Response to Consultation on Voluntary Carbon Markets

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Executive Summary

1. This submission has been prepared under the auspices of Canopy PACT, which is a charitable spin out from the Cambridge Centre for Carbon Credits (4C) - an interdisciplinary research group from the University of Cambridge's Departments of Zoology, Plant Sciences, and Computer Science

2. Canopy PACT was registered with the Charity Commission in January 2025 and aims to create an independent scientific council and operational criteria for certifying evaluation methods for nature-based carbon projects, based on 4C's and other peer-reviewed research.

3. Within 4C we have spent close to five years developing an understanding of the theoretical basis of what carbon credits are and the ways they are manufactured.

4. Our specific expertise is centred on:

4.1. What constitutes a robust evaluation method?

4.2. How do evaluation methods shape credit integrity?

4.3. How does credit integrity define the impact claims that can be made?

5. We welcome the Government's ambition for a market where a high integrity credit represents a demonstrable reduction in atmospheric CO_2 concentration of one tonne as a direct result of a carbon financed intervention

6. Based on our experience, the Government's current proposals do not go far enough to meet this aspiration. Specifically, we identify issues with the proposal to adopt the Core Carbon Principles (CCPs) of the Integrity Council for Voluntary Carbon Markets (ICVCM) as the minimum standard for methods:

6.1. Although the ICVCM CPPs should improve credit markets, if adopted as currently written, a range of vastly different credit qualities will still be approved, with many carrying considerable risks of over-crediting, because:

6.1.1. The CCPs are too high-level and flexible to ensure that all qualifying credits will be high integrity.

6.1.2. The resulting variability and lack of comparability between credits would not support the necessary rigour and transparency required to boost buyer confidence.

6.2. The way that the CCPs specify how to handle leakage and permanence, if applied as written, would exclude many schemes that could yield high integrity credits.

6.2.1. This is because the CCPs present the full quantification of these components as far easier than it is in practice.

6.3. At the same time, credits are already being approved as compliant in a way that does not conform with the principles. In December 2024 VM0048 and ART TREES were approved as CCP compliant, which led to the resignation of some members of the ICVCM expert panel.

VM0048 is a Verra methodology for quantifying carbon credits from avoidance projects nested within Jurisdictional REDD+ systems. However, all baseline setting methods specified rely on *ex ante* inputs, contradicting Criterion 5.3 of the CCP Assessment Framework (Schneider et al., 2024).

7. There are also fundamental problems in existing market structures that lead to poor quality credits:

7.1. The ongoing use of outdated, expensive and unsound legacy monitoring, reporting and verification (MRV) practices and related credit-issuing processes fails to support credit integrity while placing heavy financial burdens on project proponents.

7.2. Financial conflicts of interest are widespread in systems of evaluation and validation. Standards bodies generally earn a transaction fee on each credit generated; project proponents who benefit financially from the number of credits sold often lead project design and monitoring exercises. Validation and Verification Bodies (VVBs) are often paid by and have close relationships with project proponents.

7.3. Monitoring and validation often lack transparency and reproducibility, and there is currently no standard approach to accounting for leakage and permanence. Key documents for assessing impacts are often not publicly available.

7.4. Different credit schemes, including those approved as CCP compliant, currently account for their impacts differently, making them inherently incomparable. This introduces unquantified over-crediting risks that affect decisions taken about what credits can be used for.

7.5. These issues are resolvable:

7.5.1. The financial barriers to market entry for projects can and should be reduced through the adoption of evaluation methods that rely on open access data such as publicly available remote sensing layers. This would simultaneously update the accuracy and efficiency of the evaluation methods to match current scientific best practice.

7.5.2. Structures must be in place to explicitly prevent perverse incentives that over-inflate the volume of credits produced. This would involve separating evaluation processes from financial incentives.

7.5.3. High integrity credits should be produced through quasi-experimental methods modelled on those used in clinical trials. This allows impact to be assessed by comparison to a credible control group, and makes all schemes evaluated in this way directly comparable in quantitative terms. Standard and defensible methods for accounting for leakage and permanence are also essential for fully comparable impact evaluation.

7.5.4. Ensuring consistent evaluation across credit schemes would remove differences between schemes that currently lead to unquantified over-crediting risk, making credits and the claims that they can be used for equivalent. To this end, we note that:

7.6. It is not the case that all removals credits are inherently higher in integrity than avoidance credits. Neither is it true that all avoidance credits are low integrity.

7.7. Credit integrity comes from the quality of the assessment method used to evaluate credit impact. Further, within a decarbonisation strategy, the claims that can be made appropriately when credits are used are determined by credit integrity, not credit type.

In this consultation we have selected eight questions to address, under two Principles - Principle 2: Use high-integrity credits, questions 9, 10, 11, 14 and 15; Principle 5: Make accurate green claims using appropriate terminology, questions 23, 24, 25, and 26.

Questions

9. **Do you have any concerns with, or feedback related to the proposal to endorse ICVCM's CCPs and their accompanying Assessment Framework, as representing a minimum quality requirement?**

9.1. We have identified several concerns relating to the adequacy of the CCPs as a minimum quality requirement. We suggest the following clarifications:

9.1.1. *Additionality quantification*: we advocate for a shift from ex ante baselines to ex post verification using quasi-experimental approaches as the primary basis for credit issuance. While ex ante methods may serve preliminary financing needs, high integrity credit volume should rely on quasi-experimental approaches that compare project outcomes with real control groups exposed to the same external conditions. For REDD+ and similar programs, this means moving beyond historical baselines to dynamic monitoring of deforestation rates in project areas versus comparable non-project areas. A UK standard should explicitly require quasi-experimental approaches, or at the very least recognise their widespread use by independent assessors (academia, ratings agencies etc.) and ensure that credit issuance is in line.

9.1.2. *Permanence*: we propose a shift away from buffer pools. Buffer pools are inherently problematic because they only protect against small reversals (typically 10-20%) and projects are not protected by buffer pools once they have ended. The reduced climate impact of shorter duration credits could be adjusted when making claims by accounting for the realised social value (Balmford et al. 2023). This means recognising that although indefinite storage cannot be guaranteed, progress towards reducing atmospheric greenhouse gas concentrations still has value. This pragmatic approach would allow the use of shorter durability credits while transparently communicating storage duration risks.

9.1.3. *Leakage*: Any project that reduces atmospheric carbon directly is likely to cause emissions elsewhere indirectly. This has material effects on the impact that can be claimed. For nature-based projects, additional carbon storage almost always results in forgone production, which causes emissions elsewhere. Similarly, engineering projects will often increase demand for organic (e.g. biochar), mineral (e.g. enhanced rock weathering) or energetic (e.g. DACCS) inputs, which can increase the emissions-intensity of activities elsewhere. For example, if DACCS makes use of renewable energy sources this may come at the expense of access to these sources for other parts of the economy. For this reason, 100% of forgone production should be considered to cause leakage, unless projects can demonstrate mitigation through verifiable interventions. For example, projects claiming reduced land-use change in agricultural systems could show evidence of compensatory yield improvements.

9.1.4. In practice, in the case of nature-based projects, mandating that leakage be accounted for through mitigation would encourage the targeting for carbon credit projects of less productive land that has a high potential for storing carbon. On a global scale, it is unlikely that fertile agricultural land in the UK, with dramatically less potential for carbon storage and biodiversity than regions such as the tropics, would fit these criteria.

9.1.5. For engineering projects, minimising leakage means ensuring that their demand for inputs (e.g. organic residues or renewable energy) does not increase total demand. Where total demand does increase, it should be mitigated by actively increasing supply. In this way, DACCS projects should be actively engaged with increasing renewable energy supply to meet their needs, above and beyond what would have happened in the absence of the project.

10. **Do you have any views on the accompanying use of carbon credit ratings assessments by CCRAs, or any other steps or guidance that could help identify high integrity credits at the project level?**

10.1. CCRAs have emerged in response to the broader failure of carbon markets to properly assess impacts in a standardised way. CCRAs provide guidance for buyers navigating this landscape, helping them to distinguish between high and low integrity credits. While CCRAs certainly provide invaluable insights that reduce risks for buyers, their effectiveness for ensuring credits are high integrity remains debatable. This is because the evaluations made by CCRAs are themselves varied and often incomplete. A major omission remains proper assessment of leakage. Ultimately, well-functioning markets do not need a variety of ratings agencies that carry significant financial costs. Instead, the integrity of credits should be transparent to potential buyers at the point of issuance.

11. **Do you have any views on the potential measures above that could accompany CCP endorsement, or any others not listed?**

11.1. As we state in Section 5 and in our response to Question 9, we have reservations about endorsing the CCPs. We recommend that they be endorsed in part, but heavily reworked to ensure method integrity (see Question 9), as well as to allow for more granular levels of method approval rather than the current binary outcome.

14. **Do you believe that current standards adequately reflect the potential impacts of indirect land use change and fully account for net environmental impacts, and if not, how could environmental impacts be fully accounted for to help prevent leakage?**

14.1. As we state in our response to Question 9, leakage is a fundamental problem constraining the integrity of credits, not just for nature-based credits but for any kind of credit. Yet within the CCPs the leakage accounting requirements lack clarity (see Assessment Framework Criterion 10.5). While the "all material sources" standard reflects an idealised ambition, current monitoring techniques make total leakage quantification impractical for

many project types, especially when considering global market leakage impacts. The concession to allow for "conservative" adjustments risks inconsistent application without clearer guidance and could give excessive leeway in disregarding important leakage effects. This proves especially problematic for projects where market displacement effects are likely to be high.

14.2. Carbon projects in the UK, particularly afforestation, may be especially prone to leakage. This is because the UK has comparatively low carbon storage potential in combination with highly productive agricultural systems. Any reduction in the UK's production of food is likely to result in a greater proportion being imported from regions that are more carbon dense and lower in productivity. This is especially true if the imports cause increased tropical deforestation, the emissions from which could outweigh any carbon gains measured domestically (Balmford et al., 2025). Furthermore, while afforestation delivers carbon benefits only gradually due to slow tree growth, the deforestation caused by displaced production is instantaneous.

14.3. Ultimately, difficulties in measuring market leakage make active mitigation an essential component of high integrity credits. This means ensuring that the drivers of emissions are not displaced elsewhere. One example would be to invest in improving the yield of agricultural land that is already under production, to ensure that displaced productive land uses do not cause emissions to occur elsewhere (Balmford et al., 2025; Filewod & McCarney, 2023). Ignoring leakage effects could result in successfully increasing the local carbon stocks without driving any change at the global level.

15. **Do you think there are any capacity barriers or other issues faced by validation and verification bodies in the UK or internationally?**

15.1. There are fundamental flaws with the current structure of the VCM. Many of these result from a lack of separation between the validation of credit volumes, and the financial returns from credit volumes, which can cause perverse financial incentives to arise. VVBs should not be clients of project proponents.

15.2. VVBs, either in the UK or internationally, are limited in what they can achieve because they only check what they have been asked to check by the standard or accreditation body that oversees the relevant methodology. If the standard is too flexible or inappropriate, then checking by VVBs will not reveal or address these issues. It is therefore essential that projects are interrogated by independent and impartial organisations, as well as being checked by the VVBs.

24. To what extent is a lack of clarity on claims inhibiting wider use of voluntary credits? And what, if any, is the role of the UK Government in addressing any challenges, e.g. through official definitions?

24.1. Lack of clarity on claims is a major factor inhibiting the wider use of voluntary credits. As we state in our response to Question 9, adopting the CCPs as a minimum standard will only partially help this situation.

24.2. As we state in our response to Question 10, CCRAs provide integrity guidance that is helpful to credit buyers but does not necessarily ensure integrity because of the limited way leakage is currently assessed.

24.3. The claims that can be made are tightly tied to the integrity of the credit. High integrity credits neutralise emissions and can therefore be considered a valuable market instrument in reducing emissions across a wide set of use cases. Low integrity credits may represent only a fraction of the needed compensation and thus do not neutralise emissions. For this reason, it is extremely important that only high integrity credits are used for compensation.

24.4. We would like to see the UK Government adopt the position that the integrity of a credit arises from the credibility of the method by which it has been evaluated. The credit type, whether avoidance or removal credits, should not in principle affect the credibility of claims buyers can make about the impact of their purchase. What matters is that all claims are based on the use of high integrity credits that represent one tonne of carbon dioxide atmospheric reduction.

24.5. We would be interested in working with the UK Government to align the work we are doing on standardising quantitative evaluations of REDD+ with the work the Government is doing with BSI. While our focus has been mainly on credits representing carbon in tropical moist forests rather than on UK nature credits, the issues are comparable.

25. **What are your views on Option 1, specifically: the value of UK Government-defined credit related claims terminology, and any terms that should be prioritised?**

25.1. It would be useful for the Government to define credit-related claims terminology. While it would be difficult for regulators to check directly whether a specific project's impact claims are justified, it would be easier for regulators to look at whether a project has been evaluated using a scientifically verified method, i.e. a method independently certified as meeting scientific criteria, such as the criteria Canopy PACT is developing for evaluation methods for REDD+ credits. Terms cited in such criteria could perhaps be strengthened by being defined by the Government.

25.2. If the Government chose to define terms on the supply side, we would want to see robust definitions for additionality, which must be quantified relative to a quasi-experimental counterfactual estimate; leakage, which must be understood as market leakage, including across jurisdictional borders; and permanence (or durability), which could be defined in various ways, but which must in any case be specified and included in carbon calculations.

25.3. On the buy-side, VCMI, SBTi and so on already provide a lot of guidance for buyers on how they can legitimately use carbon credits as part of their decarbonisation strategy, and

many organisations already rely on this type of guidance to align with best practice and avoid accusations of greenwashing. The UK Government could play a positive role by bringing together different existing voluntary initiatives and agreeing common definitions for terms relevant to all buyers and other stakeholders.

26. **What are your views on Option 2, specifically: the value of a UK claims standard as a mechanism for supporting greater use of high integrity carbon credits?**

26.1. As we state in our response to Question 24, the strength of the claims that can be made with credits is dependent on the integrity of the credit. Specifying this relationship in a UK claims standard would help support greater use of high integrity carbon credits as a component of organisations' decarbonisation strategies.

26.2. In all cases, a claims standard should require that buyers should first assess viable emission reductions within their own operations before resorting to carbon credits.

26.3. Once internal reductions become prohibitively expensive or technologically unfeasible, organisations should weigh these costs against purchasing high integrity credits. This creates a clear economic framework for decarbonisation decisions. A UK claims standard should mandate that emissions are never hidden on carbon accounting sheets. Instead, all emissions require transparent reporting with context explaining why they persist. Where emission reductions prove currently unfeasible due to technological limitations or excessive costs, high integrity credits can provide compensation.

26.4. This approach differs from traditional offsetting. Rather than permitting buyers to make net zero claims through credit purchases, a claims standard should define the contexts where high integrity credits are encouraged without providing a justification for slowing decarbonisation efforts. Credits thus demonstrate climate responsibility for unavoidable emissions under current limitations, not permission to maintain the status quo. This reinforces the appropriate role of credits: supporting transition strategies rather than enabling continued high-emission activities. Organisations should pursue all feasible internal reductions first, then deploy high integrity credits strategically to justify genuinely hard-to-abate emissions.

Glossary

Afforestation, reforestation and revegetation (ARR): activities that establish, increase, or restore vegetative cover in non-forest areas or enhance forest carbon stocks in areas with existing forest cover.

Baseline: the projected GHG emissions that are calculated to occur in the absence of the proposed project activity.

Biochar: a charcoal-like substance produced from the pyrolysis of biomass (organic matter) under limited or no oxygen conditions. It's a stable form of carbon that can be used to improve soil quality, sequester carbon, and potentially mitigate climate change.

Buffer pools: a form of insurance against the risk of carbon reversals, where previously sequestered carbon is released back into the atmosphere. They are essentially a reserve of carbon credits, withheld from sale, that are used to compensate for any unforeseen loss of carbon storage within a project, such as from natural disasters like wildfires or pest infestations.

Direct Air Carbon Capture and Storage (DACCS): a technology that removes carbon dioxide (CO2) directly from the atmosphere and permanently stores it underground or uses it in long-lasting products.

Engineering/mechanical removals: technologies to directly capture and store carbon dioxide from the atmosphere. It involves human-made technologies that focus on mitigating emissions directly, rather than relying on natural ecosystems or processes.

***Ex ante* evaluation:** a systematic assessment of a policy or project based on a projection made prior to implementation.

***Ex post* evaluation:** a systematic assessment of a project, or policy based on measuring counterfactual units concurrent with or following its implementation

Quasi-experimental method: a research approach that aims to establish a cause-and-effect relationship between variables, like a true experiment, but without random assignment of samples to different treatment groups prior to analysis. This means that while researchers manipulate an independent variable, they don't use random selection to allocate samples to treatment and control groups. Instead, pre-existing groups or naturally occurring differences are used. Quasi-experimental methods are suitable for studying deforestation because they allow researchers to investigate causal relationships between interventions and deforestation outcomes even when random assignment of treatments is not feasible. These methods enable the estimation of counterfactuals (what would have happened without the intervention) using statistical techniques to control for confounding factors.

Reducing Emissions from Deforestation and Degradation and fostering conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries (REDD): An initiative by the United Nations Framework Convention on Climate Change

established as part of the Paris Agreement (2015). Under the REDD+ initiative, developing countries can receive payments for emissions reductions when they reduce deforestation.

Social Cost of Carbon (SCC) an estimate, in monetary terms, of the economic damages that result from emitting one additional ton of carbon dioxide into the atmosphere. It represents the net present value of future climate change impacts, including things like damage to agriculture, human health, and property, as a result of that single ton of emissions. It changes with time due to climate conditions and discounting.

Bibliography

Balmford, A., Ball, T. S., Balmford, B., Bateman, I. J., Buchanan, G., Cerullo, G., d'Albertas, F., Eyres, A., Filewod, B., Fisher, B., Green, J. M. H., Hemes, K. S., Holland, J., Lam, M. S., Naidoo, R., Pfaff, A., Ricketts, T. H., Sanderson, F., Searchinger, T. D., … Williams, D. R. (2025). Time to fix the biodiversity leak. Science, 387(6735), 720–722. https://doi.org/10.1126/science.adv8264

Balmford, A., Keshav, S., Venmans, F., Coomes, D., Groom, B., Madhavapeddy, A., & Swinfield, T. (2023). Realizing the social value of impermanent carbon credits. *Nature Climate Change*, *13*(11), 1172–1178. https://doi.org/10.1038/s41558-023-01815-0

Filewod, B., & McCarney, G. (2023). Avoiding carbon leakage from nature-based offsets by design. One Earth, 6(7), 790–802. https://doi.org/10.1016/j.oneear.2023.05.024

Guizar-Coutiño, A., Jones, J. P. G., Balmford, A., Carmenta, R., & Coomes, D. A. (2022). A global evaluation of the effectiveness of voluntary REDD+ projects at reducing deforestation and degradation in the moist tropics. Conservation Biology, 36(6), e13970. https://doi.org/10.1111/cobi.13970

Rambharos, M. (2024, September 24). On Carbon Credits, Tell the Whole Story | Opinion: On carbon credits, tell the whole story - Verra CEO. Verra. https://verra.org/verra-views/on-carbon-credits-tell-the-whole-story/

Rambharos, M. (2025, April 21). The Real Story of Carbon Markets Is Missing from the Headlines. Verra. https://verra.org/verra-views/the-real-story-of-carbon-markets-is-missing-from-the-headlines/

Schneider, L., Fuessler, J., Oberpriller, Q., & Spalding-Fecher, R. (2024). The ICVCM approval of three REDD methodologies presents risks to the integrity of the initiative. *oeko.de*. https://www.oeko.de/blog/the-icvcm-approval-of-three-redd-methodologies-presents-risks-to-the-integrity-of-the-initiative/

Swinfield, T., Shrikanth, S., Bull, J. W., Madhavapeddy, A., & zu Ermgassen, S. O. S. E. (2024). Nature-based credit markets at a crossroads. Nature Sustainability, 1–4. https://doi.org/10.1038/s41893-024-01403-w

The Assessment Framework. (n.d.). ICVCM. Retrieved 9 July 2025, from https://icvcm.org/assessment-framework/

West, T. A., Bomfim, B., & Haya, B. K. (2024). Methodological issues with deforestation baselines compromise the integrity of carbon offsets from REDD+. Global Environmental Change, 87, 102863.

West, T. A. P., Börner, J., Sills, E. O., & Kontoleon, A. (2020). Overstated carbon emission reductions from voluntary REDD+ projects in the Brazilian Amazon. Proceedings of the National Academy of Sciences, 117(39), 24188–24194. https://doi.org/10.1073/pnas.2004334117