

1. Discuss the role of removals activities and this guidance in supporting the aim of balancing emissions with removals through mid-century.

- a. In the near term, avoidance, removal and emissions reductions will all be necessary. A shift to removal in carbon markets is likely in the long-term. As outlined in the Oxford Principles for Net Zero Aligned Carbon Offsetting, not only is a shift to 100% carbon removal needed by the mid-century, a shift to long-duration storage is also necessary.
- b. Short-duration removal has a higher risk of re-emission due to anthropogenic factors. These include changing social, economic and political factors. For example, a change in government in Brazil in 2019 saw increased deforestation (a loss of around 34,000 km² of forest) reducing subsequent carbon removal capacity.
- c. Short-duration removal has a higher risk of re-emission due to natural and climate-related factors. These include fire, extreme weather and biotic agents, which can all increase reversal risks. For example, regions subject to drought see decreasing resilience, and thus decreasing removal capabilities over time. Also, climate change itself will further exacerbate re-emission risk. Climate change is placing pressure on both human and natural factors, further increasing risks of relying on short-duration removal.
- d. Long-duration removal can allow for socio-political transitions to take place. Reducing global emissions will require a shift in activities for most economic sectors. This will have economic, social and physical implications. For example, decarbonising the housing sector is possible with available technical solutions, such as heat pumps, efficient lighting or retrofitting. With this transition occurring across many economic sectors it is implausible to assume this can take place immediately. Long-duration removal provides longer term solutions to manage the uncertainty associated with transitional risks.

2. Discuss the applicability and implementation aspects of these approaches, including as stand-alone measures or in combination, and any interactions with other elements of this guidance:

a. Non-permanence risk buffer (pooled or activity-specific);

- i. While risk buffers help to mitigate against the risk of reversal, our view is that they fall short of providing adequate system-wide insurance of all the risks posed in their current design. Project-specific risk assessments vary considerably - for example standardisation and robust assessments of all natural, internal and external risks are required.
- ii. Project-specific risk assessments typically support the identification and mitigation of key risks. However, recent data indicates that even such best-practice measures may have resulted in under-resourced buffer pools. For example, natural risks, such as fires, have led to the California

Air Resources Board's buffer pool to indicate that 95% of the credits deposited to insure against fire risk have already been depleted.¹

- iii. Disclosure and information risk. We find significant gaps in disclosure of these reports in the VCM: 74% (25 out of 34) of NBS projects with a BeZero Carbon Rating present at least one non-permanence risk report (NPRR) although only 3 projects present NPRR for all the vintages (9%).
- iv. It is our recommendation that the UNFCCC supports a high level of transparency regarding how percentages applied for natural, internal and external risks are reached. BeZero Carbon proposes that any cap placed on the maximum level of risk allowable should be disclosed/highlighted in the UNFCCC's risk assessment documentation. Similarly, where the approach required a minimum risk buffer allocation in cases where projects assess low risk, this or the lack of a minimum allocation should be specified. We also recommend that any project documentation detailing how risk buffer allocations are calculated be made publicly available. This allows a greater level of disclosure that brings greater indication that project risks are mitigated appropriately.

b. Insurance / guarantees for replacement of ERs where reversals occur (commercial, sovereign, other);

- i. Insurance products, alongside carbon credit ratings, are likely to dominate the future risk allocation in carbon markets. Where such alternative reversal mitigation options are applied (such as the replacement of credits from another project), we recommend that the projects detail which projects and vintages credits are sourced from. Transparency across project specific buffer pool accounting methods would also provide greater opportunity for end users to ascertain that any reversals that may occur are accounted for with credits of similar characteristics and effectively mitigate the risks presented.
- ii. If other insurance mechanisms are utilised, transparency regarding the sources of insurance and how such mechanisms would be applied in the case of a reversal are necessary.

3. What risks of non-permanence need to be minimized, and how can these risks identified, assessed, and minimized?

- a. Physical non-permanence: Stronger scientific consensus around dissolution rates at sea and on land is needed (for enhanced rock weathering and ocean alkalinity enhancement). This needs to be supported by robust MRV practices.
- b. Non-permanence risks in general can be minimised through contractual permanence measures:

¹ Badgley et al (2022) California's forest carbon offsets buffer pool is severely undercapitalized. *Frontiers in Forests and Global Change*. DOI: 10.3389/ffgc.2022.930426

- i. Commitment periods for projects need to be in human relevant timeframes.
- ii. Combination of modelling and field testing in MRV. For example, for enhanced rock weathering, digital modelling could be twinned with practices such as soil, water and gas sampling.