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Concept note

Removal activities under the Article 6.4 Mechanism

Version 01.0

United Nations
Framework Convention on
Climate Change

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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", requested the Supervisory Body of the mechanism established by Article 6, paragraph 4, of the Paris Agreement (the Supervisory Body), to elaborate and further develop, on the basis of the rules, modalities and procedures of the 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. The present note contains an analysis of possible removal activities under the mechanism, including their monitoring, reporting, accounting, crediting periods, as well as the issues relating to addressing reversals, avoidance of leakage and avoidance of other negative environmental and social impacts.

3. This note draws upon the following sources:

   (a) Existing rules, regulations and methodologies relating to removals activities under the flexibility mechanisms of the Kyoto Protocol, namely, the clean development mechanism (CDM) and the Joint Implementation (JI);

   (b) Earlier work done by the Subsidiary Body for Scientific and Technological Advice (SBSTA) on additional land use, land-use change and forestry (LULUCF) activities, activities related to forests in exhaustion, and alternative approaches to addressing non-permanence under the CDM;

   (c) Reports of the Intergovernmental Panel on Climate Change (IPCC);

   (d) Rules, regulations and standards of other market-based mechanisms;

   (e) Other published literature.

2. Purpose

4. The present note has the objective of facilitating the work of the Supervisory Body in arriving at its recommendation to the CMA on removal activities under the mechanism. The note provides an overview of removal activities and the issues that may arise from the potential use of removal activities under the mechanism.

3. Key issues and analysis

3.1. Types of removal activities

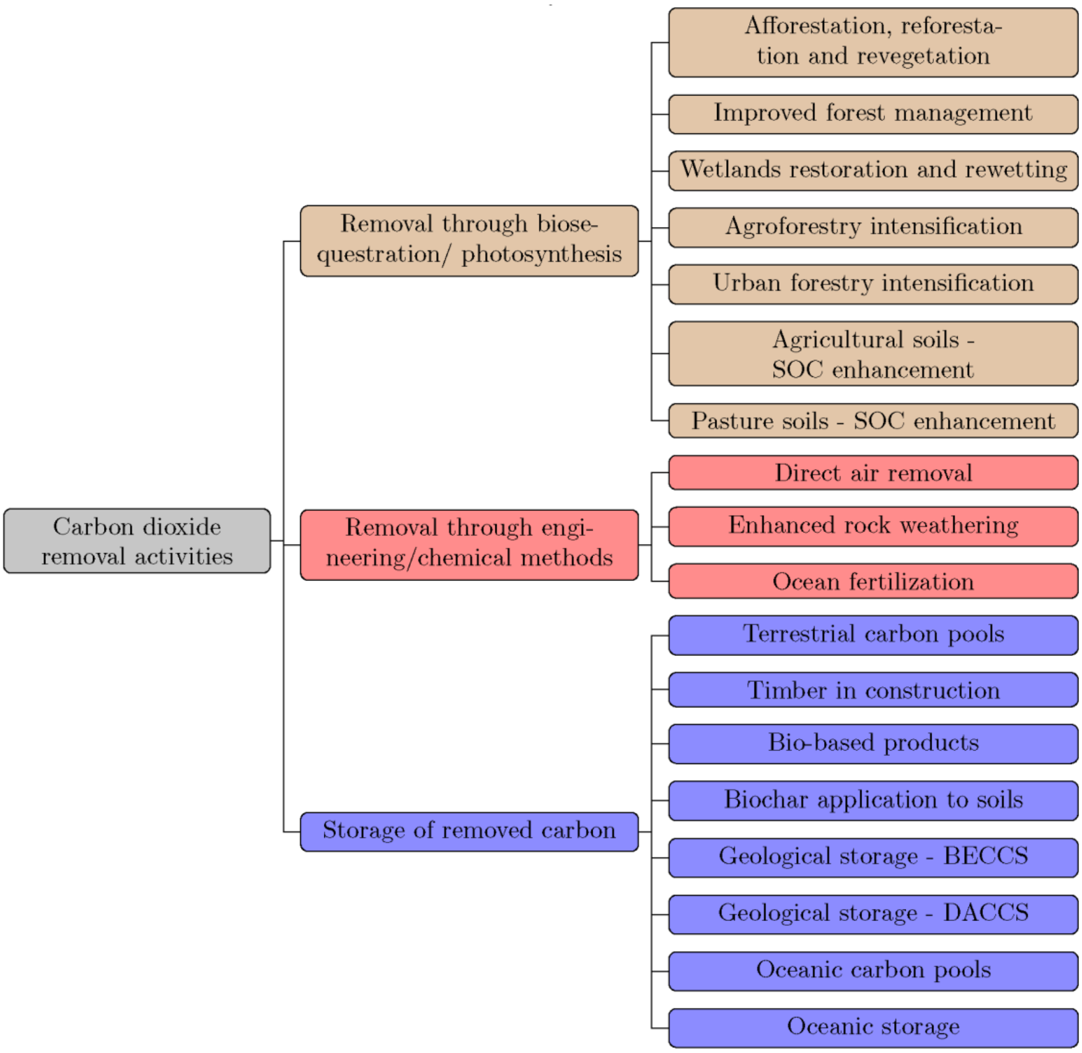
5. Carbon dioxide removal (CDR) refers to anthropogenic activities that remove carbon dioxide (CO_2) from the atmosphere and ensure its long-term storage in terrestrial,

[1] See Decision 3/CMA.3, paragraph 6(c) contained in document FCCC/PA/CMA/2021/10/Add.1, available at: https://unfccc.int/documents/460950.

geological, or ocean reservoirs, or in long-lasting products. Carbon capture and storage (CCS) and carbon capture and utilisation (CCU) can be part of CDR methods if the CO_2 has been captured from the atmosphere, either indirectly in the form of biomass or directly from ambient air, and stored over the long term in geological reservoirs or long-lasting products. Figure 1 shows an overview of CDR activities and the associated long-term storage methods.

6. According to the IPCC, CDR is a key element in scenarios that likely limit warming to 2°C or 1.5°C by 2100.[2]

Figure 1. Types of removal activities and associated carbon-storage methods



[2] Although CDR cannot serve as a substitute for deep emissions reductions, it can fulfil multiple complementary roles: (1) further reduce net CO_2 or GHG emission levels in the near-term; (2) counterbalance residual emissions from 'hard-to-transition' sectors, such as industrial activities and long-distance transport, or methane and nitrous oxide from agriculture, in order to help reach net zero CO_2 or GHG emissions in the mid-term; (3) achieve and sustain net-negative CO_2 or GHG emissions in the long-term, by deploying CDR at levels exceeding annual residual gross CO_2 or GHG emissions.

7. A brief description of the different types of removal activities is provided in the sections below.

3.1.1. Afforestation, reforestation and revegetation

8. Establishing forests and other perennial vegetation in areas where there previously were no trees, or restoration of land to forest that previously contained forest, can effectively remove carbon from the atmosphere by storing it in tree biomass and other associated terrestrial carbon pools, which, if maintained over long term, can act as a carbon reservoir.

9. Afforestation is planting trees on land not forested for a long time (e.g. over the last 50 years in the context of the Kyoto Protocol), while reforestation implies the re-establishment of forest formations after a temporary condition in which the land is not carrying forest. Abatement costs are estimated to be low compared to other CDR options.

10. The global potential of removals through afforestation and reforestation is estimated to be 0.9–1.5 gigatonne of carbon-dioxide equivalent ($GtCO_2e$) per year between 2020 and 2050.[3]

3.1.2. Sustainable forest management

11. Sustainable forest management is defined as 'the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality, and their potential to fulfil now and in the future, relevant ecological, economic and social functions at local, national and global levels and that does not cause damage to other ecosystems'.

12. Sustainable forest management can maintain or enhance forest carbon stocks, and can maintain forest carbon sinks, including by transferring carbon to wood products, thus addressing the issue of sink saturation.

13. Globally, forest management has a potential to remove 0.4–2.1 $GtCO_2e$ per year.[4]

3.1.3. Wetlands restoration and re-wetting

14. Wetlands, including peatlands, are large stores of carbon, and widely distributed across the globe. As they are drained for agriculture, peat extraction or urban expansion, they release stored carbon. Rewetting drained peatlands can swiftly stop carbon emissions as well as lead to small amounts of sequestration. While other bio-sequestration removal activities such as afforestation, reforestation, agroforestry and soil carbon management on mineral soils can reach a point of ecosystem-carbon saturation, wetlands can continue to sequester carbon for a very long time.

15. Wetland restoration aims to permanently re-establish the pre-disturbance wetland ecosystem, including the hydrological and biogeochemical processes typical of water-saturated soils, as well as the vegetation cover that pre-dated the disturbance. Normally, the restoration of previously drained wetlands is accompanied by rewetting, while the restoration of undrained, but otherwise disturbed wetlands may not require rewetting. The

[3] Source: The State of the World's Forests 2022. Food and Agriculture Organization of the United Nations, available at: https://www.fao.org/publications/sofo/2022/en/.

[4] Source: IPCC: Special Report on Climate and Land, Chapter 2, available at: https://www.ipcc.ch/srccl/.

re-establishment of a vegetation cover on a drained site without rewetting is a form of site rehabilitation.

16. Restoration and subsequent conservation of wetlands has the removal potential of 3.19 $GtCO_2e$ by 2050.[5]

3.1.4. Agroforestry

17. The integration of trees and shrubs into crop and livestock systems, while dominantly providing adaptation benefits, can also be a significant removal activity. Agroforestry practices enhance productivity, livelihoods and carbon storage, including from indigenous production systems, with variation by region, agroforestry type, and climatic conditions.

18. Despite its multiple benefits, the adoption of agroforestry has been relatively low and uneven, often constrained by the variety of barriers faced such as lack of reliable financial support, landowners' lack of experience with trees, complexity of management practices and low intermediate benefits to offset revenue lags, and inadequate market access.

19. The global potential for removals from agroforestry is estimated to be 0.08–5.7 $GtCO_2e$ per year.[6]

3.1.5. Urban forestry

20. Urban green zones such as parks and tree-belts along roads, like any other tree cover, help mitigate climate change by capturing and storing atmospheric carbon dioxide during photosynthesis, and by influencing energy needs for heating and cooling buildings.

21. The value of urban carbon sequestration is substantial. Urban forests can help cities adapt to rising temperatures and other climate change effects, including increases in heat waves. Shading and the slowing of wind speed by trees can help to reduce carbon emissions by reducing the use of air conditioning. Shading can also extend the useful life of street pavement by as much as 10 years, thereby reducing emissions associated with the petroleum-intensive materials and operation of heavy equipment required to repave roads and haul away waste.

22. The global potential for removals through urban forestry activities is estimated to be 0.082 $GtCO_2e$ per year.[7]

3.1.6. Soil organic carbon enhancement in croplands and grasslands

23. Increases in soil organic carbon (SOC) on mineral soils - in croplands or grasslands – while primarily providing adaptation benefits can also provide substantive additional removals. Management options include cover cropping, no-till cultivation, improved crop rotations, perennial crops, conversion from arable land to grassland and other management practices to increase SOC levels.

[5] Source: Project Drawdown, available at: https://drawdown.org/.

[6] Source: IPCC: Special Report on Climate and Land, Chapter 2. See footnote 4 for link to the report.

[7] Source: Environmental Research Letters, Volume 16, Number 3, 3 March 2021 (16 034059) available at: https://bit.ly/3ysbUuc.

24. Soil carbon sequestration has negligible water and energy requirements, affects nutrients and food security favourably and can be applied without changing current land use, thus making it socially more acceptable.

25. The global potential for achieving removals through increasing SOC in mineral soils is estimated to be 0.4–8.64 $GtCO_2e$ per year.[8]

3.1.7. Direct air carbon dioxide capture and storage

26. Capturing CO_2 from ambient air through chemical processes with the subsequent storage of the CO_2 in geological formations is independent of the source and timing of emissions and can avoid competition for land.

27. While the theoretical potential for direct air carbon dioxide capture and storage (DACCS) is mainly limited by the availability of safe and accessible geological storage, the CO_2 concentration in ambient air is so low that it requires much more energy than flue-gas CO_2 capture. Water requirements for DACCS can also be high.

3.1.8. Enhanced rock weathering and ocean alkalinization

28. Weathering is the natural process of rock decomposition via chemical and physical processes in which CO_2 is spontaneously consumed and converted to solid or dissolved alkaline bicarbonates and carbonates. Removals can be achieved by accelerating mineral weathering through the distribution of ground-up rock material over land, shorelines or the open ocean[9].

29. Ocean alkalinization adds alkalinity to marine areas to locally increase the CO_2 buffering capacity of the ocean. The marine application of ground minerals is limited by the feasible rates of mineral extraction, grinding and delivery. As with other engineering-based CDR options, scaling and maturity are challenges, with deployment at scale potentially incurring considerable costs in transport and disposal.

3.1.9. Ocean fertilization

30. Nutrients can be added to the ocean, resulting in increased biologic production, which lead to carbon fixation in the sunlit ocean and subsequent sequestration in the deep ocean or sea floor sediments. The added nutrients can be either micronutrients, such as iron, or macronutrients, such as nitrogen and phosphorous.

31. Only small-scale field experiments and theoretical modelling have been conducted so far.

3.2. Enabling sustained removal through long-term storage of removed carbon

32. Most bio-sequestration-based removal can reach a state of saturation because the amount of carbon that can be stored in the ecosystem is only limited (e.g. the forests cannot grow indefinitely). To overcome this limitation, long-term storage of the sequestered carbon needs to be managed. The following are some of the activities that enable the sustained long-term storage of carbon and keep the bio-sequestration sinks working.

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[8] Source: IPCC: Special Report on Climate and Land, Chapter 2. See footnote 4 for link to the report.

[9] See IPCC Global warming of 1.5°C (SR15), Chapter 4, Section 4.3.7.4 entitled “Enhanced weathering (EW) and ocean alkalinization, available at: https://www.ipcc.ch/sr15/download.

3.2.1. Timber in construction

33. Continued flow of biomass (hence sequestered carbon) can occur if wood produced is used up in building construction. This is a double-benefit activity as it not only ensures the sink strength of the removal activity, but it also achieves emission reduction by displacing more GHG-intensive building materials such as steel and cement.

34. Realizing the climate mitigation potential of mass timber building[10] could be accelerated by policy and private investment. Policy actions such as changing building codes, including mass timber in carbon offset crediting programmes, and setting building-sector-specific emissions reduction goals can remove barriers and incentivize the adoption of mass timber. Private capital, as debt or equity investment, is poised to play a crucial role in financing mass timber building.

35. The global potential for increasing the long-term storage of wood by replacing other construction materials is estimated to be 0.25–1 GtCO_2e per year.[11]

3.2.2. Long-lasting bio-based products

36. Increasing carbon stocks in long-lasting bio-based products is a way of storing carbon, with additional climate benefits resulting from the displacement of GHG-intensive materials.

37. The size of the bio-based products carbon pool depends on the quantity of carbon stored in newly produced products entering the pool, the duration of storage, and their end-of-life options such as landfilling, energy recovery, recycling, or re-use.

3.2.3. Biochar application to soils

38. Biochar is formed by recalcitrant organic carbon obtained from pyrolysis. When applied to soil, biochar can increase soil carbon stock and at the same time improve soil fertility and physical properties. Its permanence may be varying from a few decades to several centuries, depending on the soil type and biochar production temperatures. Water requirements are low, and energy could be generated from the syngas which is a side product of the process.

39. Biochar is constrained by the maximum safe holding capacity of soils. Biochar can also be used as an adsorbent for the removal of inorganic, organic and toxic compounds from soil and water; as a flue gas adsorbent; and as a building material.

40. The global potential for the long-term storage of carbon through biochar is estimated to be 0.03–4.9 GtCO_2e per year.[12]

3.2.4. Bioenergy with carbon capture and storage/use

41. Bioenergy with carbon capture and storage (BECCS) systems effectively transport the sequestered carbon into geological storage and thereby avoid the reversal of removals

[10] See for example: Chen, C.X.; Pierobon, F.; Jones, S.; Maples, I.; Gong, Y.; Ganguly, I. Comparative Life Cycle Assessment of Mass Timber and Concrete Residential Buildings: A Case Study in China. Sustainability 2022, 14, 144. https://doi.org/ 10.3390/su14010144, available at. https://bit.ly/3yl3V0v.

[11] Source: IPCC: Special Report on Climate and Land, Chapter 2. See footnote 4 for link to the report.

[12] Ibid.

achieved via biomass production. Assumed capture rates differ between technologies, for example, about 90% in the case of electricity and hydrogen production, and about 40–50% in the case of liquid fuel production.

42. Such bioenergy systems offer double benefits, as they not only ensure the sink strength of the removals activity, but also achieve emission reductions by displacing fossil fuels used in energy generation.

43. The global potential for the long-term storage of carbon through BECCS activities is estimated to be 0.4–11.3 $GtCO_2e$ per year.[13]

3.3. Eligibility of removal activities in existing carbon market mechanisms

44. The following market mechanisms in the compliance sector and voluntary sector employ removal activities to generate carbon credits.

(a) Flexibility mechanisms of the Kyoto Protocol

(i) Under the CDM, removal activities are limited to afforestation and reforestation (A/R) activities, as agreed under the Marrakech Accords. To date, 67 A/R CDM project activities and one A/R CDM programme of activities have been registered under the CDM;

(ii) At the seventeenth Conference of the Parties in Durban, South Africa, during the review of the CDM modalities and procedures at the end of the first commitment period, the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, by its decision 2/CMP.7 “Land use, land-use change and forestry”, requested the SBSTA to develop and recommend modalities and procedures for possible additional LULUCF activities under the CDM. Although negotiating Parties agreed that revegetation activities could be made eligible as CDM project activities, no recommendation could be made for lack of consensus;

(iii) Under the joint implementation of the Kyoto Protocol (JI), two A/R projects were implemented bilaterally between Annex-I Parties.[14]

(b) Voluntary sector carbon market mechanisms

(i) The range of removal activities eligible under voluntary sector carbon market mechanisms is broad. In addition to A/R activities, improved forest management, conservation of wetlands, and activities enhancing carbon sequestration in agricultural soils are also eligible under some of these mechanisms;

(ii) The methodologies under these mechanisms do not necessarily cover the full spectrum of activities under each of these removal types, yet most mechanisms are open to considering new types of projects along with new methodologies.

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[13] Source: IPCC: Special Report on Climate and Land, Chapter 2. See footnote 4 for link to the report.

[14] See, for example, RO1000080: Romania Afforestation of Degraded Agricultural Land Project, available at: https://bit.ly/3taXNGA and, RU2000050: 0311. Bikin Tiger Carbon Project - Permanent protection of otherwise logged Bikin Forest, in Primorye Russia, available at: https://bit.ly/3u9p1O2.

(c) Other offset market mechanisms in the compliance sector

(i) Compliance market mechanisms such as the Australian Carbon Farming Initiative/Emissions Reduction Fund, the California Compliance Offset Program, the Switzerland Carbon Offsets Projects (myClimate) and other such initiatives allow participants to receive credits from diverse types of land-based removal activities;

(ii) Most of the schemes mentioned in subparagraph (i) above issue tradable carbon permits to the project participants.

45. Table 1 summarizes the types of removal activity types eligible under some of the past and present carbon market mechanisms.

Table 1. Use of removal activities in existing carbon market mechanisms

Activity	**Clean development mechanism**	**Joint implementation**	**Climate Action Reserve**	**American Carbon Registry**	**Plan Vivo**	**California Compliance Offset Program**	**Australian Carbon Farming Initiative**	**Swiss Offset Projects**	**Verified Carbon Standard**	**Gold Standard**
Ecosystem-based removal activities										
Afforestation/ reforestation	x	x	x	x	x	x	x	x	x	x
Revegetation							x		x	x
Improved forest management		x	x			x	x	x	x	
Wetlands restoration		x						x	x	
Agroforestry					x		x	x	x	x
Urban forestry			x						x	
Soil organic carbon in cropland					x		x	x	x	
Soil organic carbon in pastureland					x		x	x	x	
Engineering-based removal activities										
Direct air carbon removal										
Enhanced rock weathering										
Ocean fertilization										
Use of offset credits generated										
Domestic offsets: market			x	x		x	x	x		
Domestic offsets: centrally purchased										
Offsets in a regional market			x	x		x				

Activity	**Clean development mechanism**	**Joint implementation**	**Climate Action Reserve**	**American Carbon Registry**	**Plan Vivo**	**California Compliance Offset Program**	**Australian Carbon Farming Initiative**	**Swiss Offset Projects**	**Verified Carbon Standard**	**Gold Standard**
International offsets	x	x								
Offsets used in the voluntary market					x				x	x

3.4. Methodological issues in removal activities

46. Removal activities, when used for generating carbon credits, need to address the methodological issues discussed in this section.

47. Table 2 summarizes the possible options to address various issues under the different types of removal activities.

3.4.1. Accounting: baseline setting and additionality demonstration

48. Most mechanisms recognize that an activity should be credited only if it exceeds the minimum regulatory requirements and is not commercially viable or financially attractive in itself without potential carbon revenues. Thus, the existence of additionality implies that the revenue from the carbon credits is what enables the financial viability of the activity. These concepts are universally applied across the compliance and voluntary markets.

49. The actual methods for demonstrating that these requirements are being met by an activity vary across the mechanisms. Sufficient experience in such methods and approaches has accumulated over the course of the last two decades, during which rules in the carbon markets have evolved.

3.4.2. Monitoring: quantification, uncertainty, and costs

50. Quantification of removals resulting from bio-sequestration-based activities is achieved through biomass measurements conducted in the field and fed into models. The most used models are the allometric equations, which estimate the biomass of trees based on measurements such as diameter at breast height and tree height. In appropriate cases, remotely sensed data is used in conjunction with field measurements to reduce the costs of monitoring.

51. The quantification of carbon in long-lasting carbon products is more robust, since the manufacture of products itself can provide precise data. However, since products change hands over their lifetime, the tracking of the products is a crucial aspect in ensuring the permanence of the removals. In some schemes, removal credits generated by the products pool are calculated using first-order decay models after determining a specific half-life period obtained from empirical studies.

52. The quantification of removals achieved through engineering and chemical approaches is often accurately known through the very nature of these processes.

3.4.3. Verification: third-party validation verification

53. In most schemes, the validation of the baseline and the verification of the monitoring reports of a removal activity is undertaken by accredited third-party verifiers.

3.4.4. Crediting period

54. The crediting period is the period of time during which activities are credited for removals. Activities are generally required to carry out periodic quantification of the removals that occur and monitor other outcomes that may be relevant (e.g. events causing reversal) throughout the crediting period. In some mechanisms, activity owners may have residual responsibilities even after the end of the crediting period (e.g. related to ensuring permanence).

55. The crediting period of ecosystem-based removal activities is often longer than those of emission reduction activities, as vegetation takes much longer to accumulate carbon stocks.

56. Different approaches have been used to determine the crediting period in different mechanisms, such as:

(a) Fixed versus renewable crediting period: A renewable crediting period is adopted to ensure that, over time, the baseline of the registered activity remains valid. The renewal time is also the occasion when the activity can use the latest version of the methodology applied.

(b) Length of the crediting period: Depending on the rate of biomass growth in different bioclimatic zones, a crediting period of some activities may need to be longer than that of other activities.

3.4.5. Addressing risk of reversal

57. The carbon stored in vegetation and soil as a result of a removal activity can be reversed by human actions or natural disturbances. The risk of reversal is also subject to climate change impacts. In comparison, the carbon stored in geological and ocean reservoirs (via BECCS, DACCS, or ocean alkalinisation), as well as carbon stored in biochar, is less susceptible to reversal.

58. Different approaches can be used to address the risk of reversal:

(a) Issuance of temporary (self-expiring) credits

Credits issued under this option are not fungible with the emission reduction credits, but can be used to temporarily compensate for emissions exceeding the allowed limit under a cap-and-trade system. This is the option followed under the CDM, where tCER or lCER credits are issued for a removal activity. Both these types of credits expire after a certain period of time.

(b) Compensating reversals from a pooled buffer of credits

Under this option, removal activity owners surrender a fraction of their credits to be deposited in an indemnity pool, which provides a collective insurance against reversal risks by any of the registered activities. When a reversal occurs, an equivalent number of units from this pool are retired (i.e. cancelled).

(c) Crediting of tonne-year units based on a fixed permanence period

Under this option, credits are scaled by an agreed ‘permanence period’. For example, if it is verified that 100 tonnes of removals were achieved and were maintained in the carbon pools for a period of 5 years, the tonne-years achieved would be 500. With a permanence period of 50 years, 10 credits could be issued, and the issued credits would be considered permanent, and hence fungible with emission reduction credits. No residual liability will persist for the activity owner, and no monitoring of the carbon pools will be required after issuance. If the activity owner, however, wished to get a continued stream of credits, they will have to periodically monitor the carbon stocks achieved and have these verified.

3.4.6. Avoidance of leakage

59. Carbon leakage is the increase in emissions that occurs outside the boundary of a removal activity but is attributable to (i.e., shown to be caused by) the activity. Most commonly, the decision to allocate land resources to a removal activity can cause the baseline activities occurring on that land to be shifted to another land. This shifting of activity, if it occurs, may or may not cause an increase in emissions depending on what the baseline activity is and what kind of land it is shifted to.

60. In case of engineering-based methods such as DACCS, leakage can occur in the form of “mitigation obstruction” which results from lenient mitigation policies and actions in emission reduction with the hope of achieving mitigation targets with the help of removal activities. Setting and achieving separate targets for emission reductions and emission removals can address this concern.

3.4.7. Avoidance of negative environmental and social impacts

61. Risks of removal activities for ecosystems, biodiversity and people depend on the method, site-specific context, implementation, and scale of the activity.

62. No risk is posed by reforestation, revegetation, improved forest management, soil carbon sequestration, and peatland restoration activities. In fact, such activities can enhance biodiversity and ecosystem functions and generate additional local employment and incomes. These activities, in general, also generate adaptation co-benefits in terms of strengthened resilience of ecosystems and local communities.

63. Activities of afforestation and management of soils in agricultural fields and pastures can potentially cause adverse environmental and socioeconomic impacts, including impacts on biodiversity, food and water security, local livelihoods and the rights of indigenous peoples.

64. Sustainable forest management activities can prevent and reduce land degradation, maintain land productivity, and sometimes reverse the adverse impacts of climate change on land degradation, thus contributing to adaptation.

65. Agroforestry practices potentially reduce soil erosion, facilitate water infiltration, improve soil physical properties and buffer against extreme events.

66. The removal activities of ocean fertilisation, if implemented, could lead to nutrient redistribution, restructuring of ecosystems, enhanced oxygen consumption and acidification in deeper waters.

3.4.8. Contribution to sustainable development

67. The social and economic co-benefits and the contribution to sustainable development is implicated in all types of removal activities to varying extent and in different ways.

68. The activities of reforestation, revegetation, improved forest management, soil carbon sequestration, and peatland restoration can, in general, enhance employment opportunities and local livelihoods, particularly for vulnerable populations such as women.

69. Reducing and reversing land degradation, at scales from individual farms to entire watersheds, can provide cost-effective, immediate, and long-term benefits to communities and support several of the Sustainable Development Goals.

70. However, the sustainable development contribution of removal activities also depends on the context and the design of the activities. For example, afforestation activities can compete for land that is required for food production or livestock raising, thus adversely affecting food security, social equity, and human rights where land-tenure rights are absent or poorly defined.

Table 2. Options for addressing various issues in different types of removal activities

Issue to address	Afforestation, reforestation and revegetation and improved forest management	Wetland restoration	Agroforestry and urban forestry	Soil organic carbon enhancement
Baseline setting	• Pre-project carbon stocks • Pre-project removals • Removals based on the most likely land-use scenario	Removals based on the most likely land-use scenario	Removals based on the most likely land-use scenario	Removals based on the most likely land-use scenario
Additionality demonstration approaches	• Standardized baselines (e.g. based on land types) • Positive lists (e.g. based on species) • Barrier analysis • Financial analysis	Additional by default	• Positive lists (e.g. based on species) • Barrier analysis	Additional by default
Monitoring	• Field measurements • Field measurements combined with satellite data	Field measurements	Field measurements	Field measurements
Verification	• Third party verification • Verification based on satellite data	Third party verification	Verification based on satellite data and Internet of Things (IoT) technologies	Verification based on IoT technologies
Crediting period	• Fixed vs. renewable crediting period • Longer time horizon than emission reduction activities • Re-assessment of baseline and additionality, and use of latest methodology version, at the time of renewal of crediting period	Same as in ARR	Same as in ARR	Same as in ARR

Issue to address	Afforestation, reforestation and revegetation and improved forest management	Wetland restoration	Agroforestry and urban forestry	Soil organic carbon enhancement
Addressing reversals	• Buffer reserve • Tonne-year credits	Same as in ARR/IFM	Tonne-year credits	Tonne-year credits
Avoidance of leakage	• Restricted baseline activities eligibility • Monitoring lands receiving shifted activities • Default deduction based on lands receiving shifted activities	Same as in ARR/IFM	No leakage is likely.	No leakage is likely.
Addressing negative env & social impacts	Stakeholder consultations	No adverse impacts are likely to occur.	No adverse impacts are likely to occur.	No adverse impacts are likely to occur.
Contribution to sustainable development	• Quantified SD co-benefits: monitored • Qualitative SD benefits: validated before registration and verified post-implementation	Qualitative SD benefits: validated before registration and verified post-implementation	Qualitative SD benefits: validated before registration and verified post-implementation	Qualitative SD benefits: validated before registration and verified post-implementation

4. Recommendation

71. The secretariat recommends the Supervisory Body to provide feedback and guidance on further work in view of the information provided in this document, especially information contained in Table 1 and Table 2.

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Document information

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