Senate Standing Committees on Environment and Communications

Submission on

Carbon Credits (Carbon Farming Initiative) Bill 2011

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1 INTRODUCTION

Degree Celsius is a Joint Venture model based on the 56 Regional NRM networks of Australia, enabling NRM activities of Australia to be aggregated for both regional and larger scale delivery of climate mitigation and abatement.

In Australia, agriculture, forestry and other land uses (AFOLU) could abate a significant proportion of Australia's emissions. As we are a nation of predominantly small land-holders, regional aggregation of AFOLU activities will be required, because of administrative complexity and transaction costs, to mitigate climate change successfully. These findings are reported in a forthcoming Earthscan book titled *Designing Agricultural Mitigation for Smallholders* (published by the international Climate Change Agriculture and Food Security project of the Consultative Group on International Agricultural Research and the FAO) in which our chapter *An Australian landscape-based approach: AFOLU mitigation for smallholders* appears.

From experience, and from comprehensive research including global best-practice approaches, we believe that, as currently proposed, the Carbon Farming Initiative will result in little uptake by landholders.

Globally, terrestrial carbon and greenhouse gases provide abatement opportunities second only to the energy sector. International scientific consensus is that it is not possible to avoid dangerous climate change without terrestrial carbon and other greenhouse gas abatement. Unfortunately, in this CFI Bill, Australia is proposing to follow precedents set by the Kyoto Protocol's Clean Development Mechanism and others which have not realized the potential of forestry and agriculture: afforestation and reforestation have been the least successful projects covered by the CDM. Only 1% of projects in the CDM are based on forestry, and developing these projects has proved time consuming and expensive due to the complicated technical and administrative rules including complex methodologies for baselines, additionality and leakage, and the issue of 'permanence'.

The World Bank in its 2009 report *10 Years of Experience in Carbon Finance* similarly has warned about the disproportionate focus on complex, conservative and restrictive methodologies and integrity standards at the expense of emission reductions and environmental outcomes. A major impediment to

abatement projects is the issue of permanence, deterring many from entering the carbon abatement market because ‘permanence’ has required commitments from landholders for too long into the future.

The voluntary market frameworks have been so restrictive that the first forestry projects have only just come onto the market in late 2010, and these, ironically, also focus on exotic trees (in Tanzania).

In Australia, regional landholders face an historic legacy of never having been rewarded for the avoided deforestation that Australia counts toward its Kyoto accounts, and could theoretically trade under the Kyoto Protocol. Farmers wore the cost of the abatement on behalf of Australian society, leading to significant resentment towards Government across Australia’s rural and remote areas. Despite regulatory tree clearing legislation, 13% of Australia’s annual emissions remain from land clearing, which is mainly regrowth (2005 figures). Reforestation, on the other hand, currently offsets only a small fraction of this.

Entrenched views persist and perceptions still exist in the community, including in government, that landholders and managers should not be paid for ecosystem services. Or, if paid then it should be made difficult for fear of landholders and managers receiving “money for jam” or windfall profits, on the wrongful assumption that landholders have a duty to freely provide these services to society.

Least cost abatement, by contrast, means that we should facilitate incentives to abate greenhouse gas emission through pragmatic solutions that reward landholders, and which unleashes the potential of Australia’s landscapes which have been estimated by CSIRO in their recently released Climate Change report to hold the potential to offset 20% or more of Australia’s emissions.

We therefore respectfully make this submission to the **Senate Standing Committee on Environment and Communications** on the Carbon Farming Initiative Bill 2011. The submission is made in the form of comments and suggested changes, and is referenced to the Bill as it stands.

We have not made comment where we consider that comments are not warranted or the issues are outside our scope.

2 INTEGRITY STANDARDS WITH A FOCUS ON PERMANENCE

Overview
The following summary comments relate to a number of sections of the Bill. They are further elaborated in the submission.

- The Australian Carbon Farming Initiative includes a proposal to set the period for retaining carbon sink forests at 100 years, with the argument that they are 'permanent' if retained for this period.
- A global review shows there has been little uptake of forest carbon projects, with onerous permanence rules such as the 100-year "rule" being one of the key hurdles for implementation.
- There is no ecological basis for 100 years 'permanence', and it is an arbitrary period not based on any technical criteria but determined by policy, or ideology.
- The CFI has also proposed crediting periods of 20 and 15 years for forest carbon sink offsets, which differs from the contract period (100 years), so farmers would be expected to retain the carbon sink forests for 100 years, but with guaranteed credits for only 20 or 15 years.
- Australia seems to be the only place in the world that is proposing to make the carbon sink forest contract period different from the crediting period.
- The preeminent global standard for forest offsets, the Voluntary Carbon Standard, and other Standards around the world, have now approached the issue by using a risk-based method of ensuring long-term sequestration, and contract length matching the crediting period.
- 73% of global buyers of forest carbon credits prefer the Voluntary Carbon Standard.
- The result of implementing a 100-year rule will be little uptake of the Carbon Farm Initiative, and significant foregone mitigation and adaptation opportunities, with high economic and environmental costs.
- The pre-emptive audit requirements are considered to be onerous, especially considering the other compliance requirements and costs of establishing projects.
- Care needs to be taken with respect to disenfranchising certain types of projects, especially bundling or aggregation projects, by allowing splitting of heterogeneous projects.
- The Bill has proposed to apply relaxed rules on additionality of projects, which we support, but allow for established projects to become non-additional if they become 'common practice' This change to established projects would disadvantage established projects.
- The requirement to obtain all regulatory approvals may present an onerous burden, and should be relaxed so that proponents can make declarations that all required approvals have been met.
- The benchmark sequestration level needs to be addressed, as the National Carbon Accounting Toolbox models a decrease in sequestered carbon for a few years after reforestation, so that projects would be immediately in breach of this section.

Appendix 1 contains a detailed analysis of the Issue of Permanence, and low uptake of the Carbon Farming Initiative: Australia is not following best-practice nor lessons from global forest carbon projects.

2.1 CARBON MAINTENANCE OBLIGATION – 100 YEARS

Review
Section 97 establishes a 'carbon maintenance obligation' which by the establishment of the relinquishment period of 100 years is a 100-year obligation (**Section 100**). The Explanatory Memorandum to the CFI Bill states in several parts (6.4, 6.27, 6.35) that 'Sequestration is generally regarded as permanent if it is maintained on a net basis for around 100 years'. This is not the case and is misleading, and there is no convention which establishes that 100 years is permanent. The Voluntary Carbon Standard allows a risk-based approach which allows a minimum of 20 years for a project, up to 100 years, with 20 years being 'considered the minimum acceptable AFOLU project crediting period for the buffer approach to serve as an effective non-permanence risk mitigation tool' (p17, *Voluntary Carbon Standard Guidance for Agriculture Forestry and other Land Use Projects 2008*).

The eligible offsets projects must be registered on title (**Section 39)** (the section states that the relevant land registration official may make entries in title registers, but there is no alternative), because the carbon maintenance obligation must run with the land. This causes problems if the 100 year permanence period is made obligatory, for three main reasons:

- Very few landowners or leaseholders will take up such a commitment when the returns are not guaranteed or reasonably expected, and 100 years is a very long time to expect such returns (is there another tradeable primary commodity which requires such a long forward commitment?), and if returns are not guaranteed, the value of the land will be decreased proportional to the area of land under the carbon maintenance obligation;
- The penalty for not maintaining the carbon sequestration project and not relinquishing the units, in terms of the relinquishment requirements specified in **Section 179,** are severe, at twice (200%) the current market value of the Australian carbon credit units, which will make most landholders very nervous about committing to 100 years for themselves, their descendants and future purchasers of the land; and
- The greater proportion of land in Australia is held under Crown lease or similar, most of which are term leases which are shorter, mostly much shorter than 100 years. In order to commit to a carbon maintenance obligation of 100 years, even if a leaseholder would want to, would require the relevant state or Territory government Minister (**Sections 27, 44 etc**.) to likewise commit to the obligation. We would anticipate that State and Territory governments would be reluctant to take on this obligation, and to pass it on to a subsequent leaseholder when there were likely to be no returns from the carbon maintenance project, diminishing the lease value of the land according to the proportion of the land under the maintenance obligation.

Crown Land, including leasehold land, presents a major difficulty in relation to a carbon offsets project, as under **Section 27 (4) (h) and (i)** the relevant State or Territory Minister must certify that the applicant has the applicable carbon sequestration right. The right must be noted on title as required under **Sections 39 and 40**, such as by a *profit a prendre* under titles acts, and the rights will have to be for the term of the project, which in the draft Bill is 100 years. As most leases are not perpetual, and as most are in the order of 30 years or less, each leaseholder who applies for the carbon rights will have to convince the Minister that the carbon sequestration rights should be assigned to the leaseholder, which also obliges the Minister and future leaseholders to a carbon maintenance obligation, as the Minister has an 'eligible interest' in the project area (**Section 27 (4)(k)**). This situation will present major obstacles to many, if not all leaseholders across the country, as there will be natural reluctance on the part of the Minister to commit to such an obligation.

Degree Celsius Submission
We argue strongly for flexibility and shorter contract and crediting periods of a minimum 20 years, because on the evidence from all the studies done on farmers' and other landholders' attitudes to long term contractual obligations, and from our own discussions with landholders, 100 years is a significant barrier to any contractual commitment, and in particular to the commitment to establishing and maintaining a carbon sink forest. This reluctance to commit to 100 years, or even shorter periods of say 50 years, is more pronounced when there is no financial commitment for the 100 year period, which is the case with the CFI. Very few landholders will be prepared to commit to 100 year carbon maintenance obligations, when those obligations must be established on the title to the land, in other words 'run with the land', as is stated in **Section 43** of the CFI Bill and in the **Explanatory Memorandum at 3.43**.

2.2 CREDITING PERIOD

Review
Section 68 refers to two types of eligible offsets projects – native forests and not native forests, which allow crediting periods of 20 years and 7 years respectively. Under the Voluntary Carbon Standards, the most popular carbon forest sequestration trading standard in the world (73% of trade), the crediting period must be the same as the project lifetime - that is, if the crediting period is 20 years, the project

lifetime (equivalent to the proposed carbon maintenance obligation) must also be 20 years. This makes sense, because the whole shape of the carbon sequestration, offsets and emissions world will have changed substantially over the next 20 years, as they have changed substantially over the previous 20 years. Indeed, the carbon trading system was not envisaged 20 years ago, and the UNFCCC was not formed until 1994. The first climate mitigation actions commenced after then, little more than a decade ago.

The result of the different time frames will be that farmers and other landholders who commit to carbon sequestration for 100 years would be guaranteed a crediting period of 20 years for avoided deforestation and only 15 years for reforestation projects. There would be very few landholders who would be prepared to commit to carbon maintenance obligations for 100 years, or any long period if they were not also guaranteed financial returns for the same period, as they still need to make an income from the land. If a carbon maintenance obligation prevents other land uses, such as grazing, farming, timber-cutting, then they would not have guaranteed income from that land after the first crediting period.

The **Explanatory Memo Para 9.36** states that the crediting period for reforestation projects will be longer at 15 years, based on the assumption that this period is justified because estimation methods are well-established. This is misleading. If by the 'estimation methods' is meant the National Carbon Accounting Toolbox, then there are many deficiencies of the modelling in the toolbox for many regions of Australia. In the Wet Tropics, for instance, the modelling underestimates the carbon sequestered by at least 15% (Degree Celsius unpublished data). The NCAT also incorrectly estimates soil carbon sequestration, showing a continuous decline over 100 years under a reforestation project. From the scientific literature on soil carbon sequestration, this is simply not correct, as soil carbon starts to accumulate in the soil over a period of time after reforestation, usually less than a decade.

Part 9 Division 2, Sections 125, 126 and 127 (see also Exp. Memo. 5.98, 5.99, 5.100, 9.35) determine that during a crediting period a methodology which applied at the beginning of the crediting period and expires or is revoked during the crediting period will continue to apply, unless the project proponent obtains the Administrator's consent to apply a new or revised methodology. **Section 128 (Exp. Memo. 5.100)** allows for a project proponent to apply to change or apply a new methodology during a crediting period. This new methodology may apply from the end of the previous reporting period. This seems to be a reasonable consideration which would make the projects work for the best advantage of landholders and carbon sequestration efforts.

Degree Celsius Submission
We urge that the Crediting Period be the same as the Carbon Maintenance Obligation (Project Lifetime).

2.3 AUDIT REPORT REQUIREMENTS FOR APPLICATIONS AND REPORTING

Review
Auditing requirements proposed in the CFI Bill are onerous. They would be required at two stages of a project – the *application* for a certificate of entitlement, and the *application* for a declaration of an eligible offsets project, which includes the reporting stage.

This burden of multiple pre-emptive auditing brings in a number of problems, including significant transaction costs, availability of auditors generally, the availability of technically competent auditors, and time-frames.

Part 2, Division 3, Section 13 Certificate of Entitlement – an application for certificate of entitlement must be accompanied by a prescribed audit report prepared by a registered greenhouse and energy auditor who has been appointed as an audit team leader for the purpose.

The *National Greenhouse and Energy Reporting Act 2007*, allows for an audit to be done if the Greenhouse and Energy Data Officer has reasonable grounds to suspect that a corporation has contravened or is contravening the Act or regulations. In the Carbon Farming Initiative Bill 2011,

however, an audit and a prescribed audit report under **Section 76** are required to be presented with the application for a certificate of entitlement for issue of Australian carbon credit units in respect of offsets projects, after the end of each reporting period. This places an onerous burden on *recognised offsets entities* whether individuals or corporations, both in terms of costs and of the work required to obtain the carbon credit units. This requirement would mean that if a reporting period was annual, an audit report would be required annually, whereas if it was every 5 years it would be required every 5 years. Costs of auditing are significant and would place most small-scale and many medium-scale projects in jeopardy. Audits normally are conducted to verify compliance with legislation or other rules, or if a breach is suspected, but not automatically applied – they are usually required at the discretion of regulators or administrators if a government requirement. It is unreasonable to expect an entity to obtain an audit simply to submit an application for the certificates, especially when the application will require a significant amount of information.

Part 3, Div2, Section 22 and 23 - the application for declaration of an eligible offsets project, an audit report is again required 'if the project is of a kind specified in the regulations'. As the regulations have not yet been prepared nor enacted, this section means that project proponents could be burdened with significant establishment and transaction costs before the project is even declared to be eligible.

While it is recognized that under **Section 13 (2)**, the regulations may provide that a project of a kind specified in the regulations is exempt from the prescribed audit and audit report, this is no comfort as the regulations have not yet been prepared nor approved. The discretion of the Administrator should be the other way – they should have the discretion to require an audit (as is allowed under **Section 214**), not be dependent on unspecified regulations to make a project exempt. While the **Explanatory Memo Para 9.17**, states that the Government 'intends to exempt uncomplicated low-risk offsets projects from the requirement to include an audit report with each offsets report', this is subject to uncertainties about what form the exemption may take, and could result in very unsatisfactory outcomes for many projects, even those of a medium to large scale which might be bundling projects, because they are often complicated. Because of the complications of bundling, the transaction costs are inherently high. For individuals with small offsets projects, the auditing requirements would be completely cost-prohibitive.

In our experience with auditing of a regional carbon sequestration and abatement project, the costs of the audit, the availability and technical competence of the auditors on the team, and the time it took for the preparation of the audit, the audit follow-up and the final audit report for a single aggregated project, were all significant.

Sections 9.18 and 9.46 states that the Administrator will take a light-handed approach to documentation – why cannot this approach be taken for applications as well?

Degree Celsius Submission

We submit that the Bill be amended to conform with the *National Greenhouse and Energy Reporting Act 2007*, allowing that the regulator may require an audit if they suspect that an offence has been committed, or that the carbon sequestration claims are valid, rather than a pre-emptive impediment to establishing projects.

We submit also that the regulations should allow for a 'light-handed approach' to auditing requirements, especially considering the significant establishment and transaction costs associated with all offsets and mitigation projects. If the Department finds later that auditing and reporting requirements need to be tightened, then they can be tightened through amended regulations.

We submit also that the proponents, particularly aggregators, should be responsible and be held responsible for the reporting probity, and that in most cases they will be able to verify and validate the reports, through mechanisms such as statutory declarations (which are allowed for in the CFI Bill), the *Corporations Act 2001*, and through the penalties for false declarations already identified in the CFI Bill.

Review

Non-compliance audit

Section 214 allows for an audit of an eligible offsets project, and if the audit demonstrates that there is no evidence of non-compliance (**Section 214 (8) (c)**) then the person can make a claim to the Administrator for reimbursement of the costs of the audit. This is unreasonable as in most, if not all audits, non-compliance is not uncommon, but usually of the immaterial sense, where the non-compliance is trivial, insubstantial or of a minor nature.

Degree Celsius Submission

This section should be changed to allow minor non-compliances, that is to make the non-compliance condition (under Section214 (8)(c)) one of a material, substantial or non-trivial nature.

2.4 ELIGIBLE OFFSETS PROJECTS - SPLITTING

Review

Section 26 – the Administrator may split an application if they determine that the application relates to 2 or more eligible offsets projects. This could severely jeopardise bundled projects which may intend to bundle or aggregate many small offsets projects across biogeographical regions and across activities, each of which will have differences which could be construed to be different offsets projects for the purposes of this section. A project from an aggregator's point of view may include native forest and non-forest activities and offsetting and mitigation activities, especially where a single buyer of credits requires a large amount of credits, and the regionally bundled similar activities can together provide only part of the big amount.

Degree Celsius Submission

Protection of the aggregation or bundled approach for similar projects needs to be clarified and made explicit in the legislation.

2.5 ADDITIONALITY

Review

The CFI Consultation paper on p7 observes that some projects may cease to be additional during their lifetime because the project activity may become common practice. This is an unreasonable situation for those who started early to change these practices, because they took the initiative against the common trend, they committed to the project when it was more expensive to do so, and they were required to commit to the 'permanence rule' of 100 years. It is highly unlikely that it would become 'common practice' to commit to 100 years without legislation requiring this, and there is not likely to ever be any legislation that would force landholders to do this, for instance, to plant a forest.

Section 41 proposes to regulate offsets projects so that they may automatically pass an additionality test if certain conditions apply (such as not being common practice). We support this approach to relaxing the very onerous additionality tests used in other situations, where if, for instance a forest was planted for environmental outcomes and was funded by a grant from a government, it may not pass the test. This would certainly disadvantage many small holders both now and in the future. Such projects should be allowed to pass the additionality test because they are adding to the offsets. The alternative could be (as recent cases have proven) that farmers and other landholders might clear their planted forests because they are not benefitting from them, or for other perverse reasons.

Degree Celsius Submission

We urge the government to make the additionality test easy for most forest activities, whether they be avoided deforestation or reforestation projects, and for other mitigation projects. Proving additionality has been a major impediment world-wide, especially in forest projects.

2.6 REGULATORY APPROVALS

Review
We have concerns about the intention and outcomes of the requirement to obtain all regulatory approvals to the satisfaction of the Administrator (**Section 28 of CFI Bill, Para 3.28 of Exp. Memo**). As these are unspecified here, there is a risk that it will be difficult if not impossible to *demonstrate* that all regulatory approvals have been obtained from all Commonwealth, state and local government authorities. Most authorities will have no means of issuing certificates or notices for these approvals, so proponents will have great difficulty demonstrating that approvals have been obtained. The requirement could place an onerous burden on proponents.

Degree Celsius Submission
A simpler mechanism to enable projects to demonstrate that approvals have been obtained needs to be identified.

2.7 BENCHMARK SEQUESTRATION LEVEL

Review
A technical problem arises with the benchmark sequestration level determined under **Section 97 (8),(9) and (10)**, where the benchmark sequestration level is established using the National Carbon Accounting Toolbox. According to the modelling in the Toolbox, which is probably faulty, the total carbon sequestered in a reforestation project actually decreases initially below the carbon stored at the beginning of the project, and does not return to positive sequestration until about the 3rd year or later in some cases. Compliance with this provision may be impossible in these cases.

Degree Celsius Submission
The CFI should reflect the possibility of a reduction below the benchmark sequestration level in certain circumstances, or the NCAT should be corrected.

3 TRANSITION TO AN EMERGING ETS

Review
It is only through an emissions trading scheme that the full potential of Australia's landscapes, and the innovation of its landholders and managers can be unleashed to drive down Australia's emissions trajectory.

The establishment of the Carbon Farming Initiative and NCOS trading in the voluntary market is a temporary solution and any contract established within this framework should be able to be rolled into an ETS at the price established under the ETS that embraces the full suite of agriculture, forestry and landuse opportunities for abatement.

The establishment of the Carbon Farming Initiative trading in the voluntary market with no policy for transitional arrangements to any forthcoming emissions trading scheme or other domestic carbon pricing mechanism will result in continued uncertainty. Prices for a tonne of CO_2-equivalent in the international voluntary markets are considerably lower than those that will be established under a domestic mandatory scheme. Export of compliance permits should be allowed in the first instance, but it may be wise to ensure that there are restrictions on export, subject to consideration of the Multi-party Climate Change Committee and future legislation regarding carbon pricing.

Given the substantial transaction costs and impediments now implicit in the design of the CFI, there will likely be little uptake or incentive, especially by small landholders, to enter into contracts established within this framework, particularly in light of an impending price on carbon being established in the near future anyway. Also not recognised is the significant role that a low carbon economy can play in regional development. The carbon price and amount of carbon revenues are the main factors that will stimulate the generation of offsets and carbon as an alternative commodity in regional Australia.

Degree Celsius Submission
Provision should be made in the Carbon Farming Initiative Bill that transitional arrangements to an Emissions Trading Scheme will be made and that any contract established within the CFI framework will be able to be rolled into an ETS at the price established under the ETS that embraces the full suite of agriculture, forestry and landuse opportunities for abatement

Yours sincerely

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Appendix 1

The Issue of Permanence, and low uptake of the Carbon Farming Initiative: Australia is not following best-practice nor lessons from global forest carbon projects

The Issue of Permanence, and low uptake of the Carbon Farming Initiative: Australia is not following best-practice nor lessons from global forest carbon projects

Briefing Paper (310311)

Summary

- The Australian Carbon Farming Initiative includes a proposal to set the period for retaining carbon sink forests at 100 years, with the argument that they are 'permanent' if retained for this period.
- Globally there has been little uptake of forest carbon projects, with onerous permanence rules such as the 100-year "rule" being one of the key hurdles for implementation.
- There is no ecological basis for 100 years 'permanence', and it is an arbitrary period not based on any technical criteria but determined by policy, or ideology.
- The CFI have also proposed a crediting period (15 years) for forest carbon sink offsets which differs from the contract period (100 years) so farmers would be expected to retain the carbon sink forests for 100 years, but with guaranteed credits for only 15 years.
- Australia seems to be the only place in the world that is proposing to make the carbon sink forest contract period different from the crediting period.
- The preeminent global standard for forest offsets, the Voluntary Carbon Standard, and other Standards around the world, have now approached the issue by using a risk-based method of ensuring long-term sequestration, and contract length matching the crediting period.
- 73% of global buyers of forest carbon credits prefer the Voluntary Carbon Standard.
- The result of implementing a 100-year rule will be little uptake of the Carbon Farm Initiative, and significant foregone mitigation and adaptation opportunities, with high economic and environmental costs.

Introduction

Australia is proposing to use the 100-year permanence 'rule' for forest carbon projects under the Carbon Farm Initiative despite the global evidence that such a rule will result in little uptake. Other approaches, such as calculating the risk of reversal, are used by the Voluntary Carbon Standard, the preeminent global standard for offsets. This Standard is preferred by 73% of forest carbon purchasers. The VCS uses a risk-based approach, which has scientific credibility (compared to an arbitrary 100 year rule), as well as market acceptance. This briefing paper examines the forest carbon market, queries the scientific and policy foundation of the 100-year rule, and makes a case that implementing such a rule will potentially result in perverse outcomes that will have the reverse outcome of the result intended.

Permanence and lessons from global forest carbon projects

Worldwide, the complexity of rules and high transaction costs has resulted in little uptake of forest carbon projects. In particular, the issue of permanence has been one of the key hurdles for implementation of forest carbon projects (Zhu *et al.* 2010).

The complexity of the Clean Development Mechanism (CDM) of the Kyoto Protocol and its significant transaction costs is a clear example. In particular the CDM deals with permanence by offering temporary credits, which have expiry dates and must be replaced. The resulting outcome was a dramatic reduction in the price of forest carbon credits and a loss of interest by buyers: the CDM has only 21 registered afforestation and reforestation projects around the world. This is 0.6% of the all CDM projects, 0.02% of total volume of carbon abated (http://cdm.unfccc.int/Statistics/Registration/RegisteredProjByScopePieChart.html) and 2% of the global forest carbon market (Hamilton et *al.* 2010).

Other rigorous carbon standards such as the Voluntary Carbon Standard and the American Carbon Registry have approached permanence by estimating the risk-of-reversal of the carbon sequestered. This risk-based approach estimates the risk of carbon sequestered being released again. A risk buffer, appropriate to the project is generated that compensates for future losses. The result is permanent, fully eligible and tradable carbon that is part of a regular carbon market. Nearly three quarters of the world's buyers of forest carbon prefer the VCS (Ecosecurities 2010) because it provides carbon of high integrity that can be traded.

That this approach has met with comparative market success is evidenced by nearly half of global forest carbon credits being credited under the VCS: about 116Mt CO_2-e (http://www.forestcarbonportal.com/projects), compared to a projected 2Mt CO_2-e by 2012 under the CDM (Hamilton, 2009).

The American Climate Action Reserve also uses the 100 years permanence rule but projects so far have verified about 2.5Mt CO_2-e of forest carbon, all of which have involved the purchase of land by conservation organizations (about three properties). The CAR at least offers a crediting period of up to 100 years to match the permanence period.

What would be the uptake of the CFI under the 100-year permanence rule

Our consultation with over 100 rural landholders in the wet tropics natural resource management (NRM) region makes it clear that very few, if any, would consider 100 years commitments to 'lock up' their land for non-productive purposes. This is particularly the case given that the crediting period suggested by the CFI is for a much shorter period of 15 years with no guarantee of returns after the initial return period.

A study undertaken for the Fitzroy Basin Association in 2009 (Gowen, 2009), focusing on landholders of central Queensland's brigalow forest, found that longer contract lengths, presented as 20 years versus committing to a 50 year carbon sequestration commitment (100 years was not mooted), had a significant effect on landholders' willingness to participate with few likely to participate with long contract lengths.

In a detailed study of farmers' attitudes to carbon farming activities in the USA, it was found that less than 2% of family forest owners in the USA, which comprise 35% of forests in the USA, were prepared to enter into conservation easements (of 100 years) to protect carbon sequestration forests (Charnley et al., 2010).

Modeling of contract length of carbon sequestration and environmental outcomes shows that while long contracts may increase the environmental benefits from one

landowner, the overall result is poor because few landholders are prepared to participate (Ando and Chen, 2011). Higher payments would be required for landholders to become involved; in the case of the central Queensland landholders, prices over \$70/tCO_2-e could attract a significant proportion of farmers, something that the Carbon Farming Initiative cannot deliver.

Both the National Farmers Federation and the Forestry Industry council (A3P) have criticized the 100-year rule as militating against serious uptake of the CFI (http://www.blakedawson.com/Templates/Publications/x_article_content_page.aspx?id=61489).

Where did the 100-year permanence rule come from and what is its validity?

It is difficult to discover the basis for the 100-year permanence rule. The Intergovernmental Panel on Climate Change (2000) calculated the Global Warming Potential of greenhouse gases (GHGs) using an *arbitrary* 100 years as a basis for comparison. Equally, the IPCC (2000) also discussed methodologies that compare the differences between current atmospheric concentrations of CO_2 and pre-industrial concentrations, deriving carbon storage periods in the atmosphere (permanence) of 42-50 years.

An examination of the scientific literature suggests that there is no ecological basis for 100 years 'permanence', and it is considered to be an arbitrary period not based on any technical criteria but determined by policy (Chomitz, 2000; Cacho et al., 2003; Wilman and Mahendrarajah, 2002).

The sheer practicality of envisaging 100-year contracts also needs to be questioned. One hundred years ago transport was mainly by horse and carriage, with the first Model T Ford built in 1909. Aviation was in its infancy, and electricity networks were a thing of the future. Ross Garnaut, in his latest report, was not prepared to project economic modeling beyond 80 years (Garnaut, 2011).

Landscape resilience is an unlikely outcome of the 100-year permanence rule

We recognize that the longer a forest is retained, the greater the ecological benefit, but long-term contracts of 100 years or longer will result in poor uptake and therefore poor outcomes in terms of forest sequestration. Time itself has a value in mitigating the effects of carbon pollution on climate change, and there is a strong case for enabling shorter-term commitment periods for landholders. Postponing the impacts of climate change such as catastrophic cyclones, droughts and floods for even a few years represents a permanent prevention of all the damages that would have occurred over those years. Allowing short-term contracts also buys time while the world moves to a carbon neutral footing (Chomitz, 2000; Cacho et al., 2003).

Surely the goal of the CFI is to promote wide participation to achieve real, fast and significant emissions reductions. Permanence is more likely under a situation of wide participation (Zhu *et al.* 2010) where there is at least a chance of bringing about long-term change. Experience in the USA shows that many landholders choose to renew their conservation contracts once they expire (Ando and Chen, 2011).

While we have focused on the role of forests in abating of GHGs, their role in building landscape resilience is of equal importance. Nearly 90% of forest carbon buyers preferred carbon credits to have additional community and biodiversity benefits (Ecosecurities 2010). The Convention on Biological Diversity has recognized that 'resilience depends on the availability of a large pool of options for reacting and adapting to environmental changes such as climate change' (Convention on Biological Diversity, 2011). In the agricultural landscapes of Australia, this large pool of options

through carbon sink forests is possible only if uptake is substantial. Spreading the risk through a large pool of shorter carbon sequestration forests, rather than through a small pool of long-term contracts, is likely to produce better policy outcomes and greater resilience across the landscape (Convention on Biological Diversity, 2011).

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