

The issue of land clearing is critical to high integrity carbon markets

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Land use is closely linked to human-induced climate change. Throughout history, humanity has used our planet's land (and water) to drive and support our development - felling our forests and digging up mineral and gas deposits. World-wide, each of these activities has released greenhouse gas emissions into our atmosphere where they have accumulated.

The negative way we have managed our land has polluted our air, land and water, driven world poverty and caused mass extinction. Now we are in a point in time where we must confront the reality that the way we have managed our land has a direct role in our climate change crisis.

Surely it follows that just as land use has been a source of our climate crisis, so it must be part of the solution? Positive land management can reduce greenhouse gases while also benefitting many of the most disadvantaged communities, fostering healthy water supplies, clean air and vigorous soils, while maintaining and rebuilding biodiversity.

Rising global temperatures and the increasing frequency of environmental catastrophe leaves little room to truly disagree that reducing greenhouse gas emissions is essential.

Yet, governments cannot afford the money that it will require to fund this undertaking. Though we have seen successes created by legislation and regulation solutions, such as national parks and world heritage areas, we have seen a century of failure as well - which has delivered diminishing reefs, massive deforestation of our rainforests, accelerating desertification from erosion, as well as the afore-mentioned extinction crisis.

This reality calls for us to be able to place a value on the services the environment has provided to us. This is where market-based solutions can come in.

Effective markets are typically driven by the gains to the participants from voluntary exchange of goods and services.

Landholders can work with experts in projects that manage land to, for example, promote native vegetation growth to abate and sequester carbon. Quantification of the carbon abated allows carbon credits to be generated - ie., we directly place a value on the environment. At the same time, business organisations can buy these credits to offset the emissions they have been unable to avoid in their operations or for ESG purposes. Thus, a market is in operation.



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This market-based solution introduces the opportunity for private sector innovation and local expertise to efficiently contribute to solving a problem that is felt by everyone.

For offsetting to succeed, there has to be absolute confidence that an emissions reduction has occurred.

This level of confidence requires:

- justification that the activity is beyond business as usual;
- accurate quantification of emissions that both occurred and would have occurred;
- determination of any displaced emissions, and;
- determination of the permanence or lack of permanence of emissions reduction (i.e., trees can be cut down, geological reservoirs can leak and soils can be ploughed).

It follows then that the integrity level of the credits will be directly related to the commitment to transparency in these matters, and being conservative in the estimation of emissions reduction.

Land use offsets have in recent times come under criticism with regard to their integrity both in Australia and internationally. Yet project developers (and offsets standards and registries) can counter such negative perceptions, interpretations and exposés by offering complete transparency on projects with publicly available data, photographs, and imagery across the project lifespan, and by setting unquestionable and conservative methods for greenhouse gas accounting.

Two critical tools for the demonstration of integrity are measurement - as opposed to modelling approaches to quantifying carbon abatement - and verification. Models diverge greatly from reality if there are differences from the expected vegetation starting condition, soils, topography or climate. Measurements, in contrast, record the size and density of the carbon pools present, providing certainty and transparency. Likewise, verification by an independent auditing organisation encourages confidence - it states that a professional has audited all statements, measurements and calculations for precision and accuracy. These tools provide evidence.

In the land use sector, land clearing makes the case for effective offset activities while simultaneously attracting the greatest criticism of them.

Between 1990 and 2020, the world lost 178 million hectares of forest. Gross greenhouse gas emissions associated with land use and land clearing may total as much as 37 per cent of total global emissions. In Australia, nearly half of our forest cover has been lost over the past 200 years, while more than 2,000 hectares are currently being lost every single day.

Yet carbon projects that generate credits from land where such clearing is prevented - avoided land clearing and avoided deforestation projects - are at the heart of criticisms of offsets. If you protect an area of trees and prevent deforestation, you have prevented the baseline from ever occurring and any opportunity to measure it. It is very challenging to prove that deforestation would actually have happened. Clearly, if the area was under no risk of land clearing, then issuance of an offset results in a net increase in greenhouse gases in the atmosphere. To counter criticisms, avoided deforestation offset projects must therefore be able to effectively guarantee that deforestation would have occurred within a defined period of time.

In Australia, avoided deforestation projects under the Emission Reduction Fund (ERF) are limited to western New South Wales (NSW) and to where landowners have a valid clearing consent issued before 1 July 2010. In NSW, permanent clearing of woody vegetation has tripled since 2015 with 35,000 hectares cleared each year.

Under the ERF methodology, a clearing consent issued prior to the commencement of the carbon market is accepted as demonstrating a legal right and intention to clear that will inevitably be fulfilled. Crediting for this project type occurs over 15 years, instead of immediately upon project initiation, which is intended to acknowledge uncertainty about the precise date when clearance would occur. This methodology design is deliberately conservative, thus increasing integrity. But it has a greatly limited application. The woody clearance areas in Queensland, for example, significantly exceed those in NSW, with an estimated 559,844 hectares cleared in 2018 alone (an area almost two and a half times the size of the state of Victoria) – these losses highlight the huge need for an offset approach to allow the market to help protect remaining native ecosystems in Queensland and across Australia.

Internationally, the approach to avoided deforestation projects has been to examine the rate and pattern of forest loss in a reference region and then apply this rate to modelled, or arbitrarily determined, locations in the project area into the future. Valid criticism has arisen where some developers have cherry picked their reference region and very aggressively modelled the future rates of deforestation such that large numbers of highly questionable offsets have been issued. These weaknesses are now leading to changes in the methodologies that fill in the loop holes, increase rigour and provide verifiable transparency. They include making the reference area for a project the jurisdiction in which the project is located and bringing in independent contractors to model the risk of deforestation across that jurisdiction.

Such an approach could be applied in Australia. The rate of clearance within a state over recent years would be a reasonable indication of likely upcoming clearance. Risk maps, taking into account factors such as accessibility, proximity to existing clearing, desirability of climate and soils, topography and previous management, could be developed. Risk maps would determine the relative risk of baseline deforestation on specific hectares, while also incorporating discount factors for issued abatement.

A Queensland-specific model has been developed (by Don Butler, currently a professor at Australia National University) which shows a strong correlation between the modelled risk and real incidents of clearing on Queensland category X land. Similar risk mapping has been conducted by the NSW Departments of Primary Industries and Environment, Industry and Environment. These models are both considered conservative and, notably, both are ready for inclusion in a potential new methodology under the ERF. As crediting is designed to take place over 15 years or more, this will both solve the uncertainty of the specific date of clearance and will incentivise continued land management and improved practice.

Such risk-based approaches applied in a conservative and transparent manner, can be used globally and in Australia, if paired with actual measurement of carbon stocks, and subject to independent verification. This would produce high integrity offsets which would resist future negative analysis and associated media coverage.

In Australia, we must address land clearing. The ERF is our most effective tool to do this over the long term. Politics and land clearing make for an awful mix, which is why, after over 100 years of trying to solve the problem, land clearing rates in Queensland and NSW are as high as they have ever been. The only effective long-term solution is to properly value the carbon, biodiversity and conservation value of vegetation such that it is an attractive long-term economic alternative to land clearing. When this can be done, it works. We know this categorically from the wide uptake of projects where landholders qualify for participation under the limited scope of existing methods.

Ongoing large scale land clearing and deforestation - negative land management - represents the opportunity cost of failing to do this. And we risk continuing failure if the real and the perceived integrity of derived offsets is overlooked. Only with positive land management practices and with real, fully transparent, high integrity offsets, will the potential power of carbon markets to reduce emissions be realised. Only then will we be able to properly value our native lands and allow them to play a vital and meaningful role in the mitigation of the climate crisis.

Dr Tim Pearson is Technical Head of International Projects at GreenCollar. Tim has more than 20 years of experience in accounting greenhouse gases associated with forests and agriculture. He has worked across scales supporting national governments, commodity producers and mitigation projects in greenhouse gas accounting. He has published widely including serving as an author for methodologies and standards for the UNFCCC, the Architecture for REDD+ Transactions, Verra, the Climate Action Reserve and the American Carbon Registry. Prior to joining GreenCollar Tim led the Ecosystem Services team at Winrock International.