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| **Document reference number and title: A6.4-MEP006-A02. Concept note: Applicability of removal guidance to emission reductions activities and vice versa (version 01.0)** |
| **Item** | **Section no.** (as indicated in the document) | **Paragraph/Table/Figure no.** (as indicated in the document) | **Comment**(including justification for change) | **Proposed change**(including proposed text) |
| 1 | 3. Key issues and proposed solutions | 8. Accordingly, the MEP proposes to exempt certain greenhouse gas reservoirs from aspects of these elements of the Removals Standard, as discussed below for monitoring (section 3.2.3 of this document), reporting (section 3.2.4 of this document), post-crediting period monitoring and reporting (section 3.2.5 of this document), and addressing reversals (section 3.2.8 of this document). These exemptions would apply only to those activities where: (i) the greenhouse gas reservoirs are not under the control of the activity participant, and (ii) the greenhouse gas reservoir is not in the same location as where the mitigation activity is implemented, and (iii) changes observed in the greenhouse gas reservoir could not be attributed to the mitigation activity | In our view, there is a key methodological aspect to be resolved by SBM and MEP, before proceeding with the exclusion of any carbon reservoirs from the Removals Standard. The methodological gap may be called the “vintage paradox”. For more detailed explanations, we refer to our webpage on the methodological fundaments at [www.carbon-recycling.eco](http://www.carbon-recycling.eco) . For a quick explanation we reproduce following extract from the webpage (explanatory Box 6):**Emissions Reductions and Removals (A6.4 ERs)** The following definitions are set by CMA (Baku’s decisions on Article 6 Mechanisms): *“6.* ***Reductions in emissions, increases in removals,*** *as well as mitigation co-benefits of adaptation actions and/or economic diversification plans, are each and collectively referred to as” emission reductions or removals” (A6.4 ERs) in this document.”**“8(a)* ***Anthropogenic removals*** *as the withdrawal of greenhouse gases (GHGs) from the atmosphere as a result of deliberate human activities. (IPCC AR6 WGIII report, glossary);”** 1. *“9(a)* ***Removals*** *are the outcomes of processes by which greenhouse gases are removed from the atmosphere as a result of deliberate human activities and are either destroyed or durably stored through anthropogenic activities;”*

Specifically for Carbon Dioxide (CO2), we make reference to: * 1. *“8(b)* ***Carbon dioxide removal (CO2; CDR)*** *as 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. (IPCC AR-6 WG III report, technical summary).”*

References are made for the A6.4-STAN-METH-001, *“Standard: Application of the requirements of Chapter V.B (Methodologies) for the development and assessment of Article 6.4 mechanism methodologies”*, Version 01.1, and A6.4-STAN-METH-002, *“Standard: Requirements for activities involving removals under the Article 6.4 mechanism”*, Version 01.0. Baku’s COP 29 Standards for Article 6 Mechanisms operation.***Removals vs Reversals and vintages paradox***The accounting of removals is set in Section 4.4 of the Standard A6.4-STAN-METH-002, based on **monitoring of carbon reservoirs within the activity boundary, during the monitoring period (e.g. for one year “y”)**. We reproduce paragraph 30 of that standard:* 1. *“30. Removals eligible for crediting shall be determined as follows:*
	2. *(a) The net change in greenhouse gas storage shall be calculated by subtracting the sum of the change in greenhouse gas stored in each applicable greenhouse gas reservoir in the baseline scenario from the sum of the change in greenhouse gas stored in each applicable greenhouse gas reservoir in the activity scenario, calculated from the start date of the period covered by a monitoring report to the end date of the same period;*
	3. *(b) The net change in emissions, not including any greenhouse gas storage losses from the greenhouse gas reservoirs referred to in paragraph (a), shall be calculated by subtracting the total emissions in the baseline scenario from the total emissions in the activity scenario, calculated from the start date of the period covered by a monitoring report to the end date of the same period;*
	4. *(c) If the net change in greenhouse gas storage is positive, then the number of A6.4ERs issued to the activity is calculated by combining the following terms (herein referred to as net removals):*
	5. *(i) The net change in greenhouse gas storage, specified in paragraph (a);*
	6. *(ii) Minus (-) the net change in emissions, specified in paragraph (b);*
	7. *(iii) Minus (-) any applicable leakage effects;*
	8. *(iv) Minus (-) any crediting deficit, specified in paragraph (d);*
	9. *(d) If the calculation in paragraph (c) is negative, then no A6.4ERs shall be issued for the period covered by that monitoring report and the negative number shall be recorded as a* ***crediting deficit*** *and included in future A6.4ER issuance calculations;*
	10. *(e) If the net change in greenhouse gas storage is negative, then there is a reversal of an equivalent quantity* ***(herein referred to as reversals)****.”*

These standard definitions have an apparent paradox concerning the “vintage” of the mitigation outcome in the ETF accounting system, when the ITMO$ are authorized by a NDC and the corresponding adjustments are set to it. As defined in the **Glasgow Article 6.2 Guidance and the clarification given by CMA in the “Sharm el-Sheikh Decision 6/CMA.4”:** * 1. *“5. Clarifies that the vintage of an internationally transferred mitigation outcome is the calendar year in which the underlying mitigation occurred;”*

The paradox becomes clear when we realize that **removals mitigation outcomes are monitored only ex-post after the commence of the A6.2 and A6.4 activity**, and any biomass stocks (carbon reservoirs) pre-existing and reported previously to the activity start cannot be claimed as a mitigation outcome. ***Vintage paradox:* This definition of removals is apparently contradicting with the concept of renewable biomass: the biogenic constituents of any kind of wastes (urban, rural, industrial), the biofuels, the biomass collected or harvested during the mitigation activity, which have grown before the activity start, are not eligible as “removals”, for their vintage years being previous to the crediting period, for their land-use generation sites being outside of the activity boundary. Therefore, none of these biogenic substrates are CO2 emissions-free, as they have been considered by Kyoto-CDM.** | We also reproduce below part of the methodological fundaments as described in our [www.carbon-recycling.eco](http://www.carbon-recycling.eco) initiative (explanatory Box 6):This paradox raises a need for the SBM and its Methodology Panel – MEP to propose an accounting method or tool to determine the removals/reversals net effect of any biomass/biogenic substrate (Municipal Solid Wastes, biofuels, woody and non-woody biomass sources, etc.) to be used in any Emission Reduction Activity (e.g. biogas, composting, incineration, pyrolysis, etc.). If these substrates are used by the activity participants sourced from outside of the boundary and from vintage years before the activity starts, the net removals that were caused for the biogenic substrate generation, including emissions for the cultivation, fertilizers and irrigation emissions, etc., will need to be known for assessing the actual removal amounts. Moreover, when the substrate is produced during the crediting period (e.g. a BECCS activity using bagasse from a sugar-mill) the removal/reversals ratio shall be monitored in the sugar-crop cultivation, and the full effect on the carbon stocks of the activity boundary, including the direct emissions and leakage effects in the crop cultivation, shall be monitored and accounted for. **The modified Fnrb approach as possible solution**The Fraction of Non-Renewable Biomass (Fnrb) has been adopted in Kyoto-CDM to express the fraction of the CO2 emissions by oxidation of any substrate that are counteracted by a removal activity (the renewable fraction, Frb which is CO2 emissions-free) and the other fraction (Fnrb) is considered as non-renewable: any saving or avoidance of oxidation of a biomass substrate will thus receive a mitigation potential given by the fraction Fnrb. The methods and procedures to determine Frb and Fnrb are highly controversial in their origin, and tried to circumvent the estimation of “avoided deforestation” effects as a baseline for CDM activities, which were excluded by the Marrakech Accords. Now, under the Paris Mechanisms, the **Fnrb needs to be revisited to reflect not only the fact that the removals are accounted simultaneously with the emissions reductions, but also to reflect the fact that the “vintage years” and emissions footprints of the compared baseline and activity substrates differ from each other**: any biomass we have at our disposal in this present year 2025 has been grown at vintage years before the present year. Therefore, a mismatch is unavoidable between the NDC and ITMOs calculation at the ETF, following the carbon-stocks changes measured in the LULUCF sector, compared with the emissions reductions incurred by the shift of fossil fuels or non-renewable biomass by renewable biomass from a removal activity. The removal activities, from now on, will monitor the actual renewable biomass generation (Fnrb = zero) from controlled activities of bioproduction of feedstocks, ex-post monitored and discounting all activities and leakages emissions. **Biomass from any other origin, not registered and not monitored under the A6.4 and A6.2 framework, are deemed as partly non-renewable, and must have a Fnrb that is not zero. This includes any component of MWS, bagasse, woody and non-woody biomass, biofuels, animal manure, etc.** We may somewhat rephrase the above as the following: “**any CO2 emissions from combustion/oxidation of any fossil or non-fossil biogenic organic material is strictly a reversal emission**: the vintage year when the removal activity took place may be identified as being millions of years before today (fossil fuels) up to the CO2 uptake by a living vegetable in the yesterday afternoon…**The *“time-tunneling effect”* for the removal/reversal cross-comparison may be the basis for the *“Modified Fnrb Calculation Tool”*.** Two parameters shall be known or estimated for a biogenic substrate: (i) the age distribution, where the mass fractions of the components are estimated for the median vintage year “y” when the removal took place in the past years/decades, when they were generated by photosynthesis. For example, yearly harvested crops from annual cultivation and annually collected fruits/biomass from perennial cultivations or natural ecosystems (e.g. fruits, nuts), garden wastes and litter collected in urban and rural areas, etc. will be ascertained to the year where they were mechanically collected. On the other hand, biomass from multiyear regrowth (e.g. trunks and woody branches from Afforestation/Reforestation and Sustainable Forest Management activities) are estimated for the age distribution of the forests ecosystem where they were extracted from; (ii) the type or kind of management practice at the LULUCF area where the bio-substrate was extracted (natural or managed land, rural and urban, etc.). This management practice factor will influence and determine conservatively the past emissions that were incurred historically in the production of the substrate and are used to discount for emissions and leakage effects that were incurred for the biomass production, adjusting the Fnrb accordingly. A very useful reference value that may be introduced in the modified Fnrb calculation is the Keeling Curve ratio: the CO2 level at the atmosphere in any past year starting 1850 (the pre-industrial era) up to the present value of the daily/yearly measured value may be used to correct and determine the net mitigation impact for a removal activity that has occurred in the past. For example, the trunk of a tree that is older than 50 to 100 years has a Fnrb that is closer to 1.0 (almost equivalent to a fossil fuel) whereas the present year cultivated vegetables have Fnrb that are close to zero, i.e. fully renewable, if the cultivation and leakage effects emissions are discounted. This Modified Fnrb factor will reflect more precisely the net mitigation effect of a removal, if it remains monitored and accounted for as per the removal Standard (paragraph 30 cited above). When, and if in the future any reversal occurs (see again para 30), the mitigation impact and Fnrb of the reversal’s emissions will be calculated based on the age distribution of the reverted carbon stocks. The longer the permanence in time-tunnel effect, the larger the Fnrb. A very desirable consequence of the adoption of the modified Fnrb is the driving force of market evaluation of biomass stocks according to their ages: older biomass, for example the wooden structures from demolishing houses or furniture, which are 100 or more years old in their extraction, will have Fnrb close to 1.0, and shall be preferably not used for any CO2 emissions activity (e.g. combustion or energy), whereas the yearly cultivated crops or annually collected regrowth from decidual forests/trees management, will have the Fnrb close to zero, i.e., will have the largest emissions reductions potential if used to displace fossil fuels. The proposed method for modified Fnrb shall be used not only for the removal/reversal accounting of living biomass and carbon stocks at nature-based solutions, but also for the CCS (fossil CO2 with Fnrb=1.0 for geological storage) and BECCS (bioenergy-based CO2 capture and storage).  |
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