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TreeSmart News

Waiting for Garnaut

The world, it seems, is waiting for Garnaut!

Or at least that part of the world that is wanting to know his views on how the Australian Emissions Trading Scheme might, or should, be structured.

On July 4th, the Garnaut Review will release their Draft Final Report, in which they begin to outline their views on climate change and the steps which Australia must take to address these issues.

This draft report will be followed in late-August by a Supplementary Modelling Report, in which they present the methods and results of their comprehensive modelling on the costs and benefits of climate change action.

Finally, in late-September, they will release their Final Report in which they provide an assessment of Australia's best options for meeting the challenges ahead.

Between July and September, the Garnaut Review will again be calling for public comment on their Draft Report. This complements over 4000 public submissions on earlier Discussion Papers on a wide range of topics.

Now is a critical time for Australia's future. Make sure you read the Draft Report, and make a submission as you see fit. ❁

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The purpose of the ***TreeSmart Newsletter*** is to keep ***TreeSmart*** subscribers and farm foresters aware of some recent developments in carbon offsetting in Australia.

Transpirational Regenerative Emissions Extractor

Partly in response to Richard Branson's Virgin Earth Challenge to find "a commercially viable design which results in the removal of anthropogenic, atmospheric greenhouse gases so as to contribute materially to the stability of Earth's climate", Prof. Tony Richardson, Director of The Urban Transport Institute and TreeSmart Australia, recently launched the Transpirational Regenerative Emissions Extractor which can be rolled out on a large scale to remove huge quantities of CO2 from the atmosphere. This technology extracts CO2 emissions from the atmosphere after they have been created from a wide range of anthropogenic sources (such as electricity generation and transport systems) and has two major features.

The underlying chemical reaction is based on transpiration whereby the Extractor emits oxygen and water vapour into the atmosphere while extracting carbon dioxide from the atmosphere. The energy used to power this process is totally solar-based, with millions of small receptors strategically placed on the exterior of the Extractor. These receptors track the sun during the course of the day to capture maximum solar energy.

Realising that the construction of the millions of Extractors needed for large scale emissions extraction would require a large workforce and significant input energy, the design of the Extractor is such that it "builds itself" during the process of emissions extraction. The carbon dioxide extracted from the atmosphere provides ample quantities of carbon which, when combined with an equal weight of other construction materials, produces a carbon fibre material that forms the skeleton of the Extractor on which the solar energy receptors are attached. In a virtuous circle configuration, as more emissions are extracted from the atmosphere, the Extractor grows larger, enabling it to extract even more emissions, until it reaches a point where structural design considerations and capillary-action hydraulic limitations limit further growth of the Extractor. The Extractor can then be disassembled and the stored carbon can be placed in more secure long-term storage options. The process can then be repeated to build a new set of Emissions Extractors.

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The Transirational Regenerative Emissions Extractor (T.R.E.E. for short) would be totally weatherproof and can be constructed outdoors where it will withstand significant winds and rain. It would also have numerous other social, economic and environmental benefits, and will come in a wide variety of shapes and colours (mainly shades of green). The development of the Extractor has been a true family effort and Prof. Richardson would like to thank his wife and Mother (Nature).

For more information, go to page 4

Harvested Plantations - the carbon offset factory

While carbon offsets are only one part of an overall Greenhouse Emissions Management Strategy (along with reductions in the emissions themselves), they are a very important part since they allow reductions in atmospheric greenhouse gases to be achieved relatively quickly, while the longer-term reduction strategies take effect.

For many years, tree-planting has been seen as one way of offsetting carbon dioxide emissions, by locking carbon dioxide from the atmosphere into the growing trees by means of photosynthesis. Under the Kyoto Protocol rules, however, there was a penalty imposed if and when the trees were harvested, with the assumption made that the carbon dioxide previously absorbed by the trees would return immediately to the atmosphere. This, however, was a simplistic assumption aimed at securing the permanence of the sequestration. Instead of thinking about permanence of the sequestration itself, it concentrated on permanence of the trees, without considering the ways in which the carbon could continue to be sequestered after the trees were harvested.

Recent research and policy studies, however, have shown that carbon continues to be sequestered for long periods after harvesting, in the Harvested Wood Products, in landfills after disposal of the wood products and in fossil fuels that remain unburnt when the wood from harvests (and thinning) is used to produce energy in place of using fossil fuels to produce the same amount of energy.

By comparison with unharvested plantations (or environmental plantings) that grow once and sequester carbon only once in the living trees, harvested plantations act like a carbon sequestration factory, producing an additional amount of sequestration with every rotation, while the carbon from previous rotations continues to be sequestered in the post-harvest formats. The harvested plantation sequestration is also less risky, with the total sequestration eventually being distributed across a portfolio of formats (living trees, HWP, landfills, bioenergy), rather than all being tied up in one form in living trees (just waiting to be burned down!).

The forthcoming Emissions Trading Scheme for Australia is likely to recognise these multiple forms of sequestration, following consistent and persistent representations from various parts of the forestry industry and community, with post-harvest sequestration being recognised as contributing to carbon offsets and credits as part of the ETS.

Such recognition will have very significant implications for the tree-grower seeking to contribute to the stock of carbon credits. No longer will the trees have to remain on the property forever, and no longer will 100-year restrictions on Title be required. Instead of having to maintain the trees permanently, there will only be a requirement to maintain the sequestered carbon permanently (in one form of another). If the sequestered carbon is released to the atmosphere, then there will be a requirement to replace that sequestered carbon with another form of sequestration, such as in another plantation or by way of some other form of sequestration that might have become available at some time in the future.

Treegrowers will be paid when they sequester the carbon, but will have the obligation to re-pay (or replace) the carbon credits if that carbon sequestration is destroyed. Such an arrangement will provide the right incentives and disincentives to ensure that carbon is sequestered in the first place, and that it remains sequestered for the long term, without imposing draconian and unnecessary restrictions on tree-growers. ❁

(this article by TreeSmart appears in the Winter 2008 edition of Australian Agroforestry)

SharpCAM - a TreeSmart Modelling Package

One of the critical tasks in the management of a carbon pooling operation, such as TreeSmart, is the estimation of the amount of carbon likely to be sequestered in a plantation.

Several modelling tools have been developed by various parties for the estimation of carbon sequestration, such as the FullCAM package developed for the Australian Greenhouse Office (now Department of Climate Change). However, while the FullCAM package is very powerful at a broad national landscape level, it is not very flexible or adaptable for individual project analysis. The user interface of FullCAM is not particularly intuitive, and requires a high level of modelling expertise to be able to run it successfully.

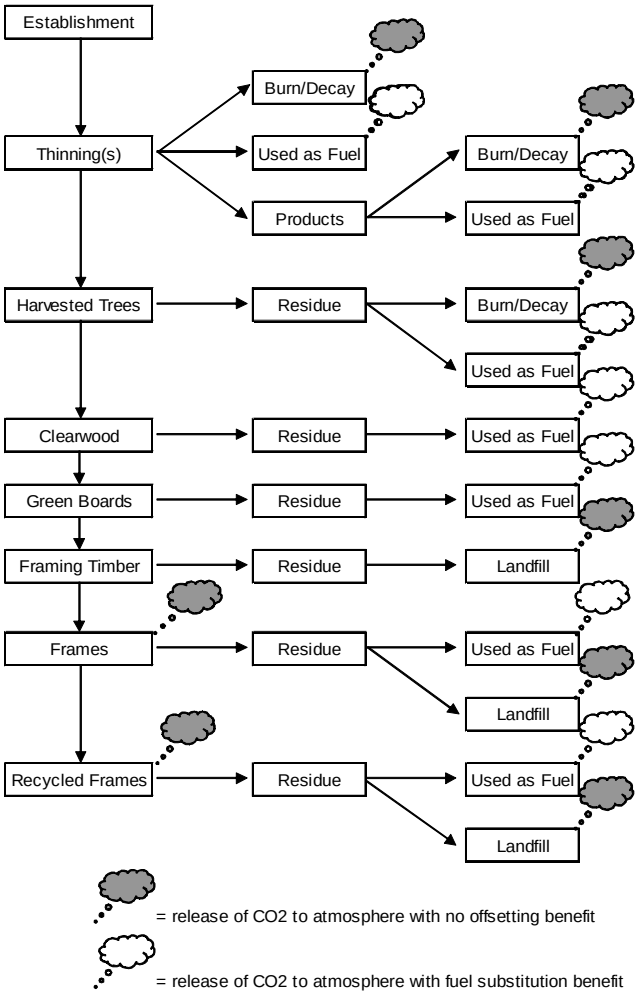
For this reason, TreeSmart has been working for some time on a complementary modelling process that can be used in conjunction with, or as an alternative to, FullCAM. The new package is called SharpCAM (Sustainable Harvested Plantation Carbon Accounting Model). The SharpCAM model will be used to assess all plantations that wish to be registered with TreeSmart.

The SharpCAM package has been specifically designed by TreeSmart to analyse the lifetime (100 year) sequestration from a specified harvested plantation. It can accept outputs from FullCAM, but is then easier and more flexible to run than the full FullCAM modelling suite, thereby making it more accessible for ongoing use for real harvested plantations. It also considers the financial values of the costs incurred and benefits received from the plantation, in terms of carbon offsets, harvested wood products and bioenergy from harvest residues.

SharpCAM accepts a basic growth tree growth curve from FullCAM, but then calibrates this curve to match data that might have been obtained from Permanent Sampling Plot (PSP) measurements in the field from the plantation in question. As more PSP measurements are obtained over time, the growth curve can be recalibrated.

The model then considers the various fates of the carbon sequestered in the trees after the plantation is harvested. Unlike the Kyoto Protocol assumption, SharpCAM considers where the sequestered carbon might actually go after harvesting. As a result, the model considers form different formats in which the carbon might be sequestered:

- In the living trees
- In Harvested Wood Products
- In Landfills
- In unused Fossil Fuels (as a result of fuel substitution when harvest residue is used to produce bioenergy)



The diagram above shows the pathways that the sequestered carbon might take after harvesting of the trees

In addition to modelling the sequestration of carbon, the SharpCAM model also estimates the volume and value of Harvested Wood Products at harvest time, the amount of electricity produced from thinnings and harvest residue, the value of the electricity produced and the value of the Renewable Energy Certificates (RECs) created when the bioenergy is produced. It also considers the costs of production, and estimates the discounted economic value of the 100-year investment.

SharpCAM is an Excel spreadsheet model, which is automatically linked to Microsoft Word to produce a comprehensive report on the evaluation of the plantation.❁

SharpCAM can accept outputs from FullCAM, but is then easier and more flexible to run than the full FullCAM modelling suite, thereby making it more accessible for ongoing use for real harvested plantations.

Hawks Tassie Trips Offset

Beginning in 2007, and continuing in 2008, ***TreeSmart Australia*** has provided a sponsorship to the Hawthorn Football Club, by way of offsetting the greenhouse emissions associated with team flights to play home games in Launceston.

TreeSmart has also been a player sponsor, having sponsored 2008 team captain Sam Mitchell (left) and a number of other players over the past 5 years.

For the 2007 HFC sponsorship, ***TreeSmart*** calculated the emissions associated with the flights to Launceston, and then calculated how many trees would need to be used to sequester the emissions from that travel. In 2007, it was estimated that the four home games in Tassie generated a total of 180,000 kms of air travel for the team, and about 80 tonnes of CO_2 emissions. This required about 4 hectares of plantation to be set aside for the year to absorb these emissions.

In 2007, TreeSmart also offset the travel for supporters attending a game at the MCG during World Environment Week. For the MCG game against the Swans, with a total attendance of over 40000, it was estimated that Melbourne-based Hawthorn supporters travelled to the game in about 15000 vehicles, covering 12 kilometres each way. This 360,000 kms of car travel generated about 83 tonnes of CO_2, requiring another 4.1 hectares to be set aside. ❁

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Transpirational Regenerative Emissions Extractor (T.R.E.E.)

This was an April Fool's story run on the TreeSmart website. However, there is a serious side to this story.

Let's not get so hung up in chasing esoteric technologies that we forget to look at the simple (but amazingly complex) technologies that Mother Nature has provided to us for extracting carbon dioxide from the atmosphere. The simple tree is still the cheapest, most immediately available and most effective emissions extractor yet devised. While we are busy developing new technologies to assist in combating climate change, let's not denigrate the solutions provided to us by Nature. Let's ensure that we use all options (technical and non-technical) available to us in the short, medium and long term to deal with the problem of climate change. ❁

About TreeSmart Australia

TreeSmart Australia is a carbon pooling organisation which offsets emissions primarily from the transport sector by supporting the establishment and management of farm forestry plantations.

Farm foresters are paid for the carbon sequestered in their trees according to the amount sequestered each year.

TreeSmart uses a year-for-year carbon accounting system, whereby the emissions produced each year are offset by the amount of carbon sequestered in that, or previous, years. No forward borrowing of sequestered carbon (offsetting past or current emissions through future growth of trees) is allowed.

TreeSmart Australia is a private company, with all profits re-invested in growing more trees for sequestration purposes.

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