

## 1. UNFCCC A6.4SB Input to Structured Consultation for further work on removals

## 2. Elements for structured consultation and further work

### 2.1 Cross cutting questions:

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

#### Climeworks:

Removal activities are directly referred to in Article 4(1) of the Paris agreement, stating that a balance between GHG emissions and removals should be achieved within the second half of the century. Notably, this balance is necessary for the achievement of the long-term temperature targets specified in Paris. From the most recent, 6<sup>th</sup> Assessment Cycle of the IPCC, it is confirmed that the achievement of the long term temperature targets is requiring net-negative CO<sub>2</sub> emissions (globally) throughout the second half of the century to counterbalance other GHG emission sources. As stated within the WG3 contribution of AR6: "Carbon Dioxide Removal (CDR) is necessary to achieve net zero CO<sub>2</sub> and GHG emissions both globally and nationally, counterbalancing 'hard-to-abate' residual emissions. CDR is also an essential element of scenarios that limit warming to 1.5°C or below 2°C (>67%) by 2100, regardless of whether global emissions reach near zero, net zero or net negative levels." ([Box TS.10](#), page 114).

Within AR6, CDR is stated to be fulfilling three roles: Prior to the achievement of net-zero CO<sub>2</sub> emissions, it is contributing towards lowering cumulative emissions to the atmosphere. At net-zero CO<sub>2</sub> emissions, CDR makes for the "net" in "net-zero" CO<sub>2</sub>, as it serves to tackle and counterbalance residual emissions from hard to abate sectors. Once net-zero CO<sub>2</sub> emissions are achieved, CDR continues to fulfil an important role via the realization of "net-negative" CO<sub>2</sub> emissions, to compensate for i) other, non-CO<sub>2</sub>, GHG emissions and ii) a potential mitigation of overshoot emissions.

In short, removal activities fulfill an additional, complementary role from emission reductions, but they remain critical for the achievement of the long term temperature targets.

This guidance should thus be safeguarding that:

- 1) Removal activities are not treated as a substitute to unprecedented and fast emission reductions

To the contrary, it shall safeguard that

- 2) Removal activities are being treated as a complementary tool in climate change mitigation, following a distinct framework wherever needed to safeguard the achievement of the long-term temperature targets (e.g. see McLaren et al. [2019](#)). Thereby, removal activities will be able to meaningfully fulfil their roles specified in e.g. the AR6.

For further information on the role of DAC in mitigation, please consult Beuttler et al. [2019](#).

- 2) What are the roles and functions of the following entities in implementing the operations referred to in this guidance:
  - a. Activity proponent(s),  
Advancing the understanding of relevant and real world implications of CDR guidance.

- b. A6.4SB  
Based on i) scientific assessments, ii) stakeholder input and iii) the Paris Agreement, the A6.4SB should safeguard that CDR can (and will) be operationalized in a harmonized and effective manner. Safeguarding quality via a robust framework in both, environmental and social dimensions.
  - c. 6.4 mechanism registry administrator,  
The mechanism registry administrator should facilitate CDR deployment and its correct reflection in terms of accounting. The registry administrator should not be imposing additional (administrative) burdens for the overall functioning of the Article 6.4 mechanism. Given its oversight over projects, the mechanism registry administrator could furthermore be tasked to host and operate a grievance process for A6.4ERs.
  - d. Host Party  
No opinion
  - e. Stakeholders  
Today: Informing the set-up of the mechanism via dedicated input.  
Once operational: Contributing towards the goals of maintaining quality and robustness of the mechanism.
- 3) How are these elements understood, in particular, any interrelationships in their functions, timeframes and implementation?
- a. Monitoring period  
To safeguard that reversals are addressed “in full”, the monitoring period for CDR activities should expand a very long timeframe. For activities involving geological sequestration, certain jurisdictions have set up frameworks, where the monitoring period can be understood as almost indefinite. Such decisions allow for an effective handling of reversal events, whilst lessening the burden for project developers as in some cases, the liability to monitor and cover reversals can be transferred to national entities, upon proof of permanence based on a performance assessment.
  - b. Crediting period  
Industrial CDR approaches like DACS require high upfront investments that need to be amortized over longer timeframes (10-30 years). Whilst the choice of a short crediting period can safeguard the principles of encouraged ambition, methodologies allowing for longer crediting periods should be considered for activities such as DACS. The upper boundary of 15 years should be considered for industrial CDR activities.
  - c. Timeframe for addressing reversals  
See point above on the monitoring period. Climeworks welcomes performance based monitoring periods, safeguarding that i) monitoring is continued to the point where there is “proof of permanence” (e.g. via a transfer of liabilities as specified in the European CCS directive) whilst ii) not overburdening project developers following best practice that is following scientific assessments of what is happening to CO<sub>2</sub> once stored in a geological reservoir. Given that the A6.4SB is requested to allow for reporting of reversals and addressing them “in full” for all A6.4ERs, the above logic pertinent to geological storage could also be “transferred” towards CDR methods not reliant on geological storage.

## 2.2 Questions on specific elements

### A. Definitions:

Discuss the role and potential elements of definitions for this guidance, including “Removals”.

Definitions are extremely important. As mentioned above, there is a case for a differentiation between emissions reductions and removals in general. The removals definition should safeguard that such differentiations won't become blurred. Two more important aspects for the definition of CDR are found in:

1) The storage timeframe

Given that all reversal should be addressed in full, limiting the definition towards CDR methods that can safeguard storage permanence should be considered. Alternatively, the monitoring period should reflect options to safeguard addressing all reversals in full by coverage of a very long timeframe. The draft GHG Protocol Guidance for the Land sector and removals has specified the need for "ongoing monitoring" to safeguard that information about the carbon stock is never missing and thus allowing to address potential reversals.

2) An active anthropogenic intervention

Given that A6.4ERs shall be designed to achieve mitigation of GHG emissions that is allowing for higher ambition, an "active anthropogenic" intervention should be required per the definition.

**B. Monitoring and Reporting:**

1. What timeframes and related procedures should be specified for these elements referred to in A6.4-SB003\_A03?

a. For initial monitoring and submission of monitoring reports (para 3.2.14)

Should be designed in line with the logic of the European CCS directive for activities involving geological storage.

(a) For subsequent monitoring and submission of monitoring reports (para 3.2.14);

Should be designed in line with the logic of the European CCS directive for activities involving geological storage.

(b) For monitoring and submission of monitoring reports following an observed event that could potentially lead to a reversal (para 3.2.14);

Should be designed in line with the logic of the European CCS directive for activities involving geological storage.

(c) For monitoring and reporting, including any simplified reporting, conducted after the end of the last crediting period of activities involving removals (para 3.1.10 and 3.2.13)

Should be designed in line with the logic of the European CCS directive for activities involving geological storage.

2. Discuss any further considerations to be given to the core elements for monitoring and reporting in A6.4-SB003-A03; where possible, identifying the applicable scope, i.e., relevance to all 6.4 mechanism activities, to removals activities, or to specific removal activity categories or types.

The above points are relevant to activities involving geological sequestration. We encourage the A6.4SB to harmonize the stringency and requirements for all CDR activities, as competition between A6.4ER is to be expected, once the mechanism is fully operational. Thus, requirements for specific activities should not present a competitive disadvantage. By safeguarding a robust and science based framework, a race to the bottom in terms of quality should be addressed. We welcome considerations of clear differentiations between reductions and removals, noting the different (but complementary) roles the two mitigation approaches have to fulfil.

**C. Accounting for removals:**

1. Discuss any further considerations to be given to the core elements for accounting for removals in A6.4-SB003-A03; where possible, identifying their applicable scope, i.e., relevance to all 6.4 mechanism activities, to removals activities, or to specific removal activity categories or types.

We welcome considerations of clear differentiations between reductions and removals, noting the different (but complementary) roles the two mitigation approaches have to

fulfil. Therefore, separate accounting of reductions and removals is encouraged. This logic has been implemented in the draft guidance for the land sector and removals issued by the GHG-Protocol.

2. For activities involving removals that also result in emissions reductions, what are the relevant considerations, elements, and interactions between this guidance and the requirements for the development and assessment of mechanism methodologies, including.

“Hybrid” activities should be contributing towards reductions and removal accounts based on a verified differentiation of the outcomes based on their relative shares/contributions. Further guidance could be requested from the IPCC, based on its vast experience via the provision of guidance for the establishment of national inventories.

#### **D. Crediting period:**

Discuss any further considerations to be given to the core elements for crediting periods in A6.4SB003-A03; where possible, identifying the applicable scope, i.e., relevance to all 6.4 mechanism activities, to removals activities, or to specific removal activity categories or types.

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#### **E. Addressing Reversals:**

In order to minimize the risk of non-permanence of removals over multiple NDC implementation periods, and, where reversals occur, ensure that these are addressed in full.

1. 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);  
Buffer contributions should be reflecting the overall risk profile of activities. For activities involving geological sequestration, previous work under the CDM should be taken into account. From the Durban CCS decisions, we applaud that buffer credits are refundable per design, as it incentivizes safe operations and rewards project proponents accordingly. Given this refundability of buffer credits for CCS activities under the CDM, options for pooling with other activity types might be limited.
  - b. Insurance / guarantees for replacement of ERs where reversals occur (commercial, sovereign, other);  
For activities involving geological sequestration, the Article 6.4 mechanism should seek alignment with national requirements for the permitting of injections. Relevant legislations are e.g. in place in the US (EPA UIC class VI wells) or Europe (CCS Directive).
  - c. Other measures for addressing reversals in full.
2. Discuss the appropriate timeframe(s) for applying the approaches, including any interactions with other elements of this guidance and the applicable scope, i.e., relevance to all 6.4 mechanism activities, to removals activities, or to specific removal activity categories by types.  
For activities involving removals, please see comments on the “monitoring period” above.
3. What risks of non-permanence need to be minimized, and how can these risks be identified, assessed, and minimized?  
All risks of non-permanence need to be minimized, as they shall be “addressed in full”

based on Decision 3/CMA.3. Therefore, they should be identified upfront to the extent possible, or immediately assessed and minimized (in full?) upon occurrence.

4. In respect of risk assessment, how should the following elements be considered in the implementation of the approaches in (a) and any other relevant elements in this guidance?
  - a. Level of non-permanence risk assessment, e.g. activity- or mechanism-level  
*Activity level*
  - b. Timing for risk assessment(s)
    - i) Upfront; ii) in case of a reversal event; and iii) upon each renewal of the crediting period.
  - c. Entity(ies) responsible for risk assessment(s), e.g., activity proponent, 6.4SB actuary  
*The 6.4SB is encouraged to define activity specific risk assessments included within methodologies. Activity proponents should thereby become required to undergo the risk assessment in case they want to be issuing A6.4ER.*
5. How should the following elements be considered in the implementation of the approaches in (1) above and any other relevant elements in this guidance?
  - a. Methods for determining the level of buffer pool contributions  
*Methods should science based and allowing for periodic updates.*
  - b. Composition of buffer pool, including in relation to ER vintages and contributing activity types or categories  
*Buffer pools should be designed activity specific.*
  - c. Intentional and unintentional reversals  
*The atmosphere doesn't care if it is intentional or unintentional.*
  - d. Treatment of uncanceled buffer ERs, including after the end of the last crediting period of the contributing activity  
*Should be made refundable to award project proponents and incentivize safe operations.*
  - e. Specifications for ERs that cancelled for compensate for reversals, including in relation to ER vintages and contributing activity types or categories  
*We welcome considerations of clear differentiations between reductions and removals, noting the different (but complementary) roles the two mitigation approaches have to fulfil. Therefore, separate accounting of reductions and removals is encouraged.  
Following this logic, Climeworks encourages not to mix buffer contributions from reductions and removal activities.*
  - f. Replenishment in case buffer cancellations exceed contributions; slide language on re-raising baseline level of storage before new crediting
6. In the event of a reversal, what interactions and implementation aspects should be considered in respect of other elements of the activity cycle?  
*For activities involving geological sequestration, the Article 6.4 mechanism should seek alignment with national requirements for the permitting of injections. Relevant legislations are e.g. in place in the US (EPA UIC class VI wells) or Europe (CCS Directive).*

#### **F. Avoidance of Leakage:**

Discuss any further considerations to be given to the core elements for leakage avoidance in A6.4-SB003-A03; where possible, identifying the applicable scope, i.e., relevance to all 6.4 mechanism activities, to removals activities, or to specific removal activity categories or types.

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#### **G. Avoidance of other negative environmental, social impacts**

Discuss considerations to be given to core elements for avoidance of other negative environmental, social impacts; where possible, identifying the applicable scope, i.e., relevance to all 6.4 mechanism activities, to removals activities, or to specific removal activity categories or types.

For activities involving geological sequestration, the Article 6.4 mechanism should seek alignment with the CDM decision on CCS activities made in Durban 2011.

### **About Climeworks:**

Climeworks is a leading direct air capture (DAC) company with the most advanced DAC deployment experience worldwide. DAC is a technology that removes carbon dioxide (CO<sub>2</sub>) directly from the atmosphere. Paired with permanent geologic storage of the captured CO<sub>2</sub> (DAC+S), it provides a carbon dioxide removal (CDR) service, meaning that, when properly deployed, it effectively creates negative CO<sub>2</sub> emissions to reduce atmospheric levels of CO<sub>2</sub>.

Climeworks has already implemented more than 15 DAC projects globally, including the world's first and currently only commercial direct air capture and storage (DAC+S) facility, located in Iceland, and has collected more than 120,000 hours of real-world data and operating experience. Headquartered in Switzerland with subsidiaries in several countries, Climeworks today employs more than 300 people.