

Public submission

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Topic 1. Sustainability of current and future forestry operations in NSW

See attachments.

A constructive way forward for forests in NSW can deliver the following outcomes:

- A strongly positive contribution to the mitigation of climate change
- Increased capacity to adapt to climate change impacts
- Protection and enhancement of biodiversity
- Regeneration and protection of water catchments, and forested and agricultural landscapes
- A net positive contribution to secure, skilled, socially useful employment
- Opportunities for cultural reconciliation through caring for country together
- Diverse opportunities for investment in sustainable wealth creation
- A wider range of value-adding industries based on sustainable timber production

At the national level the Albanese Labor Government has provided a lead towards the sustainable management of natural resources in its Nature Positive Plan. This policy document, responding to the Samuel Review of the EPBC Act, recognises that sustainability can only be achieved when regeneration adequately balances resource use, and also redresses past over-exploitation and degradation of natural resources.

According to the Nature Positive Plan, plans for regeneration of our natural environment will be developed at a regional/bioregional level. These are intended to guide all Commonwealth NRM investments, and those the Commonwealth can influence. It is to be hoped that private investment in environmental repair, for example through carbon markets and biodiversity markets, will be similarly targeted at identified regional environmental priorities.

Following this national lead, solutions to forest disputes in NSW are not to be found within the disputed forests, but in them and their broad landscape context, and will result from a range of activities including:

- Elaboration of a supportive policy and program framework for regional environmental regeneration including timber plantation development, based on the Nature Positive Plan
- Best practice ecological analysis and modelling at catchment to national scales, to support biodiversity conservation in the long term, including taking climate change impacts into account
- Community-led and agency-supported (bio)regional planning for sustainable (regenerative) natural resource management, while protecting productive agricultural landscapes
- Development (and simplification) of rigorous methodologies for the full range of desirable eligible project types for environmental services markets
- Analysis of environmental services markets project types to determine levels of public subsidy required to make public-good project types competitive for commercial funding
- An industry development package for environmental regeneration businesses
- Developing training, career progression and industrial relations standards and frameworks to support environmental workers to undertake regeneration works at scale, fire preparedness and management including cultural burning, and natural disaster response
- Structural adjustment assistance for the timber industry to enable higher value-adding of a wider range of products from a declining native forest log yield and increasing planted forest/small log yield, over time
- Public/private construction of new visitor facilities and recreation infrastructure in public forests
- Supporting engagement of Aboriginal people in caring for country and their participation in all the activities listed above



**DESIGNING MARKETS
TO OPTIMISE
ENVIRONMENTAL
BENEFITS**

The Carbon Store Pty Ltd

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Director



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Main points

1. The Samuel Report on the EPBC Act, and the Nature Positive Plan, place great weight on regional planning to direct government and private resources to priority environmental issues and locations. However, neither the existing arrangements under the Carbon Farming Initiative legislation (including changes to the ERF recommended by the Chubb Review) nor the draft Nature Repair Market Bill contemplate either restriction or incentive for project approval based on consistency with approved or accredited regional plans.
2. An initial tranche of Regional Plans under the new EPBC arrangements is scheduled for completion by 2028.
3. There are current regional planning processes in 56 Natural Resource Management regions. These have provided the framework for delivery of the major components of national landcare programs.
4. There is currently no process contemplated, at least publicly, to incorporate existing regional NRM plans into new regional plans under the revamped EPBC, or any transitional arrangements.
5. The approach that landscape carbon projects do not need to provide co-benefits is fraught and could bring unintended and negative consequences to regional communities, rural industries and the environment. Resource allocation to such projects cannot be left to be determined by financial return on investment calculations alone. There is a need to ensure a basic level of environmental and social benefit that only consideration at a regional level can ensure.
6. Biodiversity certificates would be most useful in providing incentive for investment that would otherwise be uneconomic, rather than providing windfall profits to carbon projects that would go ahead anyway.
7. Carbon Rights Agreements and Conservation Covenants provide a means to bind all future owners of land to the changed management practices on the land that yield environmental benefits and credits. This ability to enforce the changed management over extended timeframes is what makes the difference between environmental credits and environmental “junk bonds”.
8. “Permanence” periods of twenty five years are manifestly inadequate for either carbon sequestration or biodiversity conservation, especially where these are expressed as the length of time over which a project must be conducted, rather than in terms of the durability of the benefits created.

In short, the paper addresses the need to drive sustained carbon storage and biodiversity conservation with vegetation, land and water management which is ecologically, economically and socially sustainable.

Sustained carbon storage and sustainable natural resource management

Providing a financial incentive for storage of atmospheric carbon in vegetation and soils is a driver for increase in biomass in the landscape. Providing financial incentives for the protection and enhancement of biodiversity will generally benefit carbon storage in addition to the primary biodiversity benefits. Incentives for catchment protection, sustainable land and agricultural management, sustainable forest management, and risk management against fire, drought and flood can also result from the operation of markets for environmental services if these are properly designed and regulated.

However, markets are primarily driven by the need for return on investment. Investment will flow to where costs, including opportunity costs, are lowest and returns are highest. An adequate policy and regulatory framework is required to harness the drivers provided by markets for environmental services to maximise, and optimise between, the various benefits referred to above. The Samuels review of the EPBC Act, and the Government's response, identify regional plans as fundamental to underpin action to regenerate and repair our environment.

There is a tendency in current policy discussions to see storage of carbon in vegetation and soils as a separate activity to conserving biodiversity or the creation of other environmental benefits and that it is desirable but not necessary for carbon project outcomes to align with other environmental imperatives. This paper questions that proposition. It may be that it has already led to perverse outcomes, or that it may do in the future.

For example, some authors argue that regrowth management projects have moved into areas where the opportunity cost imposed by de-stocking is lowest, but where the accumulation and maintenance of carbon stocks may also be most difficult to sustain over the long term. It could also be that projects with higher environmental value will be "crowded out" by the capital demands of carbon projects with lower costs and higher returns on investment.

An alternative policy position is that the duration of carbon storage is important as well as the quantum, and that durable carbon storage is most likely to result from natural resource management which is optimal in attaining the widest range of environmental, economic, and social benefits.

The market for carbon abatement is a compliance market. It is global in reach, it is relatively mature and the scale of cash flows mobilised by it now and in the near future it will likely dwarf those mobilised by a voluntary market for biodiversity certificates. The carbon price in Australia is already at multiples of the value required to compensate landowners for production lost through avoided deforestation and managing regrowth in woodlands and rangelands. On its present trajectory it will soon be recognised as adequate to drive reforestation by planting and intensive natural regeneration, at scale.

It is vital that this strong driver for increase in biomass in the landscape is constrained through a nuanced policy, regulatory and planning framework that results in the right biomass in the right place for the right reason. Markets will then drive investment to the lowest cost and highest return opportunities within this framework. Markets for other environmental services should provide additional financial resources to projects with greater environmental benefits and higher costs, and not additional revenue to carbon projects that would go ahead anyway.

There has yet to be an adequate assessment of the social and economic impacts of large areas of former grazing land being managed back to forest, or where this should occur, or issues that may arise relating to management of fire, or feral animals and other pest species, or impacts on regional communities with economies based on traditional land uses. The risk of unfavourable side-effects, or ephemeral carbon storage, will be greater the higher the price of carbon becomes and the longer it operates as a financial driver without a planned approach at regional and landscape level.

It may be a good thing for Australia's rangelands and woodlands to be largely retired from grazing in favour of acting as a carbon sink, and this is a likely outcome where the returns from carbon sequestration dramatically outweigh those from cattle grazing. However, such changes should be undertaken with good information of all the implications and in consultation with regional and other stakeholders.

As will be seen in the following discussion of current policy development processes and reviews, there is broad acknowledgement that repair of our environment should be guided by regional plans that are developed by and for regions, to meet national environmental priorities. However, the first stage in development of new regional plans to meet the needs of the Environmental Protection and Biodiversity Act is set to be finalised in 2028.

Fortunately, considerable resources have already been allocated by governments over many years to develop catchment and bioregional plans for sustainable natural resource management. Such plans have generally considered the need to protect good agricultural and pastoral land, to enhance its productivity wherever possible, and to meet multiple objectives in relation to biodiversity conservation, catchment protection, weed and erosion control, salinity abatement etc.

Legislation underpinning the ERF currently requires project proponents to provide a declaration whether their project plan is consistent with an approved NRM Plan or not. This is to give carbon credit buyers the option of paying a premium for credits in accordance with such a plan, if they wish.

A framework for the regulation of a voluntary biodiversity market creates the opportunity to “stack” a biodiversity credit or certificate on top of the carbon credit. The degree to which this will lead to optimal achievement of national environmental goals is entirely debatable, and it is a debate we need to have. Arguably, integration of environmental markets for carbon, biodiversity and other values through regional plans will optimise the range of benefits.

Until new regional plans under a National Environmental Standard are developed, as recommended by Samuels, it is suggested that where environmental market projects cannot demonstrate consistency with best-available existing regional NRM plans, they should be the subject of additional assessment. This could include assessment by Commonwealth officials including those developing the National Environmental Standard for the new regional plans.

The Samuels Review of the EPBC Act

Sustainability is generally defined as the wise use, conservation, and regeneration of resources such that their enjoyment by future generations is not compromised. The Samuels Review of the EPBC Act, and the Albanese government’s response to it, reflect awareness that sustainable development is possible only when regeneration and repair of our natural environment balances resource use¹. Given past exploitative practices, this implies that for the foreseeable future, regeneration and repair of our environment must more than balance resource use.

The Samuels Review recommends that the regeneration and repair of the environment should be guided by national priorities and nationally accredited regional plans.

Specifically, in the Key Points for Chapter 8 on Planning and Restoration, Samuels says:

“Reversing this unsustainable trajectory will require planning to manage the environment on a national or regional (landscape) scale, as well as broad scale investment in restoration. To do this effectively and efficiently, a fundamental shift is required – from a transaction-based approach to one that is centred on effective and adaptive planning.

The regulatory levers of government, including offsets, should align with the priorities of plans. However, immediate change is required to the current EPBC Act environmental offsets policy to ensure that offsets do not continue to contribute towards environmental decline.

The scale of investment required to enable future development to be sustainable means that environmental restoration cannot be delivered solely by direct government investment.

The EPBC Act can provide certainty for investment in offsets and identify matters of national environmental significance in need of protection and restoration. But outside of the Act, more work is needed to recognise and halt the degradation of Australia’s ‘natural capital’.

¹ Past discourse regarding environmental issues has generally taken place between the poles of resource use and conservation. Inevitable compromise has left us always short of sustainable management.

More avenues for investment in restoration and sustainable land management will ‘grow the pie’ to improve the overall state of the environment. This will enable Australia to accommodate future development in a sustainable way.

The key reforms recommended by the Review are:

- *Strategic national plans for ‘big-ticket’, nationally-pervasive issues to guide the national response and enable action and investment by all parties.*
- *Regional plans that support the management of the environment at the landscape scale. These plans should be consistent with the National Environmental Standards and developed in accordance with quality planning principles.*
- *Immediate improvements should be made to the offsets policy ahead of more fundamental legislative change.*
- *The Commonwealth should formally examine and publicly report on the feasibility (costs and benefits) of an investment and research organisation and the suite of measures required to deliver environmental restoration*

The Samuels Report also says in relation to carbon markets as drivers for environmental repair (Chaper 8, Section 8.3.2 under ‘Greater Alignment Between Carbon and Biodiversity Markets’):

“Funding for carbon abatement has expanded the area of potential habitat that can support threatened species, but these projects have not been targeted at MNES. Multiple reviews have identified opportunities to better align carbon abatement with biodiversity benefits (CCA 2018, CCA 2020, King 2020). Despite this, restoration funded by carbon farming has not occurred in areas of high biodiversity. This opportunity still exists because progress in aligning carbon and biodiversity benefits has been limited.

There is potential to increase investment in threatened species habitat restoration by reducing barriers between carbon-focused and biodiversity-focused markets, where appropriate. When developing new offsets laws, government should reduce these barriers at both the Commonwealth and State or Territory level.

Greater alignment between the carbon and biodiversity markets could shift restoration efforts toward areas that will assist more threatened species. It could deliver the dual benefits of:

- *increasing the net carbon abatement and threatened species recovery, due to an increase in area being restored*
- *reducing the overall cost of achieving carbon and threatened species outcomes because both benefits can be realised from one activity.”*

Not mentioned but arguably of equal importance is that to the extent that carbon storage is consistent with environmental, economic and social sustainability, it is likely to be sustained and the problems associated for re-emission of credited carbon, including liability, will be thereby minimised.

The Nature Positive Plan

The Albanese Government’s response to the Samuels Review is called its “Nature Positive Plan”. It says *“Regional plans and National Environmental Standards will provide project proponents with certainty, giving clear indicators of conservation priorities and where development impacts will largely be prohibited. Working in conjunction with environmental offsets and the nature repair market, regional plans will enable more accurate pricing, de-risk projects and reduce project approval time.”*

However, the Nature Positive Plan also says *“The government will seek to trial the application of regional plans with states and territories to determine whether they are practical before finalising the Regional Planning Standard. Other standards will underpin implementation of regional plans.*

The government aims to complete the first round of regional planning by 2028.” Emphasis added.

The Nature Positive Plan commits the government to establishing both a system for regulating offsets to balance the impacts of development, and a Nature Repair Market.

Of Environmental Offsets the Plan says *“A National Environmental Standard for environmental offsets will be made under law to provide certainty and confidence in its application.*

Project proponents will need to first demonstrate attempts to avoid and mitigate harm to protected matters before resorting to environmental offsets. Where a proponent is unable to find or secure ‘like for like’ offsets, the proponent will be able to make a conservation payment.

Conservation payments will be sufficient to achieve a net positive environmental outcome. This will establish a clear price signal and give proponents an effective incentive to avoid and mitigate environmental impacts from their projects.

An evidence-based investment strategy, developed at arms-length from government, will ensure that conservation payments are used to deliver optimal biodiversity outcomes for relevant bioregions.”

Regarding the Nature Repair Market, the Nature Positive Plan says *“The government will introduce legislation to underpin the nature repair market. This will establish a nationally consistent framework for measuring, monitoring, reporting, verifying and publicly tracking biodiversity projects. Long-term obligations to maintain and manage nature repair projects will apply to participating landholders. This voluntary scheme will operate alongside the carbon market, with both schemes regulated by the Clean Energy Regulator.”*

The differences, similarities and parallel development paths of the regulated voluntary market for biodiversity certificates established by a Nature Repair Market Bill (if enacted) and the offsets system seems not to be currently explained, and the timeline for development of the National Environmental Standard for Offsets is not specified.

Draft Nature Repair Market Bill

The draft Bill² contemplates the establishment of a voluntary market for biodiversity conservation and rehabilitation. The Bill is a slightly revised version of a Bill put forward by the previous LNP government covering much the same ground. If enacted, it would provide for a highly regulated and accountable market for tradable biodiversity certificates. The market would trade certificates issued to registered biodiversity projects, where these projects are conducted in compliance with standard project methodologies designed to meet biodiversity integrity standards, including through compliance with biodiversity assessment instruments.

Neither draft methodologies nor biodiversity assessment instruments are currently available for review, so the practical effects and outcomes of the project registration and certificate issue processes remain unknown. Drawing overall conclusions on the operation of a Nature Repair Market is therefore not currently possible.

The reference to Biodiversity Integrity Standards in the Bill includes:

“For the purposes of this Act, a methodology determination complies with the biodiversity integrity standards if:

(a) a biodiversity project carried out in accordance with the methodology determination should result in enhancement or protection of biodiversity in native species (whether the effect on biodiversity occurs within or outside the project area) that would be unlikely to occur if the project was not carried out; and

² Full text of the Bill is [here](#).

(b) a biodiversity project carried out in accordance with the methodology determination should be designed to prevent the project from having a significant adverse impact on biodiversity in a native species that is protected under:

(i) a law of the Commonwealth; or

(ii) a law of a State or a Territory in which the project area is wholly or partly situated; and

(c) a biodiversity project carried out in accordance with the methodology determination should be designed to achieve enhancement or protection of biodiversity in native species that is appropriate to the project area; and

(d) a biodiversity project carried out in accordance with the methodology determination should be designed to achieve enhancement or protection:

(i) that is of biodiversity in native species; and

(ii) that can be measured, assessed and verified; and

(e) any condition set out in, or requirement imposed by, the methodology determination in accordance with subsection 45(4) or (5):

(i) is supported by clear and convincing evidence; and

(ii) is, so far as is reasonably practicable, consistent with relevant Indigenous knowledge and values; and

(iii) is consistent with enhancement or protection of biodiversity in native species that is appropriate to the project area; and

(iv) in the case of a condition or requirement that relates to the measurement or assessment of the enhancement of biodiversity of native species—requires a clear indication of the level of certainty of achievement of the enhancement; and

(v) in the case of a condition or requirement that relates to the measurement of the protection of biodiversity of native species—requires a clear indication of the level of certainty of achievement of the protection;.....”

The Bill also defines excluded biodiversity projects, as follows:

“(1) For the purposes of this Act, a biodiversity project is an excluded biodiversity project if it is a project of a kind specified in the rules.

(2) In deciding whether to make rules for the purposes of subsection (1) specifying a particular kind of project, the Minister must have regard to whether there is a material risk that that kind of project will have a material adverse impact on one or more of the following:

(a) the availability of water;

(b) biodiversity (other than the kinds of biodiversity to be addressed by the project);

(c) employment;

(d) the local community;

(e) if there is a local community of Aboriginal persons, or Torres Strait Islanders, who have a connection to the project area—that community;

(f) land access for agricultural production.”

There is no mention in the bill of either current NRM regional plans nor the regional plans to be developed under the Nature Positive Plan. These would, in fact’ provide a means of supporting decisions in relation to all the above matters.

The Bill defines a “permanence period” for Registered Biodiversity Projects which:

“(a) begins on the day after the Regulator registers the project on the Register; and

(b) ends at:

(i) the end of the 25-year period that began on the day after the Regulator registers the project on the Register; or

(ii) if another period is ascertained in accordance with the methodology determination that covers the project—the end of that other period.”

The Chubb Review

Since publication of the Samuels Review Final Report, an Independent Review has focused on the integrity of Australian Carbon Credit Units (ACCUs) issued under the Emissions Reduction Fund. The review was undertaken by a panel chaired by Professor Ian Chubb AC.

The purpose of the Review was to ensure ACCUs and the carbon crediting framework maintained a strong and credible reputation supported by participants, purchasers and the broader community. The review examined, among other things:

- governance arrangements and legislative requirements of the carbon crediting scheme
- the integrity of the key methods used
- other scheme settings affecting the integrity of ACCUs
- the broader impacts of carbon projects, including for agriculture, biodiversity, participation of First Nations people, and regional communities

The Review (Final Report page 31) notes *“Greater connectivity and coordination between federal, state and local governments would support integration of regional and state policies and programs and optimise economic, social and environmental (including biodiversity) outcomes.*

Harmonising standards, regulations and laws across jurisdictions increases certainty and supports integrity within the scheme – state and local governments have local knowledge and expertise to guide, advise and coordinate ACCU projects, in line with regional plans, to maximise beneficial outcomes from carbon abatement.

There would be benefits from coordinating actions arising from concurrent reviews, consultations and new initiatives the government is undertaking.”

However, the Review (Final Report p28) also says *“Co-benefits extend beyond reduced emissions and carbon removals. They include non-carbon benefits to proponents, the broader community, and to the environment.*

Scheme arrangements should facilitate but not require provision of co-benefits.”

This is consistent with the approach adopted in the Carbon Credits (Carbon Farming Initiative) Act 2011 which says (para 21(1)(g) that an application for declaration of an eligible offsets project must:

“if the project area, or any of the project areas, for the project is covered by a regional natural resource management plan—be accompanied by a statement about whether the project is consistent with the plan”.

That is, there is no requirement for consistency with the regional NRM plans which currently guide Commonwealth and other investment in environmental and landcare projects. Rather, the ERF has relied on broad national prescriptions and proscriptions in the Act, Regulations and Methodologies to avoid bad outcomes.

For example, a proscription on plantation forestry ERF projects in higher rainfall areas was later amended by Regulation to allow timber plantation ERF projects to proceed without undue administrative complexity in certain designated forestry hubs identified in Australia's National Plantation Strategy. Further regions may be added to these areas. However impacts on water supplies can only be sensibly considered on a water catchment basis.

Another national level attempt to prevent adverse impacts of ERF projects was The Carbon Credits (Carbon Farming Initiative) Amendment (Regeneration Projects) Rule 2022, which took effect on 8 April 2022. It allowed the Agriculture Minister to prevent native forest regeneration projects covering more than 15 hectares and one third of a farm from going ahead if they would have an adverse impact on agricultural production or regional communities.

Promoting environmentally, socially and economically sustainable management of natural resources with national rules, including the "one size fits all" excluded biodiversity project rules, is like using a sledge hammer to crack a walnut. A much more granular approach is required, such as can be efficiently provided by adequate regional plans.

Regional NRM plans

For around a decade, Natural Resource Management (NRM) bodies in 56 regions have been tasked with developing regional plans to direct efforts in implementing Landcare and environmental improvement strategies. Collaboratively with State Governments, they have delivered Regional Land Partnerships, the largest component of the National Landcare Program. Their activities have been targeted at the following specific outcomes:

- The ecological character of Ramsar sites is maintained or improved.
- The trajectory of species targeted under the Threatened Species Strategy, and other Environmental Protection and Biodiversity Conservation (EPBC) Act priority species, is improved.
- The natural heritage Outstanding Universal Value of World Heritage properties is maintained or improved.
- The condition of EPBC Act listed Threatened Ecological Communities is improved.
- The conditions of soil, biodiversity and vegetation are improved.
- Agriculture systems have adapted to significant changes in climate and market demands.

According to NRM Regions Australia³:

"Helping regions to support carbon projects with clear environmental and social co-benefits will help address potential negative outcomes and increase community support for the Emissions Reduction Fund. This will include working with commercial carbon project developers and will preserve the integrity of the reverse auction, but encourage projects that would not be viable on the economics of the Emissions Reduction Fund alone. For example, in western NSW and Queensland, many Emission Reduction Fund projects have avoided vegetation clearance or allowing invasive native species to regenerate. In these regions, increased native vegetation may affect grazing productivity outcomes and may negatively affect erosion and feral animal control. This can also affect neighbouring properties and may lead to complications, such as higher fire risks. Some projects may have negative productivity and environmental outcomes and may therefore not be achieving real changes in emissions reductions" and, "Including regional NRM organisations in the delivery of the Emissions Reduction Fund will increase the involvement of smaller property owners and projects, while increasing the social acceptance /license for Australia's approach to emission reductions."

The same could be said in relation to a Nature Repair Market and the system for EPBC Offsets.

³ NRM Carbon and Environmental Markets – NRM Regions Australia

Forest carbon projects

There is a hierarchy of costs associated with forest projects to reduce greenhouse gas concentrations in the atmosphere. The cheapest way of generating credits is avoided deforestation, where vegetation which would be cleared in a “business as usual” scenario is protected. The next cheapest is regrowth management where regrowth which would normally be suppressed is protected and allowed and/or assisted to grow back to forest. Both project types can be validly accounted and generate bona-fide credits through sequestration and reduced greenhouse gas emissions⁴.

Many of the credits generated using these two methods to date have been contracted for sale to the Commonwealth for prices between AUD10 and AUD15 per tonneCO₂e. It is the experience of this author that avoided deforestation credits can be generated at a fraction of these costs. Significant profits are likely to have been made already both by participating landholders and the service providers and aggregators who have facilitated trades. These profits will be significantly greater under current and likely future carbon prices (over \$35/tonne CO₂e). The previous Commonwealth Government undertook to release entities who had contracted to sell streams of credits to the Commonwealth (for up to 10 years in the future) from their contracts, in order that they could get the financial benefit of these higher prices.

Investment will generally flow to projects where the greatest profits can be made, generally where the marginal cost of abatement is least. There is no scope currently for new avoided deforestation projects as virtually all the eligible clearing permits have already been relinquished in favour of carbon funding. Projects to manage regrowth back to forest, however, still have huge scope for implementation. Within this project type, the most financially favourable projects will include those where the opportunity cost of existing management is lowest, that is, where cattle grazing is most financially marginal. At future carbon prices however, grazing in all areas will find it difficult to compete, especially if methane emissions from livestock become accountable..

According to some authors, this driver has already pushed some regrowth management projects into areas where tree growth is also marginal. It will be interesting to see how some of these projects fare as we move into the next El Nino period, as extended drought is a key risk factor for tree growth and survival, particularly in semi-arid areas. Across all regions where the regrowth management project type is popular, there is a risk that grazing industry could be adversely affected, along with population centres that depend on traditional rural industries in these regions.

Reforestation as a project type has significantly higher costs than avoided deforestation or regrowth management. While these latter types may involve reducing potential stocking rates, and therefore foregoing income from grazing, landowners are essentially being paid to refrain from “development” of their land. Reforestation and intensive “bush regeneration” projects on the other hand involve planning and approval processes, purchase of seed or seedlings if required, fencing, land preparation, planting or seeding (again, if required), weeding and long-term protection and management of the forest once established. These costs can be substantial.

These costs are mainly at the beginning of a project. Plantation forestry in Australia has always found it difficult to attract investment. This is because the effect of compound interest on early planning, establishment and management cost over the decadal timeframes until returns from wood and timber sales accrue. This makes it difficult to demonstrate a positive, let alone attractive, return on investment.

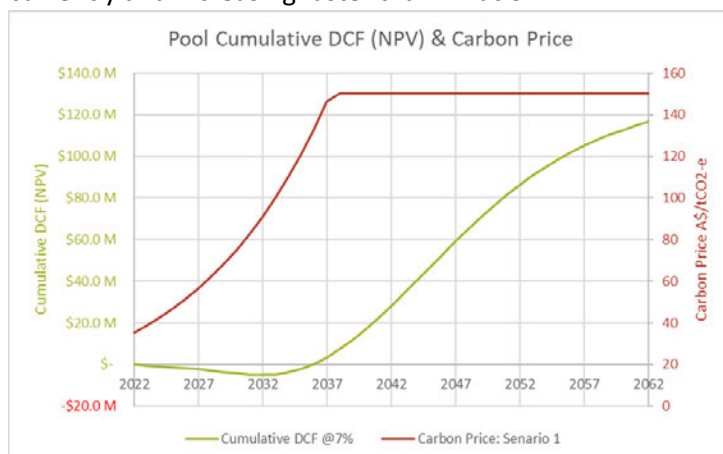
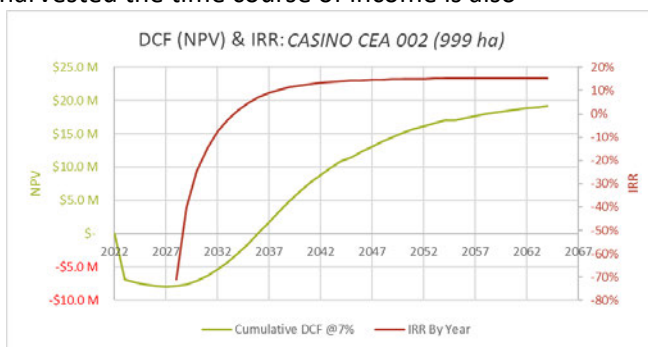
However, income streams from carbon occur as soon as trees start sequestering carbon at a significant rate. Biomass (and therefore carbon) increment in a newly established forest starts

⁴ This is notwithstanding that concerns have been raised that loopholes in accounting rules may have been used to generate credits that are not additional to those that would have occurred anyway, or that the credited carbon storage may be ephemeral.

slowly in the first few years, accelerates to a peak in annual growth around years 12-15, and then slows again until the forest reaches peak biomass for the site on which it is growing.

This early income makes it much easier to demonstrate a reasonable return on investment. Where some of the trees will later be harvested this income covers the gap in income that would otherwise occur. Where the forest is not to be harvested the time course of income is also beneficial and can, in some circumstances, make establishing forests for environmental reasons alone financially viable.

The Carbon Store Pty Ltd has worked with a business advisory firm to model returns from carbon credits following reforestation. A provisional conclusion from this work is that carbon prices of around AUD35/tonne CO₂e currently and increasing faster than inflation



are sufficient to make moderately biodiverse reforestation an attractive investment. The graph above shows modelled returns to a grower. The graph to the left illustrates returns to a pool growing over time to comprise 80,000 hectares of forest. Both graphs assume a 5% real increase in carbon price, capped at AUD150 in 2060.

Prices for ACCUs have recently exceeded AUD35/tonne. It seems

reasonable to assume that current prices will be a “floor” going forward and it seems likely that pressure from an increasingly alarmed community for more vigorous action on climate change will see carbon prices climb significantly in the future. More specifically and immediately, the Albanese Labor Government is committed to establishment of a “baseline and credit” emissions trading scheme through the Safeguard Mechanism.

All of these factors make reforestation, including biodiverse reforestation, a scalable investment opportunity unless it is crowded out by regrowth management.

Environmental projects and risk

There has been considerable criticism of strategies to absorb carbon from the atmosphere and store it in new forests and soil because carbon storage in the biosphere can be relatively easily reversed. This can be caused by bushfire, drought, dieback and other impacts including those caused or exacerbated by climate change. These impacts are projected to become significantly worse in coming decades and centuries. Humans and their direct impacts on natural systems are also a serious threat where adequate protections are not in place over stored carbon, for example from resumption of tillage where carbon has been stored by fallowing or minimum tillage cropping systems. These concerns must be paid serious attention, since most of the greenhouse gas emissions to be “offset” are of carbon which has been in stable geological storage for many millions of years.

CSIRO Land and Water produced a report for the Climate Change Authority in 2020 entitled “Technical review of physical risks to carbon sequestration under the Emissions Reduction Fund”. It provides an exhaustive qualitative analysis of known risks to credited carbon across six different generalised types of ERF projects. The project types analysed were increasing carbon in agricultural

soils, planting new forests, “blue carbon” (intertidal ecosystems) projects, savannah burning projects, regrowth management and avoided deforestation/clearing projects. Risks were evaluated to the year 2050, or around the 25 year “permanence” period available to ERF project proponents. Risk is increased and uncertainties became too great if evaluation extended to 100 years.

However even over around twenty-five years there were significant risks to both accumulation and retention of carbon, arising from both direct and indirect effects of climate change. Different risks were analysed by reference to the severity of the consequences and the probability of their occurrence. Consequences were assigned to five classes “ranging from ‘Insignificant’, with less than a 5% expected loss of abatement over the long term, through to ‘Catastrophic’, where greater than 80% of achieved abatement is lost (or less than 20% of planned abatement is achieved), combined with a subsequent loss in capacity to sequester additional carbon into the future. The report says that *“although the consequence classes are defined numerically, in the absence of detailed modelling to quantify the possible impacts of the risk factors across the different ERF activities on sequestration outcomes, the numerical classes are here used as a guide to ranking outcomes, based largely on qualitative information.”*

These consequence classes were then assigned a degree of probability of occurrence across three probability classes, being likely to occur (>66% probability), likely as not to occur (33%-66% probability) and being unlikely to occur (<33% probability). The risk analysis then combined the probability and severity of risk into four “risk priority classes”, Low, Medium, High and Extreme. Over the timeframe to 2050, no Extreme risks were identified, but multiple “high” risks apply to some project types.

The report concludes that the highest risks overall were to the “soil carbon” and “planting new forests” project types and the lowest risks were to those projects that protect mature or maturing native forests. Blue carbon and savannah burning projects face moderate levels of risk. Soil carbon projects have a risk profile several times the severity of avoided deforestation.

Direct climatic factors with likely high impacts on carbon storage included additional heat stress limiting growth and increasing mortality, consistent elevated temperatures shifting preferred climatic conditions, reduced soil water availability, changes to soil respiration and soil microbial processes, and changes to timing/seasonality of crop growth. Drought, fire, and pests and diseases were also expected to cause additional problems to both retention and accumulation of carbon in many project types. These risks are in addition to current levels of risk from these factors.

These, cumulatively, are the kinds of risks which the Commonwealth is currently expecting to manage over 100 years with a 5% buffer of retained credits. It is worth noting that where projects opt for a 25 year permanence period, it is usually in order to keep options open for a change in land use at the end of that period. As at 2020 about half of the regrowth management projects had opted for the shorter period. It is the risk of this change away from the carbon activity that is intended to be managed by a 20% buffer of retained credits from 25 year projects.

Environmental markets and time - the issue of permanence

The atmospheric benefit of short-term carbon storage is small. When carbon dioxide is emitted to the atmosphere, it persists in the atmosphere for well over a century. Where the carbon is emitted as methane it decomposes more rapidly but it still active in the atmosphere for many decades. The longer-lived greenhouse gases such as nitrous oxide or the HFCs can persist in the atmosphere for centuries or millennia.

Also, the multi decadal timeframes over which forest carbon projects take place create special risks for land and forest owners, investors, trading scheme regulators and national governments. This is because every carbon credit issued create a contingent carbon liability which becomes an actual liability (for someone) if the credited carbon is re-emitted to the atmosphere. The commercial focus on carbon credits has tended to obscure an appropriate focus on carbon debits and liabilities.

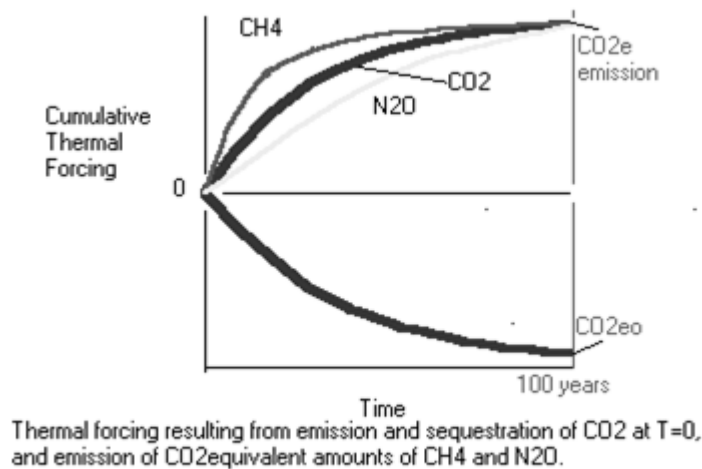
IPCC accounting requires that nations account for greenhouse gas emissions and removals by change in stocks. Therefore, carbon sequestration must be in perpetuity in order to avoid carbon debits, or emissions, being reported in national inventories. Obviously, this responsibility must be transferred effectively to the project level activities which earn credits, if the national government is not to be left bearing sole responsibility for future carbon liabilities.

In considering such liabilities it is important to recognise the effect of future discount rates on future disbenefits or penalties. That is, if carbon sequestration can be used as a mechanism to delay accounting for emissions sufficiently far into the future, then the future disbenefit of accounting for re-emission has negligible present disbenefit and will tend not be taken into account. In the case of twenty-five year projects, liabilities of project proponents are discharged at the end of twenty-five years anyway, although they remain current for the Commonwealth

Therefore, crediting sequestration simply upon verification of a change in stocks at a project level creates a significant moral hazard for project proponents and a serious risk for regulators and other stakeholders. Such a transaction could be characterised as a loan over decades from the national government to project proponents, without security or any repayments until maturity, and probably a high interest rate. The obvious temptation for commercial entities is to take the present benefit and, over the timeframes involved, to concentrate liabilities into an appropriate commercial vehicle and send it to the bottom of the harbour.

Following from all the above, landscape carbon storage will be of greatest benefit to people, the environment, and the climate if the carbon remains stored for extended timeframes, and preferably permanently. This is most likely to be the case if it is consistent with sustainable natural resource management. In short, we should ensure carbon trading systems support **sustained carbon storage through sustainable forest and land management.**

A useful approach to achieving this has been the adoption of a convention that projects must be managed to ensure retention of the credited carbon for a specified minimum period of time, usually one hundred years. One hundred years is the period (time horizon) used in calculating the value of a CO₂ equivalent (CO₂e) emission. That is, when considering the Global Warming Potential of the different greenhouse gases,



their warming effect is related to the effect of an emission of CO₂, each over 100 years. Therefore, to offset an emission of any greenhouse gas, expressed in CO₂ equivalents, it is both logical and useful to require that an equivalent quantum of carbon dioxide should be sequestered from the atmosphere for a minimum of 100 years. One hundred years is confirmed as the required period of storage in the IPCC's Special Report on Land Use, Land Use Change and Forestry (P88).

The usefulness of the convention is that requiring one hundred years guaranteed minimum storage provides regulators and auditors with a sustainability benchmark against which project plans can be assessed for risk. This will necessarily include the risk posed by climate change over that period. It also meets any need to factor out the effects of CO₂ fertilisation, since this increase in stocks would have to be balanced against climate change impacts over the hundred-year timeframe.

This approach was legislated by the Government of New South Wales, Australia, in the NSW Greenhouse Gas Abatement Scheme. It was also adopted by the Californian Climate Action Reserve. The approach has been significantly watered down in arrangements for the Carbon Farming

Initiative and more recently the Emission Reduction Fund. There was initially a requirement for projects to commit to a 100 year project length. This means that for a project that claimed credits for the first twenty years of forest growth, the carbon stored in year 20 would actually only be required to be stored for seventy years. More recently, presumably responding to landowner reluctance to commit their land for long periods, the government has also allowed twenty-five-year project commitments with a modest discount (20%) to the quantum of carbon credits issued.

A twenty-five-year project length means, for a regrowth management project for example, that if credits were claimed for the first twenty years of forest growth, the land could be re-cleared after twenty-five years and the credited carbon most recently stored in the vegetation would have had only five years of storage.

Also, since clearing and regrowth cycles in low rainfall areas are often between fifteen and twenty years, there is only a very modest delay beyond business-as-usual before re-clearing could occur without penalty, and there is currently no provision for carbon re-emitted after the “permanence period” to attract any penalty. The Australian Government will however have to account for such re-emission as and when it occurs. This is potentially storing up liabilities for future generations of Australians.

The value of biodiversity projects and those creating benefits for catchment protect, salinity abatement and many others are also greatest where the durability of the benefit is likely. The default “permanence period” for projects under the proposed Nature Repair Market is twenty-five years. It is unclear what proportion of biodiversity benefits in a reforestation project accrue in the first twenty-five years, and what incentives remain after the end of the permanence period to manage and maintain forests for biodiversity. It is clear that old-growth characteristics of new forests accrue over century timeframes as do complex fungal and other ecological relationships.

It is not clear why land managers would be unwilling to commit to longer permanence periods if the intention is actually to create sustained and sustainable environmental benefits based on sound land management practices. It does seem clear though that twenty five year “permanence” periods have been introduced to secure broad landholder engagement and overcome their reluctance to tie up their land. This may have been necessary at lower carbon prices but at current carbon prices and those likely in the future it is probably entirely unnecessary and is undesirable for all the reasons detailed above. It also seems to have provided a poor precedent for biodiversity markets where ephemeral benefits are also to be avoided.

Pooling of environmental rights and covenants

The Carbon Store believes that pooling of sequestered carbon and other environmental benefits from many projects could be a useful feature of future environmental credit trading markets. Where the delivery of such credits is based on enforceable rights registered on land titles (for example Carbon Rights or Conservation Covenants) the pooling of such rights creates a Scheme of Development as it is known in law. A Scheme of Development is an arrangement where each participant in an undertaking is benefited by the covenants entered into by each other participant, in an arrangement known as “mutual reciprocity”.

A pool, as the owner of the “environmental rights” would create a layer of civil enforcement of the contractual obligation of individual landholders, in addition and complementary with regulation and enforcement by governments.

Advantages to land and vegetation owners of pooling carbon with other growers could include:

- Provision of risk management services against release of sequestered carbon from individual projects by fire, pests, disease etc, through retention of a buffer of credits at the pool level. Conventional insurance may be taken out against loss of a timber crop, but

given that permit and credit prices in the future are unknown, insurance to cover their loss could be unaffordable.

- Smoothing carbon flows, particularly for harvested forests;
- Longevity of the pool as an entity, enabling long term obligations to be entered into and met;
- Access to a package of the full range of professional services required, through arrangements with the pool and associated entities

At the moment the Commonwealth Government is providing some of these services, most notably in respect of taking on the risks to credited carbon stocks, apart from those arising through proponent malfeasance. Consequently, many or most project aggregators and service providers have a focus on advisory and consulting services, including in respect of meeting the onerous project registration, and measurement, reporting and verification (MRV) processes, rather than managing long-term risk.

This may be appropriate, but it could be argued that under present arrangements the Commonwealth is taking altogether too much of the risk, and as the ultimately responsible entity, is not adequately managing it or laying it off onto the beneficiaries of commercial carbon credit or other environmental credit transactions.

Carbon Rights and Conservation Covenants

Carbon credits and biodiversity certificates are a form of personal property known as a “choses in action” or intangible personal property. Carbon Rights and Conservation Covenants on the other hand are an “incorporeal hereditament”, or intangible real property. Real property is in the same general class of property as land or fixtures on land (“real estate”). Real property has very strong protections and remedies available at law. Carbon Rights and Conservation Covenants are an interest in land and can be registered on land titles in the same way as easements or covenants.

Each state and territory in Australia has legislation creating carbon rights in some form or other. Queensland, for example, defines carbon sequestration by trees, and carbon stored in trees, as “Natural Resource Products” and allows for them to be registered on land titles as a “profit a prendre”. In New South Wales, a Carbon Sequestration Right, “in relation to land, means a right conferred on a person by agreement or otherwise to the legal, commercial or other benefit (whether present or future) of carbon sequestration by any existing or future tree or forest on the land after 1990”. The carbon sequestration right is registrable on land title as a “profit a prendre”. Western Australia has, arguably, the simplest and clearest carbon rights legislation, making a Carbon Right a registrable interest in land, and enabling the support of this Right with both positive and negative covenants.

Importantly, the various forms of carbon rights legislation allow for the registration on a land title of a plan of management for the area of land affected by the Right. It is this registered plan that creates the informed expectation that the set of activities that sequester carbon will be carried out and maintained for the specified duration of the plan, notwithstanding that the land may be transferred to different owners during the term of the carbon rights agreement. This is because any new owner “takes with notice” of the plan, because it is registered on title. The ability to do this is relatively new in property law in Australia. Historically only negative covenants were enforceable against a new property owner. Legislation to allow for the registration on land titles of conservation covenants also exist in most Australian states and territories, again in a range of forms.

The exposure draft legislation for a Nature Repair Market indicates that if the Regulator approves a biodiversity project then the Regulator must notify the Crown lands Minister of the State or Territory, in writing, of the approval. It also says a land registration official in the relevant jurisdiction may make

such notations on land titles as that official thinks fit to draw attention to the project and requirements that may arise.

The draft legislation also indicates that the scheme regulator can make a Biodiversity Maintenance Declaration where a project Proponent has been required to surrender a biodiversity certificate and failed to do so, and in other circumstances, and that this may also be the subject of notations made by land title officials.

The Bill says as follows:

Entries in title registers—general

Scope

(1) This section applies to a registered biodiversity project.

Entries

(2) A relevant land registration official may make such entries or notations in or on registers or other documents kept by the official (in electronic form or otherwise) as the official thinks appropriate for the purposes of drawing the attention of persons to:

(a) the existence of the registered biodiversity project; and

(b) the fact that requirements may arise under this Act in relation to the project; and

(c) such other matters (if any) relating to this Act as the official considers appropriate.

Entries in title registers—biodiversity maintenance areas

Scope

(1) This section applies to one or more areas of land if those areas of land are biodiversity maintenance areas declared under a biodiversity maintenance declaration. Note: See Part 14 (biodiversity maintenance declarations).

Entries

(2) A relevant land registration official may make such entries or notations in or on registers or other documents kept by the official (in electronic form or otherwise) as the official thinks appropriate for the purposes of drawing the attention of persons to the biodiversity maintenance declaration.

The Regulator has strong powers to ensure the rigour of the scheme, in various ways. For example the Regulator can seek civil penalties against the project proponent for shortfalls in performance of obligations to conduct the project, the project proponent can be required to relinquish certificates issued in respect of a project or certificates of equal value, certificates can be cancelled in the hands of buyers, and the regulator can apply restriction on activities carried out on project land for the term of the permanence period. It appears the Regulator cannot, however, require a new owner of the land to take over the positive obligations to implement a project.

It remains to be seen how all this would work out in a functioning voluntary market. It appears though that the opportunity to base a market for biodiversity certificates on a system of conservation rights enforceable against all owners and interest holders in the land, a system based in real property or “incorporeal hereditaments” may have been foregone. This combined with the short term nature of obligations, where these are only twenty five years, could reasonably be seen to significantly compromise the integrity and environmental efficacy of the scheme.

Reforestation - the next big thing

It has been widely accepted for several decades that large scale reforestation works could help address biodiversity decline, degradation of water catchment values, erosion, salinisation and other problems and should be a significant national priority. Thirty years after the start of the Decade of Landcare and the One Billion Trees program in 1990 there is widespread awareness of the value of trees and forests in the landscape, a significant knowledge and skills base for application to ecological restoration, and lots of trial, demonstration and small works projects with varying degrees of ecological success. That is, conditions are ripe for significant and ongoing expansion of regeneration and reforestation efforts to the scale of the problems faced.

Increasing the scale of regenerative forestry projects is urgent. The existing impacts of past over-clearing and habitat fragmentation will be dramatically exacerbated by climate change. Many species have requirements for a supportive environment that include what is known as their “preferred climatic envelope”. This is the geographical area over which climatic factors are supportive of ongoing habitation by that species. As global, regional and local temperatures rise climatic envelopes can be expected to shift, generally southward depending on topography, and towards higher altitudes.

As an example, Snow Gum (*E. pauciflora*), a keystone species in the Australian Alps, is threatened by shrinking of its preferred climatic envelope and there is little scope for it to move, or be moved, to higher altitudes. The pace of such shifts locally and regionally is likely to mean that many plant species and some animal species will not be able to migrate fast enough to keep pace with their preferred climatic conditions.

The creation of functional ecological corridors, particularly allowing north to south migration, will be of great importance if ongoing impacts on Australia’s biodiversity are to be minimised. Moreover, given that the areas of new forest and other native vegetation creating such corridors will be managed from the time of planning and establishment, there may well be potential to actively assist the migration of plant species to climates to which they are better adapted.

In eastern Australia, for example, this could translate to a managed “sheath” of new native vegetation linking existing “islands” of biodiversity and creating a functional ecological corridor roughly following the spine of the Great Dividing Range. Regionally it would manifest as corridor networks allowing species to migrate between existing areas of high biodiversity and along ecotones including from coastal environments to the ranges. Locally, design would take into consideration the need to protect valuable agricultural and pastoral land for ongoing sustainable production, the potential for wood and timber production, and the need to address locally significant biodiversity, land and water degradation issues such as species recovery plans, flood mitigation, erosion, salinity etc. At a farm scale enhanced vegetation cover would maintain or improve productivity, address weed infestation, provide shade and shelter for livestock and diversify farm income through sale of carbon credits and/or timber and/or payments for other off-farm environmental services.

This is an example of how beneficial human intervention can mitigate and adapt to the impacts of climate change in an endeavour that could be characterised, in Australia’s case, as “continental scale biomass and biodiversity management”. The Gondwanalink project in Western Australia is another. There are a considerable number of regional and larger scale projects with similar ambitions. They will need national policy support but regional planning. The benefits they provide will need to be durable in the landscape.