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SLIDES: In the Nick of Time: Pathways to a Post-2012 Climate Treaty Framework

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In the Nick of Time

Pathways to a Post-2012 Climate Treaty Framework

Presentation at the University of Colorado School of Law

Annie Petsonk

June 2006
“The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a timeframe sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.”
“I reaffirm America's commitment to the United Nations Framework Convention and its central goal, to stabilize atmospheric greenhouse gas concentrations at a level that will prevent dangerous human interference with the climate.”

--President George W. Bush, February 14, 2002
Dangerous Climate Change: Questions for Policy Makers

- How warm is too warm?
- How fast is too fast?
- Is there a tipping point?
- How much time do we have to make emissions cuts?
How warm is too warm?
How fast is too fast?

- Summer 2003 heat wave in southern Europe causes more than 14,000 “excess deaths” in France
- Heat stress on western US forests increases risks of pest, fire damage
- Warmer sea surface temperatures > more intense hurricanes
- Hurricane Wilma (2005) most intense Atlantic storm ever recorded
**Figure 2: Concentration Levels and Temperature Change**

Is there a tipping point?  How much time do we have?

- Absent urgent and strenuous mitigation actions in the next 20 years, the world will almost certainly be committed to a temperature rise of between about 0.5°C and 2°C relative to today by 2050.

- If action to cut emissions is delayed by 20 years, rates of emission reduction may need to be 3 to 7 times greater to meet the same temperature target... Even a delay of 5 years could be significant.

Source: Avoiding Dangerous Climate Change (UK Met Office 2006)
## What is Dangerous?

<table>
<thead>
<tr>
<th>Event</th>
<th>Temperature Impact</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gulf Stream shutdown</td>
<td>3°C in 100 years</td>
<td>O’Neill &amp; Oppenheimer 2002; Keller et al. 2004</td>
</tr>
<tr>
<td>Disintegration of West Antarctic Ice Sheet</td>
<td>2°C 450 ppm CO₂ 2-4°C, less than 550 ppm</td>
<td>O’Neill &amp; Oppenheimer 2002; Oppenheimer &amp; Alley 2004, 2005</td>
</tr>
<tr>
<td>Disintegration of Greenland Ice</td>
<td>1°C</td>
<td>Hansen 2004</td>
</tr>
<tr>
<td>Widespread coral reef bleaching</td>
<td>More than 1°C</td>
<td>Smith et al. 2001; O’Neill &amp; Oppenheimer 2002</td>
</tr>
</tbody>
</table>
FIGURE 5
Potential coastline retreat as a result of ice sheets melting Florida

The shoreline of Florida today

Florida in the event of a Greenland ice sheet melting

Florida in the event of both the Greenland and West Antarctica ice sheets melting

Courtesy of Byron R. Parizek, Ph.D., Pennsylvania State University

High Water Blues (Environmental Defense, 2005 Update)
The costs of delay

Global CO₂ emissions (billion tons of carbon)

Example: 450 ppm by 2100

A - Reductions begin 1990, gradual, at steepest a 2% annual decline by 2080
B - Reductions delayed until 2005, decline of 2% /year beginning not later than 2035
C - Reductions delayed until 2010, decline of 2.5% /year beginning not later than 2030
D - Reductions delayed until 2015, decline of 3.0% /year beginning not later than 2028
E - Reductions delayed until 2020, decline of nearly 5% /year beginning not later than 2025
Cap and Trade Drives US SO2 Down While Economic Growth Moves Up

Index: 1987 = 1.0

1990: Cap & Trade Law Enacted
1995: SO2 Trading Begins

- U.S. Gross Domestic Product
- Total net electricity generation
- SO2 emissions from electric utilities

(Sources: DOC, DOE and EPA, respectively)

*ARP units only

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SO2 Cap And Trade Program Achieves Major Reductions in Acid Rain

Average 1989 - 1991

Average 2000 – 2002

USEPA, 2004
Countries Participating in Greenhouse Gas Emissions Trading (undertaken or planned)
As of February, 1, 2005
EU Trading Market: Price

EU CO2 Market Snapshot
jc@emissierechten.nl (15 May '06)

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EU Trading Market: Price and Volume
Hallmarks of Effective Post-2012 Policy

- Mandatory, market-based
- Built on Kyoto design template
- Emissions targets set based on new science of dangerousness
- Interim target signal
- Pathways for broader voluntary participation in carbon markets
Agriculture

- Increased interest in carbon sequestration accounting - eligible activities include agriculture, reforestation, forest preservation, and other methods.
- On-farm renewable energy & biofuels
- Carbon as a new commodity
Comparison of mean annual deforestation emissions (1989–95) with fossil fuel emissions from selected countries (1995)
Compensated Reduction of Deforestation

Baseline: 20,000 km²

Reduction of Deforestation

Source: INPE 2003

* Decade mean
** Biennium mean

% reduction of deforestation = ~5%

Avoided Emission: mean of 12 Million Tons C/yr