

~ CELEBRATING 20 YEARS ~  
**WENTWORTH GROUP**  
OF CONCERNED SCIENTISTS

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Dr Emma Carmody, Mr Peter Cosier AM, Prof Tim Flannery FAA, Mr Mike Grundy, Dr Terry Hillman AM, Prof Lesley Hughes, Prof David Karoly FAA, Prof Richard Kingsford, Prof Martine Maron, A/Prof Bradley Moggridge, Prof Jamie Pittock, Mr Robert Purves AM, Prof Fran Sheldon, Ms Anna Skarbek, Prof Bruce Thom AM, Mr Martijn Wilder AM.

## **Submission to the Independent Review of Australian Carbon Credit Units**

The Wentworth Group<sup>1</sup> welcomes the opportunity to contribute to the independent review of Australian Carbon Credit Units (ACCUs). The science tells us that it will be next to impossible for nations to achieve the scale of reductions in carbon required in time to avoid dangerous climate change unless we rapidly decarbonise our economy, end broadscale land-clearing and remove carbon from the atmosphere.<sup>2</sup>

The Wentworth Groups supports the carbon market and the role of the land sector in providing opportunities for carbon sequestration. If planned wisely, carbon farming presents an unprecedented economic opportunity to address a range of major environmental challenges confronting Australia.<sup>3</sup> This includes helping to repair degraded landscapes, restore river corridors, improve the condition of our agricultural soils, and conserve Australia's biodiversity.<sup>4</sup>

It also poses significant risks. Carbon forests have the potential to create adverse impacts on biodiversity and water resources. Further, droughts, rainfall, bushfires and other disturbances make projection and measurement of carbon stocks and management effects challenging. The Australian government needs to publish evidence demonstrating that carbon offsets are long-term, real and additional, and appropriate for specific landscapes. Without this transparency, it will be impossible to establish the credibility needed to restore confidence and integrity in the carbon market. As a consequence, carbon abatement will be jeopardised, and with it, the opportunity to harness the emerging carbon economy to fund landscape restoration.

The offsets integrity standards underpin a robust carbon market, as summarised below according to the Emissions Reductions Assurance Committee:<sup>5</sup>

1. "Additionality: A method should result in carbon abatement that is unlikely to occur in the ordinary course of events (disregarding the effect of the Act).
2. Measurable and verifiable: A method involving the removal, reduction or emissions of greenhouse gases should be measurable and capable of being verified.
3. Eligible carbon abatement: A method should provide abatement that is able to be used to meet Australia's international mitigation obligations.
4. Evidence-based: A method should be supported by clear and convincing evidence.
5. Project emissions: Material greenhouse gas emissions emitted as a direct result of the project should be deducted.
6. Conservative: Where a method involves an estimate, projection or assumption, it should be conservative."

We put forward eight principles with recommendations for interpreting and applying the offset integrity standards in a way that is transparent and credible, to help address the integrity issues raised.<sup>6</sup> The scope of these recommendations is aimed specifically at land-sector methods.

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<sup>1</sup> Disclosure statement: The Wentworth Group is an independent non-profit group of experts. We do not receive funding from government. Wentworth Group Members are volunteers and some have pecuniary or other interests, direct or indirect, in the carbon market.

<sup>2</sup> IPCC 2022 [Mitigation of Climate Change Sixth Assessment Report](#)

<sup>3</sup> Wentworth Group 2015 [Blueprint Paper 1: Using Markets to Conserve Natural Capital](#)

<sup>4</sup> [Australian National Outlook 2019](#)

<sup>5</sup> ERAC 2021 Information Paper: [Committee considerations for interpreting the ERF's offset integrity standards](#)

<sup>6</sup> Macintosh, A., Butler, D., Evans, M. C., Ansell, D., Waschka, M. (2022) Fixing the Integrity Problems with Australia's Carbon Market. The Australian National University, Canberra.

# Principles and recommendations to ensure integrity of the carbon market

## Principle 1. Methods must comply with the offset integrity standards.

*The Carbon Credits (Carbon Farming Initiative) Act 2011* (CFI Act) offset integrity standards (standards) are the central pillar for ensuring integrity in the carbon market. As stated above, the standards require the methods to only credit abatement that is unlikely to occur in the ordinary course of events, to be supported by clear and convincing evidence, and for all the estimates projections and assumptions in methods to be conservative. The Wentworth Group strongly support these principles. Compliance with the offset integrity standards need to be verified for each project and this compliance should be made apparent to the public to increase transparency.

The application of the standards under the original *CFI Act 2011* offered a strong level of assurance that methods were required to meet the standards i.e. the Minister could not approve a method, and the independent statutory committee could not endorse a method, unless it complied with the standards. However, changes to wording introduced in the *Carbon Farming Amendment Bill 2014* watered down these requirements, and the Minister currently must only *have regard* to the standards<sup>7</sup> in development of methods and the independent statutory committee is only required to *give advice* as to whether the standards are satisfied.

**Recommendation 1:** All methods must be required to meet the offset integrity standards. There must be compliance with the standards to ensure they have been properly interpreted and applied to each project.

## Principle 2. Transparency is fundamental for demonstrating compliance with the integrity standards.

It is currently not possible to know whether projects satisfy the offset integrity standards because the evidence is not made publicly available. There is insufficient project-level data available nor the ability to interrogate the data from Carbon Estimation Areas (CEAs). Until such information is available, the public cannot be assured that the integrity standards are met, and thus it will be impossible to restore the credibility of the carbon market.

**Recommendation 2:** Evidence showing how projects comply with the offset standards and data from CEAs should be made publicly available.

## Principle 3. Methods should result in carbon abatement that is unlikely to occur in the ordinary course of events.

Human-induced regenerations (HIR) projects involve regenerating native forests by changing land management practices, like removing grazing pressure. The method was intended to encourage regeneration of native forests by allowing vegetation to regrow in cleared areas where it would otherwise not regrow. Regeneration of vegetation is closely linked to environmental factors like rainfall, however the HIR method does not separate these impacts i.e. any increase in carbon stock is attributed entirely to the project activity. This assumption is credible in cleared forest landscapes because regrowth is more evidently linked to project activities. In these landscapes, rain-triggered regeneration would not have occurred unless there was a cessation of re-clearing practices (i.e. regrowth is unlikely to occur in ordinary course of events).

Most HIR projects have, however, been directed to arid and semi-arid regions where vegetation has never been cleared (see Figure 1).<sup>8</sup> In these boom or bust systems, rainfall is the key driver of vegetation

<sup>7</sup> CFI Act, ss 123A(3) and (4), and ss 106(4) and 114(2).

<sup>8</sup> Area-based Emissions Reduction Fund (ERF) projects, <https://data.gov.au/dataset/ds-dga-4eac1209-869f-466f-b583-70ffded90a56/details> (accessed 25/9/2022)

National Vegetation Information System (NVIS) Version 6.0 - AUSTRALIA - Extant Vegetation.

<http://environment.gov.au/fed/catalog/search/resource/details.page?uuid=%7Bab942d6d-9efd-4cf2-bec7-4c1521b83803%7D> (accessed 25/9/2022).

change, and drives both increases and decreases in biomass.<sup>9</sup> While reducing grazing pressure can result in increased tree and shrub cover in these landscapes, from a carbon sequestration perspective this effect is small relative to cyclical climatic drivers. It is difficult to disentangle the influence of the project activity on carbon stocks from other drivers including rainfall.

If causation cannot be confirmed (i.e. that the project activity directly results in increased carbon stocks) and additionality can't be guaranteed (ie. reliable estimation of the amount of increased carbon due to project activity alone), then it is not possible to establish credibility of the method. For HIR projects in these ecosystems, under the current method there is a risk they are overestimating the carbon that is attributable to the management change.

The Wentworth Group recognises that landholders participating in this scheme have entered into landholder agreements in good faith, so where this principle and recommendation affects existing projects, consideration must be given on how to equitably address ongoing contractual arrangements with the landholder.

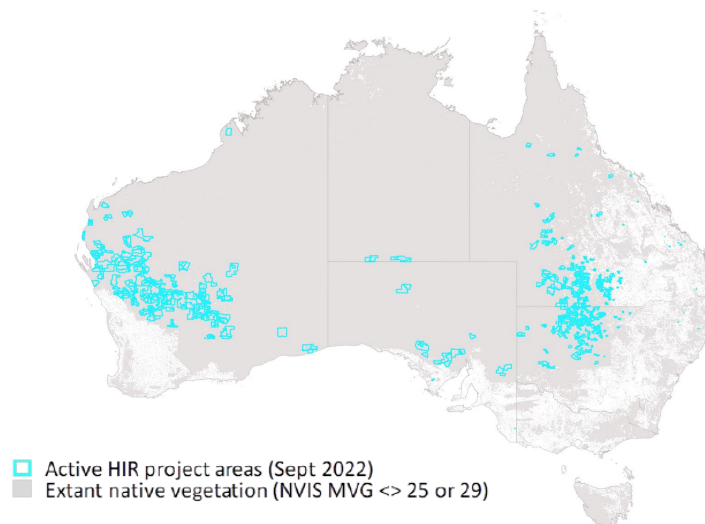


Figure 1 - Location of registered HIR project areas and extant native vegetation (Sep 2022)<sup>8</sup>

**Recommendation 3:** To ensure projects result in carbon abatement that is unlikely to occur in the ordinary course of events:

- (a) Only sequestration attributable to the project activity alone should be credited, to ensure there is a high level of confidence that abatement is real, additional, and unlikely to reverse due to climate fluctuations;
- (b) Projects should only be eligible in arid and semi-arid (ie non forest) landscapes where a method can confidently distinguish the additional role of management factors from natural events such as changes in rainfall (i.e. where causation can be established);
- (c) where causation is unclear, further detailed carbon lifecycle studies are needed to confidently distinguish the role of management from other factors contributing to carbon accumulation taking into account landscape dynamics; and
- (d) consideration should be given on how to equitably address landholder agreements, where these issues affect existing projects.

<sup>9</sup> [Fensham et al., 2012](#). Potential aboveground biomass in drought-prone forest used for rangeland pastoralism. *Ecol Appl.* 2012 Apr;22(3):894-908.

#### **Principle 4. ACCUs should only be credited if models are fit for purpose.**

The sequestration of carbon dioxide in forests that are regenerated through HIR project activities is estimated using a model (known as 'FullCAM'). FullCAM is a spatially-explicit model for carbon accounting which integrates a number of models including biomass, decomposition and soil carbon. FullCAM was developed for a specific range of conditions and management practices including in transitional (e.g. afforestation, reforestation and deforestation) and mixed (e.g. agroforestry) systems.<sup>10</sup>

The FullCAM model assumes regeneration from zero (or near zero) woody biomass through to the attainment of forest cover.<sup>11</sup> CSIRO has confirmed that the model is not currently calibrated for use on sites where native vegetation exceeds 5% of the estimated maximum biomass at the project commencement.<sup>12</sup> Like all models, FullCAM should only be applied within the bounds for which it was calibrated and validated, and where its assumptions are met. To maintain credibility, areas that do not meet model assumptions must be removed from the CEAs.

Where a model is not fit for purpose, other methods for estimating terrestrial carbon stocks and/or further model development and extension should be considered to ensure that it remains appropriate in areas where it is being applied. Standard modelling techniques are available, including re-calibrating model parameters, reconfiguring model parameters, revising assumptions or applying bias correction to outputs.

**Recommendation 4:** Models used to estimate carbon sequestration must be:

- (a) capable of distinguishing changes in carbon stocks due to project activities alone;
- (b) applied within the bounds for which they were calibrated and validated, and where assumptions are met;

Areas that do not meet these requirements must be removed from the CEAs to maintain credibility.

#### **Principle 5. Direct measurement and hybrid approaches should be developed for estimating carbon sequestration if they are capable of satisfying offset integrity standards.**

Recent advances in field survey techniques and remote sensing technologies such as drones and high resolution, wide spectral satellites can help to validate and improve estimates of carbon sequestration due to project activities. Were these technologies able to demonstrate they satisfy all offset integrity standards (including additionality and confidence) they should be encouraged.

**Recommendation 5:** Direct measurement and hybrid approaches should be developed and applied to improve estimates of carbon sequestration if they satisfy the offset standards, including controlling for rainfall and other drivers of changes in carbon stocks.

<sup>10</sup> Richards, G. 2001, The FullCAM carbon accounting model: development, calibration and implementation for the National Carbon Accounting System, Australian Greenhouse Office, Canberra <https://catalogue.nla.gov.au/Record/1586383>

<sup>11</sup> Macintosh, A., Butler, D., Ansell, D. (2022) Measurement Error in the Emissions Reduction Fund's Human-induced Regeneration (HIR) Method. The Australian National University, Canberra.

<sup>12</sup> Correspondence by Keryn Paul, Principal Research Scientists CSIRO Land and Water to Andrew Macintosh *et al.*, 12 October 2021

## **Principle 6. Methods should not result in adverse leakage effects.**

Most carbon offset programs have environmental and social safeguard policies designed to reduce the risk of detrimental effects from registered projects. Currently, there is an ongoing risk of projects moving the emitting activity to another location while claiming credits for their reduction in emissions at the initial site of activity (direct leakage). For example, logging projects could shift practices from one forest to another, while claiming abatement at the site from which the activity was moved. Further, there is a risk of indirect leakage, where the benefits of the abatement within the project's boundary are negated by marked increases in emissions outside of the project boundary; for example, the risk that funding from ACCUs generated are then used to fund broadscale land clearing of remnant native vegetation outside the project area.

**Recommendation 6.** Introduce effective land-clearing controls and explore approaches to help prevent other forms of leakage.

## **Principle 7. Methods should not result in adverse environmental impacts.**

For an Emissions Reduction Fund method to be made and maintained, the activity must meet the offsets integrity standards (see Principle 1). They must also have regard to any adverse environmental, economic and social impacts, as set out in Subsection 106(4) of the CFI Act and in the Carbon Credits (Carbon Farming Initiative) Rule 2015.<sup>13</sup> While this rule controls for specific adverse environment impacts - such as preventing adverse impacts on the availability of water or planting of a species in an area where it is a known weed species – evidence suggests that these rules fail in practice.

For example, the market supports the establishment of *Leucaena* plantations - a species currently classified as an environmental weed in several states. In addition, there is evidence to suggest that large-scale tree planting can substantially reduce river flows and impose costs on downstream water users if planted in areas of high runoff yield.<sup>14</sup> The rule to protect streams needs to clearly identify and manage areas where the trade-off is significant, as is already the case in South Australia where there are restrictions on planting in valley floors.

**Recommendation 7.** A principle relating to adverse environmental impacts should be added to the integrity standards to ensure methods do not permit actions that may cause environmental harm.

## **Principle 8. Carbon projects should be incentivised to provide biodiversity co-benefits.**

Harnessing the carbon economy to fund landscape restoration is a remarkable opportunity to help address the systemic decline of ecosystems<sup>15</sup> as documented in the State of the Environment Report<sup>16</sup> as well as a pathway to mitigate carbon emissions and adapt to climate change. Actions that simultaneously maximise carbon storage and biodiversity conservation represent the best use of limited resources and available land. As a global mechanism, carbon offsets were originally designed to include co-benefits to incentivise social, economic and ecological outcomes from the implementation of a project.

Australia is a signatory to the Global Deforestation Pledge<sup>17</sup> and more recently joined the Leader's Pledge for Nature<sup>18</sup> committed to reversing biodiversity loss by 2030. With the right incentives, carbon farming could help Australia meet these goals. Evidence shows that it is possible to restore 99.8% of Australia's degraded terrestrial ecosystems to at least 30% of their pre-European extent while prioritising

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<sup>13</sup> CFI Rule 2015, ss 20AA and 20AB

<sup>14</sup> Herron et al. 2002 The effects of large-scale afforestation and climate change on water allocation in the Macquarie River catchment, NSW, Australia, *Journal of Environmental Management*, 65(4) 369-381

<sup>15</sup> Wentworth Group 2009 [Optimising Carbon in the Australian Landscape](#) blueprint

<sup>16</sup> DCCEEW, 2022, Australia State of the Environment 2021 Commonwealth Government Canberra.

<sup>17</sup> UN Climate Change Conference UK 2021 – [Glasgow Leaders' Declaration on forests and landuse](#)

<sup>18</sup> Prime Minister Anthony Albanese Speech [Australia to join leader's pledge for nature](#), 21 September 2022

agricultural productivity on prime farmland and supporting jobs in regions.<sup>19</sup> Carbon farming could cover potentially all the costs and restored vegetation would provide an expected carbon abatement of 13 MtCO<sub>2</sub>e annually by 2030.

There are number of existing schemes in Australia focused on the positive social, cultural<sup>20</sup> and environmental impacts of carbon offsets projects<sup>21</sup> that should be rapidly upscaled nationally. There is evidence to suggest a significant price premium (6.6-29%) conferred for credits that account for co-benefits, especially where these align with Sustainable Development Goals (SDGs).<sup>22</sup>

**Recommendation 8.** Consistent with Ecologically Sustainable Development principles, incentivise co-benefits that align with regional objectives, national and international commitments by:

1. Creating further opportunities for high-integrity land sector abatement;
2. Accounting for co-benefits attached to ACCUs and make their value explicit to the market; and
3. Providing incentives to help direct carbon projects to where they are most likely to measurably improve a range of social, cultural, environmental and economic outcomes.

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<sup>19</sup> Mappin, B., Ward, A., Hughes, L., Watson, J. E. M., Cosier, P., & Possingham, H. P. (2022). The costs and benefits of restoring a continent's terrestrial ecosystems. *Journal of Applied Ecology*, 59, 408– 419.

<sup>20</sup> [Core Benefits of Carbon Farming - Aboriginal Carbon Foundation \(abcfoundation.org.au\)](https://www.abcfoundation.org.au)

<sup>21</sup> Queensland's [Land Restoration Fund](#), Victoria's [BushBank Program](#), NSW BCT's [Carbon plus Biodiversity projects](#), Australian Government's [Carbon Plus Biodiversity Pilot](#)

<sup>22</sup> Lou, J., Hultman, N., Patwardhan, A. *et al.* (2022) [Integrating sustainability into climate finance by quantifying the co-benefits and market impact of carbon projects](#). *Commun Earth Environ* 3, 137