Senate Inquiry into Carbon Sink Forests

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Summary

1. **Australian forests sink 226Mt CO2 on a national scale**

2. **As per head share of global net emissions Australian forests emit 222.3Mt CO2**

3. **National Carbon loss from product is 31.79M t CO2**

4. **Current annual Drag on Carbon Pollution Reduction Strategy is 110M t CO2, about 20% of annual emissions**

5. **Addressing annual Drag on emissions by planting needs 15.7M ha of plantations**

6. **Addressing the National Carbon loss to product alone requires 1.33M ha of plantation, 70% of the current total area of plantations**

National Wood Production 2007

- Although the total area of forests declined from 164M ha to 149M ha due to improved data, the volumes of wood produced rose to 27.1M m3.

- Source ABARE

Woodchip Export Sources and Volumes

- Native Forest 3.0M m3
- Conifer Plantation 1.0M m3
- Hardwood Plantation 2.1M m3
- Total 6.1M m3
- Above in BdT
- Green tonnes native forest 5.0M m3

- Source ABARE

National CO2 Store Decline 2010-2020

- Decline in FT C store 11.0Mt pure C
- Double with Pte Forests 22.0Mt pure C
- Divide by TAS area of 1.2M ha
- Multiply by AUS area of 15.0M ha
- Divide by 10 years 27.5Mt pure C
- Multiply by 44/12 to convert to CO2-e
- Loss to AUS forest by area of 15M ha = 100.83M t CO2-e pa

- Base for calculations MBAC Report [Woodstock] to Forestry Tasmania commercial production forest [Native Forest], Private Forests Tasmania Woodflowweb.

National CO2 Sink Increase 2010-2020

- Growth in FT C store 5.0Mt pure C
- Add 30% Pte Forests 1.91
- Add Conservation Area 8.38
- Divide by TAS area of 2.3M ha
- Multiply by AUS area of [149 -15] = 134M ha
- Divide by 10 years 89.13t pure C
- Multiply by 44/12 to convert to CO2-e
- Gain to AUS forest by area = 326.84M t CO2-e pa

- Base for calculations MBAC Report [Woodstock] to Forestry Tasmania Conservation Forest, Private Forests Tasmania Woodflowweb

TAS area includes Conservation Reserves [formal and informal] and unlogged/able Private forest

National Balance from above calculations

- Gain 326.84M t CO2-e
- Loss 100.83 M t CO2-e
- Balance sunk 226.01M t CO2-e pa

- Faults: Differential growth rates between areas and differential use mean this total only reflects the balance comparing wood production forest with formal conservation reserves and other land not currently logged

Carbon emissions know no boundaries

- The terrestrial sinks [forests, shrublands and grasslands remove 1.4 gigatonnes of CO2 net from the atmosphere.
- Per person with a global population of 6.3Billion and an Australian one of 21Million that equates to 0.22t CO2 per head pa
- Australia share of the global terrestrial sink is therefore 4.67Mt CO2

Global Balance in tonnes of CO2

- Comparing the total Australian share of global terrestrial sinks with the Balance offset by Australian forests.
- Australian share 4,670,000
- Balance sunk 226,010,000
- Global emission [-222,340,000]

- Excluded from these calculations are the contributions of other terrestrial carbon sinks in Australia from the +-227M ha of non forest non agricultural land although we used the entire per head 'share' in the above calculation. Including the oceans merely increases the Australian share by 6.33M t CO2

Changes in Pure Carbon Stocks
Forest Tasmania 2010 – 2020

- 50% of Woodchip Volume from Privately owned forest [679M ha] = -22M t pure C
- Conservation Forest of 1.27M State + 0.758 Sate Forest + 0.291 Privately owned forest unlogged/able = 2.319 M ha increasing at [5Mtc /0.758 = 6.596 t per ha x 2.319] = +15.3M t pure C.
- -6.7MtC [x44/12] = A loss of 24.5 M t CO2 from all Tasmanian forests over 10 years or 2.45M t CO2pa.
- Value as tradeable offset @ $20 per tonne = $49.13Mpa
- However the actual loss from wood production is [22 + 15.3 - 6.7] = 30.6M t pure C [x 44/12 / 10 years x $20 = $224.4M

- The price paid for wood should be its C traded value plus costs of production. The income derived from the carbon value should, where it is from publicly owned forest that is used for wood production, be expended on transiting the States economy to low carbon emission technologies in all sectors.

- Note these calculations use additional Carbon only

Tasmanian Loss to Product

- Sawlog 2,000 t pure C from 300,000 m3
- Woodchip 700k t pure C x 2 to allow for Private freehold forest 1,400,000 t pure C
- Waste 60,000 t pure C
- Total 1.462M t pure C x 44/12 = 5.361M t CO2 @ $ 20 = $107.21M

National Loss to Product Baseline

- [Sawlogs] 8.5M m3
- [Woodchips] 5-0M m3
- Other product 4.7M m3
- Total 18.2 M m3

- [Native forest Green]

Carbon Loss Conversion to CO2 and nominal emissions trading value

- Sawlog 8.85/0.3Mx2k = 59,000 t pure C
- Woodchip 5.0/5-0x1.4M = 7M t pure C
- Other product 4.7 @ 25% of Woodchip = 1.65M t C
- Total 8.67M t pure C x 44/12 = 31.79M t CO2 @ $ 20 = $635.8M
- These product emissions are discounted net values, the emissions considered nullified after 100 years of regrowth at their source.

Comparison of Loss to Carbon Store with National Emissions

- 2003 emissions were 535M t CO2
- 2007 gross loss from forest was 100.8 M t CO2
- Add Current National Loss to Product of 9.295 M t CO2

- Current Annual Drag on Carbon Pollution Reduction Strategy 110 M t CO2 or 19% 2003 emissions.
- These actual annual emissions will not be offset until after 2020 if the 2020 interim target is 20%.

Plantation Area and Growth Rate

- Australia's plantation area increased by 4.7 per cent to 1.9 million hectares in 2007, consisting of 1.0 million hectares of coniferous and 0.9 million hectares of broadleaved plantations (figure a).

http://www.abareconomics.com/interactive/08afwps_may/

Addressing Cause by planting

- To offset emissions of 110 MtC per annum with an average Carbon sinking rate of 7.0t CO2 per ha. [Wood growth at 14m3 per ha] through a plantation planting program, some 15.7M ha of suitable land needs to be set aside as a carbon store. To offset the national net emissions of 9.3M t CO2 alone needs 1.33M ha of plantations 70% of the current total plantation area.

- "Australia's plantation sector continues to expand, with a further 86 600ha established in 2006-07 despite increasing difficulties associated with land availability in many regions" Source ABARE.
- That's 180 years at the current rate of plantation establishment and a growth of 825% on the plantations established for wood production.
- Allowing for the increasing trend to wood production from a plantation estate there appears to be a land supply difficulty.
- There is about 47M ha of arable land. Dedicating 1/3 of it to plantations would address the estimated total emissions from the forest industry

Costs

- Offsetting emissions by discounting them against an existing store or sink is of limited value when they are real and the aim is to reduce the level of same.
- Reducing a major sink we have a limited capacity to manage, forests, when climate instability is going to affect that sinks capacity and perhaps also impact on the current volume stored is significantly risky.
- Forests should pay for their emissions.

Sink and Mitigate

- If a forest is set aside as a Carbon sink under the current rules, only the additional Carbon attracts a value in an emissions trading market, hence part of the attraction of new planting when they also draw a taxation benefit.

- I propose that publicly owned forests set aside for wood production and privately owned forests be allowed to be Carbon stores and sinks and that,

the value of the Carbon stored against the value paid for the wood to determine their use.

- Further, the money paid for a whole forest Carbon sink be invested in mitigation. Once that investment is secure it can then be realized by the private or public owner or the income retained. The tax benefits indicate a retention of such an investment.
- This should meet the additionality requirement in 2 ways, the forest continues to sink and store Carbon and the mitigation reduces emissions.

Ongoing income accrues to the forest owner as the sink continues to accumulate CO2

Benefits for forest owners

- For a forest rich State this provides the means to fund the transition to a low Carbon economy by either making all or part of the forest a carbon sink and using the increased income from that, and/or from higher revenues for wood, to fund that transition through governmental measures.

- For a private landowner they benefit from the value of their existing Carbon store to assist their business through climate difficulties and the impacts of an emissions trading scheme on agriculture. This is of especial benefit to those whose land becomes marginal, in whole or part, due to climate instability in that they may be able to derive an income from extant forest.

- It does not prevent the possibility that new plantings can sell their additional carbon as it is sunk and accumulates in the forest as a carbon store.

Social benefits

- Carbon sinks and stores are retained in the best possible condition to withstand the perturbations caused by climate instability [change]. See Garnaut Climate Change Review Draft on temperature ranges impacting on Terrestrial Sinks
- Increased mitigation through investment in low carbon technology.
- Reduced landowner stress [financial and other] due to option for private forest owners.

Sources

- ABARE Australian forest and wood production statistics September and December quarters 2007

- MBAC 2007 Report on Carbon Stocks for Forestry Tasmania

- Central Intelligence Agency World Factbook – Australia

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