



Forests and climate change mitigation

IFA Forestry Policy Statement No. 6.2

Key Statement

Forests perform an important role in the removal and storage of greenhouse gases from the atmosphere. Sustainable forest management activities can therefore help meet global climate change mitigation objectives.

The issue

The recognition of carbon storage and sequestration in forests within international, national or sub-national climate change agreements is creating opportunities for investment in forests. However, the ability to accurately account for forest carbon stocks and their changes often requires complex carbon accounting methodologies. If carbon accounting methodologies are poorly designed, they can create perverse incentives that are not always compatible with sustainable forest management objectives. There are concerns regarding potential reversals of forest carbon storage due to natural and anthropogenic disturbances such as fire and harvesting. Mature and old growth native forests store more carbon than younger forests, and if disturbed, these forests can take decades to return to their pre-disturbance carbon levels. Further research is required on the impacts of harvesting and other disturbances over the full life cycle of native forests.

Background

There is widespread global concern that increases in atmospheric greenhouse gases, mainly due to burning of fossil fuels and deforestation, could result in climatic changes. International climate change agreements such as the United Nations Framework Convention on Climate Change (UNFCCC) provide a policy framework to encourage activities that reduce greenhouse gas (GHG) emissions and/or increase the rate of removal of GHGs.

Forests and wood products affect the concentration of atmospheric GHGs in five main ways:

- by removing (sequestering) CO₂ from the atmosphere through the process of photosynthesis;
- by emitting CO₂ to the atmosphere when forests or forest products are burned, decay, or are managed unsustainably;
- by acting as a store (reservoir) of carbon in the biomass of a forest, and in the wood products it produces;
- by providing low emission biomass as an energy source; and
- through use of wood products in place of more fossil fuel intensive alternatives such as aluminium, concrete and steel.

International concern about the potentially dangerous effects of increased atmospheric concentrations of greenhouse gases on the global climate system resulted in the adoption of the Kyoto Protocol to the UNFCCC in 1997, which sets out legally binding targets that aim to achieve an average 5% reduction in greenhouse gas emissions below 1990 emissions for 'developed' countries between 2008 and 2012. It is possible that Reduced Emissions due to Deforestation and Degradation (REDD) in developing countries will be included within the post-2012 UNFCCC framework, in order to capture the significant source of emissions from land use conversion of tropical forests.

Australia ratified the Kyoto protocol in December 2007 and as a result is now committed to restricting its emissions to 108% of its 1990 level emissions.

Recognising the important role of forests in the global carbon cycle, the Australian Government has proposed to implement a Carbon Pollution Reduction Scheme (CPRS), commencing in 2010. This scheme allows the removals of CO₂ in forests planted after 1990 to be used to meet emission reduction targets.

The development and implementation of the CPRS requires careful consideration of the role of forests and how forestry can contribute to the scheme.

The following issues should be considered in designing systems to utilise forests for climate change mitigation purposes:

- Carbon accounting must be undertaken in accordance with agreed standards and be verified independently. It should include potential losses and gains in all pools including: living tree biomass, understorey, litter, soils and dead wood pools, unless it can be demonstrated that those pools are not a source of emissions.
- Methodologies for estimation of carbon storage in wood products are under development, and this pool should be recognised in future carbon trading schemes.
- Net changes in forest carbon stock can either be positive (when the forest is growing) or negative (due to emissions from soil disturbance and biomass losses from fire or disease). Risk management procedures need to be adopted to account for unanticipated losses. This might include retaining of a portion of carbon in a reserve pool, or spreading risk across a diverse range of forestry offset projects.
- Estimates of change in carbon stocks can have large statistical errors due to the high variability in carbon density in different pools. Producing estimates of carbon stock change with low error can require many samples and this can be costly, particularly for small forest holdings.
- Models such as the Department of Climate Change FullCAM model have been developed to simplify forest carbon estimation procedures. Such models should be used by trained operators, and be accompanied by forest inventory measurements to ensure model estimates are reflective of reality.
- Old growth and mature forests store more carbon than younger forests but are at risk of catastrophic loss. Hence it is undesirable to aim for conversion of the entire native forest landscape to old growth, partly because a mixture of age classes may provide a better balance of storage and sequestration and partly as younger regenerating age classes are necessary to maximise biodiversity and maintain ecological functions provided by a range of age classes.

Policy

The IFA advocates:

- the development of scientifically-based mechanisms that enhance the potential contribution of forests to climate change mitigation; and
- the active inclusion of the forestry and timber sectors in all Government initiatives for emissions trading and related climate change mitigation schemes.
- The IFA supports and encourages:
 - international cooperative efforts to reduce greenhouse gas emissions, incorporating quantitative commitments for emission reduction particularly in developed countries;
 - incentives that recognise the full range of activities and processes through which forests can mitigate climate change, including sequestration, REDD, biomass energy and product substitution, in both developed and developing countries.
 - the ongoing development of scientifically defensible and operationally practical methods for accounting for both carbon storage and carbon fluxes in forests and forest products;
 - the development of opportunities for trading of carbon sequestration and storage benefits in both formal compliance and informal voluntary schemes, subject to measurement and application being based on scientific principles and sound evidence, and full disclosure of the accounting methodologies and temporal characteristics of the carbon product.
- The IFA considers that:
 - implementation of forest carbon projects should promote sustainable forest management practices;
 - forest carbon offsets should be used to supplement, not replace, efforts to reduce GHGs from burning of fossil fuels, as well as investment in renewable energy sources;
 - that efforts should be made to maximise the longevity of forest carbon sequestration and avoidance projects, while recognising the even temporary emission reductions are of significant value, as they allow time for investment and development in renewable energy sources and low-emission technologies;
 - that increased use of wood products is a legitimate means to mitigate climate change;

- implementation of ecologically-sound fire management regimes including prescribed burning can help prevent large scale bushfires, which result in significant losses of carbon, infrastructure and human lives; and
- experience in trading of forest carbon may assist in developing markets for other forest environmental services.

Further reading

- IPCC, 2007: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp.
- Climate Change 2001: The Scientific Basis. Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). [Houghton, J. T., Y. Ding, D. J. Griggs, M. Noguer, P. J. van der Linden, X. M. Dai, K. Maskell, and C. A. Johnson, (eds.)] Cambridge University Press, Cambridge, UK.
- International Emissions Trading Association - <http://www.ieta.org/ieta/www/pages/index.php>
- United Nations Framework Convention on Climate Change - <http://unfccc.int/2860.php>
- Australian Department of Climate Change, www.climatechange.gov.au

Approved 15-07-2009

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