



ETS may see demise of native forests



Plantations may be a better source of commercial timber, while native forests may be more effective for storing carbon. CSIRO Sciencemage

The Australian Government's proposed emissions trading scheme (ETS) could have a devastating effect on native forests, as plantation owners rush to the carbon market and forego wood harvesting, according to two researchers from the Australian National University, Dr Judith Ajani and Dr Peter Wood.

With logs accounting for just half of the carbon in a plantation, at carbon prices as low as \$10 per tonne of CO₂

hardwood plantation owners are likely to earn more revenue growing carbon than wood, say the researchers.

Plantations currently supply 80 per cent of the wood-processing industry's raw material and generate most timber industry jobs. If their function shifts to carbon storage, logging is likely to shift back to native forests. Because native forests are more carbon-dense than plantations and the proportion of useable wood is

lower, this would cause a net increase in Australia's greenhouse emissions, according to the researchers.

'Native forests, the less efficient resource for forestry industry competitiveness, are tagged for wood production with lost opportunities for the job they do best – carbon storage,' says Dr Ajani. 'Whereas plantations, the less efficient and less reliable resource for carbon storage, are tagged for carbon storage with lost opportunities for the job they do best – wood supply.'

The researchers recommend plantations be excluded from the ETS and have called on the government to undertake an urgent inquiry into the value of native vegetation in climate change mitigation. They also looked at the possibility of carbon stored in wood products being included in future IPCC 'accounting rules' and found that this does not invalidate their initial findings.

http://epress.anu.edu.au/green_carbon_citation.html

www.climatechange.gov.au/greenpaper/consultation/pubs/0133-wood-ajani.pdf

Plantstones for soil carbon storage

Researchers from Southern Cross University are investigating the potential of grass-type crops such as sugar cane, bamboo and sorghum to fix carbon via tiny silica phytoliths – known as 'plantstones' – in the outer epidermal cells of the leaves, roots and stems.



Plantstones in crops such as sugar cane may hold the secret to soil carbon sequestration. CSIRO/Willem van Aken

The researchers have found that the silica 'entombs' carbon-rich cellular material in the plantstones. When the plant dies, decays or is harvested, the phytoliths are incorporated into the soil matrix, where they will remain intact for thousands of years, according to earlier radiocarbon dating studies.

The researchers are identifying which plants make more stones; already they have found that phytoliths from sugar cane hold more carbon, while other plants make more plantstones than others. Different cultivars of the same crop are also being identified for their higher carbon-fixing efficiencies.

The researchers say that this form of biosequestration is more stable and durable than tree plantations, which are vulnerable to fire or future land-clearing. Its effect is also easy to quantify.

Carbon time-bomb in permafrost zones?

In a recent *Bioscience* paper, an international team of scientists warned that the twice as much carbon is locked up in the world's permafrost regions than previously thought. The researchers now estimate the world's high-latitude carbon inventory to be more than 1500 billion tonnes – equivalent to twice the current amount of CO₂ currently in the world's atmosphere.

As frozen organic matter thaws and decomposes, it will release its heavy load of carbon into the atmosphere in the form of carbon dioxide (CO₂) and methane (CH₄).

'With temperatures in the higher latitudes estimated to rise by as much as eight degrees by the end of this century, the world could experience a major melt of large tracts of permafrost in Canada, Russia, Alaska, Norway, Sweden, Finland and Greenland,' says the CSIRO's Dr Pep Canadell.

He adds that even a small fraction of this vast frozen reservoir of carbon would significantly accelerate climate change. 'At current rates of warming in the higher latitudes, the evidence indicates that this is likely to happen.'



Thawing and decomposition of organic matter in the permafrost could release billions of tonnes of carbon dioxide and methane gases. Alfred Wegener Institute