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## Problems and perspectives regarding Kyoto Protocol implementation in the Russian Federation

Presented by the World Wide Fund for Nature (WWF)



Alexey Kokorin, WWF Russia, concludes that the Kyoto Protocol is the best option for the Russian Federation, politically, economically and ecologically.

Outlining the results of the recent Duma elections in the Russian Federation, Alexey Kokorin, WWF Russia, highlighted that there is now slightly more support for the Kyoto Protocol. Drawing on the findings of the country's third national communication, he noted that the Russian Federation's greenhouse gas emissions are expected to grow three times more slowly than its economy. Kokorin stated that factors influencing GDP growth include quantity of oil and gas exports, oil prices, and the service industry, whereas factors influencing emissions include power generation and transportation infrastructure. He underscored that, even under an optimistic economic growth scenario, the Russian Federation will not exceed its Kyoto Protocol target for the first commitment period. Noting that the Russian Federation's President has indicated his intention to ratify the Kyoto Protocol, Kokorin said ratification is unlikely to occur until June 2004 at the earliest. He identified the political and economic factors delaying ratification, as well as misinformation among the Russian public regarding obligatory measures for industry and financial penalties for non-compliance.

Stepan Dudarev, National Carbon Union, highlighted the large potential for energy efficiency and emission reductions in the Russian Federation and the need for investment through Joint Implementation (JI). He recommended bundling small-scale projects to reduce transaction costs and increase efficiency, and called for further cooperation with the EU to share technologies and create markets with harmonized standards.

Yuri Fedorov, National Carbon Sequestration Organization, announced that the Russian Federation is steadily moving toward ratification. He described a UNDP project that aims to, *inter alia*, monitor carbon dioxide emissions in the Russian Federation and recommend legislative options for implementing JI projects. He also outlined the first federally-coordinated Russian pilot policy development scheme, which aims to prepare JI projects, and assess the costs and benefits of ratifying the Kyoto Protocol and of developing national rules and regulations to comply with Protocol Articles 5 (methodological issues), 7 (communication of information) and 8 (review of information). Noting barriers to ratification, he identified the need to assess the costs of developing and implementing national policy, and distribute new responsibilities among federal regional ministries and agencies. He also urged expressions of interest for international cooperation from potential partners. He concluded that the construction of efficient national rules and procedures is critical for ratification.

Discussion: In response to questions from participants, panelists discussed the relatively high profile of Kyoto Protocol issues in mainstream Russian media, and the merits of a Green Investment Scheme.

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# Climate change policies in the US

Presented by the US Climate Action Network



Daniel Lashof, Natural Resources Defense Council, says that the US policy on climate change repackages inadequate programs.

Daniel Lashof, Natural Resources Defense Council, described the US Climate Change Technology Program as a failed approach to reducing greenhouse gas emissions. He said that the US national plan repackages existing programmes and has meaningless industry commitments. Lashof concluded by stating that the US policy increases emissions, substitutes spin for action and is inconsistent with UNFCCC obligations.

Alden Meyer, Union of Concerned Scientists, stated that the Bush-Cheney energy strategy and policy is a flawed process that is good for profits but bad for the environment, and weakens the Clean Air Act and opposes renewable electricity standards. He noted that the Domenici-Tauzin energy bill is even worse for the environment than the Bush-Cheney energy policy.

Debbie Reed, National Environmental Trust, said that the Bush administration opposes "real" climate change policies in the US and highlighted that many resolutions by the US Senate and House of Representatives on climate change were opposed by the Bush administration. She underscored that President Bush reneged on his campaign promise to regulate carbon and that his climate plan increases carbon.

Tim Profeta, Office of US Senator Joseph Lieberman, described legislation introduced by Senators Joseph Lieberman and John McCain to develop a "cap and trade" system that would use market forces to help reduce greenhouse gas emissions. He explained that studies show that the program would have minimum macroeconomic impacts and that the bill received strong support with 44 votes in the Senate.

Russell Long, Bluewater Network, spoke on actions in western states to reduce greenhouse gas emissions and noted that his organization conceived and sponsored the California Climate Friendly Car Law, which aims to regulate vehicular greenhouse gas emissions like other pollutants. He noted that the law affects new vehicles starting with model year 2009, and that the state has until December 31 2004 to develop regulatory language.

Brian Jones, M.J. Bradley & Associates Incorporated, provided an overview of business actions, noting that mandatory climate policies in the US are no longer a matter of "if" but of "when" and "by how much." He stated that businesses are partnering with government, environmental groups and non-profit organizations to take actions and that there is considerable uncertainty and risk both in taking actions and in taking a wait and see approach.

Discussion: Participants asked about how the emission trading market would be regulated and controlled. They also questioned whether the US was trying to keep the Russian Federation from ratifying the Kyoto Protocol and whether the US was planning to create a regional or bilateral framework for climate change.

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# Implementing the CDM in China

Presented by the Tsinghua University

Lu Xuedu, Ministry of Science and Technology of China, noted that China's CDM approval process is simple and efficient, and said that CDM projects should: reduce greenhouse gas emissions; have additional financial resources; promote technology transfer; and prioritize energy efficiency and renewable energy sources.

Corrado Clini, Ministry for the Environment and Territory of Italy, noted that his Ministry has been working with China to implement pilot projects on energy efficiency and renewable energy sources, particularly in the transportation sector.

Noting that China is a large and fast developing country, and consumes huge amounts of coal as primary energy resources, Liu Deshun, Tsinghua University, underscored the large potential to significantly reduce greenhouse gas emissions.

Zhao Xiusheng, Tsinghua University, outlined some case studies on the CDM conceptual design, and highlighted the importance of building capacity and sharing experiences, for developing CDM projects. He said China aims at CDM projects that involve low risk and promote technological advancement.

Andreas Oberheitmann, GTZ, said that the CDM alone cannot overcome the barriers faced by renewable energy sources such as wind power. He highlighted the importance of joint efforts to establish incentives for project developers and reduce transaction cost for CDM implementation.



Wei Zhihong, Tsinghua University, underscores China's marginal emission abatement cost for CDM projects.

(Continued on page 3)

# Implementing the CDM in China

*Continued from page 2*

Wei Zhihong, Tsinghua University, highlighted the CDM's potential in China, and noted that China's greenhouse gas emissions from the energy sector are projected to increase to 1090 tonnes of carbon in 2010.

Othmar Schwank, INFRAS Consulting Group, highlighted the technological and cost risks of CDM projects. He noted that CDM projects on wind power and biogas entail lower risks for project developers than transportation projects.

Richard Morgenstern, Resources for the Future, identified opportunities for small-scale CDM projects in China's energy sector. He said that a series of case studies were conducted in China, which focused on: evaluating emissions, technology, and financial and social impacts; meeting with developers and local authorities; and developing project development documents.

Zhihong discussed cooperation between Canada and China in the field of climate change, which focuses on capacity building in China to: promote sustainable development and poverty reduction; increase public awareness on climate change issues; and assist China in preparing its national communication.

Mitsutsune Yamaguchi, Keio University, highlighted the CDM potential for electric power projects in China, and said that the Chinese CDM analysis process includes: selecting CDM model plants and technologies; calculating baseline emissions; and estimating carbon dioxide reduction costs.

Osamu Kawaguchi, Keio University, said that his research focuses on methodologies for estimating carbon dioxide emission reduction and their application in CDM projects in north China. He explained that the project carried out simulations for reducing greenhouse gas emissions, and established baselines for electric power generation units.

Christine Zumkeller, UNFCCC, commended China's effort to develop CDM projects.

Preeti Bhandari, TERI, on behalf of Rajendra Pachauri, IPCC, expressed concern about how to combine findings relating to small and large-scale projects, especially on the promotion of capacity building.

Holger Liptow, GTZ, noted that China is building a solid base for developing CDM projects, and highlighted the need for China to spread its know-how beyond Beijing.

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# Question and answer session with the GEF

Presented by the Global Environment Facility (GEF)

Providing a brief history of the GEF, Leonard Good, GEF, said the Facility takes direct guidance from international conventions' strategic priorities. He announced that the GEF will spend about US\$1.2 billion dollars towards meeting the objectives of the UNFCCC next year. He said this work will focus on: national communications; capacity building, especially adaptation measures; and the administration of funds including the Least Developed Countries Fund and the Special Climate Change Fund (SCCF).

Responding to questions from participants, Good said that GEF support was in addition to Official Development Assistance and helps developing countries participate in the UN conventions. He acknowledged that GEF projects must be driven by developing country priorities and their Poverty Reduction Strategy Papers. In response to a question regarding the GEF's cooperation with the private sector, Good stressed that the GEF has placed priority on obtaining co-financing from the private sector, and that a study would be produced on possible strategies for working with the private sector.

Good emphasized the need to simplify GEF operational processes, and the importance of synergies between institutions and conventions, which he hoped would be facilitated by the Adaptation Fund. He said that the GEF will need clear guidance from Parties to administer the SCCF. He indicated that the GEF will be meeting with its three implementing agencies in January 2004 to examine how to spend the US\$50 million in the Adaptation Fund and facilitate project implementation.

Although he noted that the GEF is still very project-oriented, he said the Facility's work has been increasingly programme-oriented on such issues as protected areas and biodiversity. He hoped the GEF could take a more coherent, strategic approach with respect to adaptation, and noted that the GEF was producing a study on overall performance assessment to be completed by 2005.



Len Good, GEF, says that 40% of GEF funds go toward projects related to the UNFCCC's objectives.

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# UNFCCC Article 2: Impacts and implications

Presented by the Swiss Federal Institute of Technology



Bill Hare, Potsdam Institute for Climate Impact Research, identifies those ecosystems that are particularly vulnerable to climate change.

#### More information:

<http://www.pik-potsdam.de>  
<http://www.falw-nieuw.vu.nl/onderzoek/index.cfm>  
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Bill Hare, Potsdam Institute for Climate Impact Research, outlined research focused on the effect of increasing temperature on the level of risk to ecosystems, water, agriculture and socioeconomic structures. Regarding the level of risk from temperature increases, he noted that models generate a consistent message indicating that Sub-Saharan Africa is among the regions that will be most negatively affected by climate change. He stressed that temperatures must drop in order to minimize damage to coral reefs and other ecosystems and to avoid accelerated risks of hunger, water scarcity and disease.

Malte Meinshausen, Swiss Federal Institute of Technology, showed a series of graphs illustrating the emissions reductions that are necessary to limit temperature increase to less than two degrees celcius. He stressed a number of variables influencing the necessary emission reductions, and said that climate sensitivity is a critical uncertainty when making assumptions to serve as a basis for the development of projections of required emission reductions.

Marcel Berk, National Institute of Pubic Health and the Environment of the Netherlands, noted the need for more informal dialogue with stakeholders in order to exchange views on how to interpret the UNFCCC's objective to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system (Article 2). He said the HOT Dialogue research project seeks to: improve mutual understanding of the implications of climate change; link national, regional and international dialogue; support initiatives from developing countries to promote a balanced global dialogue; and employ science as a "servant" of policy development. He suggested the development of indicators as a useful way of searching for common ground on Article 2.

Ulka Kelker, The Energy Research Institute (TERI), presented the results of a regional dialogue undertaken as part of the HOT research project in India. She identified a wide spectrum of views, and a general perception that a global consensus was not feasible. She noted that evaluation of risk was related to individual circumstances, and identified a need for further research to produce and verify numbers for indicators.

Discussion: Participants stressed the need to address threats from all human activities simultaneously, and noted that countries will define sustainable development in different ways depending on their specific needs and priorities.

# US climate change technology program

Presented by the US Delegation



Emil Frankel, DOT, notes that transportation makes up 11% of the US GDP and accounts for two-thirds of all US oil consumption.

David Garman, US Department of Energy (DOE), outlined DOE's efforts on energy efficiency and renewable energy, in particular with regard to hydrogen initiatives. He noted that hydrogen can: provide greater efficiency; assist the US in reducing its dependency on petroleum; foster the use of renewable energy sources; and reduce emissions in the transportation and power sectors to zero or near-zero. He explained that a hydrogen economy requires a diversified technology portfolio, public-private partnerships, responsiveness to consumer demands and market preferences, and international collaboration.

David Conover, DOE, noted the importance of carbon sequestration initiatives, drawing attention to: the Carbon Sequestration Leadership Forum; DOE's 65 public-private partnerships; and the Department of Agriculture's environmental quality incentive and conservation reserve program. Conover also highlighted plans for Future Gen, an emission-free power plant.

David Haugen, US Environmental Protection Agency (EPA), underscored EPA's climate change technology activities and efforts including: Energy Star, a programme that identifies energy efficient products through labeling; Climate Leaders, a private-public partnership which promotes a comprehensive climate change strategy; Smart Way Transport, a voluntary freight industry partnership; and methane partnerships aimed at leakage prevention and recovery.

Emil Frankel, US Department of Transportation (DOT), noted that DOT provides grants totaling US\$ 60 billion annually to build and maintain highways, passenger rail and public transit systems, and airports. He outlined DOT's efforts to develop new transportation fuels and technologies and noted research, development and demonstration initiatives for the use of fuel cells in heavy transport vehicles. He explained that DOT is working toward the

(Continued on page 5)

# US climate change technology program

*Continued from page 4*

reduction of greenhouse gas emissions through enhancing fuel efficiency in the transportation sector and supporting transportation planning at state and local levels.

Larisa Dobriansky, DOE, underscored US commitment to public-private partnerships and international cooperation for cleaner technologies development. She noted a window of opportunity for enhanced international cooperation on energy technologies, innovation and deployment. Dobriansky spoke on US efforts to build partnerships for both near and long-term climate change activities and stated that public-private partnerships involve sharing risks, leveraging scarce resources and overcoming technological, financial and institutional barriers.

Discussion: Participants discussed US commitment to assist developing countries, the importance of a broad and diverse technology portfolio, and dealing with pricing differentials between new clean technologies and existing technologies.

## More information:

<http://www.epa.gov/international/airandclimate/index.html>  
<http://www.noaa.gov/climate.html>  
<http://www.doe.gov>  
<http://www.whitehouse.gov/news/releases/2003/09/20030930-4.html>

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# Climate change related activities in the International Energy Agency - a focus on investment

Presented by the Delegation of Switzerland

Fridtjof Unander, International Energy Agency (IEA) discussed projected trends for carbon dioxide emissions and energy use over the next 30 years. He said that between 1973 and 1990, emissions fell significantly relative to GDP in most IEA countries, and that the oil price shock in the 1970s did more to reduce emissions and increase efficiency than policies implemented in the 1990s.

Laura Cozzi, IEA, explained the world energy investment outlook, which examines the amount of energy investment needed over next 30 years. She stressed that: capital needs are largest for electricity; half of total energy investment is needed in developing countries; and total investment requirements are modest relative to world GDP.

When explaining how to enhance demand response in liberalized electricity markets, Phil Harrington, IEA, said that supply-driven price formation is inherently inefficient and unstable, and that liberalized markets are not providing the appropriate signals for investment on the demand side. He defined demand response as enabling electricity demand to respond in real time to market prices. Harrington recommended offering customers better pricing choices and addressing supply-side bias in market design.

Cédric Philibert, IEA, presented key findings on lessons learned since the Kyoto Protocol was developed at COP-3, and noted positive directions, including ambitious targets by the EU, and the current levels of investment and technology flows to developing countries from emissions trading.

Maria Rosa Virdis, IEA, presented scenarios for 2050 that take a long-term view to analyzing the intersection between energy and climate change. She noted that the scenarios explore different types of uncertainties and focus on strategic issues and choices for a sustainable energy and environmental future.

Carmen Difiglio, IEA, said that current technology will not meet energy security and environmental challenges at a reasonable cost, and stressed that the technological frontier needs to be expanded to reduce emissions. He said three types of actions are needed: those that spur investment in energy technology research and development; those that support underlying scientific knowledge; and those that promote energy investments.

Julia Reinaud, IEA, discussed possible impacts of emissions trading schemes (ETS) on investment in the power sector, based on the EU ETS. She noted that: ETS is not expected to adversely impact overall investment; there is a change in technological choice in favor of non-emitting technologies; and the uncertainty surrounding the emissions trading market is influencing investment decisions.



Cédric Philibert, IEA, notes that climate change is a long-term, global process surrounded by cost and benefit uncertainties and that fixed and binding targets are "hard to swallow" in the context of the Kyoto Protocol.

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## Emissions trading in aviation

Presented by the Institute for Applied Ecology



Odetter Deuber, Institute for Applied Ecology, presented a study that investigates how greenhouse gas emissions from the aviation industry can be reduced

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<http://www.oeko.de>

<http://www.umweltdaten.de/verkehr/emissionshandel-e.pdf>

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Falk Heinen, Federal Environmental Agency of Germany, emphasized that aviation is the fastest growing area of the transportation sector, with predicted growth of approximately 5% between 2000 and 2020. He said aviation already has the same global warming impact as worldwide passenger vehicle traffic.

Martin Cames, Institute for Applied Ecology, outlined potential ETSs in international aviation, and their elements that include: climate impacts of aircraft emissions; mitigation strategies and abatement costs; sensitivity analysis; and cost avoidance potentials. He said the research on aircraft emissions aims to identify potential design options for an ETS, and assess the consequences of such options. Cames outlined essential features of possible ETS designs, including ETS participants, assignment of emissions, and trading allowances that are allocated free-of-charge or by auction. He recommended that Parties negotiate the distribution of aircraft emission targets in accordance with their technical and financial ability to mitigate greenhouse gas emissions in aviation.

Odetter Deuber, Institute for Applied Ecology, drew attention to the climate impacts of aircraft emissions, especially the effects of nitrous oxide, which promotes the formation of ozone and breaks down methane. She noted the difficulty in quantifying the climate change impacts of cirrus clouds, and said that radiative forcing measurements are highly convincing for the assessment and comparison of aviation emissions. Deuber suggested options for avoiding costs in aviation, including reducing in-flight cruising altitude and optimizing flight management. She said the impact of an ETS on ticket prices would vary from 1 to 2% of the total ticket price.

## The costs of technological transition and climate change policy

Presented by the University of East Anglia



Ursula Fuentes, Germany, stresses the need to identify policy instruments to promote technological change, including market signals.

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John Schellnhuber, Tyndall Centre for Climate Change Research, identified the need to understand the dynamics of technological change, and apply this understanding when developing policies and targets to influence technological change, with the goal of achieving a low carbon economy.

Terry Barker, University of Cambridge, said that higher energy prices promote energy efficiency, and noted that the cost of renewable energy falls as technologies diffuse and markets develop.

Ottmar Edenhofer, Potsdam Institute for Climate Impact Research, said policy instruments can be applied to encourage investment in the renewable energy sector, promote learning, and reduce the leakage rate and marginal costs of carbon capture and sequestration.

Michael Grubb, Imperial College, emphasized the high risk and long timescale associated with the invention, commercialization and diffusion of technologies. He identified a need for government intervention at different stages of the innovation chain, using a range of measures including both targets and technology policies.

Sarah Henry, UK, outlined the range of climate change measures under development in the UK. She stressed the need for collective action to achieve ambitious reductions in greenhouse gases and promote technology diffusion. She noted that ruling out nuclear power and carbon capture and sequestration causes mitigation costs to escalate.

Ursula Fuentes, Germany, noted that the timing of mitigation policies is crucial and cautioned against delay. She stressed that legally-binding emission targets provide an appropriate framework for advancing the development of national policies to promote technological change.

Discussion: Participants considered how the rate of return on investment in technology varies over time, and what kind of policy instruments could be used to direct technological change.