

Demystifying Older Vintage Nature-Based Carbon Credits

How older vintage carbon credits, far from being of lower value, can actually represent greater climatic, biodiversity and community benefits

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Key messages

- The market expectation of a lower price for older NBS carbon credits runs contrary to the improved climatic, biodiversity and social benefits that older, more established high-quality projects provide
- Far from being poorer quality, older carbon credits have had more time to prevent a greater proportion of the heat that would have occurred otherwise as a result of CO₂ persistence in the atmosphere
- High-quality nature-based solutions projects require significant upfront investment prior to credit generation and valuing older vintage credits less penalizes developers that moved early to prevent deforestation
- The older vintage credits of projects that have already been operating for a long period represent more established and embedded community and biodiversity benefits

Introduction

The term "vintage" in carbon credits refers to the year the credits were generated. It is essentially the year in which emissions were avoided, reduced, or sequestered and carbon credits subsequently verified and made available for issuance. Carbon credits will be denoted with the vintage year.

There is a widespread assumption that the price of mature credits (vintages older than five years) should be cheaper than newer credits, as if the value of a ton of avoided or removed emissions from the atmosphere depreciates over time, in the manner of a car or of perishable goods. This is evidenced in the way some exchanges structure their contracts and it has influenced buyers' overall opinion of the value and therefore price of more mature credits.

However, this position that mature carbon credits are worth less is not based on clear, scientific considerations and should not apply to carbon credits derived from nature-based solutions (NBS), which are, on the one hand, in short supply relative to their increased demand, and, on the other hand, may be associated with high-quality projects that have



managed to survive over time, guaranteeing integrity, lower investment risk, and climatic permanence with clear co-benefits for biodiversity and for local communities.

This paper seeks to demystify mature credits in order to demonstrate that purchasing them from high-quality projects is not only a sound option for offsetting emissions, but it can also contribute to the conservation of natural forests, which provide a critical service of climate change mitigation and which are becoming an increasingly scarce resource due to continuous high deforestation.

Critique of mature credits and ideological stance on their depreciation

One of the reasons there is a misconception that mature credits should be worth less is that there is concern in carbon markets about a significant number of Clean Development Mechanism (CDM) credits older than five years that have questionable environmental credentials and can flood carbon markets, reducing their integrity. There is a real concern, in particular, that the CDM created a perverse incentive for the development of unnecessary industrial gases, which polluters exploited to achieve economic rewards by collecting carbon credits based on their removal.

As a result, emissions reduction compliance programs such as the EU Emissions Trading System (ETS) and the Program for the Reduction of Emissions from International Aviation Sector (CORSIA) have both set restrictions on the usage of older vintages or projects. Despite the fact that these programs generally market outside of the context of credits obtained from NBS, these constraints have served to generate an ideological position in which the year of credit creation has gained significance.

Another argument for avoid mature credits is the manner in which some corporations make public statements or claims for the credits they retire and emissions they offset. The rationale used by these corporations is for the offsets bought to match to the year in which the emissions were generated, as this streamlines communication with stakeholders and clients. However, this position contradicts climate change science, which demonstrates that CO₂ reductions have the same global warming mitigation power regardless of the year in which they occur, and are indeed more valuable due to the persistence of CO₂ in the atmosphere.

Finally, exchanges and purchasers are concerned that mature credits signal a potential incapacity of carbon projects to sell such offsets because their quality is somehow poorer. This notion has been linked to the fact that more mature carbon credits were previously created with less stringent methodologies or standards, and that new credits may have higher quality since they are associated with more up-to-date methodologies. Similarly, there is a perception that the project developers may not have been able to secure buyers for these carbon credits due to the lower quality attributed to them, and that the project as a whole has low integrity and performance because the credits were generated without



an equivalent return that guarantees the investment in emission mitigation activities in the field. As a result, in the perspective of buyers, the fact that the project has mature credits that it has been unable to sell but has been able to generate without earning returns is a red flag that the offsets may be of poor quality.

However, these perceptions overlook key aspects of the financing of climate change mitigation projects based on NBS, which, on the one hand, necessitate significant upfront investment before credits are issued, and, on the other hand, necessitate significant maturity to demonstrate permanence. According to recent reports, many new projects may be associated with a perceived recent 'gold-rush' in carbon markets, making quality-proven projects and developers with mature credits perhaps the best choice for buyers.

Deconstructing mature credits

One significant difference between the carbon credits that may threaten to flood carbon markets from the CDM and those generated by NBS is that the latter generate credits that are actually alive and associated with natural forests, which, in addition to mitigating climate change, provide critical benefits for biodiversity and the communities where they are found. CDM credits are associated with projects that used technological solutions such as non-conventional renewable energy, methane capture, industrial gas removal, and energy efficiency, which have been excluded for use after 2016, for example, in the CORSIA scheme, based on weak additionality claims on these project types (except for renewable energy in LDC¹s and methane capture subject to improved standards). As a result, mature credits from NBS cannot be directly compared to credits generated from other technologies, such as those based on common technical solutions within the CDM system.

Consequently, we contend that the concerns of a market flooded with low-integrity credits outweigh the mature credits created by NBS projects. For example, in terms of supply and demand for NBS credits, the reality is that demand exceeds supply; and the projection is that demand will increase dramatically due to the growing carbon neutrality and zero carbon goals of companies that, in addition to offsetting their carbon footprint, seek to deliver benefits such as biodiversity conservation and improved quality of life in local communities.

Similarly, there is no actual bioclimatic reason for the assumption that a mature credit should be worth less for its contribution to climate change reduction in the year in which it is purchased. This is due to the fact that according to conventional climate change science, a CO₂ molecule emitted into the atmosphere has the same global warming potential regardless of the year of emission, and thus a mature credit theoretically delivers the same climate protection.

¹ Least Developed Countries



In fact, the evidence is mounting that mature carbon credits should be more valuable because they have had more time to generate a positive climate impact due to the persistence of CO₂ in the atmosphere, and thus their earlier removal from the atmosphere has certainly prevented further impacts resulting from positive feedback loops. In this regard, mature credits have already made a greater contribution to climate change mitigation.

According to peer-reviewed studies, the physics of CO₂ absorption spectroscopy indicate that the relative change in radiative forcing is likely greater than the relative rise in CO₂ concentration, implying that CO₂'s warming potential is not linear. In practice, this means that the contribution of CO₂ persistence to global warming is more than previously assumed due to positive feedback loops². As a result, more mature carbon credits are more valuable since they have prevented a greater proportion of the heat that would have occurred otherwise as a result of CO₂ persistence in the atmosphere.

Although more research at the temporal scale of NBS initiatives is currently lacking to estimate how valuable a mature credit should be, the evidence above, in addition to the contribution of CO₂ to feedback loops, such as permafrost melting and albedo reductions in the Arctic, is safe evidence that older credits resulting from high-quality projects have already helped to reduce those impacts when compared to credits issued more recently. This argument is not meant to imply that newer credits should be valued lower than mature credits, but it does show that the existing price penalty for mature credits is clearly unreasonable and lacks a scientific basis.

In retrospect, mature carbon credits should be treated like good wines. Because fine wines need time to develop, the carbon credits generated by high-quality NBS take time to exhibit permanence. As a result, penalizing more mature carbon credits from NBS projects with a lower price can have a significant impact on their performance and prevent the development of climate benefits with severe consequences for local communities and biodiversity.

Furthermore, after certain projects have been monitored, verification can take several years, delaying the time when the credits obtained can eventually be marketed. As a result, labeling the more developed credits of such projects as low quality is entirely inappropriate.

NBS projects, for example, that seek to protect humid tropical forests can suffer large initial implementation costs and only have a few years to invest the upfront resources required to limit deforestation. If their most mature carbon credits are penalized with a lower market value, these projects will undoubtedly be punished for having risked implementing the projects with upfront capital; and the returns from such mature credits may not be commensurate with the riskier initial investment required to curb deforestation. Even well-

² <https://www.pnas.org/doi/full/10.1073/pnas.1006282107>



known standards, such as the Gold Standard, assert that as long as projects adhere to a high quality and respectable standard, the year in which the credits are created should be irrelevant in terms of climate mitigation.

Finally, high-quality NBS should be regarded as real estate, since the natural forests these efforts seek to maintain are becoming a scarce resource for climate change mitigation. For example, scientific evidence indicates that the Amazon has lost 17% of its forests in the last 50 years, and that if this percentage hits 20%, the forest will cross a tipping point and undergo a dieback process, thereby becoming a carbon emitter rather than a carbon sink. The risk that this is conceivable is that scientific research suggests that with current rates of deforestation, the Amazon might be deforested for at least the next 200 years³. So, NBS projects that avoid crossing this tipping point would be effectively protecting an increasingly scarce climate mitigation resource, and thus they should appreciate over time, particularly their more mature credits, which would represent compensation for higher-risk investments made at the start of the projects.

³ <https://costingnature.infoamazonia.org/en/index.html>

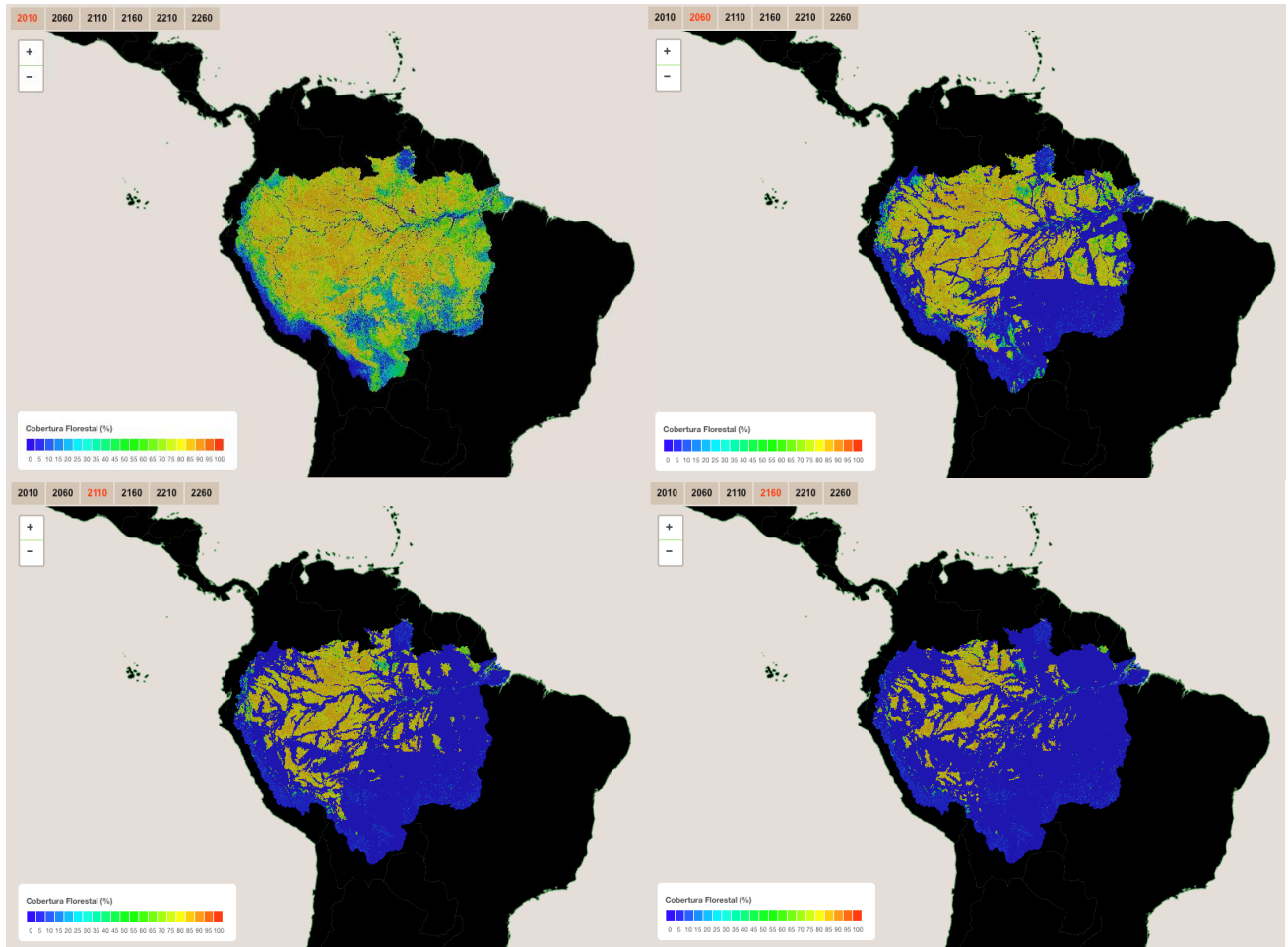


Figure 1: Amazon deforestation modelled to the year 2160, indicating the possibility of passing dangerous tipping points, because at current rates, the basin's forest might be lost for at least the next 200 years unless effective conservation measures are implemented. Source: Costing Nature/Infoamazonia⁴.

To illustrate how forests protected by NBS projects are becoming an increasingly precious climate change mitigation resource, consider how the Katingan Mentaya Peatland Conservation and Restoration Project in Kalimantan, Indonesia (VCS ID: 1477), managed to mitigate a major portion of the deforestation that happened in the surrounding areas. As a result, the economic worth of the service it provides should be appreciated as Kalimantan's forests, which are required to combat climate change, become increasingly scarce. On the other hand, the project's mature credits might be considered the first responders to stop deforestation because they strive to pay for the early investments required to stop it in an area of Indonesia where natural peat swamp forests are becoming increasingly scarce. As a

⁴ <https://costingnature.infoamazonia.org/en/index.html>

result, carbon credits generated by high-quality projects that have been in operation for a number of years should be more valuable, particularly their more mature credits, which correspond to a portion of the net present value of project investments made in the early years, when such investments were clearly riskier, as illustrated above.

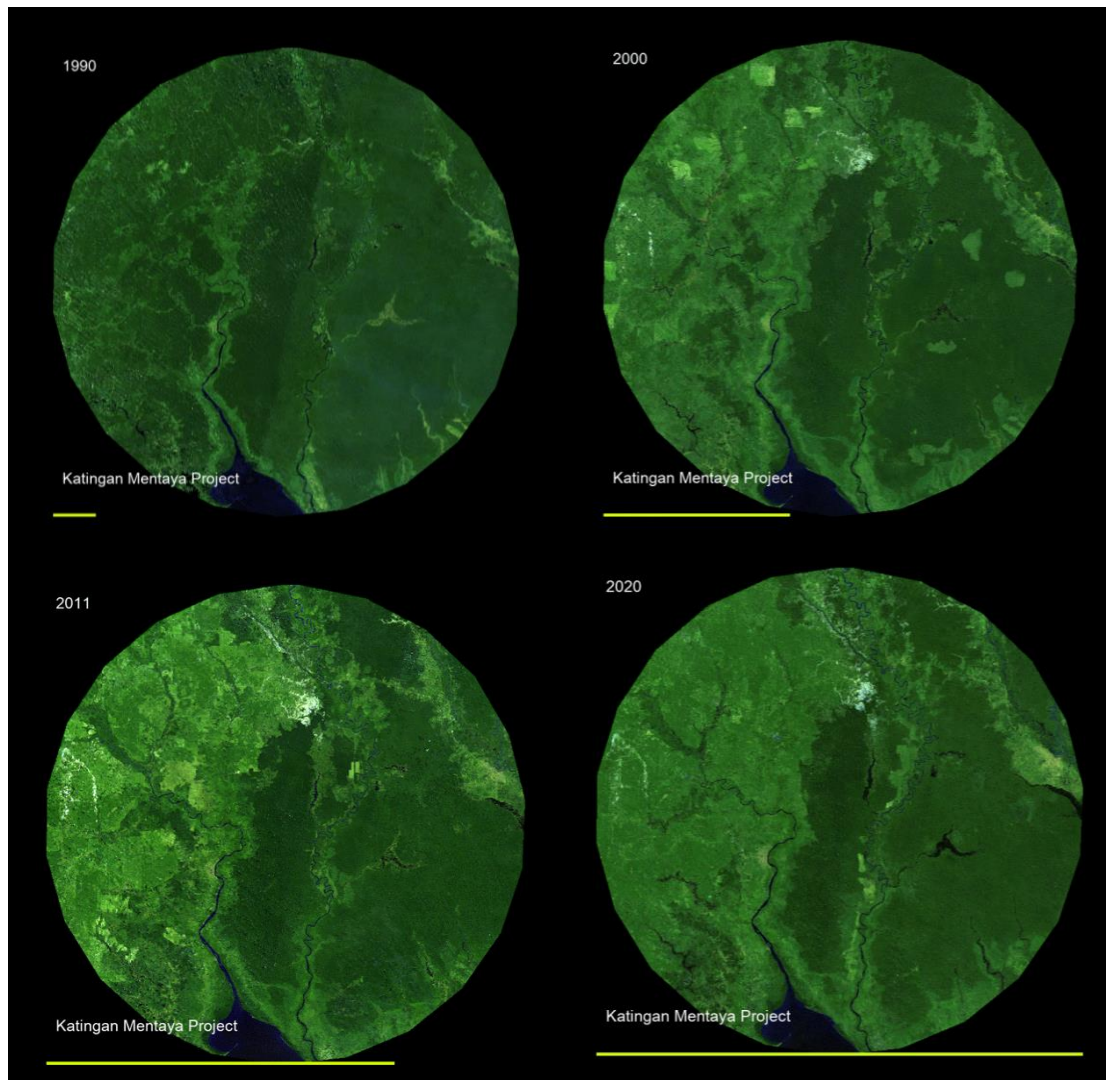


Figure 2 shows a time-lapse of the Katingan Mentaya project to show the extent of deforestation in the project region over the previous three decades. There has clearly been a dramatic loss of forest in the area surrounding the project, making the forests protected by the project an increasingly precious resource for climate change mitigation in Kalimantan, Indonesia. Source: Javier Ruiz/Permian Global.

Recommendations for market buyers



As a result, buyers of carbon credits should not dismiss mature vintages because of the year they were earned or for fear of flooding the market with low-quality offsets. Buyers should instead examine whether projects have generated and continue to generate climate, environmental, and socioeconomic benefits, as well as ensure that the generated offsets have been confirmed and that the emission reduction is permanent.

Similarly, buyers of carbon credits should exercise extreme caution when selecting carbon credit sources; and if they prefer NBS project credits, they should be aware that the supply of such credits is currently limited in comparison to the high demand for them.

There is an urgent need to increase communication regarding the global warming mitigation potential of carbon offsets, which is at least the same between newer and older vintages, if not more, for the latter when considering the contribution they have already made to the mitigation of positive feedback loops. Furthermore, it is critical to better communicate that mature credits for high-quality projects may be a great alternative for buyers, as they have had more time to demonstrate operational, environmental, social, and commercial viability. This risk-reduction characteristic for buyers should be clearly reflected in carbon credit purchasing decisions. Especially when mature credits are compared with new credits from projects that have had less time on the market and so have had less time to ensure permanency, performance, and integrity.

Finally, buyers should perform thorough inquiries into the reason for mature credits' authenticity. Avoiding mature credits from high-integrity initiatives may inadvertently penalize project developers who took the risk of moving forward and investing in such projects when essential to reduce deforestation.



Table 1. Demystifying older carbon credit vintages and recommendations for Market Buyers.

Criticism of older vintages	Demystifying older vintages	Recommendations for market buyers
<p>Concern that some CDM credits may have been issued by projects with questionable environmental credentials.</p> <p>General uncertainty caused by compliance programmes such as the EU Emissions Trading System (ETS) and the CORSIA programme for international aviation having imposed restrictions on the use of older vintages and/or older projects.</p> <p>Arbitrary preference for credits that deliver environmental benefit in the same year environmental impacts are compensated for.</p> <p>Belief that a project developer's inability to sell credits is a sign of low-quality.</p>	<p>Carbon credits from nature based solutions (NBS) projects provide cumulative climatic benefits as the project continues and deliver co-benefits, such as improving ecosystem services, biodiversity and community well-being. NBS should not be compared with older credits derived from other technologies.</p> <p>Concerns of a flooded market and questionable environmental credentials are misplaced when it comes to older vintages in the current voluntary market for NBS credits.</p> <p>A molecule of CO₂ realised to the atmosphere has the same global warming potential indistinctive of the year in which it was released. Moreover, older credits have had more time to make an impact, and their early removal from the atmosphere has prevented greater impacts from positive feedback loops.</p> <p>For some REDD+ projects verification of emission reductions may take place several years after monitoring has taken place. Therefore, this fact can delay the point at which credits can come to market.</p>	<p>They need to confirm that projects are continuing to operate and deliver benefits for ecosystems and communities, and that carbon emissions avoided are permanent.</p> <p>Buyers should exercise extreme caution when choosing the sources of the credits they purchase, and if they prefer credits from NBS - which also offer a number of environmental and social benefits - they should be aware that the supply of such credits is currently short relative to their demand.</p> <p>There is a need to improve communication of credit-generating efforts so that when they buy older vintages from REDD+ projects, as they should, the warming mitigation potential of those offsets is effectively explained, which is not different from that of newer vintages.</p> <p>Buyers should conduct thorough investigation into the legitimate justifications for the production of older vintages. If they are deemed to have come from high quality projects, avoiding old vintages may inadvertently punish project developers who took the risks to move forward with projects earlier.</p>

Conclusions

The widely accepted position that mature credits from NBS projects should be worth less than newer credits is misguided due to the appreciation older credits can generate in terms of climatic, biodiversity and social benefits.

The belief that mature credits from NBS projects can flood the voluntary carbon market with credits of poor environmental quality is clearly unjustified, not least because the supply of such credits is limited in comparison to the growing demand for credits by companies seeking to meet their net zero and carbon neutrality goals – and especially when many organizations are also looking for the environmental and social co-benefits that NBS projects provide.

Similarly, the lower price penalty for mature NBS project credits is illogical and scientifically unsound. In actuality, carbon molecules have the same heat mitigation capability regardless of when they are emitted, hence allocating a lower price to a mature credit is scientifically unjustified. In truth, there is a physical reason for assigning a higher value to older vintages. That reasoning stems from positive feedback loops in the atmosphere, which means that older credits have a greater influence than younger credits due to the compounding effects of those feedback loops. This is not to say that new credits should be worth less, but to show that the penalty for lower-priced mature credits is unjustified.

In fact, mature carbon credits derived from high-quality projects might be compared to fine wines that have taken time to age, demonstrating that the project's integrity and permanence have been convincingly proven. On the other hand, because the forests that these projects protect are an increasingly limited climate mitigation resource, the initiatives that earn these mature credits can also be associated with real estate appreciation.

Rather than shunning mature credits from NBS projects, credit purchasers should choose credits with caution, ensuring they come from high-quality projects and adhere to established standards.

On the other hand, they must revise their communication strategies in order to justify not only the purchase of offsets that correspond with the years in which the emissions were generated, because high-quality mature carbon credits have the same mitigation capacity than newer credits, if not more, due to the contribution to the mitigation of positive feedback loops. By changing their perspective and acquiring mature credits, buyers can reward the efforts of high-quality project developers who were pioneers in investing upfront in the projects and who bore great risk to ensure that deforestation was prevented.