TOOL03

TOOL FOR MONITORING, REPORTING AND VERIFICATION OF EMISSIONS, REDUCTIONS AND REMOVALS

Version 02

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CONTENTS

INTRODUCTION

BACKGROUND

1. Transparency assured through robust monitoring, reporting and verification (MRV) processes is pivotal to ensure environmental integrity under the market mechanisms defined under Article 6 of the Paris Agreement (PA). Monitoring methodologies under Article 6 need to consider host country Nationally Determined Contributions (NDCs) and the national reporting commitments of both host and buyer country under the Enhanced Transparency Framework, particularly in the context of the Biennial Transparency Reports (BTRs).
2. In January 2022, the "International Initiative for Development of Article 6 Methodology Tools" (II-AMT) was launched with the aim of developing methodological tools that guide the revision of existing methodologies when applied to activities implemented in the context of Article 6 of the Paris Agreement.

OBJECTIVES

3. MRV under Article 6 should not be developed from scratch. This tool aims at complementing rules and procedures under the Clean Development Mechanism (CDM), applying the lessons learnt during their use. It therefore serves as an "add on" to existing CDM monitoring methodologies[1], providing approaches that satisfy the principles and criteria of Article 6.

4. The following experts have led the development of this tool:

    - Axel Michaelowa, Perspectives Climate Research, Switzerland
    - Randall Spalding-Fecher, Carbon Limits, Norway
    - Kentaro Takahashi, Institute for Global Environmental Strategies, Japan
    - Martha Ntabadde, member of the CDM Methodology Panel, Uganda
    - Sina Wartmann, independent consultant for MRV and Transparency
    - Naoki Matsuo, Institute for Global Environmental Strategies, Japan

5. The following experts supported the development of this tool:

    - Derik Broekhoff, Stockholm Environment Institute, US
    - Jessica Wade-Murphy, Atmosphere Alternative, Colombia
    - Clayton Munnings, Munnings Consulting, US
    - Aayushi Singh, Perspectives Climate Research, Germany

RULES AND PRINCIPLES

6. This tool is developed based on the following principles enshrined in the decisions 2/CMA.3 and 3/CMA.3 as well as 18/CMA.1 and 5/CMA.3 adopted by the Parties to the Paris Agreement:

7. **Guidance on cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement**

    "1. Internationally transferred mitigation outcomes (ITMOs) from a cooperative approach are:

    (a) Real, **verified** and additional; […]"

[1] Focus will be on the methodologies listed in Annex 1 of the Development Phase Work Plan

(c) **Measured** in metric tonnes of carbon dioxide equivalent (**t CO_2 eq**) in accordance with the **methodologies and metrics** assessed by the **Intergovernmental Panel on Climate Change** and adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA)[2]

[…]

18 f). For a first or first updated NDC consisting of policies and measures that is not quantified, **quantify the emission level resulting from the policies and measures** that are relevant to the implementation of the cooperative approach.

18 i) Describe how each cooperative approach will:

(i) **Minimize** and, where possible, **avoid negative environmental, economic and social impacts**;

22. Each participating Party shall also include, as an annex to its biennial transparency reports […], the following information on how each cooperative approach in which it participates:

(b) Ensures environmental integrity, including:

[…]

(ii) Through robust, transparent governance and the quality of mitigation outcomes, including […] addressing **uncertainties** in quantification

(iii) […] when **reversals** of emission removals occur, ensuring that these are addressed in full;"

(f) Minimizes and if possible avoid negative environmental, economic and social impacts.

8. **Rules, modalities, and procedures of the Article 6.4 Mechanism**

"24. The Supervisory Body shall, in accordance with relevant decisions of the CMA:

(a) Establish the requirements and processes necessary to operate the mechanism, relating to, inter alia: […]

(xi) The development of tools and approaches to assess and **report information about how each activity is fostering sustainable development**, [...]

32. The activity shall apply a mechanism methodology that has been developed in accordance with chapter V.B below (Methodologies) and approved by the Supervisory Body following its technical assessment, in order to: […]

(c) Ensure **accurate** monitoring of emission reductions.

50. The activity participants shall **monitor** emission reductions achieved by the activity during each monitoring period, in accordance with the relevant requirements adopted by the Supervisory Body. The activity participants shall also **monitor potential reversals** over a period to be decided by the Supervisory Body.

51. A designated operational entity shall independently review and determine the implementation of, and the emission reductions achieved by, the Article 6, paragraph 4, activity during the monitoring period (hereinafter referred to as verification) against the requirements set out in these rules, modalities and procedures, further relevant decisions of the CMA and relevant requirements adopted

[2] The Article 6.2 guidance also allows for ITMOs to be measured in other non-greenhouse gas (GHG) metrics determined by the participating Parties that are consistent with the nationally determined contributions (NDCs) of the participating Parties. However, this tool only focuses on MRV of GHG metrics.

by the Supervisory Body, and provide written assurance of the **verified** emission reductions (hereinafter referred to as certification)."

9. **Modalities, procedures, and guidelines of the enhanced transparency framework**

"3. The guiding principles of these modalities, procedures, and guidelines (MPGs) are:

[…]

(d) Promoting **transparency**, **accuracy**, **completeness**, **consistency** and **comparability**;

[…]

31. Each Party shall use notation keys where numerical data are not available when completing common reporting tables, indicating the reasons why emissions from sources and removals by sinks and associated data for specific sectors, categories and subcategories or gases are not reported. These notation keys include: […]

(e) "C" (confidential) for emissions by sources and removals by sinks of GHGs where the reporting would involve the **disclosure of confidential information**

[…]

37. Each Party shall use the **100-year time-horizon global warming potential (GWP)** values from the **IPCC Fifth Assessment Report**, or 100-year time-horizon GWP values from a subsequent IPCC assessment report as agreed upon by the CMA."

10. **Further principles**

Since the objective of the tool is to reform the existing CDM MRV framework, the requirements for the monitoring plan of CDM and JI activities enshrined in the Marrakech Accords of 2001 are as follows (wording taken from the JI section, it is repeated verbatim in the CDM section):

"(a) The collection and archiving of **all relevant data** necessary for estimating or measuring anthropogenic emissions by sources and/or anthropogenic removals by sinks of greenhouse gases occurring **within the project boundary during the crediting period**;

(b) The **collection and archiving** of all relevant data necessary for determining the baseline of anthropogenic emissions by sources and/or anthropogenic removals by sinks of greenhouse gases within the project boundary during the crediting period;

(c) The identification of all potential sources of, and the collection and archiving of data on increased anthropogenic emissions by sources and/or reduced anthropogenic removals by sinks of greenhouse gases **outside the project boundary** that are **significant** and **reasonably attributable** to the project during the crediting period. The project boundary shall encompass all anthropogenic emissions by sources and/or removals by sinks of greenhouse gases under the control of the project participants that are significant and reasonably attributable to the […] project;

[…]

(e) **Quality assurance and control procedures** for the monitoring process;

(f) Procedures for the periodic calculation of the reductions of anthropogenic emissions by sources and/or enhancements of anthropogenic removals by sinks by the proposed […] project, and for leakage effects, if any. Leakage is defined as the net change of anthropogenic emissions by sources and/or

removals by sinks of greenhouse gases which occurs outside the project boundary, and that is **measurable** and **attributable** to the […] project;

(g) **Documentation of all steps** involved in the calculations referred to in subparagraphs (b) and (f) above."

Decision 9/CMP.7 on the "Materiality standard under the clean development mechanism" specifies that

"The Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol […]

1. Decides that the concept of **materiality** should be applied in a **consistent manner** under the clean development mechanism; […]

4. […] decides that information related to a clean development mechanism project activity shall be considered material if its omission, misstatement, or the non-compliance with a requirement might lead, at an aggregated level, to an **overestimation of the total emission reductions** or removals achieved by a clean development mechanism project activity equal to or higher than:

(a) 0.5% of the emission reductions or removals for project activities achieving a total emission reduction or removal of equal to or more than 500,000 t CO_2e per year;

(b) 1% of the emission reductions or removals for project activities achieving a total emission reduction or removal between 300,000 and 500,000 t CO_2e per year;

(c) 2% of the emission reductions or removals for large-scale project activities achieving a total emission reduction or removal of 300,000 t CO_2e per year or less;

(d) 5% of the emission reductions or removals for small-scale project activities other than project activities covered under paragraph 4(e) below;

(e) 10% of the emission reductions or removals for the type of project activities that are referred to in decision 3/CMP.6, paragraph 38 [i.e., renewable energy projects <5 MW and energy efficiency projects projecting energy savings <20 GWh per year]"

SCOPE AND APPLICABILITY

11. This tool specifies updates to the monitoring elements of CDM methodologies, as well as related reporting and verification elements, to ensure alignment with the Article 6.2 guidance; the rules, modalities, and procedures (RMPs) of the Article 6.4 mechanism; and MPGs of the enhanced transparency framework (ETF). Where existing standards for monitoring outside of CDM methodologies, such as standards for monitoring equipment or sustainable development (SD) monitoring, appropriately capture the principles of Article 6, the tool provides a direct reference to such standards.

12. The key elements for updating the existing framework are listed below:

    a) Fehler! Verweisquelle konnte nicht gefunden werden.Fehler! Verweisquelle konnte nicht gefunden werden. Ensuring conservativeness in case accuracy is low due to excessive costs of accurate monitoring approaches:
        i. the baseline
        ii. activity emissions and/or removals

    b)

c) ELEMENT 1: Ensuring conservativeness

13. Different elements of a monitoring methodology can vary greatly in their levels of uncertainty, depending on the data collection approach and the sector as well as sources of emissions or removals in question. Measurement equipment, be it for material flows or continuous measurement of GHG emissions, when calibrated and maintained according to specifications, tends to exhibit low uncertainties well below 10% for the majority of application cases. Other data collection approaches, e.g. surveys, sampling, data related to biological processes, e.g. in the agriculture and forestry sectors, can exhibit considerably higher uncertainty levels. The IPCC 2006 Guidelines for national GHG inventories provide default uncertainty levels for categories of GHG emissions / removals throughout all sectors.

14. Activity developers should ensure that the overall uncertainty of their emission and/or removal estimation does not exceed the overall level of uncertainty for the respective category in the national GHG inventory of the host country for the most recent reporting year available at the time of developing the methodology. Uncertainty levels can be found in the host country's national GHG inventory document. Where an uncertainty level for the relevant categories is not available, e.g. as the host country is at the time only reporting a qualitative uncertainty level, the activity developer can use the default values in the IPCC 2006 Guidelines for the categories in question to calculate the relevant uncertainty level.

15. In developing the monitoring methodology, the activity developer should strive for the highest level of accuracy available without prohibitive cost. Cost and accuracy can be balanced through the concept of conservativeness. Where a higher level of accuracy would lead to prohibitive costs, the activity developer can use a less accurate methodology if it ensures that emissions are rather overestimated, and removals are rather underestimated. In the activity design document, the activity developer shall briefly present different monitoring options for the various elements of the calculation of project emissions or removals and a justification the options chosen.

16. For any monitoring methodology where technical measurement equipment is used (e.g., liquid or gas flow meters, electricity/kilowatt-hour meters), the uncertainty of the measurement is taken into account conservatively by using the reading of the measurement equipment at the lower end of the uncertainty range of the measurement at a 95% confidence interval, taking into account the provisions of article 35 above (i.e. overall uncertainty of emissions and/or removal estimation does not exceed the overall level of uncertainty for the respective category in the national GHG inventory of the host country). For example, if the measured natural gas flow rate for electricity or heat production is 1 m^3/h and the uncertainty range of the measurement method is ±2%, emissions reductions shall be calculated based on a flow rate of 0.98 m^3/h. Assuming that this example is in a developing country with a less developed statistical system and where the uncertainty level for the relevant category is not available, reference should be made to table 2.15 of Chapter 2 of the IPCC 2006 Guidelines, which indicates that the maximum uncertainty allowed is 2% ("less developed statistical systems, surveys"). The uncertainty range of the project measurement method is therefore within the uncertainty range given in the IPCC guidelines.

d) **ELEMENT 2: Monitoring of all relevant policies**Ensuring monitoring of all relevant policies, including potential new policies influencing emissions levels of the activity
e) **ELEMENT 3:** Ensuring full identification and monitoring of reversals
f) **ELEMENT 4: Monitoring Sustainable Development impacts**Ensuring identification and monitoring of all relevant sustainable development parameters through use of robust methodological guidance and tools.

The Article 6 MRV tool also recognises the following elements deemed sufficiently addressed under the existing CDM MRV methodological approaches by the experts involved, which may only require minor modification:

g) ELEMENT 5: **Accuracy**
h) ELEMENT 6: **Completeness**
i) ELEMENT 7: **Consistency**
j) ELEMENT 8: **Comparability**
k) ELEMENT 9: **Leakage**
l) ELEMENT 10: **Materiality**
m) (d) 5 **per** cent of the emission reductions or removals for small-scale project activities other than project activities covered under subparagraph (e) below; (e) 10 per cent of the emission reductions or removals for the type of project activities referred to in decision 3/CMP.6, paragraph 38 (referred to as microscale project activities).
n) ELEMENT **11: Confidential information**
o) Generally, no information that is **used in** the proof of additionality should be confidential.
p) ELEMENT **12: Use of recent IPCC AR GWPs**
q) ELEMENT 13: **Quality assurance (QA)/Quality control (QC**

TERMS AND DEFINITIONS[3]

17. The following terms and definitions are applied under this tool:

18. **Accuracy**
    - A relative measure of the exactness of the estimations of the monitored variables that make up the formulae expressing net project emissions and baseline emissions. The accuracy of project emissions, baseline emissions, or emission reductions is calculated by the error propagation formula. (Accuracy concept is not applied to how the mathematical formula of the counter-factual baseline emissions is represented). Estimates should be accurate in the sense that they are systematically neither over nor under true emissions or removals, so far as can be judged. When there is accuracy, there is agreement between the true value and the average of repeated measured observations or estimates of a given variable. An accurate measurement or prediction lacks bias or, equivalently, systematic error[4]. In theory, the system should be designed so that higher accurate monitoring provides larger emission reductions.
    - This means all endeavours is made to remove bias from the emissions estimates using the best approaches to data collection and putting into consideration uncertainty.
19. **Activity**
    - A practice or ensemble of practices that take place on a delineated area over a given period of time.
20. **Activity boundary**
    - The activity boundary should encompass all anthropogenic emissions by sources or of greenhouse gases (GHG) influenced by the activity.

[3] As the tool develops over the development phase, this section will evolve with addition of new terms.
[4] Definition based on the IPCC Glossary of terms

- An activity boundary may vary by the type of activity and may encompass the area outside of the project participants' control.

21. **Bias (systematic error)**

- lack of accuracy and it can occur when the available data is not representative of the actual situation or due to instrument error.

22. **Comparability**

- Activities are monitored and reported in a way that allows comparison with similar activities.

23. **Completeness**

- All parameters that are relevant for estimation of material baseline and activity emissions or sinks for all gases within the project activity boundary, are covered or monitored.

24. **Consistency**

- Estimates for different years of the monitoring period of an activity, are made in such a way that differences in the results between years reflect real differences in emissions. Estimates should, as far as possible, be monitored and calculated using the same method and data sources in all reporting years of the activity and should aim to reflect the real annual fluctuations in emissions or removals and not be subject to changes resulting from methodological differences

25. **Conservativeness**

- The concept of conservativeness aims to provide a balance between accuracy and costs. Where a more accurate approach to monitoring project emissions or removals leads to prohibitive costs, a less accurate approach can be balanced by ensuring that project emissions are overestimated and project removals are underestimated.
-

26. **Leakage**

- Emissions occurring outside the activity boundary that are quantifiable and attributable to the proposed activity.
- Increased emissions, or reduced removals, occurring as a result of the activity but not related to the activity's primary or intended effect.
- Leakage must be estimated based on a comparison to the baseline scenario for the activity causing the leakage and applied to the sources/sinks affected.

27. **Materiality**

- Emissions / removals are material if they are significant.

28. **Monitoring period**

- Must be equal to calendar years, and aligned with the annual emission balances of sources and sinks covered by the NDC to allow for robust accounting[5]
- The end of a monitoring period must coincide with the end of the NDC implementation period, thereby allowing for monitoring of updated baseline parameters of the new NDC implementation period in a new monitoring period[6].

29. **Permanence**

[5] See II-AMT GUIDE01 for further details.
[6] See II-AMT GUIDE01 for further details.

- Permanence refers to a situation where the mitigation outcomes generated by a mitigation activity cannot be reversed later.
- Non-permanence risk is associated with mitigation activities that enhance the storage of carbon in a reservoir, either by reducing carbon emissions from a reservoir, or by removing carbon from the atmosphere and storing it in a reservoir.
- Degree to which generated mitigation outcomes cannot be reversed needs to be clearly defined.

30. **Removal**

    - Anthropogenic activities removing CO_2 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 or geochemical sinks and direct air carbon capture and storage but excludes natural CO_2 uptake not directly caused by human activities.

31. **Reporting**

    Is done on two levels

    - The activity level: through the monitoring report, which is submitted to the accredited auditor for verification and certification of the emission reductions from the activity.
    - The national level: by participating Parties (e.g., the host country) through their initial and regular information on the activity and how it ensures environmental integrity and contributes to NDC/long-term low emission development strategy (LT-LEDS) implementation. If this information is provided by the activity design documentation and monitoring reports, it reduces the reporting burden for host countries[7].

32. **Relevant policy**

    - A policy is relevant if it impacts an activity's level of greenhouse gas emissions/removals and is beyond the control of the activity developer

33. **Reversal**

    - Release of greenhouse gases previously removed by the activity into the atmosphere, or;
    - Destruction of a reservoir of greenhouse gases previously protected by the activity

34. **Reservoir**
    - A component or components of the climate system where a greenhouse gas or a precursor of a greenhouse gas is stored.

35. **Uncertainty**
    - It characterizes the range within which the true value of a measurement is expected to lie, with a specified level of confidence.

NEW ELEMENTS TO BE CONSIDERED IN LIGHT OF ARTICLE 6

36. This section of the tool specifies the new elements relevant under Article 6 for MRV. These specifications are to be applied in the CDM methodologies used by activity developers. Designated Operational Entities (DOEs) are to assess during validation whether the specifications are properly applied in activity design documents, and check during verification whether monitoring reports are consistent with these specifications.

[7] See II-AMT GUIDE01 for further details.

37. **ELEMENT 1: Ensuring conservativeness**

38. Different elements of a monitoring methodology can vary greatly in their levels of uncertainty, depending on the data collection approach and the sector as well as sources of emissions or removals in question. Measurement equipment, be it for material flows or continuous measurement of GHG emissions, when calibrated and maintained according to specifications, tends to exhibit low uncertainties well below 10% for the majority of application cases. Other data collection approaches, e.g. surveys, sampling, data related to biological processes, e.g. in the agriculture and forestry sectors, can exhibit considerably higher uncertainty levels. The IPCC 2006 Guidelines for national GHG inventories provide default uncertainty levels for categories of GHG emissions / removals throughout all sectors.

39. Activity developers should ensure that the overall uncertainty of their emission and/or removal estimation does not exceed the overall level of uncertainty for the respective category in the national GHG inventory of the host country for the most recent reporting year available at the time of developing the methodology. Uncertainty levels can be found in the host country's national GHG inventory document. Where an uncertainty level for the relevant categories is not available, e.g. as the host country is at the time only reporting a qualitative uncertainty level, the activity developer can use the default values in the IPCC 2006 Guidelines for the categories in question to calculate the relevant uncertainty level.

40. In developing the monitoring methodology, the activity developer should strive for the highest level of accuracy available without prohibitive cost. Cost and accuracy can be balanced through the concept of conservativeness. Where a higher level of accuracy would lead to prohibitive costs, the activity developer can use a less accurate methodology if it ensures that emissions are rather overestimated, and removals are rather underestimated. In the activity design document, the activity developer shall briefly present different monitoring options for the various elements of the calculation of project emissions or removals and a justification the options chosen.

41. For any monitoring methodology where technical measurement equipment is used (e.g., liquid or gas flow meters, electricity/kilowatt-hour meters), the uncertainty of the measurement is taken into account conservatively by using the reading of the measurement equipment at the lower end of the uncertainty range of the measurement at a 95% confidence interval, taking into account the provisions of article 35 above (i.e. overall uncertainty of emissions and/or removal estimation does not exceed the overall level of uncertainty for the respective category in the national GHG inventory of the host country). For example, if the measured natural gas flow rate for electricity or heat production is 1 m^3/h and the uncertainty range of the measurement method is ±2%, emissions reductions shall be calculated based on a flow rate of 0.98 m^3/h. Assuming that this example is in a developing country with a less developed statistical system and where the uncertainty level for the relevant category is not available, reference should be made to table 2.15 of Chapter 2 of the IPCC 2006 Guidelines, which indicates that the maximum uncertainty allowed is 2% ("less developed statistical systems, surveys"). The uncertainty range of the project measurement method is therefore within the uncertainty range given in the IPCC guidelines.

42. **ELEMENT 2: Monitoring of all relevant policies**

43. A relevant policy is a policy that leads to a relevant change of emissions of an activity over a period of one year or more and which is not part of that activity.

44. Relevant policies might include, among other, mandatory regulations and monetary incentives or disincentives. These might influence the choice of technologies, consumption and/or demand, which in turn influence emission levels under the activity and/or might require an adjustment to the baseline

45. **Step 1:** As part of developing the monitoring plan, the project developer shall carry out a risk analysis whether activity emission levels (e.g., relating to technologies, consumption, demand) might be influenced by policies during the crediting period.

46. The activity developer might provide a simplified estimate of changes to the activity's and/or the baseline's GHG levels (as appropriate) by comparing GHG levels with and without the policies, modifying relevant elements of the estimation approach, e.g., related to technologies, consumption, or demand. Whilst doing so and to the extent feasible, the activity developer should refer to the targets or specifications (e.g., regulatory text and/or impact assessments of the policies)

47. **Step 2:** The activity developer shall assess every five years, aligned with NDC periods, whether policies significantly influencing the activity's GHG emission and/or baseline emission levels over a year or longer have been implemented. For this purpose, the activity developer shall provide relevant information as well as a simplified estimate of GHG emission changes under the activity. Relevant information might include legislative and administrative texts and/or formal statements of public entities to the activity developers.

48. The host country's DNA shall, upon request and every five years, aligned with NDC periods, provide information to activity developers about relevant planned and/or implemented policies which might influence activity emission levels.

49. **Step 3:** Where the 5-yearly assessment indicates adjustments to the estimation of activity reduction and/or removals, the activity developer shall adjust the baseline and/or methodology for the estimation of the activity emissions and/or removals accordingly. He shall also do so retrospectively, where this is appropriate and calculate the amount of certificates to be issued for these past years. Where the amount of certificates to be issued according to this recalculation is lower than the amount actually issued for the years in question, the host country shall, in case the 5-year period coincides with the end of the NDC period, request the activity developer to return to the host country a number of certificates equalling the difference between the issued amount and the recalculated amount In case the 5-year period does not coincide with the end of the NDC period, deduct the number of certificates equalling the difference between the amount issued and amount recalculated from any certificates to be issued in the next 5-year period.

50. **ELEMENT 3: Monitoring of reversals**

51. **Step 1:** [Option 1] Developers of activities that generate reservoirs of GHGs through removals or protect reservoirs from destruction are responsible for monitoring the activity area to identify potential reversals through remote sensing at least annually from the start of the crediting period, and after the crediting period [for a duration of 100 years] [for a duration of [10] years after the end of the last crediting period].

52. [Option 2] Activity developers can discharge themselves from this monitoring requirement by showing a statement from the Article 6 authority of the host country that the host country government takes over the responsibility for monitoring for the remainder of the monitoring duration, and reports on each activity for which it takes the responsibility in its annual Article 6 report to the UNFCCC.

53. [Option 3, if available] From the start of the crediting period, and after the crediting period [for a duration of 100 years] [for a duration of [10] years after the end of the last crediting period], the

UNFCCC Secretariat identifies potential reversals through remote sensing of all such activity areas. Once a potential reversal has been identified, the developer of the activity is tasked to organize monitoring of the activity area. Activity developers can discharge themselves from this monitoring requirement by showing a statement from the Article 6 authority of the host country that the host country government takes over the responsibility for monitoring for the remainder of the monitoring duration

54. **Step 2:** In case a reversal has been identified, monitoring will be undertaken to determine the extent of this reversal. Developers of activities must present an identification and monitoring plan for the duration of the monitoring period which as a minimum describes the following:

    - Remote sensing technology to be used to identify reversals
    - Source of remote sensing data
    - Frequency of monitoring for reversal (minimum once per year)
    - Responsibilities for monitoring (incl. proof if responsibility for monitoring is discharged to the Article 6 authority of the host country)
    - Procedure for notification in case of reversal
    - Procedure for monitoring extent of reversal (if relevant)
    - Annual cost for identification of reversal
    - Annual cost for monitoring in case of reversal

55. The activity developer is required to have in place sufficient financial provisions to fulfil obligations related to the identification and monitoring of reversals, either through insurance contracts or provision of funding in an escrow account. The activity developer is required to provide details of the actual nature of the financial need, the estimated volume (level) of the financial provision foreseen to be required and a description of the nature (type) of the financial provisions it [has] [will] establish[ed] to cover the needs for long term identification and monitoring of reversals. The activity developer should provide all accompanying documentation and evidence required to support statements made in Table 1.

56. **Step 3:** In case a reversal has been identified and its extent determined through monitoring, it needs to be remedied in full [through cancellation of credits in buffer reserves]. Unless specified through monitoring, the reversal should be assumed to have begun one day after the date of the previous monitoring activity, and the period for cancellation of credits should begin on that date.

TABLE 1: COSTS OF MONITORING AND VERIFICATION OF REVERSALS

Coverage: The cost of ongoing monitoring, at an appropriate frequency, of the reservoir of GHGs and of verification and certification by a designated operational entity for at least xx years after the end of the last crediting period of the project activity
Detailed description of the financial need
Level of financial provision

Type of financial provision

57. **ELEMENT 4: Monitoring Sustainable Development impacts**

58. Given a strong political mandate to track sustainable development impacts – both positive and negative - under the Article 6.4 mechanism, there is a need to revisit the CDM SD tool and fill the gaps identified by carbon market experts to design a robust SD assessment system under Article 6.

59. Some of the gaps in the CDM SD tool are lack of quantification of co-benefits, lack of safeguards against negative SD impacts, voluntary and not mandatory monitoring, reporting and verification of co-benefits, and lack of guidance on stakeholder consultations.

60. This element refers to the Tool to track and monitor SD impacts developed by the A6.4SB; and provides a Safeguards tool.

61. The SD tool provides a high-level guidance on identifying relevant SD parameters and monitoring SD impacts in a consistent approach that bridges the gaps in the CDM SD tool.

62. **Safeguards Assessment Tool.**

63. The Safeguards tool with robust social and environmental safeguards provides a minimum threshold that an activity must adhere to in order to ensure that it abides by the “do-no-harm” principles.

64. The project proponent shall carry out an assessment of the environmental, economic and social impacts of the proposed project activity using the following steps:

65. **Step 1: Screening**

66. This would entail a quick high-level analysis to determine whether a detailed Environmental, Social-economic Impact Assessment (ESIA) is necessary, in accordance with the legislative framework of the host country or as required by an international body, if applicable to the given technology. Consultation at this stage must happen with the planning authorities of the host country. The regulatory body in charge of environmental enforcement or any other that the host country fronts to fulfil this role, shall ensure that the screening is non-biased. The host country may choose to develop a list of micro-scale mitigation technologies for which a detailed ESIA may not be deemed necessary.

67. **Step 2: Scoping**

68. If the step above requires that a full Environmental, Economic and Social Impact Assessment is necessary, this step follows to determine which environmental, social and economic impacts are likely to be significant plus identify data availability gaps and identify spatial (e.g. project boundary) and temporal scopes (e.g. for the length of the crediting period)

69. At this stage consultation is important with the host country government enforcement agency to confirm that the proposed scope is appropriate; local communities; and other relevant stakeholders is important in ensuring all potential impacts are identified.

70. **Step 3: Assessment**

71. The project proponent shall apply the ***IFC Performance Standards on Social and Environmental Sustainability***[8] or ***the Environmental and Social standards*** under the World Bank Environmental and Social Framework[9] in the assessment of social-economic and environmental project impacts and identification of mitigation options.

72. The two standards are closely related and aim to address a broader scope of environment and social risks and potential impacts to be assessed and managed by the project activity proponent including on climate change, biodiversity, community health, road traffic safety, disability, occupational health and safety and ways to ensure vulnerable groups have access to project benefits.

73. All projects for which an ESIA is deemed necessary under step 1, shall abide by the IFC Performance Standard 1 or World Bank Environmental and Social Standard 1: Assessment and Management of Environmental and Social Risks and Impacts[10]; throughout the duration of the crediting period of the project activity. When considered necessary by the host country environmental regulatory body, the project activity may be mandated to abide by other IFC performance Standards, in the management of other impacts by the project that are considered significant. The assessment can be broken down into three parts:

    I. Baseline Assessment

    Baseline assessment is important to provide a reference point against which any future environmental, social and economic impacts associated with a project activity can be gauged.

    II. Impact prediction and Evaluation

    This is considered the heart of the Assessment and involves analysing the impacts identified in the scoping and baseline study, to determine the nature, temporal and special scale, magnitude and likelihood of the identified impacts. This will require professional judgement and input from various experts including ecologists, biologists, economists and sociologists. Once the potential impacts are more fully understood, it is necessary to judge the significance of each impact, to determine whether it is acceptable, requires mitigation or is unacceptable.

    III. Mitigation of identified Impacts

    Mitigation aims to eliminate or reduce negative environmental, social and economic impacts of the project activity. Mitigation options should generally be considered in the following order of preference: avoidance, reduction, restoration of environment, relocation and compensation.

74. **Step 4: Formulation of Environmental and Social Management Plan (ESMP) and the Environmental Impact Statement (EIS).**

75. Following the assessment, a plan is formulated in an Environmental and Social Management Plan (ESMP), which is a report defining main environmental, economic and social activities; measures on prevention; minimisation and mitigation of the impacts; as well as organisational structures and responsibilities, schedule and a sufficient budget for implementation of the Plan and monitoring activities over the course of the crediting period of the activity.

[8] https://www.ifc.org/wps/wcm/connect/c02c2e86-e6cd-4b55-95a2-b3395d204279/IFC_Performance_Standards.pdf?MOD=AJPERES&CVID=kTjHBzk
[9] https://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-standards.
[10] https://documents1.worldbank.org/curated/en/142691530216729197/ESF-Guidance-Note-1-Assessment-and-Management-of-Environmental-and-Social-Risks-and-Impacts-English.pdf

76. The results of the environmental and social impact assessment process and findings are summarized in a report-the Environmental Impact Statement (EIS). It provides a clear review of potential impacts and how they have been and will be mitigated. This report will form the basis of public consultation activities and is the document that will be presented to regulatory authorities of the host country and would suffice to fulfil the requirements of decision 18/CMA.1, paragraph 18h (i) or paragraph 22 (f) to provide detailed information to demonstrate that the activity minimizes and, where possible, avoids negative, environmental, economic and social impacts.

FIGURE 1: FLOWCHART SHOWING THE SAFEGUARD ASSESSMENT PROCESS

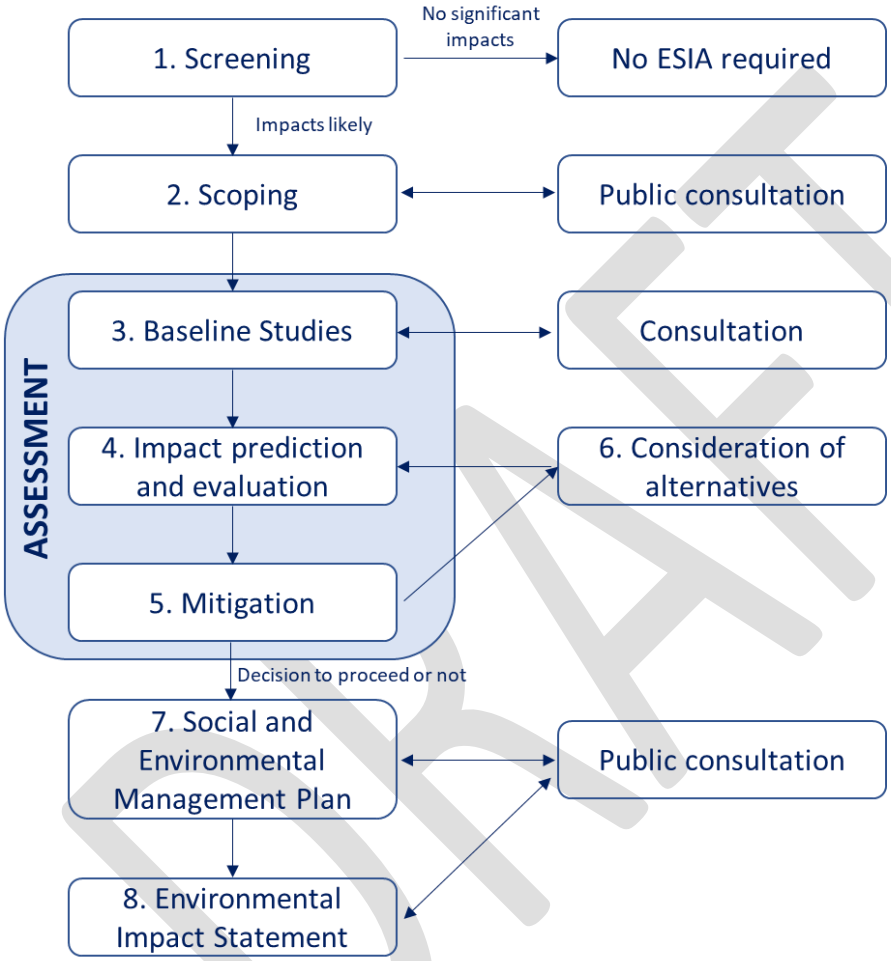

Figure 1: Flowchart showing the Safeguards assessment process.

KEY MRV ELEMENTS SUFFICIENTLY ADDRESSED UNDER CDM METHODOLOGIES

77. This section briefly discusses the MRV elements sufficiently addressed under CDM methodologies and need not be addressed in detail by this tool. For a subset of CDM methodologies, they may require some adjustments in light of Article 6 decisions; however, these are expected to be minor and will not fundamentally change the elements.

78. ELEMENT **5: Accuracy**

- The measured values should neither be over nor underestimated. In the estimation of mitigation outcomes of a given activity, the aim should be to use data or information that is as representative as possible in order to reduce possible bias and increase accuracy This means making all endeavours to remove bias from the estimates and taking care of uncertainty. However, where the cost of achieving accuracy is prohibitive, the activity developer may strike a balance between accuracy and conservativeness, using a less accurate approach while ensuring that GHG emission levels are not underestimated / sinks are not overestimated. For this purpose, the activity developer shall provide a proper justification indicating why a more accurate approach leads to unreasonable costs and what alternative approach is suggested. Costs are considered unreasonable when the costs of achieving a higher accuracy, exceed the benefit derived from it. The alternative approach proposed, with a higher uncertainty, shall apply the most conservative value of the resulting confidence interval, i.e. the lower end of the confidence interval for parameters applied in the baseline and the higher end for parameters applied for calculating activity emissions (see element 1 above).

- The accuracy element will entail specification within the methodology, of the confidence intervals for measurement equipment and monitoring parameters as well as specification of calibration requirements for measurement equipment in order to ensure accuracy.

- The general approach under the CDM of setting confidence intervals for monitoring parameters presents a good starting point to address uncertainty. The confidence interval is a range that encloses the true value of an unknown fixed quantity with a specified confidence (probability). Typically, a 95 percent confidence interval has been used following IPCC Guidelines for National GHG inventories.

- However, in the measurement or quantification of any parameter, the degree of uncertainty shall be quantified and accounted for in the estimation of the mitigation outcomes. The activity developer shall collect appropriate information necessary to develop estimates of uncertainty at 95 percent confidence interval.

- The 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories contain uncertainty assessment guidance for GHG reporting that may be applied when quantifying uncertainty and adjusting mitigation outcomes accordingly.

- Under Section 3.2, subsection 3.2.2 of the IPCC Guidelines for National GHG Inventories on quantifying uncertainty[11]specific guidance is provided on quantifying uncertainty related to activity or empirical data, including for applied emission factors. Sub-section 3.2.1.2 provides requisite information sources of data for quantifying uncertainty from measured emission or removal data, activity data or from emission factors; and 3.2.3 provides approaches for combining uncertainty which may be useful in determining the overall mitigation outcome considering uncertainty, derived from different parameters with varying uncertainty estimates.

79. ELEMENT **6: Completeness**

- The activity developer shall monitor all relevant emission sources and sinks as well as all GHGs occurring under the project activity. In considering emission sources and sinks as well as gases, the activity developer shall consider the IPCC 2006 Guidelines for national GHG inventories

[11] https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/1_Volume1/19R_V1_Ch03_Uncertainties.pdf

and the emission sources and sinks as well as gases contained therein. They shall also consider the 2019 Refinement to the IPCC 2006 Guidelines for national GHG inventories, where the host country is using it for the compilation of their national GHG inventory.

80. ELEMENT **7: Consistency**

- To the extent appropriate the same methodologies, parameters, assumptions and data sources are to be used for monitoring over time, to ensure changes in emission / sink levels reflect real changes as opposed to mere changes in methodology or data. Where this is not fully feasible, methodologies, parameters, assumptions and data sources should be chosen to minimize inconsistencies, and this should be reported transparently in the monitoring report. Furthermore, the monitoring plan is to be updated accordingly. Transparent and structured documentation and archiving of approaches, data and data sources play a key role in facilitating consistency over time [12].

81. ELEMENT **8: Comparability**

- In principle, comparability will be enhanced, where methodologies used are the same or similar as for activities which are similar in scope covered (e.g. with regards to sector/subsector, emission sources/sinks, gases, causality of GHG reduction, technologies used, etc.). Conservativeness combined with accuracy of monitoring should however take precedence over comparability of approaches.

82. ELEMENT **9: Leakage**

- The element will specify a set of parameters needed to cover significant and reasonably attributable emissions outside of the activity boundary. Additional guidance will be provided on addressing leakages for upscaled mitigation actions.[13]

83. ELEMENT **10: Materiality**

- The materiality thresholds determined in decision 9/CMP.7, para 4 are to be applied under Article 6. These are specified in the Guidelines for application of Materiality in verifications[14] as follows:

- Information is material if it might lead, at an aggregated level, to an overestimation of the total emission reductions or removals achieved by a project activity equal to or higher than:

  (a) 0.5 per cent of the emission reductions or removals for project activities achieving a total emission reduction or removal of equal to or more than 500,000 tons of carbon dioxide equivalent per year;

  (b) 1 per cent of the emission reductions or removals for project activities achieving a total emission reduction or removal between 300,000 and 500,000 tons of carbon dioxide equivalent per year;

[12] Elements on ensuring accuracy, completeness, and consistency (Elements 5-7) in MRV can be supported through digitisation of data collection and analysis. Digitisation is outside the scope of this tool, but relevant approaches and initiatives may be cross-referenced.

[13] The CDM framework for MRV is deemed sufficient to address leakage at activity and programme level.

14 EB 69 Report, Annex 6

(c) 2 per cent of the emission reductions or removals for large-scale project activities achieving a total emission reduction or removal of 300,000 tons of carbon dioxide equivalent per year or less;

(d) 5 per cent of the emission reductions or removals for small-scale project activities other than project activities covered under subparagraph (e) below; (e) 10 per cent of the emission reductions or removals for the type of project activities referred to in decision 3/CMP.6, paragraph 38 (referred to as microscale project activities).

84. ELEMENT **11: Confidential information**

- Relates to any data or information disclosed for purposes of estimation of project activity emissions or sinks which is private in nature or proprietary to a trade secret of corporate nature that is identified or marked as confidential at the time of disclosure.
- Confidential information may include information in relation to a party, business or project activity, which is commercially sensitive or of a secret nature e.g. information that reveals the operations, belongings of a business, etc. especially where only a few companies dominate the data.
- Only information that is specific to the entities directly involved in the activity can be labelled as confidential. Information that relates to a number of different entities including the activity developers and thus does not allow to discern commercially relevant characteristics of the entities directly involved in the activity cannot be declared confidential.
- Any information identified or marked as confidential should be treated as such and efforts need to be made to ensure that the confidentiality is protected, and the originator of the confidential information guaranteed confidentiality by aggregating confidential information in such a way as to protect the confidentiality but produce accurate emissions results for the given project activity.
- Generally, no information that is used in the proof of additionality should be confidential.

85. ELEMENT **12: Use of recent IPCC AR GWPs**

- Until 2030, GWPs as specified in IPCC AR5 are to be used to convert GHGs into CO_2e.

86. ELEMENT **13: Quality assurance (QA)/Quality control (QC)**

- The QA/QC element relates to specifying the QA/QC procedures to be applied that help improve accuracy, consistency, and completeness.
- The activity developer will, as a minimum, describe the following:
    - how the measurement equipment is calibrated, adjusted and checked (including prior to use) against measurement standards traceable to international measurement standards and the frequency of calibration
    - quality assurance procedures of the information technology system used for data flow activities
    - procedures for internal reviews and validation of data
    - procedures for corrections and corrective action

VERIFICATION GUIDANCE

87. Verifiers are to be assigned by the UNFCCC Secretariat per random allotment to an activity owner. The UNFCCC Secretariat publishes a fee schedule for verifications Fees must be exclusive of additional costs such as travel costs. The UNFCCC Secretariat operates a roster of qualified local verification experts. A site visit is mandatory for the first verification; for subsequent verifications with immaterial changes of verified emission reductions/removals, activity developers can request a waiver.

88. The MRV tool should streamline the provision of information between the project developer and the verifier. For this, it is important to ensure that the procedures that are the responsibility of the project developer are standardized.

89. One of the challenges in verification under the CDM is that auditors do not have standardized procedures to perform data audits, in addition to having to deal with a variety of methodological approaches, MRV systems and tools whose complexity impacts the assurance level of the audit. This added to the fact that each verification body has its own procedures and criteria aligned to different approaches that can be more robust or laxer.

90. Due to the above, it is considered that there is an opportunity to standardize procedures for the project developer and the verifier to meet the new requirements of Article 6:

    - Procedure to monitor policies in order to guide project developers on the aspects they must consider to ensure that they are not omitting any policy that may affect their mitigation activity.
    - Procedure on identifying and monitoring reversals to detail how these activities should be recorded and how credits from buffer reserves should be cancelled. Likewise, establish the following steps when the necessary credits are not available in the reserves.
    - Procedure for reviewing compliance with other instruments such as the ESIA, the ESMP and the EIS.

91. In general terms, procedures can be standardized through the use of templates that streamline the reporting of the project developers and the verification bodies in the light of the new requirements of Article 6. However, the challenge will be to keep that documentation generic as every country has its own MRV rules and work to develop to include the latest A6 requirements.

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