Forest and plantation challenges and opportunities for emission trading

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Reforestation: Integral to Sustainability

Brinkman & Associates
- 1970 to 2005
- 750 million trees planted
- Plant across Canada
- US & Central America
- First application to CDM for a New A/R Methodology
- Full rotation service
Return on Investment from Timber
Or Replacement of Forest Capital

Growing ↔ → Logging ↔ → Converting

Brinkman y Asociados Reforestadores de Centro America, S.A
Carbon trading: a third potential funding mechanism

- CDM Mountain Pine Ridge Reforestation in Belize
- Ecosystem wiped out by S. Pine Beetle
- No national funding for forest capital replacement
- Insufficient ROI from timber values alone
- 2.5 million tonnes CO$_2$ makes reforestation possible

Mountain Pine Ridge, Belize
Various forest stands and management areas can be pooled.

Image from David Brand, Hancock Natural Resource Group.
Alberta Pacific’s Poplar Plantation Program CO² Sink

Data from Alberta Pacific Pulp & Paper
Alpac’s Pulp Plant Emissions & Poplar Plantation Sink

Data from Alberta Pacific Pulp & Paper
Alpac’s Potential Net CO²

Data from Alberta Pacific Pulp & Paper
Beware of ecosystem’s emission potential

Figure 9. Condition class for the study area.

Bruce Blackwell: Ministry of Forests & NR Canada
Forest ecosystems also protect peat reservoirs

- 1998 Kalimantan peat fires released est. 17-40% of the world's annual fossil fuel emissions

- 2003 Kalimantan peat fires significant contributor to the peak 3.1 ppm CO$_2$ release > double 1.4 ppm average in previous decade

Borneo is burning

Nature (Vol 432) 11 Nov 04
Accountability for managing ecosystem carbon reservoirs

Canada Forests as % of World:
- 10% of all forests
- 25% of natural forests
- 30% of boreal
- 20% temperate rainforest
- Only intact frontier forests in a developed country

Canada’s Forests for Canadians:
- 1 billion acres (.4B ha)
- 94% public
- 1 million jobs
- 1 million aboriginal people
- $100 billion revenue ($CAN)
Canada Negotiated to meet up to 20% of its obligations by:

- accounting for changes in forest carbon stocks resulting from **afforestation**, **reforestation**, and **deforestation** activities that have occurred since 1990
- including sinks and sources from some, or all, (or none) of its managed forests

In negotiating that option, Canada becomes the pilot Party working on integrating the management of natural ecosystems into its climate change account.
What is Canada doing?

Developing a:

- Carbon Budget Model of C. Forest System
- National Forest Information System
- National Data Warehouse accounting tool for forest managers
- Carbon Tracker for forest level modeling and decision making
Demonstration Trials
Forest 2020 Carbon Plantation

- Afforestation
  - Farmland
  - Mine sites
  - Conservation areas

- Some say
  - Too small
  - Too late
  - Not tradable
‘Decision Making in Uncertainty’
Canada’s 2006 decision

Cumulative Percentage of Pine Killed

![Map showing cumulative percentage of pine killed in 2003.](BC Ministry of Forests)
Without severe winter cold
80% Mortality BC’s Lodgepole Pine

Cumulative Percentage of Pine Killed

2013

Marvin Eng: BC Ministry of Forests
MPB spreading across Canada
No Climate or Biological Barriers

No climate or biological barriers to MPB

Source: NRCan/CFSPFC
What worked: Industry accountable to reforest area harvested

BC’s legal reforestation framework created in 1987. Similar legislation is in place in the rest of Canada:

- requires clearly defined ecologically appropriate end results
- ensures prompt reforestation & tending to free growing
- reporting and auditing of new harvest areas
Before 87 | After 1987
---|---
% area planted | 50% | 73%
% survival | 50% | 93%
average Regen Delay | 8-20 yrs | 1-5 yrs
time to 3 metres | 15-20 yrs | 10-15 yrs
timeliness of treatments | Depend on budget | Immediately after harvest
What is needed for industry to be accountable for ecosystem CO$_2$?

- Carbon rights legislation
- Standardized accounting and verification
- Nationally registered baseline of forest lands
- Carbon accounting default values for forests
- Forestry Registry for credits that are fungible

Canada is already the best manager of natural ecosystems and has the data, science and technology to be a world leader in managing ecosystem carbon.
What is needed for Parties to be accountable for ecosystem CO$_2$

Be aware the Millennium Ecosystem Assessment indicates:

- 60% of the world’s ecosystems have been degraded or used unsustainably
- Continuing degradation will trigger some abrupt and potentially irreversible changes
- This can lead to large releases of carbon (some temporary)
  - Forests and forest soils originally held about 1.2 trillion tonnes of carbon, about 25% of world forest cover has been lost
  - One-third of 730 billion tonnes of atmospheric carbon dioxide is from these eradicated forest ecosystems
  - Today’s forests represent 50% of global photosynthesis and cycle 12% of the world's atmospheric carbon dioxide annually
Should there be an international Catastrophic Disturbance Account for ecosystem emissions caused by indirect human (climate change) or natural factors?

- e.g. EU’s equivalent account with allowances for Force Majeure factors outside of an emitters control
Will catastrophic compensation accounts be forced by litigation?

“Human influence on weather risk: The 2003 European Heat-wave”

- COP 10 Presentation by Miles Alan, Department of Physics, University of Oxford

- Excess mortality rates in early August 2003 indicate 22,000 and 35,000 heat-related deaths

- It is likely (90% confidence) that past human influence on climate was responsible for at least half the risk of the 2003 European summer heat-wave.

- “Plaintiffs ... must show that, more probably than The contribution of past greenhouse gas emissions to some current climate risks may already exceed 50%, the threshold for civil tort actions.

- Over the coming decade, both the cost and the inevitability of climate change will become clearer, fuelling demands for compensation.
In summary

- Ecosystems are potential large emitters which each Party must manage.

- Land managers will become accountable for the sink and source value of their forest ecosystems & plantations.

- Each Party will need internal systems within which land managers can register and trade.

- Parties will require a solution to ecosystem risks outside of their control.

- Emission trading can finance the accountability for sustaining and restoring forest ecosystems and plantations.