

Climate Change and Biodiversity Conservation

Geoffrey Heal

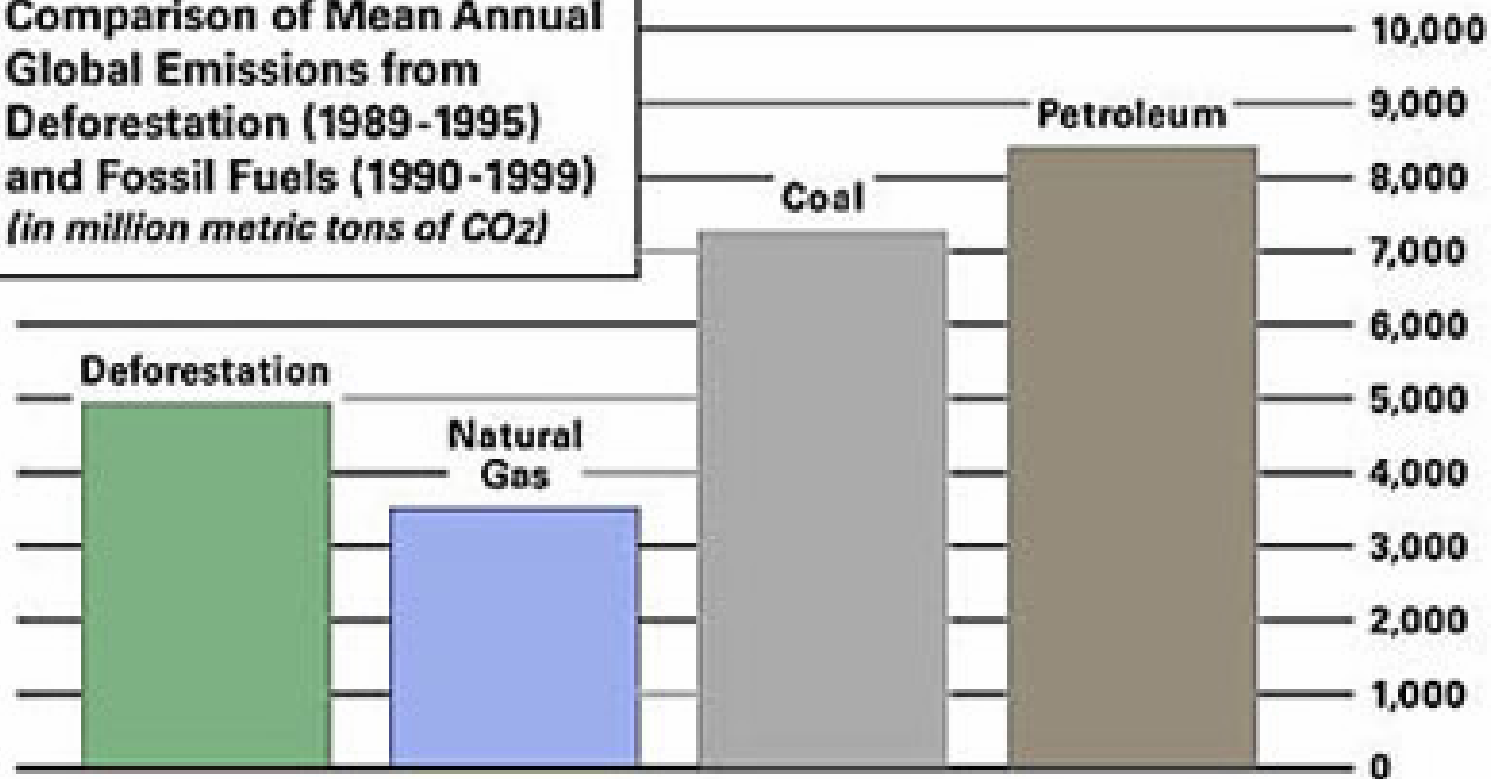
Columbia Business School

Forests and Climate Change

- Forests sequester carbon and store it
- Deforestation releases this carbon
 - Stored in trunks and leaves
 - Stored in the soil
- About 20% of all CO₂ emission are from deforestation
 - Largest CO₂ emitters are: China, US, Brazil, Indonesia, last two from deforestation



Comparison of Mean Annual Global Emissions from Deforestation (1989-1995) and Fossil Fuels (1990-1999)
(in million metric tons of CO₂)



Source: IPCC; US Department of Energy

Economics

- Capturing and storing carbon is valuable – stabilizes the climate – but currently unrewarded
 - Kyoto Protocol does reward afforestation and reforestation – perverse incentives here!
 - Developing countries can get credits under the Clean Development Mechanism for afforestation/reforestation

Economics

- The value of the carbon capture and storage services of tropical forests, at EU ETS prices, is in the range of \$100 billion annually – perhaps more than total ODA

CfRN

- In 2005 the Coalition for Rainforest Nations was formed, with PNG and Costa Rica acting as founding members and political leaders
- Aim – to modify the KP to monetize the carbon services currently provided free by tropical forests

Reducing Deforestation

- Need positive incentives to keep forests intact, not penalties for deforestation
- A possible response now being developed
- Avoided deforestation credits

Reducing Deforestation

- Basis idea copied from the KP
- Deforestation is a source of CO₂
- If country cuts back from a reference scenario this generates credits
 - CRED – credit for reduced emissions from deforestation
- CREDs are tradable in the KP and the EU ETS

CfRN

- Sponsored Agenda Item 6 at the UNFCCC COP/MOP in Montreal 05

Papua New Guinea and Costa Rica, on behalf of many supportive Nations, call upon the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) and to the Kyoto Protocol (KP) to take note of present rates of deforestation within developing nations, acknowledge the resulting carbon emissions, and consequently open dialogue to develop scientific, technical, policy and capacity responses to address such emissions resulting from tropical deforestation.

1. The Conference of the Parties (COP) took note of the submission by the Governments of Papua New Guinea and Costa Rica contained in document FCCC/CP/2005/MISC.1, and the statements made by Parties on this issue at its eleventh session.
2. The COP invited Parties and accredited observers to submit to the secretariat, by 31 March 2006, their views on issues relating to reducing emissions from deforestation in developing countries, focusing on relevant scientific, technical and methodological issues, and the exchange of relevant information and experiences, including policy approaches and positive incentives. The COP invited Parties also to submit recommendations on any further process to consider the issues. It requested the secretariat to compile the submissions from Parties in a miscellaneous document and to post those from accredited observers on the UNFCCC web site.
3. The COP requested the Subsidiary Body for Scientific and Technological Advice (SBSTA) to consider the information in the submissions referred to in paragraph 2, beginning at its twenty-fourth session (May 2006).
4. The SBSTA will report at its twenty-seventh session (December 2007) on issues referred to in paragraph 2, including any recommendations.

Process

- SBSTA provided recommendation to COP in Dec 07.
- Approved in principle at Bali in Dec 07
- World Bank forming \$500m Forest Carbon Fund to pump prime

Open issues

- CRED will reduce deforestation by giving credits for bringing deforestation below a reference scenario
- How do we stabilize standing forests that are not being cut?
 - West African countries – low deforestation because of civil wars now ending
 - Costa Rica has reversed deforestation
- Baseline deforestation is zero

Open Issues

- Without incentives to countries that are not now deforesting there is a real risk of international leakage
 - Reduced deforestation in PNG leads to more in Africa
- Two possibilities proposed
 - Give nominal deforestation rates based on similar countries or world averages
 - Establish fund to pay for carbon storage

Land Use & Carbon Prices

- Consensus is that realistic payments could make conservation the most profitable forest use
 - For as little as \$12/ton C (\$3.2/ton CO₂) some forests in Amazonia, Africa would be conserved
 - For \$100/ton C (\$27/ton CO₂) a significant fraction (50%+) of deforestation would end
 - For \$200/ton C (\$54/ton CO₂) most deforestation would end

Reality Check

- Hectare of moist tropical forest contains about 150 tons of Carbon
- This could be valued at \$100/ton
- Total value of stored carbon \$15,000
- This capital sum can generate an income of about \$500-800 per year – significantly more than any other land use

Reality Check

- The value of carbon in a tropical forest is great enough that it can generate significant income, perhaps as high as \$500+ per hectare per year
- This exceeds income from farming, most plantations, lumber, which are in the range of \$50 to \$200 per ha per year

CRED and Carbon Markets

- What impact will CRED have on the world carbon market?
- The only major market is the European Union's Emission Trading Scheme (EU ETS)
- Difficult to tell how this will evolve. Prices will depend on the emission reductions set by the EU

CRED and Carbon Markets

- EU - if CfRN proposal is accepted & CRED become a reality, will set tighter targets
- Consulted with Niels Anger of Zentrum für Europäische Wirtschaftsforschung
- Emission reductions consistent with EU's goal of confining climate change to 2deg C would certainly lead to prices in the region \$30-50/ton CO₂

CRED and Carbon Markets

- Conclusion –
- Prices of about \$30-\$50/ton CO₂ would reduce deforestation and
- Such prices could emerge from CRED and tight EU emission reductions

CRED and Carbon Markets

- Need EU agreement to tighten emission caps
- These prices would lead to significant payments to CfRN countries
- Major gains to EU in terms of reducing emissions at lower cost

Bottom Line

- Paying to stop deforestation is a way of reducing climate change AND conserving biodiversity
- Probably the least costly way of doing either