hot air. During the general election itself, the environment

was, for the most part, ignored by the three major parties and 'New' Labour walked to a comfortable victory. Shortly after this 'victory' the government admitted that it would not meet its own targets for reducing emissions, and its policies, or lack of them, for tackling climate change, were slated by the Royal Society. Around the same time, the Sustainable Development Commission released a report saying that wind power should form a critically important part of the energy mix and should play a crucial role alongside energy efficiency in any climate change strategy. Indeed, wind power saw a record year of growth in 2005 with over 500MW new capacity having been commissioned by the year end of which 445MW is already operating. A further 670MW of new projects, including 90MW of offshore are also already under construction for commissioning in 2006. Biomass and biofuels also saw a good year with a European Action Plan being adopted to boost their use across heating, electricity and transport and grants being made available for biomass boilers in the UK. Spain confirmed its status as the top spot for renewable energy investment knocking the UK from its perch due to the slow pace of development here. Solar power saw growth overall globally, but there were fears from some in the UK that a policy shift on home renewables would leave solar in the dark. Many hoped a further boost to renewables use in the UK would be given when all energy suppliers were forced to disclose how much of their energy comes from which source. Many thought that the transparency would encourage consumers to switch supplier based on the published results, however, there is scant evidence that this has so far happened. New investment was also provided through the Carbon Abatement Technology Strategy, which would see carbon emissions captured and stored, rather than actually trying to reduce the production of the emissions in the first place. The technology will be focused on coal burning plants, mostly in recognition of the fact that as oil and gas prices rise, coal has become a far cheaper alternative. At the G8 summit, George W Bush played a convincing role as the global village's prime idiot, quashing Blair's hope of consensus on climate change and leading many to pin hopes on the EU leadership. Campaigns to make poverty history were also drowned out by a combination of rock star egos and political stalling, while Aubrey Meyer of the Global Commons Institute, pointed out that by adopting a system of contraction and convergence (C&C) both poverty and emissions reduction goals could be reached simultaneously. As the year progressed, Mr Blair's supposed leadership on climate change and renewables seemed ever more shaky as he seemed to become less convinced of the need for targets to cut emissions and ever more convinced of the need for nuclear power to meet the needs of the future. This was further compounded when his chief scientific advisor Sir David King gave his backing to a new generation of nuclear power stations saying they were now far less polluting and much cheaper to build. After these hints, it came as little surprise that the main focus of the UK energy review, announced in late November, was whether or not to build new nuclear power stations. The results will be announced in July 2006. The year ended with a relatively modest victory over the nay-sayers, with agreement reached at the Montreal summit on climate change and all nations calling America's bluff over its childish attempts to walk out of negotiations. The victory is still modest, however, and still failed to come up with any post-Kyoto solution. Despite only being fully ratified in 2005, the agreement runs out in 2012 and no new system or targets have been agreed. However, the talks do offer a glimmer of hope to the developing world through the start of the Clean Development Mechanism. This allows wealthy countries to invest in renewable energy projects in nations who are not Kyoto signatories and claim carbon credits back home. The system has become tangled in red tape and ineffectual, but negotiators at Montreal have streamlined the CDM and given assurances that it will continue beyond 2012 when the first phase of Kyoto comes to a close. Nations have been urged to dramatically increase their funding to improve the administration of the scheme which, if running smoothly, could be expected to invest US\$100 billion in projects around the world from plans for hydro in Honduras and Chinese wind turbines to innovative biomass plants in Brazil and India making use of agricultural waste - sugar cane mash and rice husks. Although not a total solution to any of the problems posed by climate change, the acknowledgement by a majority of the world's governments that climate change exists, and that a framework also exists to help deal with this, means that 2006 could be the year that some definite, concerted action takes place around the world. David Hopkins

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## ENERGY AND EMISSIONS

### 2.1. More than just hot air?

5 January 2006, Nature 439, 17

With the launch of an alternative-energy division, BP is taking steps to show that it is serious about 'clean' technology. Emma Marris reports. Back in 2001, BP shrugged off its full name of British Petroleum and began suggesting in its adverts that, if anything, the two letters stood for 'beyond petroleum'. Since then, the world's second-largest oil company has been working hard to promote itself as greener than its competitors. Now it has channelled its efforts into a newly minted division: BP Alternative Energy. With 2,500 employees, this unit faces the task of rapidly expanding BP's clean-energy business. It will develop and sell technology that makes more efficient use of fossil fuels, as well as equipment for producing energy from renewable sources. In addition, the unit will use its technologies to run its own power plants. BP says that in the run up to 2008 it will invest US\$600 million a year in the new unit, with more to come thereafter. It expects the division to generate revenues of \$6 billion a year by 2015. "Our aim is to become the leading player in alternative energy," says John Browne, the BP veteran who has sought to cultivate the company's green image since he became chief executive in 1998. "We aim to grow the business five- or tenfold, and to establish it as a significant contributor to the restoration of energy security here in the United States and across the world," he told the Brookings Institution in Washington DC on 29 November 2005. The strategy contrasts sharply with that of BP's arch-rival, Texas-based ExxonMobil, whose fierce opposition to mandatory cuts in carbon emissions has riled environmental groups. Yet not all those groups are fully convinced by BP's latest pronouncements on alternative energy. Rob Bradley, an energy specialist at the World Resources Institute, an environmental group in Washington DC, says that the investment is small compared with the company's massive annual profits. BP, he notes, is spending almost as much on advertising to build its green public image as it is ploughing into the new division. "They are never guilty of underselling what they are doing," he says. The new division will be led by Steve Westwell, who previously ran BP's successful solar unit. One of its top priorities will be to find ways to cut carbon emissions from natural-gas power stations. BP plans to road-test these technologies at a \$600-million plant in Peterhead, Scotland. Here, natural gas will be mixed with steam over a catalyst to produce hydrogen and, after another process, carbon dioxide. Burning the hydrogen will generate 350 megawatts of electricity, while the CO<sub>2</sub> will be pumped underground to flush out remaining oil from natural reservoirs under the North Sea. So far, schemes such as this work only on paper. A decision about whether to move ahead will be made at the end of 2006. Renewables specialists are watching with interest. "It is a complex new technology that has certainly not been proven at a commercial scale," says Doug Arent, a strategist at the US National Renewable Energy Laboratory in Golden, Colorado. For these plants to be commercially viable, it would have to be cheaper for power companies to use them and sequester carbon underground rather than simply to emit carbon by burning raw natural gas. The US Department of Energy estimates that it costs \$150 a tonne to sequester carbon with current technologies; on Europe's young emissions trading markets, firms can buy the right to emit a tonne of carbon for about \$25 (see *Nature* 438, 1077; 2005). BP and other advocates of sequestration say that in time it will become cheaper to store carbon underground and more expensive to emit it. "I think they will make money ultimately, because I think the policy framework that rewards this will be developed," says Michael Liebreich, chief executive of New Energy Finance, a London consultancy that specializes in alternative energy sources. BP's new division also incorporates its existing renewable-energy businesses, including the unit that makes solar panels. This holds about 10% of the fast-growing global market for such panels; last year, it generated revenues of more than \$400 million and turned in its first profit. In addition, the company plans to erect and run more wind turbines. It already has two small wind farms in the Netherlands, and wants to build some larger ones in the United States, the first of which would generate about 200 megawatts of electricity. The division also includes the oil company's combined-cycle gas-turbine business, which makes more efficient use of conventional gas turbines to provide heating for industrial or domestic use as well as to generate electricity. Not everyone would see that as alternative energy, but BP says it is just being practical. "Our inclusion of it here is a pragmatic acceptance of the need for a mix of strategies," explains David Nicholas, a spokesman for BP. "We are trying to set this up as a business that will actually generate money and returns. It's kind of a hedge mix." Markets reacted without any great enthusiasm to the launch of the unit: on the day of the announcement in late November, BP's stock slipped by 2.5%. And the scale of the move doesn't amount to much compared with the firm's 2004 profits of about \$15 billion. "It's an investment," says Arent, "but they are not betting the company on it. I see it as the next step in their evolution from being an oil company to being an energy company."

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## 2.2. European Union Carbon Prices May Rise to EU35 a Ton (Update1)

3 January 2006, Bloomberg

By Mathew Carr and Lars Paulsson: Prices for European carbon dioxide allowances may rise more than 50 percent to 35 euros (\$42) a metric ton this year, analysts at Dresdner Kleinwort Wasserstein said today in a report. European Union allowances may rise to that level from 17.90 euros a ton in 2005, analysts at the bank said. EU allowances for 2006 today traded at 22.25 euros, 60 euro cents less than yesterday, according to prices from RWE AG, the second biggest German utility. Starting last year, power stations and factories in the 25 EU countries must have an allowance for each ton of carbon dioxide they emit. Companies that emit more need to buy allowances in the market or face fines, and those that emit less can sell their surplus. The carbon market appears to be behaving as if there are not 40-euro-a-ton fines for utilities that fail to produce allowances for every ton of the greenhouse gas they produce in the three years through 2007, said Chris Rowland, one of Dresdner's London-based utilities analysts. "The market is acting as if it is unconstrained," he said today by telephone. "We disagree." "We believe CO2 pricing will drive further upside, so the power-price story is not over yet for RWE and E.ON AG," Germany's biggest power utility, Dresdner said in its report. EU carbon prices may average 35 euros a ton in 2007, falling to 30 euros in 2008, Dresdner said. "No one is significantly abating carbon dioxide," Rowland said. For instance, "coal-fired generation in the U.K. is still used very intensively." EU allowances tripled in price over the course of last year. Allowances for 2006 were as low as 6.60 euros on Jan. 24. Carbon prices could fall if oil and natural gas prices decline or if the European economy slows, neither of which are likely, Dresdner analysts said.

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## 2.3. Low-cost lamps brighten the future of rural India

By Anuj Chopra, The Christian Science Monitor

Until just three months ago, life in this humble village without electricity would come to a grinding halt after sunset. Inside his mud-and-clay home, Ganpat Jadhav's three children used to study in the dim, smoky glow of a kerosene lamp. And when their monthly fuel quota of four liters dried up in just a fortnight, they had to strain their eyes using the light from a cooking fire. That all changed with the installation of low-cost, energy-efficient lamps that are powered entirely by the sun. "Children can now study at night, elders can manage their chores better," says Mr. Jadhav. "Life doesn't halt anymore when darkness falls." The innovative lights were installed by the Grameen Surya Bijli Foundation (GSBF), a Bombay-based nongovernmental organization focused on bringing light to rural India. Some 100,000 Indian villages do not yet have electricity. The GSBF lamps use LEDs - light emitting diodes - that are four times more efficient than an incandescent bulb. After a \$55 installation cost, solar energy lights the lamp free of charge. LED lighting, like cellphones, is another example of a technology whose low cost could allow the rural poor to leapfrog into the 21st century. As many as 1.5 billion people - nearly 80 million in India alone - light their houses using kerosene as the primary lighting media. The fuel is dangerous, dirty, and - despite being subsidized - consumes nearly 4 percent of a typical rural Indian household's budget. A recent report by the Intermediate Technology Development Group suggests that indoor air pollution from such lighting media results in 1.6 million deaths worldwide every year. LED lamps, or more specifically white LEDs, are believed to produce nearly 200 times more useful light than a kerosene lamp and almost 50 times the amount of useful light of a conventional bulb. "This technology can light an entire rural village with less energy than that used by a single conventional 100 watt light bulb," says Dave Irvine-Halliday, a professor of electrical engineering at the University of Calgary, Canada and the founder of Light Up the World Foundation (LUTW). Founded in 1997, LUTW has used LED technology to bring light to nearly 10,000 homes in remote and disadvantaged corners of some 27 countries like India, Nepal, Sri Lanka, Bolivia, and the Philippines. The technology, which is not yet widely known in India, faces some skepticism here. "LED systems are revolutionizing rural lighting, but this isn't a magic solution to the world's energy problems," says Ashok Jhunjhunwala, head of the electrical engineering department at the Indian Institute of Technology, Madras. In a scenario in which nearly 60 percent of India's rural population uses 180 million tons of biomass per year for cooking via primitive wood stoves - which are smoky and provide only 10-15 percent efficiency in cooking - Jhunjhunwala emphasizes the need for a clean energy source, not just for lighting but for other domestic purposes as well. The Indian government in April launched an ambitious project to bring electricity to 112,000 rural villages in the next decade. However, the remote locations of the village will make reaching this goal difficult. A.K. Lakhina, the chairman of India's Rural Electrification Corporation, says the Indian government

recognizes the potential of LED lighting powered by solar technology, but expressed reservations about its high costs. "If only LEDs weren't imported but manufactured locally," he says, "and in bulk." At \$55 each, the lamps installed in nearly 300 homes by GSBF cost nearly half the price of other solar lighting systems. Jasjeet Singh Chaddha, the founder of the NGO, currently imports his LEDs from China. He wants to set up an LED manufacturing unit and a solar panel manufacturing unit in India. If manufactured locally, the cost of his LED lamp could plummet to \$22, as they won't incur heavy import duties. "But we need close to \$5 million for this," he says. "And investments are difficult to come by." Mr. Chaddha says he has also asked the government to exempt the lamps from such duties, but to no avail. An entrepreneur who made his money in plastics, Chaddha has poured his own money into the project, providing the initial installations free of charge. As he looks to make the project self-sustainable, he recognizes that it's only urban markets - which have also shown an avid interest in LED lighting - that can pay. The rural markets in India can't afford it, he says, until the prices are brought down. The rural markets would be able to afford it, says Mr. Irvine-Halliday, if they had access to micro-credit. He says that in Tembisa, a shanty town in Johannesburg, he found that almost 10,000 homes spent more than \$60 each on candles and paraffin every year. As calculations revealed, these families can afford to purchase a solid state lighting system in just over a year of paying per week what they would normally spend on candles and paraffin - if they have access to micro-credit. LUTW is in the process of creating such a micro-credit facility for South Africa. "Then more than 4 million homes in South Africa will be able to afford this lighting system," he says. In villages neighboring Khadakwadi, the newly installed LED lamps are a subject of envy, even for those connected to the grid. Those connected to the grid have to face power cuts up to 6 or 7 hours a day. Constant energy shortages and blackouts are a common problem due to a lack of power plants, transmission, and distribution losses caused by old technology and illegal stealing of electricity from the grid. LED systems require far less maintenance, a longer life, and as villagers jokingly say, "no electricity bills." The lamps provided by GSBF have enough power to provide just four hours of light a day. But that's enough for people to get their work done in the early hours of the night, and is more reliable than light generated off India's electrical grid. Villagers are educated by GSBF officials to make the most of the new lamps. An official from GSBF instructs Jadhav and his family to clean the lamp regularly. "Its luminosity and life will diminish if you let the dust settle on it," he warns them. Such admonishments aren't taken lightly by villagers here, lest they be thrust into darkness again. The villagers don't fail to acknowledge how these lamps have lit up their dark lives and reversed their fortunes. Before the LED lamps came, spending Rs. 40 (a little less than a dollar) each month on kerosene was too much. Jadhav earns just Rs. 50 a day as a contract laborer, and supports a family of five. "Now the money saved," he says with a smile, "goes into the children's education."

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## 2.4. France not Ready for Compulsory Biofuel Blending

4 January 2006, Planet Ark

France is not yet ready to introduce compulsory blending of biofuels with conventional fuels and wants to keep tax incentives to boost green fuel output, government and industry sources said on Tuesday. Plans for compulsory blending already exist in Britain, which has announced oil companies would have to include five percent of biofuels in their fuel mix by 2010, in Germany, which plans to introduce compulsory blending and end tax breaks, and in the Netherlands, which has similar plans starting in 2007. An official at France's upper house with responsibility for biofuel taxation said there had been significant discussions on making biofuel blending compulsory before the Dec. 20 vote that approved the government's 2006 budget. In the budget, France decided to maintain an advantageous tax regime for biofuels, although it slightly lowered tax breaks. It also included new types of biofuels that can now benefit from tax breaks. "You can't make the blending of a product (biofuels) obligatory if you don't have the corresponding output, and it may not be compatible with European law," the official said. She added that, without the required production levels, such a move could encourage imports. "In reality, the blending of green fuels with traditional fuels is almost obligatory because of the tax breaks that France applies," she said. Alain Jeanroy, general director of the French sugar growers group CGB and coordinator of France's ethanol producers, said he believed the French approach to offer incentives would result in the country meeting its output targets. "It's true the ethanol industry had been all for it (compulsory blending) especially because we didn't feel the oil majors really wanted to make direct ethanol incorporation possible," he said. However, a change of heart by the oil majors to allow direct incorporation, rather than the use of ether-based ETBE that they controlled, had opened up the market. "The situation has changed since biofuel industry players

met at a round table chaired by the French industry ministry in November," Jeanroy said. "France will from March 2006 incorporate ethanol directly in fuels," he added. France plans to raise biofuel incorporation to 5.75 percent by end-2008, seven percent by 2010 and 10 percent by 2015. The targets go beyond the EU goals, which in 2004 set a non-binding target that fuel should contain 5.75 percent of biofuels in 2010. To meet its own 2008 target, France has launched a tender to produce 1.8 million tonnes of biofuel, including 1.3 million tonnes of biodiesel and 500,000 tonnes of ethanol. "The results are due at the end of January," Jeanroy said. Story by Muriel Boselli.

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## 2.5. EBRD puts energy efficiency close to top of lending list

29 December 2005,

By Fiona Harvey: The president of the European Bank of Reconstruction and Development has warned companies in eastern Europe to improve their energy efficiency if they want development loans. The EBRD is making it a key criterion for lending at a time of high energy prices to give eastern European countries a chance to benefit from international greenhouse gas emissions trading schemes, as well as to improve their environmental performance. Jean Lemierre, president of the EBRD, said: "We see this as extremely important. There is so much to be gained by increasing energy efficiency in these regions, and it's clear that we can have a role in doing that." The bank has already begun to carry out assessments of energy efficiency before it agrees to lending. It also offers free "energy audits" and advice to organisations to help improve their energy efficiency, which can produce cost savings that improve the viability of lending. So far, the emphasis by the bank on energy efficiency has saved carbon dioxide emissions equivalent to the annual output of 1m British households. But Mr Lemierre thinks much more can be done. Many companies in former communist bloc countries use outdated equipment and practices and as a consequence often have poor energy efficiency. The conservation of energy has also not been high on the agenda for businesses based in these countries, many of which have been well-supplied with nuclear power, are rich in fossil fuels, or are close to obliging neighbours with sizeable oil and gas deposits. Consumers who became accustomed to cheap energy in communist times, have often continued to benefit from subsidised power. Mr Lemierre likes to quote an old Russian joke that it was cheaper to leave the gas on than turn it off, because the cost of the match to relight it was greater than the cost of the gas. As oil prices rise energy efficiency can help individuals and companies adjust, while curbing emissions of greenhouse gases associated with global warming. As well as emphasising energy efficiency, the EBRD is helping to finance renewable energy projects, such as a €50m (\$59.5m £34.5m) renewable energy development fund in Bulgaria. The drive to reduce greenhouse gases by countries covered by the Kyoto protocol on climate change could also offer an opportunity to eastern European companies and countries. The climate change talks in Montreal earlier this month streamlined the mechanisms by which richer countries can pay for the development of projects that lower emissions in eastern European countries, instead of having to curb their own emissions. Mr Lemierre believes such projects provide a strong incentive for energy efficiency: "Companies will see clear benefits, financial benefits. This should be good for progress." East European companies in countries that have joined the European Union will find it easiest to benefit from carbon trading, because they can participate in the EU's greenhouse gas emissions trading scheme. Under the scheme, companies in certain energy-intensive sectors are limited in the amount of carbon dioxide they can emit. But if they emit less than their allowance, they can sell their spare permits on the open market to companies that need to emit more. Carbon dioxide has recently been trading at a little above €20 per tonne. Many eastern countries have an excess of emissions allowances under the scheme, from which companies can benefit until 2008. After that they are likely to face stiffer targets, so companies selling emissions credits could be well-advised to invest the proceeds in greater efficiency.

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## 2.6. In Russia, Pollution Is Good for Business

24 December 2005

By Andrew E. Kramer: By its own admission, Russia's electricity monopoly is the world's largest corporate producer of greenhouse gases, accounting - by itself - for nearly as much carbon dioxide as is emitted by Britain. From smokestacks across Russia's 11 time zones, the company, Unified Energy Systems, spews out 2 percent of all human-generated carbon dioxide accumulating in the atmosphere. What will the utility get for being the world's largest greenhouse gas polluter? It is hoping for \$1 billion. It is one of the paradoxes of the Kyoto Protocol on climate change that

companies in Russia and other Eastern European countries, which are among the world's largest producers of greenhouse gases, are poised to earn hundreds of millions of dollars through trading their rights to release carbon dioxide into the air. The Kyoto treaty, negotiated in 1997 and adopted by 36 industrial nations, established a mechanism aimed at finding the cheapest way to curb emissions of gases that contribute to global warming. The idea was that countries that produced more than their treaty-imposed limits could reach their goals by buying rights from producers in other countries where controlling output is easier and less expensive. It is not clear how successful that approach will turn out to be. But because Russia's companies operate such outdated and inefficient equipment, they can easily and cheaply upgrade. As a result, the Kyoto process has already emerged as a potential source of earnings for the country's big energy and manufacturing companies, according to company executives and analysts. They have hired consultants, inventoried pollution sources to earn credits, and opened carbon-trading divisions. Unified Energy and Gazprom, Russia's natural gas monopoly, which together release more than 50 percent of greenhouse gas emissions in Russia, both have such trading units. "We're intensely interested in the carbon-trading market," Andrey V. Gorkov, the head of the carbon-trading division at Unified Energy, said earlier this month in Montreal, where he was attending the United Nations climate conference. Member countries formally approved emissions-trading rules at the meeting. The protocol requires the 36 industrial nations - with varying targets - to reduce their emissions of greenhouse gases below their 1990 levels, in the five years from 2008 to 2012. For the European Union, the target is to reduce emissions to 8 percent below 1990 levels. In an indication of how robust the demand for emissions credits may be, this year the European Union is 6 percent above its 1990 levels. The United States, which generates a fifth of greenhouse gases but has not joined the Kyoto Protocol, is 19 percent above its theoretical limits. Russia, in contrast, suffered an economic collapse in the 1990's, and is 43 percent below its 1990 baseline in the Kyoto agreement. In fact, Russia does not expect to reach 1990's emissions levels until around 2020 - attesting to the severity of the economic setback from which it is still recovering. At the same time, Russian industry is generally wasteful with energy, so that a few cheap upgrades go a long way to reducing emissions. Thus, with both outdated equipment and a surplus of carbon emissions, Russian companies have become attractive to European, Canadian and Japanese companies that need emissions credits. The pace is increasing at Mr. Gorkov's cluttered office in Unified Energy headquarters, a drab concrete building on the outskirts of Moscow. Analysts give credit to the company's forward-looking chief executive, Anatoly B. Chubais, for recognizing the potential for profits under Kyoto. Mr. Chubais, a former deputy prime minister, had helped negotiate the pact while in government. Mr. Gorkov's 16 employees at the division, which is called the Energy Carbon Fund, scan the Internet for companies or countries in need of carbon dioxide emissions credits. They also study their own company to identify areas where they can reduce pollution. The company signed its first deal in June, with the environmental protection agency of Denmark. Denmark will pay an undisclosed sum for Unified Energy to replace coal-fired boilers at the Amurskaya power plant in Khabarovsk, near China in eastern Siberia, so that units will burn more efficient natural gas. It will also pay to upgrade an existing natural gas plant in the Orenburg region, in southern Russia near Kazakhstan, with a more efficient model. The conversion to gas at the Amurskaya plant will cut carbon dioxide emissions by a million tons a year, according to Unified Energy. The upgrading of the natural gas generator at the Mednogorskaya power plant in Orenburg will save 210,000 tons. Under the deal, the Danish government will receive 1.2 million carbon credits (one carbon credit being equal to reducing one ton of carbon dioxide), to be applied toward meeting its emissions goal in 2012. This fall, six other clients from Europe and Japan also lined up to buy emissions credits from Unified Energy, Mr. Gorkov said. The Toyota Corporation of Japan is co-financing studies at one plant, and may pay for upgrades, according to a Unified Energy Systems statement. Gazprom, Russia's largest company, is studying ways to attract Kyoto financing to upgrade other pipelines, said Bogdan Budzulyak, director of the company's transportation and underground storage department. Midsize Russian companies are also eyeing the emissions market. The Arkhangelsk Pulp and Paper Mill, with revenues of about \$250 million a year, has said it will monitor emissions, according to an article in the August 2005 issue of Carbon Finance, a trade publication. In total, Russia could potentially reduce emissions by two billion to three billion tons of carbon dioxide by 2012, said Alexander A. Golub, a senior economist at Environmental Defense, a nonprofit group based in New York. The potential value for Russia ranges from \$20 billion to \$60 billion, he said. Or it could be worth nothing, if future climate talks collapse. The United States, the world's largest economy, is already sitting out the process. President Bush rejected the Kyoto Protocol in 2001, citing the high cost to American industry. Now, without the support of the world's largest economy, there is less chance other countries will agree to

extend the treaty beyond 2012. Companies must decide if it is worth investing millions of dollars to comply with an international regulatory regime that may not be enforced after 2012 - and may collapse before then. "Discussions over the future of the Kyoto Protocol are affecting our market," Mr. Gorkov said. Even so, emissions trading has been slowed in Russia more by the sluggish pace of government bureaucracy than by uncertainty over the Kyoto Protocol. The Danish deal was signed in June. It hinged on the Russian government passing a decree to endorse Kyoto trading. That was due in late November, but delayed until February, according to an e-mail message from Hans J. Eriksen, the program coordinator at the Danish environmental ministry. Annie Petsonk, international counsel for Environmental Defense, said: "This is quite a new commodity for Russia. Maybe they don't understand that Russia has tremendous potential." Both Gazprom and Unified Energy have issued statements urging the Russian government to enforce Kyoto as quickly as possible. In the United States, in contrast, Exxon Mobil led corporate opposition to Kyoto. In Russia, the Ministry of Trade and Economic Development has formed a working group to study the decree. It needs to clear various agencies and committees. Russian officials sent a letter of apology to the Danish ministry in November. Meanwhile, at Unified Energy, where the order book for pollution credit projects is stacking up, Mr. Gorkov is getting impatient. "We needed this document signed yesterday," he said.

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## CLIMATE IMPACTS

### 3.1. Booming population 'threat to climate change fight'

6 January 2006, The Independent

By Andrew Woodcock, PA: Environmental problems such as global warming can be tackled only if the international community addresses the problem of population growth, a leading scientist warned today. Professor Chris Rapley, the director of the British Antarctic Survey, said the 76 million annual increase in the world's population threatens "the welfare and quality of life of future generations". But he said population growth was the "Cinderella" issue of the environmental debate, because its implications are so controversial that nobody dares to raise it. Scientific analysis suggests that the Earth can sustain around 2-3 billion people at a good standard of living over the long term, wrote Prof. Rapley in an article for the BBC News website. But the current global population of 6.5 billion - expected to rise to 8 billion by the middle of the century - means mankind is imposing an ever greater "footprint" on the planet. Advances made in the battle to rein in climate change, such as last month's Montreal agreement, threaten to be wiped out by the need of each additional person for food, shelter, transport and waste disposal facilities. "Imagine organising the accommodation, feeding arrangements, schooling, employment, medical care, cultural activities and general infrastructure - transport, power, water, communications, waste disposal - for a number of people slightly larger than the population of the UK, and doing it each year, year on year for the foreseeable future," wrote Prof. Rapley. "Combined with ongoing economic growth, what will be the effect on our collective human 'footprint'? Will the planet cope? "Although reducing human emissions to the atmosphere is undoubtedly of critical importance, as are any and all measures to reduce the human environmental 'footprint', the truth is that the contribution of each individual cannot be reduced to zero. "Only the lack of the individual can bring it down to nothing. "So if we believe that the size of the human 'footprint' is a serious problem (and there is much evidence for this), then a rational view would be that, along with a raft of measures to reduce the footprint per person, the issue of population management must be addressed." Prof. Rapley acknowledged that population control and reduction was "a bombshell of a topic", raising profound moral and ethical issues. Consequently, the issue was rarely raised when politicians, scientists and campaigners discussed what needs to be done to protect the environment, he said. But he warned: "Unless and until this changes, summits such as that in Montreal which address only part of the problem will be limited to at best very modest success, with the welfare and quality of life of future generations the ineluctable casualty."

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### 3.2. Past Hot Times Hold Few Reasons to Relax About New Warming

27 December 2005

By Andrew C Revkin: Earth scientists with the longest frames of reference, particularly those whose specialties begin with the prefix "paleo," often seem to be the least agitated about human-caused global warming. This has been true even in 2005, a year that saw the biggest summer retreat of Arctic sea ice ever measured, a new sign that warming seas are rising at an accelerating pace and



global temperatures continuing a sharp climb that began around 1990 and appears unmatched in 2,000 years. But these backward-looking experts have seen it all before. Recent studies have found that 49 million years ago the balmy Arctic Ocean, instead of being covered in ice, was matted with a cousin of the duckweed that cloaks suburban frog ponds. The forests on the continent now called Antarctica and on shores fringing the Arctic were once thick and lush. And through hundreds of millions of years, concentrations of carbon dioxide and the other trace gases that trap solar energy and prevent the planet from being an ice ball have mostly been far higher than those typical during humankind's short existence. Compared with that norm, the rapid buildup of carbon dioxide now from a binge of burning forests, coal and oil lasting for centuries (and counting) is but a blip. In fact, the planet has nothing to worry about from global warming. A hot, steamy earth would be fine for most forms of life. Earth and its biological veneer are far more resilient than human societies, particularly those still mired in poverty or pushed to the margins of the livable. Only we humans have to be concerned, and species like polar bears that, like the poorest people, are pushed to an edge - in the bear's case the tenuous ecosystem built around coastal sea ice. Henk Brinkhuis, a paleoecologist and botanist at Utrecht University in the Netherlands, said it might be hard to get used to the idea, but the Arctic as we have known it for centuries "is history." He said this may spell doom for polar bears, a species that branched off from brown bears only about 250,000 years ago - an evolutionary blink of the eye. Still, this is a special case, not necessarily a blow to the prospects of mammals in general. The world's last huge warm spike, the Paleocene Eocene Thermal Maximum some 55 million years ago, preceded "the biggest radiation in mammals ever," Dr. Brinkhuis said. "The first horses, cows, the first primates had their origin right around then," Dr. Brinkhuis said. "It may be that the extinction of the polar bear would be followed by all kinds of new species in return." None of this means that humans should simply embrace their fossil-fueled potency without regard to the effects. In fact, many scientists say, if we value the world as it is, there are still strong, and purely self-serving, reasons to start curbing releases of carbon dioxide and the other greenhouse gases. That long-scale earth history, while speaking of nature's vagaries, holds supporting evidence. It is rife with thresholds, points at which a little warming turns into a lot in a hurry. Avoiding such thresholds could forestall things that societies decide matter, like rapidly rising seas or a farewell to cherished Arctic icons. The Arctic, particularly, is filled with what amount to flippable climate switches, including natural repositories of carbon, like boggy tundra, that could emit vast amounts of greenhouse gases should the current warming trend pass certain points, said Jonathan T. Overpeck, the director of the Institute for the Study of Planet Earth at the University of Arizona. This could amplify warming and take the climate into a realm beyond anything experienced through human evolution. Another lesson of deep planetary history, Dr. Overpeck said, is that, once set in motion, such warm-ups can happen fast and then last a very, very long time. "That's a condition that might be really hard to get out of for tens of thousands of years," he said. Studies of the past also show that pace matters. The rise in temperature and greenhouse gases during the great heat wave 55 million years ago, while instantaneous on a geological time scale, took thousands of years to unfold. But the pace of the recent rise in carbon dioxide is as much as 200 times as fast as what has been estimated in past rapid climate transitions. Slowing that pace would help human endeavors as much as ecosystems, said David G. Barber, who holds the Canada research chair in Arctic systems science at the University of Manitoba. Those who speak of the potential benefits of warming, he noted, forget that a thawing, greening Arctic, for example, will not suddenly transform from spongy tundra to wheat-friendly farmland. "You have to generate soil," Dr. Barber said. "It takes a long time to generate this kind of stuff. So it's not going to be an instantaneous sort of thing. There's going to be a lot of messiness in between." Even for polar bears, there are reasons to think the end is not necessarily nigh. There was at least one significant period - the last gap between ice ages 120,000 years ago - when the global climate was several degrees warmer than it is today and they clearly squeaked through. So at least slowing or blunting the warming might allow them to squeak through once again. Dr. Barber said he was confident that biology would endure much of what humans throw at it. His concern is for the effects on people and the things they rely on or cherish. "All of global warming has nothing to do with the planet," Dr. Barber said. "The planet will go on through its normal cycles, and it'll do its own thing. "It only has to do with us - as people. Our economic side of things and our political side of things are really what are being affected by climate change. The planet could care less." Craig Duff contributed reporting from Churchill, Manitoba, for this article.

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EEA Report No 11/2005, published at: [http://reports.eea.eu.int/eea\\_report\\_2005\\_11](http://reports.eea.eu.int/eea_report_2005_11). Abstract: A renewed policy focus on sustainable consumption and production (SCP) can be observed, both at the global level and in Europe. With an aim to provide input for European policy-making, this report analyses the environmental effects of household consumption in Europe. We have identified four consumption categories that form a major part of our total consumption expenditure and for which the environmental effects are either large or increasing rapidly. These are consumption of food and drink; housing; personal travel and mobility; and tourism. The negative environmental effects of our consumption do not only occur in Europe, but also in other regions of the world, mainly as a result of resource extraction, production, processing and transportation of the goods we consume in Europe, and as a result of our personal travel and tourist activities. Attaining more sustainable consumption and production patterns is a common challenge that involves all actors, including public authorities at all levels, business and consumers.

EEA Report No 9/2005, published at: [http://reports.eea.eu.int/eea\\_report\\_2005\\_9](http://reports.eea.eu.int/eea_report_2005_9). Abstract: This report focuses on our ability to continue to provide for our needs by drawing on the natural Introductionworld. Given the broad coverage of the term 'natural resources', a decision was made at the outset to focus the analysis on a selection of natural resources: fisheries, forestry, water, fossil fuels, metals and construction minerals, and land use. The factors behind this choice included ensuring a mix of renewable and non-renewable resources, the policy relevance and political importance of the resources, and the ability to illustrate the various policy approaches.

The UNIDO CDM assistance project for 10 African Francophone countries is coming to an end and the country reports (in French) and English summaries are progressively being completed & loaded to the project Web page <http://www.unido.org/doc/45989>. In addition, each country was requested to identify & prepare descriptions of potential CDM projects and these are also starting to arrive in (first) draft form; their titles are listed on the project Web page <http://www.unido.org/doc/47147>.

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