ARTICLE 6.4 MECHANISM

A6.4-SB007-AA-A15

Draft recommendation

Activities involving removals under the Article 6.4 mechanism

Version 01.0

United Nations
Framework Convention on
Climate Change

COVER NOTE

1. Procedural background

1. The Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA), at its fourth session, requested the Supervisory Body of the Article 6.4 Mechanism to elaborate and further develop recommendations on activities involving removals, for its consideration and adoption the fifth session . The CMA further requested the Supervisory Body, while developing the recommendations, to consider the views of Parties and admitted observer organizations received in response to the request for submissions contained in decision 7/CMA.4, paragraph 19, broader inputs from stakeholders provided in a structured public consultation process [1] and the mandate provided to the Supervisory Body contained in paragraph 24(a)(ix) of the annex to decision 3/CMP.3 “Rules, modalities and procedures for the mechanism established by Article 6, paragraph 4, of the Paris Agreement” (RMP).

2. Purpose

2. The purpose of this document is to advance the work of the supervisory Body to elaborate and further develop draft recommendations, on activities involving removals, including appropriate monitoring, reporting, accounting for removals and crediting periods, addressing reversals, avoidance of leakage, and avoidance of other negative environmental and social impacts, in addition to the activities referred to in chapter V of the RMP (Article 6, paragraph 4, activity cycle).

3. Current Work

3. This document contains:

   (a) Text from the “Recommendations on activities involving removals under the mechanism established under Article 6, paragraph 4, of the Paris Agreement” contained in the annex to the addendum of the Supervisory Body’s annual report to CMA.4 (hereinafter referred to as the SB 003 recommendations);

   (b) New proposals based on submissions received from Parties and observers in response to the request for submissions contained in decision 7/CMA.4, paragraph 19, and the input received in response to the calls for public input opened by the Supervisory Body, including the calls for structured consultation that were opened following SB 005 meeting and SB 006 meeting;

   (c) In some instances, the document includes examples or explanations of new proposals for illustration purposes only. These are designated in “{ }”. Also, square brackets have been used to indicate diverse options to implement a provision.

[1] See decision 7/CMA.4, paragraphs 21 and 22, for the request, contained in document FCCC/PA/CMA/2022/10/Add.2 available at: https://unfccc.int/documents/626570.

4. It should be noted that the new proposals contained in this document are neither the recommendations of the secretariat nor that of the informal working group on removals but are rather options prepared to facilitate structured discussion by the Supervisory Body. All the options may need further analysis and assessment if the Supervisory Body is disposed to pursue them. The related full submissions are available at the "Calls for input" web page of the Supervisory Body's public web site and the UNFCCC submissions portal.[2]

4. Subsequent work and timelines

5. Further work will be carried out to develop draft recommendations based on the guidance that will be received from the Supervisory Body.

5. Recommendations to the Supervisory Body

6. The Supervisory Body may wish to consider this document and provide guidance for further work.

[2] See https://unfccc.int/process-and-meetings/the-paris-agreement/article-64-mechanism/calls-for-input and https://www4.unfccc.int/sites/submissionsstaging/Pages/Home.aspx

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1. Procedural background

1. The Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA), by its decision 3/CMA.3 "Rules, modalities and procedures for the mechanism established by Article 6, paragraph 4, of the Paris Agreement", paragraph 6(c), requested the Supervisory Body of the mechanism established by Article 6, paragraph 4, of the Paris Agreement (Article 6.4 mechanism), to elaborate and further develop, on the basis of the rules, modalities and procedures of the Article 6.4 mechanism, recommendations on activities involving removals, including appropriate monitoring, reporting, accounting for removals and crediting periods, addressing reversals, avoidance of leakage, and avoidance of other negative environmental and social impacts, in addition to the activities referred to in chapter V of the annex (Article 6, paragraph 4, activity cycle), to be considered at its fourth session (November 2022).[1]

2. In response to this request, the Supervisory Body agreed on the recommendations on activities involving removals under the Article 6.4 mechanism contained in the annex to the addendum of its annual report to CMA.4.

3. The CMA, by decision 7/CMA.4, paragraph 19, invited Parties and admitted observer organizations to submit, via the submission portal by 15 March 2023, their views on activities involving removals and requested the Supervisory Body to consider the views of Parties and observers in elaborating and further developing recommendations on activities involving removals, while taking into account the mandate provided to the Supervisory Body contained in paragraph 24(a)(ix) of the rules, modalities and procedures, and considering broader inputs from stakeholders provided in a structured public consultation process.

4. At its fourth meeting (7−10 March 2023), the Supervisory Body requested the secretariat to prepare an updated version of the document "Information note: Activities involving removals under the Article 6.4 mechanism", taking into account the guidance and questions contained in annex 2 to the SB 004 meeting report[2] and the views of Parties and observers submitted in response to the call for submissions pursuant to decision 7/CMA.4, paragraph 19.

5. At its fifth meeting (31 May 2023 – 03 June 2023), the Supervisory Body considered the information notes "Removal activities under the Article 6.4 mechanism"[3] and "Summary of the views submitted by Parties and observers on activities involving removals"[4] and agreed to launch a call for structured public consultation based on the information note

[1] Document FCCC/PA/CMA/2021/10/Add.1 available at: https://unfccc.int/documents/460950.

[2] Annex 2 of the SB 004 meeting report titled "Information note: Guidance and questions for further work on removals (v.01.0) is available at: https://unfccc.int/sites/default/files/resource/a64-sb004-a02.pdf.

[3] Annex 9 to the annotations of the SB 005 meeting, available at https://unfccc.int/sites/default/files/resource/a64-sb005-aa-a09.pdf.

[4] Annex 10 to the annotations of the SB 005 meeting, available at https://unfccc.int/sites/default/files/resource/a64-sb005-aa-a10v1.pdf.

"Guidance and questions for further work on removals",[5] to be open from 5 to 19 June 2023.

6. At its sixth meeting the Supervisory Body further requested the secretariat to:

   (a) Update the information note "Compilation of the public inputs on removal activities under the Article 6.4 mechanism" [6] to further incorporate submissions to the structured consultations undertaken in June-July 2023, taking into account the guidance for the information note's compilation and contents provided at the fifth meeting of the Supervisory Body (A6.4-SB005-A02);

   (b) Update the information note "Draft elements for the recommendation on activities involving removals"[7], based on guidance from the Supervisory Body at its sixth meeting, including Part I and Part II of the written consultation, and public consultations to inform the Supervisory Body's consideration of corresponding draft recommendations below at its seventh meeting, following the guidance for the note's compilation and contents provided at the fifth and sixth meeting of the Supervisory Body;

   (c) Prepare draft recommendations for consideration at the seventh meeting of the Supervisory Body, based on outputs from the fourth to the sixth meeting of the Supervisory Body, guidance from the sixth meeting of the Body, including Part I and Part II of the written consultation, recommendations on removals from the third meeting of the Body, and guidance from the informal group on removals on preliminary draft recommendations shared prior to the seventh meeting of the Supervisory Body.

2. Purpose

7. The purpose of this document is to advance the work to elaborate and further develop draft recommendations, on the basis of the RMP, on activities involving removals based on the guidance of the Supervisory Body as contained in paragraph 6 (c) above.

3. Definitions

8. **SB003 recommendation**: "removals" are processes or outcomes of processes to remove greenhouse gases from the atmosphere through anthropogenic activities and durably store them in geological, terrestrial or ocean reservoirs, or in products.

9. New proposals

   (a) Proposal 1: "removals" are outcomes of processes to remove greenhouse gases from the atmosphere through anthropogenic activities and durably store them.

[5] Annex 2 of the SB 005 meeting report, available at: https://unfccc.int/sites/default/files/resource/a64-sb005-a02.pdf.

[6] A6.4-SB007-AA-A13 - Information note: Compilation of the public inputs on removal activities under the Article 6.4 mechanism, found at:7th meeting of the Article 6.4 Supervisory Body (SB 007) | UNFCCC

[7] A6.4-SB007-AA-A14 - Information note: Draft elements for the recommendation on activities involving removals, found at: 7th meeting of the Article 6.4 Supervisory Body (SB 007) | UNFCCC

(b) Proposal 2: “removals” are anthropogenic activities removing CO2 from the atmosphere and durably storing it in geological, terrestrial, or ocean reservoirs, or in products. It includes existing and potential anthropogenic enhancement of biological, geochemical or chemical CO2 sinks, but excludes natural CO2 uptake not directly caused by human activities.

{Note: This is the IPCC AR 6 definition[8], most submissions including from Parties propose this with some recommending expansion to GHG from CO2}

(c) Proposal 2 A: Anthropogenic activities removing other greenhouse gases (GHGs) such as methane and nitrous oxide from the atmosphere:

(i) [and durably storing in geological, terrestrial, or ocean reservoirs, or in products or converting to non GHGs are also included.] or

(ii) [are not excluded and Supervisory Body will expand the above definition in a future meeting]

(d) Proposal 2 B: [Durably storing means, all available evidence, such as data, analysis and history matching, indicates that the injected carbon dioxide will be completely and permanently stored such that, under the proposed or actual conditions of use, no significant risk of seepage or risk to human health or the environment exists.][9]

{Para 9(c) and 9 (d) add clarificatory note to the Proposal 2 above}

4. Requirements

10. **SB003 recommendation.** Activities involving removals under the Article 6.4 mechanism shall meet the requirements contained in sections below, in addition to the requirements contained in the annex to decision 3/CMA.3 “Rules, modalities and procedures for the mechanism established by Article 6, paragraph 4, of the Paris Agreement”, and any further relevant decisions of the CMA and all relevant standards and procedures that will be developed and approved by the Supervisory Body.

4.1. Monitoring

11. **SB003 recommendation.** Activity participants shall monitor removals through quantification and estimation based on an appropriate combination of field measurements, remote sensing, measurement through instrumentation, and/or modelling.

[8] M. Pathak, R. Slade, P.R. Shukla, J. Skea, R. Pichs-Madruga, D. Ürge-Vorsatz,2022: Technical Summary. In: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926.002

[9] Based on stakeholder submissions that draw from paragraph 1 (a) in Appendix B of Annex to Decision 10/CMP.7 Modalities and procedures for carbon dioxide capture and storage in geological formations as clean development mechanism project activities.

12. New proposals

13. Activity participants shall monitor removals through quantification and estimation based on an appropriate combination of field measurements, remote sensing, measurement through instrumentation, and/or modelling. In this regard, methodologies shall:

    (a) specify the monitoring approach(es) for all parameters needed for the quantification of removals according to the types of removal activities taking into account following elements:

        (i) Carbon removal process including the timelines;

        (ii) Factors affecting removal permanence;

        (iii) Factors affecting net carbon removals of the activity (e.g. taking into account any emissions that might result from the removal activity itself).

    (b) Ensure that the approaches related to the use of measurements, sampling, data from third parties (e.g. studies, statistics, satellite data), default values or modelled data are robust, statistically representative and conservative (e.g. variance in the data is conservatively accounted for).

    {Note: where the SB003 recommendation is augmented in the new proposal, SB 003 recommendation is underlined}

14. **SB003 recommendation.** Calculation of removals shall be stated with the associated uncertainties, and these uncertainties shall be within the limits to be specified in the methodologies. If the uncertainty of calculation of removals exceeds the specified limits, the calculated values shall be adjusted in a conservative manner.

15. **New proposals**

16. Calculation of removals shall be stated with the associated uncertainties, and these uncertainties shall be within the limits to be specified in the methodologies applied i.e. the choice of the approaches, data, measurement methods, or default values appropriately addresses uncertainty. If the uncertainty of calculation of removals exceeds the specified limits, the calculated values shall be adjusted in a conservative manner.

17. Calculation of removals may employ conservative default values that allow flexibility in monitoring. Conservative default parameters may be determined to underestimate actual removals, with provisions to over-ride by measured values.

18. Methodologies shall require appropriate quality assurance and quality control measures, such as cross-checking the monitoring results with other sources of data (e.g. require a plan or procedure for conservative treatment and deduction of removals in case of unexpected interruption or errors in monitoring equipment or procedures);

19. The activity proponent shall periodically update a project's monitoring plan, at the earliest of the following timelines:

    (a) every five years and/or at the end of the crediting period, whichever is sooner;

    (b) when new risk factor comes to light that is not already included in monitoring plan, or when a verification event reveals a need for revision of monitoring plan;

    (c) at the host country NDC review process;

(d) following any reversal event;

(e) As per existing and applicable national and regional regulations as specified by the host Party.

20. Methodologies may specify monitoring by a third party, where activity proponents are responsible for providing the information/data as requested by the third party.

21. Methodologies may specify monitoring requirements that may vary across different carbon capture and sequestration technologies.

22. Monitoring shall be continuous during the monitoring period. Frequency of monitoring reports may decrease over time if the risk of reversal decreases.

23. **SB003 recommendation.** In order to address the risk of reversals and to ensure full compensation of reversals if they occur, monitoring shall also be conducted after the end of the last crediting period of activities involving removals in accordance with the methodological provisions to be developed by the Supervisory Body.

24. New proposals

25. In order to address the risk of reversals and to ensure full compensation of reversals if they occur, monitoring shall also be conducted after the end of the last crediting period of activities involving removals.

26. Activity participant shall be responsible for post crediting period monitoring for a minimum period of:

(a) Option 1: 15/20/25/40/100 years;

(b) Option 2: A timeframe specified by the Host Party;

(c) Option 3: until the reversal risk is eliminated or deemed negligible;

(d) Option 4: a time period determined by the risk of non-permanence or substituted with appropriate domestic regulatory monitoring arrangements;

(e) Option 5: [Monitoring is required only during the crediting period; no post crediting period monitoring is required].

{ Note: The CCS CDM M&Ps and some regional/national directives specify 20 years of post-crediting period monitoring[10]}

27. [Monitoring requirements may be stopped if “all available evidence indicates that the stored CO2 will be completely and permanently contained”.]

{Note: as stated in the EU Directive on the geological storage of carbon dioxide[11]}

[10] Decision 10/CMP.7 Modalities and procedures for carbon dioxide capture and storage in geological formations as clean development mechanism project activities, appendix B, paragraph 16(c) in the Annex.

[11] Directive 2009/31/ec of the European parliament and of the council of 23 April 2009 on the geological storage of carbon dioxide and amending, Article 18, paragraph 1(b). Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0114:0135:EN:PDF

28. [All legal obligations relating to monitoring and corrective measures may be transferred to competent authorities after the above specified post crediting period monitoring. The handover of responsibility is to be accompanied by a financial contribution to cover the expected cost of monitoring for [30] years. If there is a reversal after the transfer of responsibility, the host nation should count the reversal as an emission and take measures according to the applicable jurisdiction.]

    {Note: based on stakeholder proposals taking into account the EU Directive on the geological storage of carbon dioxide}

29. Monitoring requirements in the methodologies should improve over time as new scientific knowledge becomes available. The supervisory body will schedule reviews and revisions to methodologies and related procedures periodically, at a minimum every five years.

30. Beyond in-person and manual audits, methodologies may specify technology-enabled continuous monitoring to streamline data collection and processing (e.g. automated data collection through IoT, mobile technology and online applications). The supervisory body may also develop digital versions of methodologies alongside analogue ones.

4.2. Reporting

31. **SB003 recommendation**

32. Activity participants shall prepare monitoring reports after monitoring operations and summarize the calculated amount of removals resulting from the monitoring.

33. Monitoring reports shall contain:

    (a) A description of the monitoring operations and methods used, and the resulting calculated removals along with the associated uncertainties in the calculation;

    (b) Field data, including remotely sensed data, or if the data set is too voluminous, a summary of the data and an indication of how the complete data set may be accessed;

    (c) Records and logs of observed events that could potentially lead to the reversal of removals as well as a summary of any reversal notifications that were submitted during the monitoring period;

    (d) Estimates of any reversals that occurred during each monitoring period;

    (e) Information on how any reversals that occurred were addressed in accordance with requirements to be developed by the Supervisory Body;

    (f) Information on how the environmental and social impacts were assessed and addressed by applying robust environmental and social safeguards, following provisions to be developed by the Supervisory Body;

    (g) Information on how the activity involving removals is fostering sustainable development, following provisions to be developed by the Supervisory Body.

34. If the purpose of the monitoring is to ensure and demonstrate the continued existence of removals, simplified monitoring and reporting may be allowed, subject to provisions to be developed by the Supervisory Body.

35. Initial and subsequent monitoring shall be carried out, and the associated monitoring reports submitted, within maximum time frames to be specified by the Supervisory Body. Monitoring and reporting may also be required within a specified period of time following an observed event that could potentially lead to a reversal, in accordance with provisions to be developed by the Supervisory Body.

36. New proposals

37. Activity participants shall prepare monitoring reports after monitoring operations and summarize the calculated amount of removals resulting from the monitoring.

38. Monitoring reports shall contain:

    (a) A description of the monitoring operations and methods used, and the resulting calculated removals along with the associated uncertainties in the calculation;

    (b) Field data, including remotely sensed data, or if the data set is too voluminous, a summary of the data and an indication of how the complete data set may be accessed;

    (c) Records and logs of observed events that could potentially lead to the reversal of removals as well as a summary of any reversal notifications that were submitted during the monitoring period;

    (d) Estimates of any reversals that occurred during each monitoring period;

    (e) Information on how any reversals that occurred were addressed;

    (f) Information on how the environmental and social impacts were assessed and addressed by applying robust environmental and social safeguards;

    (g) Information on how the activity involving removals is fostering sustainable development.

39. If the purpose of the monitoring is to ensure and demonstrate the continued existence of removals, simplified monitoring and reporting may be allowed.

40. Initial and subsequent monitoring shall be carried out, and the associated monitoring reports submitted. Monitoring and reporting may also be required within a specified period of time following an observed event that could potentially lead to a reversal.

41. The frequency at which monitoring report should be submitted may be determined by the level of estimated reversal risk, at least every 2 years for activities with high reversal risk and every 5 years for those with low reversal risk;

42. The first monitoring report should be within [10][5][3][2][1] years of project registration. Subsequent monitoring report should be submitted at least once every [10][5][2] [1] years].

43. Reversal events may be reported in two separate reports, an early incident report issued immediately following the event and a full investigation and corrective actions report within a month of the incident.

44. [Balance may be sought between the burden of reporting in terms of frequency, cost, and complexity and the scale and magnitude of the risk presented. Simplified reporting and low-risk and low-frequency monitoring may be used when robust evidence or literature may be evidenced.]

45. [Activity-specific reporting requirements may be established by the Supervisory Body in the future that reflects the varying storage duration and risk of reversals of the different activity types].

46. [The responsibility for enforcement of liability in the event of not receiving the required monitoring report rest either with the host Party or with the Party acquiring and retiring the credits. Liability should follow the beneficiary, and/or the party best placed to manage reversal risks, with appropriate arrangements and safeguards for the long-term (i.e. potentially indefinite) nature of the obligations.]

4.3. Accounting for removals

47. SB003 recommendation

48. Removals to be credited shall be those in excess of the baseline while deducting any activity and leakage emissions.

49. Any carbon pools and greenhouse gases may be optionally excluded from accounting if such exclusion results in a more conservative calculation of net removals.

50. If an activity involving removals also results in emission reductions, relevant guidance shall be applied through a relevant methodology or a combination of methodologies applicable to the activity in accordance with the provisions to be developed by the Supervisory Body.

51. New proposals

52. Removals to be credited shall be those in excess of the baseline while deducting any activity and leakage emissions.

53. Any carbon pools and greenhouse gases may be optionally excluded from accounting if such exclusion results in a more conservative calculation of net removals.

54. If an activity involving removals also results in emission reductions, relevant guidance shall be applied through a relevant methodology or a combination of methodologies applicable to the activity in accordance with the provisions to be developed by the Supervisory Body.

55. The accounting of removals should consider how permanence can be ensured, potential leakage risks and the need for re-evaluation of the baseline over time. Accounting should include lifecycle emissions where necessary.

4.4. Crediting period

56. SB003 recommendation

57. At renewal of crediting period, activities involving removals shall apply the latest version of the applicable methodology.

58. New proposals

59. At renewal of crediting period, activities involving removals shall apply the latest version of the applicable methodology.

60. New versions of methodologies should highlight and explain any changes from previous versions of applicable methodologies to provide visibility for all stakeholders, implications for monitoring and measurement.

61. The length of the crediting period that is activity type specific may be specified in methodologies not exceeding the limits specified in the RMP.

4.5. Addressing reversals

62. SB003 recommendation

63. Activity participants shall minimize the risk of non-permanence of removals over multiple nationally determined contribution implementation periods and, where reversals occur, ensure that these are addressed in full, following requirements to be developed by the Supervisory Body.

64. New proposals

65. Activity participants shall minimize the risk of non-permanence of removals over multiple nationally determined contribution implementation periods and, where reversals occur, ensure that these are addressed in full, following requirements to be developed by the Supervisory Body.

66. A permanence period of [<40] [40] [50] [100] [200] [300] years [after the activity has ceased to operate] [after the year when removals occurred] as a minimum duration of storage shall be applied.

4.5.1. Reversal risk assessment

67. The risks of reversals may be:

    (a) “Natural, unintentional” due to natural occurrences or disturbances such as forest fires or weather events that could potentially release stored carbon back into the atmosphere; or

    (b) “Natural, intentional” due to human actions that intentionally interfere with natural carbon removal methods, such as deforestation or land-use changes; or

    (c) “Unnatural, unintentional” due to a technological failure or accident that leads to unintentional carbon release; or

    (d) “Unnatural, intentional” due to deliberate human actions, like the misuse of removed carbon, for instance, using carbon captured for long-term storage as a fuel source.

45bis The risks of reversals may be:

    (a) Internal risks (e.g. financials, management)

    (b) External risks (e.g. land ownership, rising land opportunity costs, regulatory and social instability, country specific political risks, legal risks)

    (c) Natural risks (e.g. fires, pests, droughts)

68. The task of risk assessment is to assess and declare the risks using robust methods, including the nature and the scale of the reversal. Quantified risk should include likelihood, duration, and impact. This allows for treatment of risks and instruments using “factors” relative to the expected environmental effect of the carbon.

69. Activity participants should demonstrate that the risks have been minimised (e.g. by diversifying removal methods, ensuring that removal projects are strategically located to minimise exposure to these disturbances, maintaining rigorous safety protocols, including regular equipment checks and backup systems). The measures and actions taken to mitigate the risk of reversal should span across different stages: before the project starts, during its operation (e.g. regular monitoring), and even after it has been implemented (e.g. post-closure requirements). Risks that cannot eliminated shall be addressed as below. The risk assessment should be used to exclude projects with a significant unaddressed reversal risk from being eligible.

70. Risk assessment should be conducted at the activity-level taking into account the durability of the removals and the risk of reversal rather than at a sectoral or broad categorical assessment of risk.

71. Assessment should be conducted by qualified experts to avoid conflicts of interest. The application of the risk assessment should be validated by a designated operational entity.

72. Risk assessments shall be conducted in advance of the project's registration and be included in the PDD and the Monitoring Plan.

73. The risk assessment and rating should be reviewed and revised, at the earliest of the following timelines:

    (a) Every 5 years;

    (b) In the case of a reversal event;

    (c) At each new monitoring report.

    (d) After any extreme weather event, such as fire activity, drought, typhoon within the project boundary;

    (e) When economic and socio-political shocks occur affecting the project region (e.g., price shocks or political instability in a region)

    (f) at the start of each crediting period.

74. The Supervisory Body will develop a risk assessment tool and methodologies may include additional guidance on the application of the tool, inter alia;

    (a) Risk calculation may include standardized formulas and ranges based on the identified risk profile of activity type.

    (b) From a default risk depending upon activity type/ category/ sector, risk may be adjusted upwards or downwards depending upon the specific circumstances of the activity.

4.5.2. Post reversal actions

75. In the event of a reversal, the activity participants shall demonstrate that they have undertaken corrective measures, inter alia:

    (a) Audit and Verification: Post-reversal, an exhaustive audit and verification including assessing the reasons behind the reversal and scrutinizing potential risks associated with the carbon dioxide removal (CDR) technology in use;

    (b) Adjustment of Risk Mitigation Measures: Mitigation strategies are adapted as needed to prevent further reversals. Depending on the specific CDR method, this might involve improving control measures, storage conditions, or handling procedures to ensure compliance with prescribed methodologies;

    (c) Education and Training: Education and training programs should be revisited to help personnel better understand the reasons behind the reversal and to prevent similar future instances. This could be particularly necessary if the reversal was due to improper handling or usage of the technology;

    (d) Regulation Compliance: The project's adherence to local and international regulations shall be reassessed;

    (e) Stakeholder Engagement: Stakeholders need to be informed about the reasons behind the reversal, the corrective measures taken, and the strategies put in place to avoid similar incidents in the future;

4.5.2.1. Timeframe for reversal notification reports

76. The activity proponent should immediately notify a reversal that occurs within their project boundary). [Where a reversal event has been identified, the activity proponent should appoint, at its expense, an independent third party to verify the characteristics of the reversal to determine the magnitude and causal factor(s).]

77. The submission of notification of a reversal of removals shall be made as follows:

    (a) First or preliminary notification shall be provided, within [<30][30][60] [100] days of the observed event including, at a minimum, the date of the event, the location and a short description of the event. It may be provided digitally;

    (b) Detailed confirmation of the reversal including full monitoring report shall be provided within [90][120] [180] [360] days of the observed event including the quantification of the exact amount reversed;

    (c) In case the reversal event is still ongoing, the proponent should continue to submit follow-up monitoring reports every [90][x] days until the reversal ceases, at which point, a final monitoring report should be submitted;

    (d) [A potential reversal event identified during the verification/certification process shall temporarily suspend the processes until the reversal event is adequately assessed and corrective actions are taken where necessary].

78. Reversal events should be fully quantified, third party validated and reported in the subsequent monitoring report indicating whether it was avoidable or unavoidable.

79. All reversals should be remediated as detailed below (e.g. establishing a buffer pool, using an insurance policy).

4.5.3. Remediation of reversals

80. A reversal risk buffer pool shall be established to remediate reversals as relevant and in accordance with guidance. In some circumstances, alternative or additional remediation measures may be applied in accordance with provisions in this and any further guidance developed by the Supervisory Body.

81. Addressing reversals shall be based on an assessment of who bears the primary liability for addressing reversals when they occur, for how long they bear this liability and what is the level of risk is for reversals over the time i.e. clear assignment of primary liability for reversals to market actors, clearly defined risk obligations over discretely defined time horizons. [Sovereign guarantees, in particular, could be valuable as a backstop to cover reversal liabilities where it is not possible to enforce obligations on private market actors (e.g. if an actor ceases to exist or goes out of business), but should not be the primary means to address reversals because of the moral hazard this would create]

82. Adequately sized buffer is one way to address the risk of reversals, by withholding an amount of credits being issued and setting them aside to form a “buffer pool” which is later used when a reversal occurs. Buffer pool, to be effective, require a high level of transparency regarding how percentages applied for natural, internal and external risks are reached. Documentation detailing how risk buffer allocations are calculated shall be made publicly available.

83. Commercial or sovereign insurance bodies may provide independent risk management services against reversal events to act as a guarantee for replacement of removals where reversals occur.

84. Alternative reversal mitigation options such as the replacement of credits from another activity may be applied. For that option, information on projects and vintages from which credits are sourced should be declared transparently. 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 is important.

85. Another approach for addressing reversals in full would be to implement temporary crediting (as was adopted for A/R projects under the Clean Development Mechanism).

86. All credits subject to reversals should be remediated by cancelling a volume equivalent to the magnitude of reversals. Clearly defined fungibility criteria shall be set for how credits subject to a reversal event can be compensated for: 1) Expected Effect 2) Vintage 3) Methodology 4) Location.

87. A buffer pool and insurance may be applied separately or together. Their use may be complementary for an activity (e.g. the buffer pool covers low-risk but high probability events like climatic variations while the insurance covers high-risk but low probability events like a catastrophic wildfire, or a buffer pool addresses potential reversals combined with a standard insurance product to compensate local communities and/or governments for ecological damage). Insurance may also be used, for example, as a backup to a well-designed buffer pool, (e.g., requiring that the buffer pool operator take out reversal replacement insurance from a third-party actor, so as to spread liability).

88. Temporary crediting approaches may also be combined with buffer pools or other insurance mechanisms to cover residual risks where replacement obligations are not enforceable.

89. [Activity participants may choose a tool or combination thereof, subject to justification and any additional requirements set by the Supervisory Body and the host party].

90. [Removals cancelled for reversal compensation should be tagged as such in a registry. For transparency, the registry may provide specific information such as the project, the reversal event and if intentional or unintentional, the size of the reversal, the date of the reversal]

4.5.3.1. Design of the Buffer pool and its operation

91. The buffer pool's composition should be reflective of the various types of removal activities and the corresponding risks of reversals, including in relation to vintages and contributing activity types or categories. Buffer pools should be made robust by using a diverse set of removals in their composition, as well as diversifying their locations. Buffer pools should be continuously replenished to ensure that they are not quickly used up. Buffer pools should be calibrated to account for changes in reversal risks.

92. If the reversal exceeds the activity participants contributions to the buffer pool or the project is terminated, the liability of the project should vary. In this instance, buffer pools need to be complemented with other measures for example, purchasing carbon credits from other projects. In this situation, the buffer pool needs to be reassessed for the next crediting period.

93. Unintentional reversals should be eligible for the release of credits from the buffer pool.

94. Intentional reversals should be cancelled from the total number of removals issued to the activity. Anthropogenic reversals that happen repeatedly, should be penalised severely and even conclude in the termination of the project;

95. Where possible reversals should be compensated with removals from the same project type, vintages and location.

96. Buffer may be combined with insurance to provide complete coverage.

97. The initial level of contribution should be designed to cover all types of reversal risks over the [permanence period] [next 100 years of storage]. For direct credit replacement, it should be based on credits associated with irreversible storage or credits from emission reduction activities.

98. Credits in the buffer should be cancelled whenever a reversal is reported, and the activity becomes ineligible for further issuance until the lost removals are recovered.

99. Buffer pool should be administered by an independent entity who should instruct the registry administrator to move and cancel credits as needed. [Risk monitoring should also be carried out by an independent entity, and not as self-monitoring by the activity proponents, to avoid conflict of interest].

100. The buffer pool should be adjusted to risk of the activity with lower or higher thresholds, at every crediting period based on the results of non-permanence risk assessments, carried out during each monitoring period.

101. The level at which the buffer contribution may be made can include:

(a) The mechanism level;

(b) The level of specific type of sink and reservoir;

(c) The level of specific activities.

102. Methods for determining the level of buffer pool contributions should be science-based taking into account empirical evidence of reversals for different forms of sinks and allow for periodic updates. The removals percentage to be discounted for each activity may be a fixed value or variable dependent on a risk assessment. The following aspects shall be taken into account:

(a) the percentages of credits allocated to the buffer should match the actuarial risk of reversal for all activities covered by the buffer;

(b) the allocation should then take into account how reversals are detected, quantified, and reported i.e. take account of uncertainties in MRV.

(c) the overall risk profile of activities including uncorrelated risks for example local legislative changes and correlated or systemic risks, for example large scale forest extinction or fires including risk changes over time.

{ Note: Stakeholder submissions refer to technical paper provided by SBSTA (FCCC/TP/2014/2) regarding host party guarantee (para. 69-73), accounting, liability, monitoring and verification in the event of a reversal (para. 78-82) besides “modalities and procedures for carbon dioxide capture and storage in geological formations as clean development mechanism project activities” (Decision 10/CMP.7) regarding permanence. }

103. Buffer composition should be assessed at the level of the entire market to ensure sufficient coverage, i.e., enough available credits (minted but not transacted) to cover reversals.

104. Buffers should report their coverage levels publicly at least once a year. Along with procedures for buffer contributions, required time frames and any significant losses should all be documented.

105. Once the buffer constituents and risk exposure are reported, stress testing under different loss scenarios should be undertaken to demonstrate the robustness of the buffer. Regular public reporting on buffer coverage, risks, and stress testing results will ensure transparency and integrity.

106. Buffer contributions and stress-testing should occur seasonally to be in line with scientific practice and the precautionary principle. [Stress-testing at least every 3 years shall be done to assess the pool’s resilience for a range of plausible reversal risk scenarios affecting the activities linked to the pool. In addition to regular stress-testing, the composition of the buffer pool, including the share of credits by vintage, region and country, activity type, crediting methodology, and specific activity, should be published annually]

4.5.3.1.1. Intentional vs unintentional reversals

107. Whether reversals are intentional/planned should be assessed by an independent third-party. Intentional and unintentional reversals should be treated differently to address reversals.

108. Where there is an intentional reversal, the activity participant shall address the situation by

    (a) Not compensating from the buffer pool but compensating by replacement of credits from outside the buffer pool, e.g., real (unencumbered) credits owned or purchased from the market, such as credits from irreversible removals or credits from emission reductions

    (b) Buying credits from another project with similar characteristics and directly replacing the lost credits with credits from emission reductions

    (c) [making monetary contribution to the relevant regulatory body]

    (d) [removing the reversed amount within a given timeframe or financing the removal of said amount through an already established activity of different independent activity proponents, proposed by the national authority]

109. [Where there is an intentional reversal, the mechanism registry account of the activity proponent may be frozen such that all issuances/ transfers/ retirements of any credits from the proponent, including those from other projects and previously issued ERs, are halted until all reversals are fully addressed, a follow-up investigation is conducted to determine the reason and nature of the intentional reversal, and appropriate disciplinary/corrective measures taken. In addition, a public notification/tag should be made available on the mechanism registry]

110. Where there is an unintentional reversal, the activity participant shall address the situation by

    (a) Using risk buffer for events that are beyond the control of the project participants

    (b) Using only like-for-like types of credits (same or higher inherent-permanence category) can be used to compensate for unintentional reversal under buffer pools

    (c) [Replenishing the buffer pool equivalent to any reversals in excess of the share of ERs it initially contributed]

111. After a crediting period, intentional reversals must be eliminated altogether. Unintentional reversals should also be reflected in the amount of A6.4ERs credited as long as they happen during the crediting period.

4.5.3.1.2. Treatment of uncancelled/unused buffer ERs

112. Option 1: Uncancelled removals should not be automatically cancelled.

    (a) Based on the performance of the activity and a risk assessment completed at the end of the crediting period, the amount of credits that need to be maintained in the buffer pool should be reassessed, with some portion of credits returned to the activity proponent depending on the reversal risk at that point in the project lifetime; or

(b) They should be entirely returned to the activity proponent to incentivize good performance; or

(c) They should be kept in a buffer pool to continue to ensure that protect against reversal events beyond the project crediting lifetime.

113. Option 2: They should be automatically cancelled. [“Incentivising Performance” needs to be met with legal liability for default.]

114. Option 3: Removals are neither cancelled nor returned to the proponent under normal circumstances. If most projects do not suffer from reversal, the buffer pool grows over time (contributing to overall mitigation in global emissions). [The credits contributed into the buffer pool should not be returned to the contributors just as the insurance premium collected is not refunded by insurance companies. Coverage of risk is a service that is already delivered to the contributors. The rate of contribution in the future may be reduced for the entities with good track record of avoiding reversals, just as insurance premium does.]

4.5.3.2. Insurance and its operation

115. Insurance mechanisms can be designed to incorporate information about the statistical risks to an asset, using actuarial techniques.

116. In-kind insurance can ensure that any reversals are compensated for with replacement carbon removals.

117. Any insurance mechanism shall be designed around replacement of removals that is the cost of providing equivalent amount of removal today to address reversal, rather than financial compensation which is the cost of the original removals in the past.

118. To implement insurance instruments, the following aspects shall be considered: i) the risks covered by insurance policy; ii) duration of an insurance contract (policy) between an insurance provider and a project participant; iii) possible recipients of the insurance award; iv) possible uses of the insurance award; v) eligibility criteria for insurance providers.

119. To ensure that insurance serves as an efficient instrument for increasing the quality of activities involving removals, the following aspects should be considered:

(a) Insurance policies shall be customized to address the unique risks associated with different activity types;

(b) Given the long-term nature of many removal activities, insurance coverage should extend over the project’s entire lifecycle, including the monitoring and verification phases to ensure the mitigation of the risks mentioned above;

4.6. Avoidance of leakage

120. SB003 recommendation

121. Activity participants shall minimize the risk of leakage and adjust for any remaining leakage in calculations of net removals following relevant provisions to be developed by the Supervisory Body.

122. New proposals

123. Activity participants shall minimize the risk of leakage and adjust for any remaining leakage in calculations of net removals following relevant provisions that will be developed by the Supervisory Body including all applicable methodological requirements and tools to minimize and address leakage emissions.

124. Carbon leakage may occur due to the relocation of emission-intensive activities from jurisdictions with a higher cost to emit CO2 to jurisdictions with a lower cost to emit, or due to an increase in fossil emissions outside the boundary of the project caused by the project activity itself.

125. Mechanism methodologies shall consider the following principles to avoid leakage:

(a) Mechanism methodologies shall consider all potential sources of leakage associated with the type of mitigation activities and not limit the consideration to a particular boundary (i.e. not be limited to national boundaries);

(b) All material sources of leakage shall be included in the quantification of emission reductions or removals, except where the omission of leakage sources is conservative;

(c) The estimation of leakage emissions shall be robust and conservative in light of the uncertainties, taking into account the choice of assumptions, models, parameters, data sources, measurement methods, and other factors;

(d) The consideration of leakage sources shall include, where relevant: upstream or downstream emissions; emission increases due to direct or indirect shifting of activities, services or products; and ecological leakage (e.g. mitigation activities affecting emissions in nearby areas that are hydrologically connected);

(e) Mechanism methodologies shall establish requirements to minimize any material sources of leakage (e.g. through requirements that avoid leakage);

(f) Any material remaining leakage shall be estimated and deducted in the quantification of emission reductions or removals.

126. Activity participant shall conduct a comprehensive assessment of the local socio-economic and environmental context to understand where leakage may occur. To mitigate this the project design should include initiatives to support sustainable livelihoods and alternative employment.

127. Activity participant may assess the following options to reduce leakage

(a) Implementing projects on a larger scale. These larger scale projects can cover the entire area in which the leakage may occur, making it easier to control or at least quantify.

(b) Creating disincentives for activities that increase emissions (e.g. if a DACCS project were to draw significant amounts of power from the grid, government policies that support the deployment of renewables to make up the shortfall can prevent the deployment of fossil fuels to supply that electricity)

(c) The use of mathematical models that predict how emissions might change in response to a project. The most accurate method is through direct monitoring and

verification. This often involves the use of remote sensing technologies to detect changes for example in land use beyond the project boundaries that might point to increased emissions.

(d) Comparing emissions in the project area to a control group and any differences in emissions between the project area and the control area could be attributed to leakage.

128. In some cases market effects should be taken into account. Projects that produce goods or stop the production of certain goods can cause leakage if the production of goods shifts to a different area in order to meet market demand

4.7. Avoidance of other negative environmental and social impacts

129. SB003 recommendation

130. Activity participants shall minimize and, where possible, avoid negative environmental and social impacts of an activity involving removals, including impacts on biodiversity, land and soils, ecosystem health, human health, food security, local livelihoods, and the rights of indigenous peoples, following requirements to be developed by the Supervisory Body while acknowledging that the enforcement of environmental and social protection laws is a national prerogative of the host Party.

131. New proposals

132. The Supervisory Body will further develop guidance[12] taking into account national and international best practices in environmental and social protection <u>to avoid negative environmental and social impacts of an activity involving removals, including impacts on biodiversity, land and soils, ecosystem health, human health, food security, local livelihoods, and the rights of indigenous people</u>.

133. The goal of Social Impact Assessment shall be to bring about a more ecologically, socio-culturally and economically sustainable and equitable environment, promoting community development and empowerment with a proactive stance to development and better development outcomes, not just the identification or amelioration of negative or unintended outcomes.

134. Activity participant shall demonstrate efforts undertaken to working with local and indigenous organizations based on the principles of partnership, program ownership, long-term commitment, flexibility and a multiplicity of actions and solutions.

135. Stakeholder Engagement and Free, Prior and Informed Consent (FPIC) are crucial to ensure the rights and interests of local communities are respected.

136. The Supervisory Body will assess existing approaches such as Cancun safeguards (according to paragraph 71 of decision 1/CP.16) and Climate, Community and Biodiversity standards[13]), World Bank's Environmental and Social Framework, UN Guiding Principles on Business and Human Rights in developing the above guidance.

[12] See A6.4-SB007-AA-A07 - Concept note: Development of a sustainable development tool for Article 6.4 of the Paris Agreement and A6.4-SB007-AA-A04 - Concept note: Appeal and grievance processes under the Article 6.4. mechanism found at https://unfccc.int/event/Supervisory-Body-7 and

[13] https://verra.org/programs/ccbs/

137. The Supervisory Body shall establish a check list of the minimum requirements for environmental and social safeguards that shall be considered by activity proponents in identifying, monitoring and mitigating potential negative environmental and social impacts. {Note: list of requirements has been included in some stakeholder submissions }.

138. In addition to general requirements contained in “Article 6.4 mechanism activity standard”, each mechanism methodology may, taking into account specificities of different removal activity categories or types, may develop and include additional requirements for robust environmental and social safeguards.

139. The Supervisory Body may develop a positive list and/or a negative list on removal activities. The negative list shall comprise removal activities with unproven and high-risk technologies and could result in negative environmental and social impacts and violations of human rights, including Indigenous Peoples’ rights.

140. Methodologies should include a monitoring system to measure the avoidance of other negative environmental and social impacts over time and the actions to maximize social welfare throughout the activity implementation.

141. The potential for negative impacts will vary depending on the context and unique circumstances of the activities. Post-activity evaluation and reporting can help document issues and increase credit integrity for other crediting efforts in the future, as new best practices and potential pitfalls are identified and shared. The avoidance of negative environmental and social impacts should consider the full value chain, not just within the operations of the activity. Impact assessments, both before and after activities commence, shall be done to ensure that environmental and social safeguards are being met.

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