

Introduction

C-Capsule, an accredited Code Manager under the International Attribute Tracking Standard for certifying durable Carbon Dioxide Removal (CDR), is pleased to contribute to this public consultation. We work closely with the International REC Standard Foundation to ensure our requirements for certifying durable CDR are of the highest quality and meet the most rigorous expectations of stakeholders, market parties, end-users and governments. Whilst primarily operating within the voluntary commercial environment, C-Capsule intends to become an accredited certification scheme for emergent compliance markets, including Article 6.4.

As outlined in our previous submissions to the UNFCCC, C-Capsule believes there must be a focus on durability, over absolute permanence. In essence, we suggest that a removal should not be seen as a durable removal unless one is able to demonstrate sequestration over a 100-year time horizon.

C-Capsule advocates for a robust and reliable framework for Measurement/Monitoring, Reporting, and Verification (MRV) throughout the removal lifecycle. We strongly encourage the adoption of digital MRV systems to streamline the process for monitoring as this can greatly enhance data collection, improve data management and result in more timely, efficient, reliable, and cost-effective CDR verification.

C-Capsule supports the use of the buffer pool mechanism to facilitate insurance and compensation of reversals, but advocates for innovation through the separation of risk management duties. A new ecosystem of risk actors including insurers/reinsurers, actuaries and rating agencies would help foster a more effective risk framework capable of growing durable carbon removal to gigaton scale.

As such, C-Capsule welcomes the introduction of independent insurers/reinsurers to manage the risk of reversal from removal activities. We view transitioning away from the traditional buffer pool approach to have a number of benefits including; more effective risk management, providing incentives for innovation and improving the overall governance of risks.

Under the consultation questions below we have provided specific answers to questions where relevant to C-Capsule. We are happy to discuss these responses in more detail with the UNFCCC directly, should this be useful for policy development in due course.

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2.1. Monitoring and reporting

5. Should the activity proponent be required to periodically update its monitoring plan every five years and/or at the end of the crediting period?
6. Should monitoring reports be submitted within the first [2] [5] [X] years of activity implementation? After the first report, at least once every [2] [5] [X] years?
7. Do the “reversal notification” reports referred to in SB 003 recommendations involve, e.g. digital notification of an observed event that could lead to a possible reversal of removals; submission of notification within [90] [120] [X] days of the observation; follow-up submission of a full monitoring report within [6 months] [1 year] [X timeframe]?
8. To ensure and demonstrate the continued existence of removals, are activity proponents required to undertake monitoring and address reversals:
- (a) Only during active crediting period(s) or
 - (b) Also [15] [X] years after the last active crediting period?
 - (c) The longer of [9(a)] [9(b)] or a timeframe specified by the host Party (e.g. communicated in LoA or earlier)
9. Is simplified annual reporting required to ensure and demonstrate the continued existence of removals? In what cases and how long?
10. Are measures required to address the residual risk of reversals beyond the monitoring timeframe? If so, for how long, and what are the options for, e.g. the mechanism(s), responsible entity(ies), oversight?

C-Capsule response

We believe that monitoring plans should be updated every 5 years during the crediting period.

We think it would be proportionate for monitoring guidelines to be methodology specific and dependent on the specific removal pathway. All monitoring activities should ensure the continued existence and durability for a removal. Ideally monitoring should continue until the reversal risk is eliminated or deemed negligible. However, we recognise that this could necessitate monitoring for hundreds, if not thousands, of years which is both burdensome and costly to the activity proponent. Fortunately, most durable methods of CDR have the benefit of limited risk of reversal, but these risks still need to be managed, preferably through independent or sovereign backed insurance.

Regarding the “reversal notification report” outlined in question 7, we believe the activity proponent should immediately notify a reversal that occurs within their project boundary. We call this an Event of Carbon Default (EOCD). Where an EOCD has been identified, the activity proponent should appoint, at its expense, an independent third party to verify the characteristics of an EOCD to determine the magnitude and causal factor(s). An EOCD Report

should be submitted no later than sixth months after the EOCD has occurred. The activity proponent may appeal for an extension to the Issuer, or Insurer (if relevant), with reasonable justification. Where an EOCD report has not been submitted within the allocated timeframe, and no extension has been permitted, the activity proponent's account on the registry should be suspended and be unable to submit further facility registrations or issue requests.

We also recommend that the UNFCCC mandates the standardised public disclosure of all EOCDs through its accredited certification schemes.

2.2. Addressing reversals

11. *What type of risk rating is used to calculate an activity's buffer contributions?*

- (a) The results of an individual activity's risk assessment;*
- (b) A standard rate determined by the 6.4SB;*
- (c) Either measure could be appropriate, depending on the circumstances (in this case, what factors should determine the use of an activity-specific or standard risk rating)?*

12. *What are the options for circumstances/triggers and/or periodic milestones for reviewing and possibly updating activity baselines, risk assessments (so, risk ratings), and monitoring plans, including in relation to:*

- (a) Verified reversals of removals; and*
- (b) The stages of activity cycle implementation?*

13. *On what basis could requirements provide for the use of simplified / standardized elements or mandate the use of more frequent, full, or activity-specific elements and what are the requirements that may be relevant?*

- (a) Activity type or category;*
- (b) Risk rating level (e.g. above versus below a given %-based threshold);*
- (c) Risk assessment contents (e.g. nature, number, variety of risk factors);*
- (d) Monitoring plan (e.g. complexity, frequency, responsible entity).*

14. *Should procedures take the same or different approaches to instances of reversals that are*

- (a) intentional/planned versus*
- (b) unintentional / unplanned?*
- (c) How/would other tools to address reversals involving direct credit replacement (including use of insurance / guarantees) be used in combination with a buffer pool?*

C-Capsule response

The risk rating to calculate an activity proponent's buffer contributions should be defined by the likelihood to deliver 100 years of effective durability. Durability is time-based effectiveness.

We call this the *Expected Effect*, which is the defensible likelihood for a tonne of CO_{2e} removed to remain outside the atmospheric cycle for 100 years. The Expected Effect provides a framework to rate risk and for insurers/reinsurers to measure their risk exposure. Calculating the Expected Effect could be either methodology specific ((11b) *a standard rate determined by the 6.4SB*), although the site of activity and risk management procedures in place may also affect risk so individual assessments should be accommodated ((11a) *The results of an individual activity's risk assessment*).

We believe that procedures should be different for intentional vs planned reversals. Penalties for such actions could include increasing the percentage of buffer contributions or increased premiums in the case of independent insurance.

2.2.2. Reversal risk tools—General: Buffer pools, direct credit replacement, insurance / guarantees

15. Regarding reversal risk buffer pools, direct credit replacement, and insurance / guarantees:

(a) *What is the current practice with these reversal risk tools, including the extent and nature of their use (respectively and in combination), transaction costs and how these are financed, and potential roles of the Host Party in multi-decadal compensation requirements;*

(b) *The circumstances under which the use of a given tool may be required or supplemental—for example, for intentional versus unintentional reversals, or during versus beyond the last active crediting period—and rationales.*

C-Capsule response

Whilst buffer pools have remained the 'status quo' for safeguarding against non-permanence in the voluntary carbon market (VCM), there have been strong calls for their reform¹. Issuers have been criticised for adopting the partisan role of risk creator, risk rater and underwriter. In mature financial systems and compliance markets these roles are clearly disaggregated to avoid conflicts of interest. A lack of regulation has also led to arbitrary buffer pool contributions, with little or no scientific justification and/or reference to actuarial or historical data².

Another key risk for the self-insurance approach in the VCM is undercapitalisation of buffer pools. In the event that the volume of reversal events exceeds the supply of certificates in the buffer pool, the issuer would encounter 'carbon bankruptcy' i.e. not enough certificates to

¹ Kent, G. and G. Thoumi (2010) *Forest Carbon is in the Climate Bill but How do we Insure it? With Trees!*" (WWW) Washington D.C.: Ecosystem Marketplace (<https://www.ecosystemmarketplace.com/articles/forest-carbon-is-in-the-climate-bill-but-how-do-we-insure-it-with-trees/>)

² Richards, K. R. and G. E. Huebner. (2014) "Evaluating protocols and standards for forest carbon-offset programs, Part A: additionality, baselines and permanence", *Carbon Management*, 3, 4, 393-410.

cover the demand for Event of Carbon Default (EOCDs). This is particularly problematic for nature-based CDR where the risk of reversal is much higher. For example, a recent study into the buffer pool of California's forest offset programs found that wildfire's had already exhausted one fifth of its supply in less than a decade³. The buffer pool was also extremely susceptible to carbon bankruptcy from risks such as disease, insects and drought.

2.2.3. Reversal risk tools: Specific

16. *What are options for robust buffer pool design, including conditions and procedures for its use, ER composition, replenishment, and administration.*

17. *The need for additional procedures and guidance for the 6.4SB, PPs, insurers/ guarantors to implement options for direct ER replacement, including for insurance or guarantees.*

C-Capsule response

In response to question 16, C-Capsule supports the use of the existing buffer pool approach to facilitate risk management and compensation of reversals in the *short-term* but strongly encourages innovation in risk management through an effective risk framework of new actors including rating agencies, actuaries and insurers/reinsurers.

We believe the solution is to disaggregate roles and responsibilities roles by appointing independent, third-party actors to rate and underwrite against risk of reversal. In this scenario, the activity proponent could pay a fixed premium to the insurer for the transfer of risk and for a guarantee that if a reversal were to occur, the insurer would compensate (with equivalent cash or carbon) for the reversal. Transferring administration of buffer pools to independent, third-party insurers would remove issuers from liability concerns relating to the recourse for carbon default, claim settlement and dispute resolution. Their presence would increase user confidence for project developers exposed to risk of reversal and buyers concerned about the longevity of their CDR claims. Transition towards financial risk management best-practice would de-risk investments into voluntary and compliance carbon instruments and increase stakeholder confidence. There are various models for third-party insurers such as:

Centralised: mandatory buffer pool contribution applied at each issue request; managed by the Issuer. Expected Effect used to determine the percentage of credits allocated to the buffer pool (e.g. 96% *Expected Effect* = 4% credits). Centralised buffer pool would be underwritten by a third-party insurer to cover the risk of carbon bankruptcy.

³ Badgley, G., F. Chay, O.S. Chegwidden, J.J. Hamman, J. Freeman. and D. Cullenward. (2022) "California's forest carbon offsets buffer pool is severely undercapitalized", *bioRxiv*.

Decentralised: buffer pools can only be managed by a third-party insurer, removing mandatory buffer contributions from the issuer. Risk management would be delegated to third party insurers subject to periodic audits to ensure appropriate quantity and quality of credits in case of an Event of Carbon Default (EOCD).

Hybrid: *Centralised Approach* with opt-out function for the activity proponent to contract with an Insurance Body to manage risk of an EOCD. Combining self-insurance with conventional insurance would give actors autonomy to choose their preferred approach to effective risk management. As per the aforementioned approaches, all buffer pools should be periodically audited by the A6.4SB to monitor the integrity of replacement certificates.

Regarding question 17, all credits subject to an EOCD shall be remediated by cancelling a volume equivalent to the magnitude of EOCD. Robust standards should be created to avoid non-fungibility of buffer credits and associated compensation. Currently, Issuers have loosely defined or haven't set criteria to determine which credits should be cancelled from the buffer pool in the event of a reversal, meaning high durability credits could be replaced with lower-durability credits.

C-Capsule recommends the Article 6.4SB set clearly defined fungibility criteria for how credits subject to a reversal event can be compensated for:

- 1) Expected Effect
- 2) Vintage
- 3) Methodology
- 4) Location

Fungibility is key for facilitating actions to be taken at scale. Fungibility occurs quantitatively by collapsing unique projects into 1 or 2 key determinant factors (e.g. durability period and Expected Effect). Clearly defined fungibility criteria would enable a more robust and transparent mechanism to address loss events and effective end-user claims.

2.2.4. Treatment of uncanceled/unused buffer ERs

18. *Are uncanceled ERs in the buffer pool returned to the activity proponent to incentivize performance and/or automatically cancelled, and is this done periodically throughout activity cycle or only after the end of the activity lifecycle or the host Party NDC timeframe?*

19. *Whether the options for treatment and timing are mutually exclusive or could be applied in combination (e.g. returning some but not all ERs to proponent).*

20. *Possible basis for periodically returning ERs to proponents (e.g. metrics for activity performance, activity cycle milestones).*

21. Procedures for the SB's periodic review and ongoing management of buffer contributions (e.g. buffer composition, stress-testing the sufficiency of risk coverage).

C-Capsule response

No response provided.