Australian Government

Submission Template

Carbon Farming Initiative methodology

Draft methodology for native forest protection projects (version 2)

Overview

This submission template should be used to provide comments on a methodology proposed under the Carbon Farming Initiative.

Contact Details

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Do you want this submission to be treated as confidential? ☐ **Yes** ☒ **No**

Submission Instructions

Submissions should be made by **close of business** on the day the public consultation period closes for the methodology. This date will be specified on the website. The Department reserves the right not to consider late submissions.

Where possible, submissions should be lodged electronically, preferably in Microsoft Word or other text based formats, via the email address – **DOIC@climatechange.gov.au**.

Submissions may alternatively be sent to the postal address below to arrive by the due date.

DOIC Secretariat, Land Division
Department of Climate Change and Energy Efficiency
GPO Box 854
CANBERRA ACT 2601

Name of methodology: **Draft methodology for native forest protection projects (ver. 2)**

General/overall comments

The Institute of Foresters of Australia (IFA) is a professional body with over 1,200 members across Australia and internationally engaged in all branches of forest management and conservation. The Institute is strongly committed to the principles of sustainable forest management and the processes and practices which translate these principles into outcomes.

The IFA supports development of sound and scientifically defensible methodologies for assessing greenhouse gas emissions resulting from conversion of forest to other land uses or that are designed to encourage and provide financial reward for implementing sustainable forest management practices that maintain and increase carbon stocks in forests and wood products.

The Institute considers that the draft methodology developed by GreenCollar Climate Solutions and proposed by Redd Forests Pty Ltd has fundamental shortcomings in both process and technical presentation.

We consider that the proposed activity and the methodology are not consistent with the 'integrity principles' that form the basis for Carbon Farming Initiative and the Carbon Pricing Mechanism. That is, it is not supported by peer-reviewed science and there are significant questions as to whether the methodology will result in emission reductions that are additional, permanent, measurable, conservative, internationally consistent or that avoid leakage. Approval of this methodology may therefore result in investment in activities that do not result in a net reduction in greenhouse gas emissions.

Furthermore, we consider that the science is not sufficiently well-developed to provide accurate and reliable estimates of the greenhouse gas outcomes of native forest 'protection' for the diversity of forest types across Australia (see the recent review by Page et al[1]). Therefore approving this methodology, even in an amended form, or any other methodology for this type of activity would be premature.

The IFA would support and be willing to contribute technical and professional advice into a methodology for activities that provide for the integration of timber harvesting and conservation in a specified project area. This would provide a more flexible and administratively simpler model where the costs of data collection, monitoring and forest management (including bushfire risks) can be covered by returns from multiple activities occurring in the project area and provide greater ongoing flexibility for forest owners in managing their forests for diverse outcomes. This would also be consistent with the international REDD+ model which encourages mitigation approaches that include conservation *and* sustainable forest management.[2]

This methodology should also take into account the broader management setting and history of forest dynamics in the region where the activities take place and the longer-term consequences of the activity for greenhouse gas emissions in other settings. This would be consistent with other methodologies being developed under the CFI that relate to practices that are intended to support and enhance continued productive use of agricultural land.

We present our general concerns in a number of areas below.

[1] Page K. L., Dalal R. C., Raison R. J. (2011) The impact of harvesting native forests on vegetation and soil C stocks, and soil CO_2, N_2O and CH_4 fluxes. *Australian Journal of Botany* **59**, 654–669.

[2] Reduced Emissions Form Deforestation and Degradation under UNFCCC Decision 1/CP 16 The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention C. Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries.

Lack of technical consultation

It appears that there has been no significant technical consultation in the development of the methodology. This is unacceptable for a methodology with potentially wide ranging consequences for local industries and communities.

In terms of process, the Verified Carbon Standard (VCS) methodology, on which this CFI methodology is based, was made available for public comment and shortcomings were identified in two submissions. From reading these submissions, these concerns have not been fully addressed either in the revised VCS methodology or in this draft CFI version. Some of these are consistent with our concerns.

Activities covered are not clear

It is stated that the methodology is based on one approved by the VCS on 11 February 2011 and available on the VCS website (VM010). This VCS methodology is aimed at describing increased sequestration if forests are converted from logged to protected forests.

The draft CFI methodology is intended to provide the basis for assessment of greenhouse gas emission reductions resulting from *'the establishment of projects to protect native forests through the prevention of clearing and clear felling harvesting activities'*. However, the exact nature and intention of activities being addressed by the methodology are not clear.

The variables listed in the table below indicate the different combinations of forest conditions and activities that could potentially be covered by the methodology. Any particular combination of these conditions and activities may give rise to very different greenhouse gas emission outcomes.

Current Forest & Silvicultural Condition	**Basal area / Stocking / carbon stock**	**Silviculture or land management activity**	**Timber utilisation**	**Future condition**
Old-growth	High	Clear felling	Poles/piles/girders	Old-growth
Mature	Medium	Group Selection	Veneer	Mature
Regrowth	Low	Single Tree Selection	Sawlogs	Regrowth
Multi-aged		Thinning	Pulpwood	Multi-aged
Even-aged			Biomass/firewood	Even-aged
		Clearing (landuse change)	Not utilised	Cleared land

Note: the columns indicate different options that could be combined in many different ways to form a forest management regime.

The accounting approach, including baseline and leakage assessments, will be quite different for different condition/activity combinations. For example, preventing the clearing of mature native forests for urban development will be different to halting of thinning of a highly stocked regrowth forest for power poles.

Understanding of growth following different types of disturbance also varies considerably between forest types and condition, with growth of low productivity forest types subject to multiple disturbances (such as selective harvesting, thinning or burning for grazing, firewood collection) being particularly uncertain.

The forest conditions and management activities covered by the methodology therefore need to be clearly specified.

The activities and the proposed methodology are not supported by peer-reviewed science

The greenhouse gas emission reductions or offset capacities of the proposed activities are not well-established in the scientific literature. The extent of any emission reduction benefits resulting from excluding timber harvesting from a particular area of native forest will depend on the history of land use (including previous harvesting activity), the stage of forest development, the size of the area and quality of ongoing management.

The methodology starts from the assumption that all types of native harvesting result in net GHG emissions. It suggests that 'ongoing logging and/or conversion have significant consequences, causing substantial emissions from the logging process and the steady degradation or loss of carbon stocks in native forests' (page 6). This is not the case. Current evidence indicates that there is a net increase in carbon stocks across the native forest estate with estimates for 2005 indicating that across the managed native forest estate about three times more carbon was sequestered in regrowing forests than was removed or emitted due to harvest.

The methodology proposes that selective harvesting in sustainably managed forests or thinning of even age-regrowth be treated in the same way as forest conversion to other land uses. It is implied on (page 9) that maintaining sustainable timber harvest with regeneration or replanting of native species following harvesting is not land-use change.

The presumption that stopping timber harvesting in sustainably managed native forests will lead to either reduced greenhouse gas emissions or increased sequestration is hotly debated in the scientific literature[3,4,5,6]. A recent case study by the NSW DPI has demonstrated that converting production forests to protection forests will lead to increased greenhouse gas emissions in the medium and long term, when the carbon dynamics in all pools are considered[7].

Research by the CRC for Greenhouse Accounting and the Forest and Wood Products Australia (FWPA) (Ximenes *et al.* 2005) has demonstrated that the increased carbon storage in a forest area managed sustainably for wood production over 200 years (accounting for carbon stocks in both forest and wood products) was more than double the carbon stored if the forest had been left unharvested for the same period of time (see Figure 10 reproduced from that report below)[8].

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[3] Hurteau, M. and M. North. 2009. Fuel treatment effects on tree-based forest carbon storage and emissions under modeled wildfire scenarios. Frontiers in Ecology and the Environment. 7:409-414.

[4] Kashian DM, Romme WH, Tinker DB, et al. 2006. Carbon storage in landscapes with stand-replacing fires. BioScience 56: 598–606.

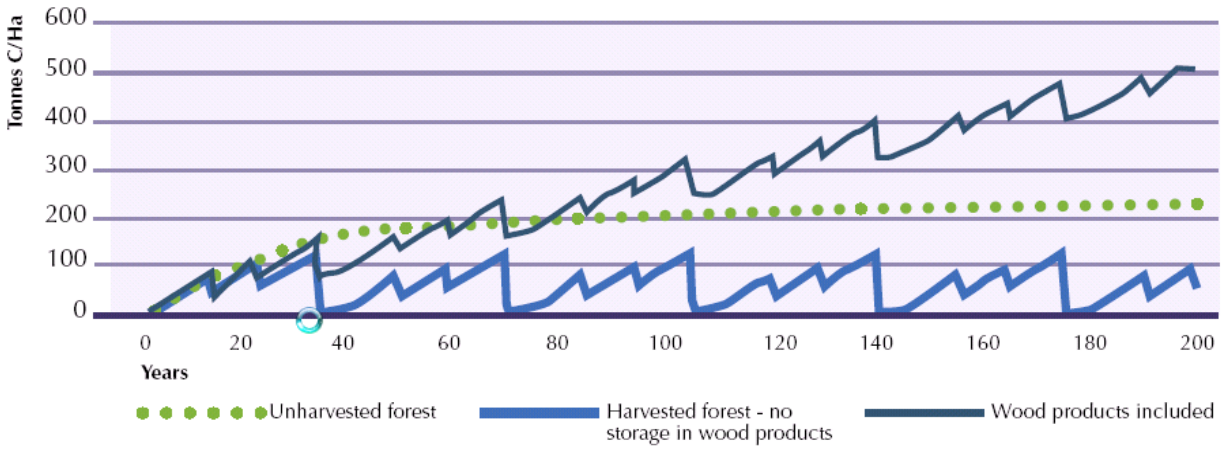
[5] Raison RJ, Squire RO (in press) Overview and integration. In 'Forest Management in Australia: implications for Carbon Budgets. NCAS
Technical Report No. 32. Vol. 1'. (Eds RJ Raison, RO Squire) pp. 1–48. (Australian Greenhouse Office: Canberra)

[6] Ranatunga K, Keenan RJ, Wullshchleger SD, Post WM, Tharp ML (2008) Effects of harvest management practices on forest biomass and soil carbon in eucalypt forests in New South Wales, Australia: simulations with the forest succession model LINKAGES. Forest Ecology and Management 255, 2407–2415. doi:10.1016/j.foreco.2008.01.002

7 Ximenes, F., George, B., Cowie, A., Kelly, G., Williams, J., Levitt, G., Boer, K. (2012) Harvested forests provide the greatest ongoing greenhouse gas benefits. State of New South Wales through Department of Primary Industries

8 Ximenes, F., Robinson, M. Wright, B. Forests, wood and Australia's carbon balance. Australian Government Forest and Wood Products Research and Development Corporation and Cooperative Research Centre for Greenhouse Accounting. Canberra, Australia. 20pp. Available online:
http://www.plantations2020.com.au/assets/acrobat/Forests,Wood&CarbonBalance.pdf

Figure 10 Carbon storage in harvested and unharvested forests



Carbon storage in a forest that is unharvested, harvested (35 year rotation) with no storage in wood products and harvested with carbon storage in wood products recognised. After 200 years, the carbon stored in the "wood products included" option (about 500 t C / ha) was more than double the carbon stored if the forest had been left unharvested for the same period of time. If the forest is harvested and storage in wood products is not recognised, then by year 200 the carbon stored in that forest is only about 50 t / ha or 10% of the "wood products included" option.

However, commercial harvest of forests is considered an immediate emission of greenhouse gases under the current rules of most schemes, with no recognition of the role of wood products in long-term storage of carbon. Failure to account for the long-term storage of carbon in wood-based products could have overestimated worldwide carbon dioxide emissions by at least 10 per cent .

This simulation does not take into account any carbon storage in soil and emissions due to slash decay are assumed to occur at the year of harvest. Carbon storage values for the unharvested forest kindly provided by Mr Rob Waterworth (AGO).

The methodology also ignores the broader-scale landscape or forest estate context of forest management. Assessments of the carbon stored in Australia's forests by the Department of Agriculture, Fisheries and Forestry (Australia's State of the Forests Report 2008, Keenan 2009), indicate that the primary human activities or events resulting in forest-related greenhouse gas[9] emissions are clearing of land for agriculture, development of urban areas and infrastructure (i.e. land use change).

Extensive wildfires also result in significant emissions. Over time, those emissions are expected to be offset by new growth as those areas recover, although this will depend on the extent and quality of future land management.

It has long been recognised that the use of timber from sustainably managed forests in wood products (particularly in those with a long 'service life' such as construction, flooring and furniture products that substitute for high embodied-energy, emission-intensive products) or in biofuels that substitute for fossil fuels, can make a positive contribution to climate mitigation objectives (Kirschbaum 2000[10]; FWPA 2011). This is acknowledged by authors from the IPCC, who stated that *'in the long term, a sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual sustained yield of timber, fibre or energy from the forest, will generate the largest sustained mitigation benefit'*[11].

9 Keenan, R.J. 2009. Disturbance, degradation, and recovery: forest dynamics and climate change mitigation. Paper presented to the XIII World Forestry Congress, Buenos Aires, Argentina, October 2009.

10 M. Kirschbaum, (2000) "The role of forests in the global carbon cycle," in *Criteria and indicators for sustainable forest management*, R. Raison, A. Brown, and D. Flinn, Eds., ed Wallingford, UK: CAB International Publishing, 2000, pp. 311–339.

11 Nabuurs GJ, Masera O, Andrasko K, Benitez-Ponce P, Boer R, Dutschke M, Elsiddig E, Ford-Robertson J, Frumhoff P, Karjalainen T, Krankina O, Kurz WA, Matsumoto M, Oyhantcabal W, Ravindranath NH, Sanz Sanchez MJ, & Zhang X, 2007, Forestry (9), in Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment report of the Intergovernmental Panel on Climate Change (Metz B, Davidson OR, Bosch PR, Dave R & Meyer LA (eds), Cambridge University Press, UK & NY, USA.

Measurable assessment of carbon dynamics in forests

In the published literature there is considerable variability and disagreement around the estimates of carbon stocks in native forests[12]. Further studies in this area are required to improve the knowledge bank and gain scientific consensus. Reliable estimates of standing carbon stock are an essential prerequisite for native forest growth models. Where estimates of carbon stocks have a wide range then it follows that the range in the estimates of forest growth responses will be even wider. In summary, the data underpinning our understanding of carbon stocks and how they respond to management change has not yet reached a standard that is acceptable for use in market-based instruments.

The methodology proposes the use of FullCAM to model forest growth responses to potential future harvest. FullCAM was originally developed to estimate C stock changes due to reforestation and deforestation over large areas as part of the National Carbon Accounting System. It has been recently calibrated to provide estimates for managed native forests. However, FullCAM has been found to significantly under-estimate and overestimate forest carbon stocks in different forest types, and there are many elements of native forest dynamics for which FullCAM is not able to provide sound estimates, particularly at a regional or local scales. This makes it unsuitable for project-based estimates for native forest activities unless significant additional field data is collected and the model is specifically calibrated for local conditions. This includes the implications of age-class distribution, different silviculture practice (particularly selection harvesting systems), interspecies competition and the effects of wildfire or prescribed burning.

The use of validated local level allometric equations, growth models and forest management and planning systems are more appropriate tools for determining historical baseline emissions against which to assess the effects of changing management practices. However, more research investment is required to provide these for assessment of carbon stocks and dynamics in most parts of Australia.

Baseline

The principles underpinning the calculation of baseline emissions in the methodology are not clear. The methodology proposes that emission reduction offset credits can be generated through the enhancement of sequestration or the prevention of emissions. This level is determined by 'the difference between the baseline and project scenarios, and after taking leakage into account' (page 7).

It is proposed that 'baseline scenario projections are calculated ex ante (before the event) and are not adjusted throughout the project lifetime', that the 'project scenario projections are calculated ex ante, and adjusted ex post (after the event or fact) based on monitoring data collected during the crediting period' and that the baseline 'be determined from a timber harvest plan developed from scenario modelling of the project area'.

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he methodology proposes that 'planned timber harvest must be estimated using forest inventory methods that determine allowable offtake as volume of timber (m^3/ha)'. However, forest inventory, is not the sole determinant of the future harvest under a forest management plan. The determination of harvest levels are the result of a number of factors including the size of resource, constraints on harvesting, legal requirements for water, soil and biodiversity protection, market conditions, the owner's desire for income at a particular time and broader goals for the management of the land.

The proposed methodology states that 'for the purpose of estimating the net annual changes in carbon stocks resulting from planned timber harvest in the baseline scenario, a detailed planned timber harvesting schedule will be developed from the timber harvest plan'. This implies that the project proponent will develop a harvesting schedule. Alternatively, they can engage a 'qualified' forestry agent or expert - without any reference to those qualifications - or compare with a loosely defined reference

[12] Ximenes, F., George, B., Cowie, A., Kelly, G., Williams, J., Levitt, G., Boer, K. (2012) Harvested forests provide the greatest ongoing greenhouse gas benefits. State of New South Wales through Department of Primary Industries

area. This presents the potential to inflate potential harvesting emissions in order to claim maximum credits. Thus, this Native Forest Protection methodology should only be considered applicable in situations where there is a pre-existing management plan specifying harvest levels and other management activities.

This proposed 'forward-looking' baseline calculated using a scenario of a future 'business-as-usual' harvesting requires assumptions about the way forest management practices might be undertaken in future and presents a number of technical and methodological challenges.

The IFA considers that a baseline developed from assessment of historical net emissions from timber harvesting and subsequent regrowth sequestration is a more scientifically defensible approach. This should either be directly from assessment of the project area or from forests in the region. This is the approach used in other methodologies such as savanna burning and internationally[13] (Brown 2002).

Leakage

The proposed methodology aims to support land use decisions that will reduce the area available for timber production. This will have several consequences – either wood that could have come from the project area will be sourced from another location or alternative materials will be used to substitute for the wood. Neither of these aspects of leakage are properly addressed.

Carbon sequestered and emitted from wood products is included in proposed baseline calculations (Table 7.2 and Steps 9.1.2 - 3) but the proposal does not provide for consideration of the longer consequences of restricting wood supply and the resulting shift to the use of alternatives that are more greenhouse gas intensive in production and use, or the implications of sourcing wood from elsewhere, particularly from poorly managed international sources.

In relation to international leakage no specific consideration is given to the replacement of native timbers by imported substitutes from tropical forests that may be managed in ways that generates significantly more greenhouse gas emissions. Changes in volumes of timber harvested at a regional or national level has been accepted as adequate for accounting for leakage in REDD projects internationally. But it is unrealistic and unreasonable to expect individual forest owners to monitor and report national statistics in CFI projects.

Such leakage issues are challenging at a policy and a methodology level. It is recognised that the Australian Government is seeking to provide a broader framework within which methodologies can address leakage. The IFA is willing to contribute to the development of this policy framework. Until this framework is developed we argue that methodologies for activities with the potential for significant leakage not be approved.

Leakage and permanence are not adequately addressed

The proposed methodology is inadequate in addressing other types of 'leakage' and the permanence of greenhouse gas emission reductions, particularly relating to disturbances loss and the implications of climate change for native forests.

Additionality

Establishing that activities result in additional emission reduction to that occurring in the absence of the activity is a critical factor in the climate mitigation integrity of activities.

The proposed methodology suggests that it only be applied where 'forest management in the baseline scenario is planned timber harvest or clearfell for land use conversion' and that under the project 'forest

[13] Brown, S. 2002 Product 8 Yolo and Sacramento County, California: Comparisons of grazing land baselines. Winrock International, Washington, 30p.

use is limited to activities that do not result in commercial timber harvest or forest degradation'.

Additionality under the CFI is established using two broad tests, with ACCU's not available for:
1. Activities are required by law (regulatory additionality), or
2. Activities are common practice and already widely adopted.

A positive and a negative list provide specific guidance as to what activities can be considered additional. Native forest protection projects are currently not included in either list.

The methodology does not provide guidance on who is the responsible entity (presumably this is the landowner) or when the acceptable point for a decision to change land use can occur. For example, is a landowner who has recently purchased a property with a stated aim of protection from future timber harvesting eligible to apply for credits, even though their stated goal of land use excludes timber harvesting? More guidance is required on process to establish eligibility of the activity in order to be consistent with national and international requirements for additionality. This includes the status of land under voluntary conservation covenants.

Wider benefits from forests and wood product usage are not considered resulting in perverse outcomes

The carbon accounting focus of the proposed methodology is therefore too narrow and short-term. The methodology does not fully consider the benefits in reducing greenhouse gas emissions by sustainably managing specified areas of forests for timber production or using wood products to substitute for energy and greenhouse intensive products such as steel and concrete.

Consequently there may be perverse outcomes from such projects where proponents receive payment for reducing or ceasing harvesting, wood production decreases and there is greater use of substitutes that are more greenhouse emission intensive.

Socio-economic impacts not assessed

The stated intention of the CFI legislation in the Parliamentary Explanatory note[14] is to encourage and enable carbon abatement activities in a manner that ensures "that abatement projects do not have perverse or unintended impacts".

The social and economic consequences of the activities proposed in this methodology being implemented on a wide scale have not been assessed. Such activities are likely to have significant negative impacts on communities unless there are arrangements put in place to mitigate these consequences. In fact, the methodology seems to anticipate such outcomes (Section 6.2, pages 10-11) but proposes no arrangements for proponents to mitigate any adverse social or economic consequences. This contradicts the intention of the Act and is not consistent with the way such projects are being implemented internationally.

It is incumbent upon the Minister (section 56 of the Carbon Credit (CFI) Act, 2011) prior to the methodology being endorsed in regulation to consider whether there is a significant risk that activities will have a significant adverse impact on the availability of water, biodiversity conservation, employment *or the local community*.

[14] Parliament of Australia. Carbon Credits (Carbon Farming Initiative) Bill 2011. Explanatory Memoranda. http://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;query=Id%3A%22legislation%2Fems%2Fr4543_ems_1455bc0c-24d3-4d9b-8072-f85c0d28a7ad%22 Accessed 01/05/2012.

Claimed additional benefits are not supported by scientific evidence

The methodology suggests that the establishment of native forest protection projects can have the additional benefits of enhancing local biodiversity, diversifying landowners' income and maintaining aesthetic and recreational values of the forest. However, no scientific evidence is put forward to justify these benefits or tests specified to ensure that such outcomes are the result of future management.

Potential increased bushfire risk

If implemented, activities proposed in the methodology may increase regional and landscape level bushfire risk. In the methodology fire management is primarily provided for in relation to risks to carbon stocks, with no consideration for broader public and property safety and security. If the methodology results in exclusion of fire, this can also impact on forest health and biodiversity conservation values.

Specific comments

Section number: *[insert section number from methodology eg 3.1]*	**Comments**
2	The developers have not sought expert review of the draft methodology and consider this not applicable. Given that this methodology is based on one written for tropical forests (not in Australia), that has been substantially revised for use in an Australia forest/forest industry (and climate change) policy setting the DOIC should insist that expert review is provided.
3.2	This section is a particular concern for forest types where there is limited knowledge of growth rates (particularly low productivity forests), or where they are subject to complex disturbance regimes such as the combination of selective harvesting and management for grazing. As a generic carbon estimation model, FULLCAM is not a substitute for a detailed local forest inventory or growth models that are required to provide standing volumes and timber product classes and assessment of carbon dynamics under different forest management and harvesting regimes. These can then be used as a basis for validating FULCAM estimates.
3.2	The equations for illegal harvesting have been removed. This may be reasonable for Australia where illegal harvesting is not generally a problem. However, activities supported by this methodology may exacerbate illegal harvesting outside Australia.
3.2	The proposal states that "*the equations accounting for leakage will be revised*" (page 4). This is a major gap and needs to be rectified and made available for public comment before the method is approved.
3.2	The removal of the uncertainty equations is not scientifically justifiable nor acceptable. The proposal claims that the key source of uncertainty (sampling error) has been identified and addressed during the stratification of the project area. Sampling error is not the only source of error. Stratification can potentially reduce the error of the sampling estimate, but it will not eliminate it, and it still should be calculated and documented. There are likely to be additional sources of assessment error or uncertainty such as those involved with the application of the FULLCAM model (particularly the dynamics of poorly understood carbon pools such as understorey and woody debris) and the extent of implementation of different types of management practices.
3.2	The equations for risk have been removed. There are probably serious risks from fire but they don't seem to be adequately handled in the proposed methodology.

3	There are other VCS modules that the methodology would benefit from for the sake of completeness – see reference to Section 7 - emissions sources.
4	Are only Commercial timber harvests excluded from the project activity? Can non-commercial thinning (thinning where trees are left on site), or removal of timber for local construction or firewood continue?
4	The Glossary should include definitions of timber harvesting, clarifying the types of operations that are included or excluded - selective, clearfall etc. For example Section 5.1 starts with the sentence "This methodology applies to the establishment of projects to protect native forests through the prevention of clearing and clear-felling harvesting activities", but the second dot point under 5.2 states "Forest management in the baseline scenario must be planned timber harvest *or* clearfell for land use conversion". Is selective harvesting an eligible baseline activity or not? NB – the original VCS methodology included: clearfelling, specie/stratum-selective harvesting and area-selective harvesting.
4	The project area is narrowly defined as the area of land available for harvesting in the timber harvesting plan (THP). It is a complex and costly exercise to do a THP and unlikely to be approved by a government department (as required under this methodology) if it is not actually going to be a real harvest. There needs to be some other form of assessment – probably simpler and more specifically designed for greenhouse gas projects that should be developed for the purposes of this methodology.
5	Section 5.1 makes generalised statements without referring to relevant and supporting scientific literature, for example: "ongoing logging and/or conversion have significant consequences, causing substantial emissions from the logging process and the steady degradation or loss of carbon stocks in native forests." Such statement must be supported by scientifically rigorous sources. The methodology makes no reference to the types of land that are eligible, nor of how to account for other forest management factors that may be present in the baseline scenario and subsequently excluded from the project scenario – e.g. cattle grazing, firewood, silviculture, and which may influence carbon pools or forest growth. There is a diverse range of multiple-use combinations for native forests in Australia. The methodology is too simplistic to include many of them. If the methodology does not include specific activities or combinations of them, then it should be specifically excluded with statements such as (using an example from the savanna burning methodology): "Cattle may be present on the project area but cattle should not be introduced, nor should cattle stocking rates be materially increased, to reduce fuel loads and emissions from fire under this methodology". If the cessation of timber harvesting alters the overall management intent such that these other activities are subsequently excluded it is not clear how they should be accounted for. Will they require a separate methodology or module?
6.1	p9 states: As per the CFI applicability conditions, the project must demonstrate a baseline scenario or planned land use change (timber harvest or conversion). Sustainable timber harvesting with regeneration/replanting of native species is not land-use change. This is consistent with UNFCCC and IPCC guidelines which the CFI should also follow as far as possible. This text in the methodology needs to be rewritten deleting the words "timber harvest" and referring only to land use conversion from forest to some other land use.
6.1	A forest inventory is more likely to give estimates of volume per hectare, so suggest replacing "number of trees per hectare" with "volume per hectare".
6.1	See comments in section 4 in relation to the THP. Doing a full THP does not seem a practical or sensible option for the needs of this methodology.
6.1 and 6.2	Re-calculating the baseline scenario every 20 years sounds superficially reasonable but it will be a significant and expensive imposition on project managers.

	The last paragraph of this section make some recognition of this but in doing so seems to contradict section 6.2. These sections of the methodology need to be re-written to make it clearer how it will operate, to give landowners some security and to avoid undermining confidence in CFI credits. If there is an optimistic over-allocation of credits in the early years this could potentially divert investment from other activities with more reliable emission reduction benefits, such as afforestation on cleared land where credits are clearly additional.
7.1	It is unclear how fire is modelled in both scenarios? Is it treated the same in the baseline (with harvesting included) as the project (no harvesting)? There is increasing evidence from the USA that long term exclusion of fire from some forest types results in a progressive build-up of biomass and thus carbon, but then can also lead to losing all of that in a big conflagration[15]. The situation is not clear in all Australian forests although there is some evidence in forests in Western Australia that forest management including fuel reduction has reduced the frequency, spread and intensity of large wildfires. Various theories and are also around about the more frequent and lower intensity smaller patch burning by Aboriginal Australians that kept large areas of forest in a more open condition than post European occupation.
7.2	Emissions Sources and Sink (7.2): under the baseline scenario emissions from combustion of fossil fuels in vehicles, machinery and equipment are excluded on the basis that "Exclusion is conservative as emissions will be greater in the baseline scenario than in the project scenario." Yet these emissions can be substantial for commercial timber harvesting activities and thus represent a significant source of abatement that should be included to create complete accounting. Additionally there are well developed methods of accounting for them that should be considered (for example VCS modules or NGERS). Inclusion of CO2 from the burning of biomass is inconsistent with other methodologies in which it is assumed to be neutral over time. And, there is inconsistency within the methodology with respect to the treatment of CO2 gas - see comment on section 9.2. There is no differentiation between natural fire (wild fire) and planned fire, or recognition that a change in land management intent from timber harvesting to protection could alter the fire regime through a decrease in planned fire and/or an increase in the extent and/or intensity of wildfire.
8	Neutral language is preferred in this type of methodology. For example, use of the term 'threatened' in the section "Total project area, i.e. that area covered by native forests *threatened* by legal and planned timber harvest". How does a proponent justify the 'threat' of timber harvest?
9.1	It is unlikely that FullCAM will generate estimates that are within 5% of the field sampling volumes, which should be used as the primary source of information for establishing the baseline for both scenarios. The field data collection should ensure that sufficient data is collected to provide a reliable estimate of merchantable volume and standing carbon stocks, and then used as the inputs to run FullCAM for modelling future projections and scenarios. Also there is some mixing of merchantable volume and carbon stock in that section that should be fixed as they are not the same.
9.1	Equation 13 – see comments above for 7.1 about whether fire should be modelled differently for the baseline and project scenarios. Local conditions and history will affect this significantly, as will proposed management, so the assumption that the two

[15] North, M.P. and M.D. Hurteau. 2011. High-severity wildfire effects on carbon stocks and emissions in fuels treated and untreated forest. Forest Ecology and Management, 261:1115-1120.
Wiedinmyer, C. and M.D. Hurteau. 2010. Prescribed fire as a means of reducing forest carbon emissions in the western United States. Environmental Science and Technology, 44:1926-1932.
Hurteau, M. and M. North. 2009. Fuel treatment effects on tree-based forest carbon storage and emissions under modeled wildfire scenarios. Frontiers in Ecology and the Environment. 7:409-414.

	scenarios are the same is questionable.
9.1	Step 9.2.2.1 – Does FullCAM have a fire module? If so, why use IPCC which is presumably a lot simpler and not spatial?
9.2	9.2 - does not allow for commercial harvesting but makes no mention of removal of firewood – which is a common use of some live and dead wood. 9.2.2 with respect to disturbance, the methodology does not differentiate between planned fire and wildfire nor consider potential changes to fire regime under the baseline and project scenarios. Can reference areas be used to establish fire regimes under the baseline and under the project scenario – comparing fire in areas managed for timber harvest with that in 'protected forest? Section 9.2.2.1 mentions only methane but section 7 refers to CO2, CH4 and N20. Thus, there is inconsistency within the methodology and with other methodologies (e.g. savanna burning which does not include CO2).
9.3	Step 9.3.1.2 The approach to leakage is to be determined by DCCEE. Until this is determined the methodology cannot be properly assessed.
9.4	It may be true that there is no need to average for the effect of climatic variation but to justify it on the basis that "carbon stock does not drop below the previous amount credited, as growth is never negative" is a generalisation. Growth can be negative and C stocks can reduce, for example in Northern Australian savanna systems (refer Werner and Prior 2007[16]) including those that may be commercially harvested (e.g Darwin stringybark).
10.2	While the references given for good practice and forest inventory are good, why not use the Australian forest inventory guidelines? These are available through State forestry agencies, the National Forest Inventory Continental Forest Monitoring Framework guidelines and reports produced for the NCAS.
11.1	Step 11.1.3 – The sampling should also be used to validate the growth models applied in FULLCAM, and estimates in the baseline scenario revised if the growth models vary by more than 10%.

[16] Werner, P. A. and L. D. Prior (2007) 'Tree-piping termites and growth and survival of host trees in savannah woodland of north Australia' *Journal of Tropical Ecology* 23:611–622.