

TOOL03



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

REVISED TOOL

International Initiative for Development of
Article 6 Methodology Tools

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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.

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INTRODUCTION

BACKGROUND

1. Transparency, assured through robust monitoring, reporting and verification (MRV) processes, is pivotal to ensure environmental integrity 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).

OBJECTIVES

2. 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, providing approaches that satisfy the principles and criteria of Article 6.

SCOPE AND APPLICABILITY

3. II-AMT TOOL03 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 (RMP) of the Article 6.4 mechanism; and modalities, procedures, and guidelines (MPGs) of the enhanced transparency framework (ETF). The relevant rules and principles referred to in the development of this tool are presented in the section preceding the annex. Where existing monitoring standards outside of CDM methodologies appropriately capture the principles of Article 6, such as standards for monitoring equipment or sustainable development (SD) monitoring, the II-AMT TOOL03 provides a direct reference to such standards.
4. The steps for updating the existing framework are listed below:
 - a) **Step 1:** Ensuring conservativeness in case accuracy is low due to excessive costs of accurate monitoring approaches
 - b) **Step 2:** Ensuring monitoring of all relevant policies, including potential new policies influencing emissions levels of the mitigation activity
 - c) **Step 3:** Ensuring full identification and monitoring of reversals
 - d) **Step 4:** Ensuring identification and monitoring of all relevant SD parameters through the use of robust methodological guidance and tools.
5. The II-AMT TOOL03 recognises the following elements deemed sufficiently addressed already under the existing CDM MRV methodological approaches, which may only require minor modification:
 - e) **ELEMENT 1:** Accuracy
 - f) **ELEMENT 2:** Completeness
 - g) **ELEMENT 3:** Consistency
 - h) **ELEMENT 4:** Comparability
 - i) **ELEMENT 5:** Leakage
 - j) **ELEMENT 6:** Materiality
 - k) **ELEMENT 7:** Confidential information
 - l) **ELEMENT 8:** Use of recent IPCC Assessment Report (AR) Global Warming Potentials (GWPs)
 - m) **ELEMENT 9:** Quality assurance (QA)/Quality control (QC)

TERMS AND DEFINITIONS

6. The following section provides definitions and interpretations of relevant terms that are applied under II-AMT TOOL03:

7. Accuracy

- A relative measure of the conformity of estimations of monitored variables that make up the formulae expressing activity emissions and baseline emissions with their true values. The accuracy of activity emissions, baseline emissions, or emission reductions is calculated by the error propagation formula. Estimates should be accurate in the sense that they are systematically neither over nor under the 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 error¹.
- This means all endeavours are made to remove bias from the emissions estimates using the best approaches to data collection and considering uncertainty.

8. Activity boundary

- For a mitigation activity (non-A/R), the physical delineation and/or geographical area of the mitigation activity and the specification of GHGs and sources under the influence of the mitigation activity developer, that are material² and reasonably attributable to the mitigation activity, in accordance with the applied methodologies and, where applicable, the applied standardized baselines.
- The activity boundary should encompass all anthropogenic emissions by sources or sinks of greenhouse gases (GHG) influenced by the mitigation activity.
- An activity boundary may vary by the type of mitigation activity and may include areas outside of the activity participants' control.

9. Bias (systematic error)

- Lack of accuracy when the available data is not representative of the actual situation or due to instrument error.

10. Comparability

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

11. Completeness

- All parameters that are relevant for estimation of material³ baseline and activity emissions or sinks for all gases within the mitigation activity boundary are covered or monitored.

¹ Definition based on the IPCC Glossary of terms, https://www.ipcc.ch/site/assets/uploads/2019/12/19R_VO_02_Glossary.pdf

² Material with respect to the significance of the emissions, as per the definition of materiality under this Tool.

³ Material with respect to the significance of the emissions, as per the definition of materiality under this Tool.

12. Consistency

- Estimates for different years of the monitoring period of a mitigation 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 mitigation activity and should aim to reflect the real annual fluctuations in emissions or removals and not be subject to changes resulting from methodological differences.

13. Conservativeness

- The establishment of a baseline or activity scenario is considered conservative if the resulting projection does not lead to an overestimation of mitigation outcomes attributable to an Article 6 mitigation activity or programme.
- The concept of conservativeness aims to provide a balance between accuracy and costs. Where a more accurate approach to monitoring activity emissions or removals leads to prohibitive costs, a less accurate approach can be balanced by ensuring that activity emissions reductions are overestimated, or activity removals are underestimated.

14. Leakage

- The net change of anthropogenic emissions by sources of GHG emissions which occur outside of the activity boundaries, and which are quantifiable and attributable to the proposed mitigation activity.

15. Materiality

- Emissions / removals are material if they are considered significant according to decision 9/CMP.7, para 4, as specified in the CDM Guidelines for application of Materiality in verification.
- Information is material if it might lead, at an aggregated level, to an overestimation of the total emission reductions or removals achieved by a mitigation activity equal to or higher than:
 - (a) 0.5% of the emission reductions or removals for mitigation activities achieving a total emission reduction or removal of equal to or more than 500,000 metric tonnes of CO₂ equivalent per year;
 - (b) 1% of the emission reductions or removals for mitigation activities achieving a total emission reduction or removal between 300,000 and 500,000 metric tonnes of CO₂ equivalent per year;
 - (c) 2% of the emission reductions or removals for mitigation activities achieving a total emission reduction or removal between 60,000 and 300,000 metric tonnes of CO₂ equivalent per year or less;
 - (d) 5% of the emission reductions or removals mitigation activities achieving a total emission reduction or removal between 20,000 and 60,000 metric tonnes of CO₂ equivalent per year or less;

- (e) 10% of the emission reductions or removals for mitigation activities achieving a total emission reduction or removal less than or equal to 20,000 metric tonnes of CO₂ equivalent per year.

16. **Mitigation activity**

- i. A mitigation practice or ensemble of mitigation practices that take place on a delineated area over a given period of time.

17. **Monitoring period**

- The period of time over which monitoring data are collected and summarized for reporting purposes and for subsequent verifications.
- 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.
- 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.

18. **Permanence**

- 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.

19. **Removal**

- 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 or geochemical sinks and direct air carbon capture and storage but excludes natural CO₂ uptake not directly caused by human activities.

20. **Reporting**

Is done on two levels:

- The mitigation activity level: through the monitoring report, which is submitted to the accredited designated operational entities for verification and certification of the emission reductions from the mitigation activity.
- The national level: by participating Parties (e.g., the host country) through their initial, annual and regular information on the mitigation 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 mitigation activity design documentation and monitoring reports, it reduces the reporting burden for host countries.

21. Relevant policy

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

22. Reversal

- Release of greenhouse gases previously removed or stored in a reservoir as a result of a mitigation activity (e.g., one that either enhanced removals or avoided depletion of the reservoir), into the atmosphere, or;
- Destruction of a reservoir of greenhouse gases previously protected by the mitigation activity.

23. Reservoir

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

24. Stakeholders

- Individuals, groups or institutions that have a stake or an interest in the mitigation activity – that may be affected by it (either positively or negatively) or they may have an interest in it and be in a position to influence its outcomes.

25. Uncertainty

- The range within which the true value of a measurement is expected to lie, with a specified level of confidence.

NEW STEPS TO BE CONSIDERED IN LIGHT OF ARTICLE 6

26. This section of the tool specifies the new steps 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 mitigation activity design documents and check during verification whether monitoring reports are consistent with these specifications.

STEP 1: Ensuring conservativeness and considering uncertainty

27. 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 flows of materials or continuous measurement of GHG emissions, when calibrated and maintained according to specifications, tends to exhibit low uncertainties (i.e., well below 10% for most application cases). Other data collection approaches (e.g., surveys, sampling, data related to biological processes such as in the agriculture and forestry sectors) can exhibit considerably higher uncertainty levels. The IPCC 2006 Guidelines for national GHG inventories (IPCC 2006) provide default uncertainty levels for categories of GHG emissions and removals throughout all sectors.
28. Methodologies 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 monitoring report. 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 (IPCC 2006) for the categories in question as the upper limit to the overall level of uncertainty.
29. Methodologies should strive for the highest level of accuracy available without prohibitive cost. Where appropriate, the use of remote sensing and digital technologies to enable transparent and accurate estimation of emission reductions or removals should be provided for. 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 activity emissions are overestimated, or removals are underestimated. In the activity design document, the activity developer shall briefly present different monitoring options for the various elements of the calculation of activity emissions or removals and a justification for the options chosen.

30. In addition, approaches for estimating mitigation outcomes shall ensure conservative estimation of emission reductions or removals from the data sources chosen, the measures applied, options selected, or assumptions made, which should result in conservative estimates of the emission reductions or removals from mitigation activities. When multiple data sources are available to set the baseline, the most conservative baseline should be selected. Also, where secondary data are used, activity participants shall provide justification that the source of data is appropriate, and the data are conservative.
31. For any monitoring methodology that uses a variety of methods or procedures for data collection (e.g. use of technical measurement equipment like liquid or gas flow meters, electricity/kilowatt-hour meters, surveys, etc.), the uncertainty of each data measurement is taken into account conservatively by using the values at the lower end of the uncertainty range of the measurement at a 95% confidence interval, taking into account the provisions of paragraph 28 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 m³/h and the uncertainty range of the measurement method is $\pm 2\%$, emissions reductions shall be calculated based on a flow rate of 0.98 m³/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 (IPCC 2006), which indicates that the maximum uncertainty allowed is 2% ("less developed statistical systems, surveys"). The uncertainty range of the activity measurement method is therefore within the uncertainty range given in the IPCC guidelines.

Methodologies shall permit the use of multiple data sources to address data gaps and the use of conservative default values and/or use of benchmarked data from comparable regions to the extent they can be applicable, ensuring conservativeness.

Step 2: Monitoring of all relevant policies

32. A relevant policy is a policy that leads to a material net change of GHG emissions attributed to a mitigation activity over a period of one year or more and which is not under the control of that mitigation activity.
33. Relevant policies might include, among others, 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 mitigation activity and/or might require an adjustment to the baseline (for guidance related to the baseline, see II-AMT TOOL02)
34. **Step 2.1: Risk analysis:** As part of developing the monitoring plan, the activity developer shall carry out a risk analysis whether baseline or activity emission levels (e.g., relating to technologies, consumption, demand) might be influenced by policies during the crediting period.

35. The activity developer might provide a simplified estimate of changes to the mitigation 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 of the policies (e.g., regulatory text and/or impact assessments of the policies).
36. The host country's DNA shall set aside an agreed share of the credits (e.g. 10%) issued for a mitigation activity each year into an escrow account, to account for potential adjustments. This will provide a safety buffer, in case potential policy impacts require updating of the baseline or the activity emission level and thus lead to a recalculation of the number of credits to be issued to the mitigation activity for past years.
37. **Step 2.2: Continuous assessment of the implementation status of relevant policies:** The activity developer shall assess at a minimum every five years or prior to a new monitoring period, aligned with NDC periods, whether policies significantly influencing the mitigation 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 mitigation activity. Relevant information might include legislative and administrative texts and/or formal statements of public entities to the activity developers.
38. The host country's DNA shall, upon request and every five years, aligned with NDC periods, provide information to activity developers about relevant scheduled and/or implemented policies which might influence baseline and/or activity emission levels. When the publication of this information is delayed, the activity developers shall use the latest available information.
39. **Step 2.3: Adjusting the baseline and/or methodology based on the outcome of Step 2.2:** Where the 5-yearly assessment indicates adjustments to the estimation of activity reduction and/or removals, the activity developer shall take the necessary steps in close alignment with the host country and other parties to the cooperation approach to adjust the baseline and/or methodology for the estimation of the activity emissions and/or removals accordingly. The activity developer shall also do so retrospectively, where applicable and calculate the number of credits that would be issued for these past years based on the updated parameter. Where the number of credits to be issued according to this recalculation is lower than the amount actually issued for the years in question, the host country shall deduct the number of credits equalling the difference between the issued amount and the recalculated amount from the escrow account.
40. **Step 2.4:** The credits remaining in the escrow account at the end of each 5-year period, and after Step 2.3 has been implemented (where appropriate), shall be released to the activity developer by the host country.

Step 3: Monitoring of reversals

41. **Step 3.1: Reversal Risk Assessment:** All activities that present a risk of reversals will identify and evaluate such risks using a risk assessment tool to be developed by Supervisory Body of the Article 6.4 mechanism (SBM). The assessment shall include quantification and scoring, for instance the nature, scale, likelihood, and duration of the risks and of potential reversals, to come up with a percentage-based risk rating. Risk assessment results and documentation are to be included with the activity design document that is submitted for host country approval and consultation.

42. **Step 3.2: Identification and monitoring of potential reversals:** Developers of activities that generate reservoirs of GHGs through enhanced storage of GHGs in terrestrial or geologic reservoirs or protect reservoirs from destruction are responsible for ongoing monitoring of the affected reservoirs to identify potential reversals until that responsibility is transferred to the host country. The stringency of the monitoring requirements will depend on the reversal risk rating of the mitigation activity, with the stringency of the monitoring requirements and the application of remediation measures to address the risk, both increasing with an increasing reversal risk rating.
43. 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 mitigation activity for which it takes the responsibility in its annual Article 6 report to the UNFCCC.
44. **Step 3.3: In-depth monitoring and notification of identified reversals:** In case a reversal has been identified, the SBM shall be notified, and 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, at a minimum, describes the following:
- i. Remote sensing technology to be used to identify reversals (if relevant)
 - ii. Source of remote sensing data (if relevant)
 - iii. Frequency of monitoring for reversal (minimum once per year)
 - iv. Responsibilities for monitoring (including proof if responsibility for monitoring is discharged to the Article 6 authority of the host country)
 - v. Procedure for notification in case of reversal
 - vi. Procedure for monitoring extent of reversal (if relevant)
 - vii. Information on how reversal risks were assessed and will be addressed, if they occur, consistent with risk mitigation measures described in the reversal risk assessment tool that will be developed by the SBM
 - viii. Annual cost for identification of reversal
 - ix. Annual cost for monitoring in case of reversal
45. The activity developer is required to have in place sufficient financial provisions to fulfil obligations related to the identification and monitoring of reversals, through insurance contracts or provision of funding in a buffer 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 established 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 its statements using the format of Table 1 in the annex to II-AMT TOOL03.

46. **Step 3.4: Addressing reversals:** In case a reversal has been identified and its extent determined through monitoring, it needs to be remedied in full through the approach specified by the SBM, which may include lapse of temporary credits, cancellation of credits in buffer reserves or insurance contracts. Unless specified through monitoring, the reversal should be assumed to have begun one day after the date of the previous monitoring activity of the affected activity area. The credits required to be reserved by the activity developer in a buffer will depend on the reversal risk rating of the given removal activity.

Step 4: Monitoring Sustainable Development impacts

47. Given a strong political mandate to track both positive and negative sustainable development impacts under the PACM, the most recent version of the [Article 6.4 Sustainable Development Tool](#) (A6.4 SD Tool) , adopted by the SBM, must be applied by activity developers.

Guidelines for the Local Stakeholder engagement and Consultation for the PACM⁴

48. The aim of the Local Stakeholder consultation is to meaningfully engage stakeholders and discuss potential environmental, social and economic impacts (both positive contributions and potential risks) that mitigation activities may have during the design, planning, implementation and operational stages and to establish an ongoing mechanism for feedback in consultation with stakeholders. All mitigation activities shall fulfil the following requirements:

Timing of the Local Stakeholder Consultation

49. It is preferable that the Local stakeholder consultation is conducted after the start date of the mitigation activity but prior to the inception of the mitigation activity or the associated project.
50. If the local stakeholder consultation must be carried out after the inception of the mitigation activity, the activity developer shall provide a justification as to why it could not be carried out before the project start date and ensure it is carried out with the relevant stakeholders at the earliest date possible after the project start date.

Stakeholder identification and Minimum group of stakeholders to be consulted

51. The mitigation activity developer shall identify and invite all relevant local and interested stakeholders for consultation and comment including Local people or communities directly or indirectly affected by the mitigation activity, stakeholders with land tenure rights within or adjacent to the mitigation activity, marginalized groups, policy makers or representatives of local authorities, national government officials or the Designated National Authority or equivalent, local NGOs, women groups, etc.
52. The mitigation activity developer shall provide evidence in the stakeholder consultation report, that invitations were sent, and comments invited from the relevant stakeholders above as a minimum or provide a justification as to why some were not invited.

⁴ Based on the Gold Standard requirements for Stakeholder Consultation and engagement: <https://globalgoals.goldstandard.org/102-par-stakeholder-consultation-requirements/>

Means of inviting Stakeholders

53. The activity developer shall invite stakeholders at least 30 days before the physical meeting, in an open and transparent manner that provides equal opportunity to each stakeholder to participate in public stakeholder meeting and provide feedback; including any party that may wish to attend.

Information to be made available to Stakeholders

54. Prior to the physical meeting, the project developer shall share information in a manner (e.g. language, format) that allows local stakeholders to understand how the local mitigation activity is likely to impact them. The information provided beforehand shall include a non-technical summary of the project, a summary of the environmental, social and economic impacts of the project informed by the ESIA, a summary of the activity contribution to the SDGs, the agenda for the planned Public Stakeholder consultation meeting and the means and methods to provide further feedback for those not able to join the physical meeting.

Physical Local Stakeholder Consultation Meeting and Feedback Round

55. The stakeholder consultation may comprise of two rounds of consultations including a mandatory physical (public) consultation meeting with local stakeholders and round lasting at least 30 days.
56. The physical local stakeholder consultation meeting aims to inform relevant stakeholders, of the project details and ensure they have an opportunity to interact and influence activity design, implementation or operation. During the meeting the activity developer shall ensure they provide a summary of the project, moderate a discussion covering stakeholder perceptions and expectations regarding potential impacts and their mitigation; and provide information on the next steps.
57. The activity developer shall provide feedback to all the stakeholders that attended the physical meeting on how comments received have been considered and seek any further comments. The activity developer shall share the updated activity documentation with stakeholders for 30-days via a publicly accessible means e.g., accessible online.

Consideration of Comments Received and the Continuous Stakeholder Engagement

58. The activity developer shall ensure all comments received during the physical consultation and the feedback round are well documented in the Stakeholder Consultation report, without tempering with the spirit and intent of a given comment and indicating how each was considered or justification for excluded comments or those not addressed.
59. Activity participants shall, after the registration of the mitigation activity under the Article 6.4 mechanism, set up and maintain until the end of the valid crediting period of the mitigation activity, a formal input and feedback and grievance mechanism to allow Stakeholders to provide any further feedback on the implementation or the operation of the mitigation activity. The Continuous input and grievance mechanism agreed with the stakeholders shall be described in the Stakeholder Consultation Report.

60. In addition, stakeholders shall be informed by the activity developers of the provision of a dedicated interface on the UNFCCC website for them to provide comments in English on any registered mitigation activity. The comments from stakeholders shall: (a) Be specific to the registered A6.4 project; (b) Be related to the compliance with applicable PACM rules and regulations.
61. The activity developers shall review the comments on the registered mitigation activity, submitted from Parties, stakeholders and UNFCCC-admitted observer organizations and published on the UNFCCC website in accordance with the activity cycle procedure, if any.
62. The activity developers shall address the issues raised in the comments by the local stakeholders and comments from the UNFCCC dedicated interface and describe a summary of how they have been addressed in the subsequent monitoring report.

Stakeholder Consultation Documentation

63. The activity developer shall document all the above requirements in a Stakeholder Consultation Report and provide all the necessary evidence to demonstrate compliance.

KEY MRV ELEMENTS SUFFICIENTLY ADDRESSED UNDER CDM METHODOLOGIES

64. This section briefly identifies the MRV elements sufficiently addressed under CDM methodologies and therefore do not need to be addressed by the II-AMT TOOL03. For a subset of CDM methodologies, they may require some adjustments considering Article 6 decisions; however, these are expected to be minor and will not fundamentally change the elements.

65. **ELEMENT 1: Accuracy**

- The measured values should neither be over nor underestimated. In the estimation of mitigation outcomes of a given mitigation 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 / removals 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 requires 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 (i.e., probability). Typically, a 95 percent confidence interval has been used, following IPCC 2006 Guidelines for National GHG inventories (IPCC 2006).
- 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 (IPCC 2019).

- Under Section 3.2, subsection 3.2.2 of the IPCC Guidelines for National GHG Inventories on quantifying uncertainty (Gillenwater et al. 2019) specific guidance is provided on quantifying uncertainty related to the mitigation 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.

66. ELEMENT 2: Completeness

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

67. ELEMENT 3: 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 ⁵.

68. ELEMENT 4: 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.

69. ELEMENT 5: Leakage

- The CDM framework for MRV is deemed sufficient to address leakage at the activity and programme level.
- Leakage is estimated based on a comparison to the baseline scenario for the mitigation activity causing the leakage and applied to the sources/sinks affected.

⁵ 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.

70. ELEMENT 6: 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 verifications⁶ 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 mitigation activity equal to or higher than:
 - (a) 0.5 per cent of the emission reductions or removals for mitigation 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 mitigation activities achieving a total emission reduction or removal between 300,000 and 500,000 tons of carbon dioxide equivalent per year;
 - (c) 2 per cent of the emission reductions or removals for mitigation activities achieving a total emission reduction or removal between 60,000 and 300,000 tons of carbon dioxide equivalent per year or less;
 - (d) 5 per cent of the emission reductions or removals mitigation activities achieving a total emission reduction or removal between 20,000 and 60,000 tons of carbon dioxide equivalent per year or less;
 - (e) 10 per cent of the emission reductions or removals for mitigation activities achieving a total emission reduction or removal less than or equal to 20,000 tons of Carbon dioxide equivalent per year.

71. ELEMENT 7: Confidential information

- Relates to any data or information disclosed for purposes of estimation of mitigation 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 mitigation 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 mitigation 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 mitigation activity cannot be declared confidential.

⁶EB 69 Report, Annex 6, https://cdm.unfccc.int/filestorage/2/v/MEL-RGQ423DZC9VXUN18J15BHWTPA07.pdf/eb69_repan06.pdf?t=cIJ8cnJnZDkwfDBb1evy7rQuzGS35AzmZDFD

- 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 mitigation activity.
- Generally, no information that is used in the proof of additionality should be confidential.

72. ELEMENT 8: Use of recent IPCC AR GWPs

- Until 2030, GWPs as specified in IPCC AR5 are to be used to convert GHGs into CO₂e.

73. ELEMENT 9: 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

74. Designated operational entities are to be assigned by the UNFCCC Secretariat per random allotment to an activity developer. 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 or regional 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.
75. The II-AMT TOOL03 should streamline the provision of information between the activity developer and the verifier. For this, it is important to ensure that the procedures that are the responsibility of the activity developer are standardized.
76. One of the challenges in verification under the CDM is that designated operational entities 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 lax.
77. Due to the above, there is an opportunity to standardize procedures for the activity developer and the verifier to meet the new requirements of Article 6:
- Procedure to monitor policies in order to guide activity developers on the aspects they must consider ensuring 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 procedures 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.
78. In general terms, procedures can be standardized using templates that streamline the reporting of the activity 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.
79. For further guidance, activity developers and verifiers are encouraged to consult the most recent version of the [Article 6.4 Validation and Verification Standard for Projects](#), adopted by the SBM, in addition to the verification procedures outlined in this tool.

RULES AND PRINCIPLES

80. II-AMT TOOL03 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:

81. **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; [...]"*

*(c) **Measured** in metric tonnes of carbon dioxide equivalent (**t CO₂ 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)⁷[...]*

*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**.*

82. **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 t

o, inter alia: [...]

⁷ 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, II-AMT TOOL03 only focuses on MRV of GHG metrics.

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

83. 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."

FURTHER PRINCIPLES

84. Since the objective of the II-AMT TOOL03 is to build on the existing CDM MRV framework, the requirements for the monitoring plan of CDM and JI activities enshrined in the Marrakech Accords of 2001 are noted 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.”

85. **Decision 9/CMP.7 on the “Materiality standard under the clean development mechanism”:**

“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 CO₂e 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 CO₂e 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 CO₂e 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]”

86. **Article 6.4 Supervisory Body (SBM) standard “Application of the requirements of Chapter V.B (Methodologies) for the development and assessment of Article 6.4 mechanism methodologies” (A6.4-STAN-METH-001)**

“24. Mechanism methodologies shall contain provisions that ensure **conservative estimation of emission reductions or removals** from the measures applied, options chosen, or assumptions made, and which should result in conservative estimates of the emission reductions or removals from Article 6.4 activities.”

“25. Mechanism methodologies shall contain provisions that require that Article 6.4 activities have a **robust monitoring, data capture and reporting system** to ensure credibility. Where secondary data is used, mechanism methodologies shall contain provisions that require activity participants to provide justification that the source of data is appropriate, and the data are conservative.”

“26. Mechanism methodologies shall contain provisions to ensure that all **emission reductions or removals, are real, transparent, conservative, and credible** by:

- (a) Including robust, transparent and user-friendly measurement, reporting and independent third-party verification systems;
- (b) Requiring the use of technical performance standards that are data driven;
- (c) Requiring transparent demonstration of changes in GHG emissions showing each step in calculations and the results, and ensuring that calculated emission reductions or removals are uniquely achieved by and attributable to the activity;
- (d) Adopting life cycle approaches and considering emissions embodied in materials and products, where relevant and practicable;
- (e) Ensuring that information, including data sources and calculations are real, transparent, conservative, accessible and credible;
- (f) Choosing a conservative emissions baseline when multiple sources of data and parameters are available to set the baseline;
- (g) Including, where appropriate, the use of remote sensing and digital technologies to enable transparent, accurate and credible calculation and estimation of emission reductions and removals.”

“51. Mechanism methodologies shall:

- (a) Contain provisions that uphold stringency and encourage **broad participation** by being accurate, simple, clear, and avoiding complexity such that a wide range of activity participants and host Parties can apply the methodology requirements irrespective of a Party’s scientific infrastructure, financial and national circumstances;
- (b) Contain provisions that take into account the context on the ground in **host Parties**, particularly in least developed countries and small island developing States.
- (c) Contain provisions that take into account the knowledge and practices of **local communities and Indigenous Peoples**.
- (d) Permit the use of multiple data sources to address **data gaps**, and the use of **conservative default values** and/or use of benchmarked data from comparable regions to the extent they can be applicable;

(e) Use simple language that is inclusive, gender-sensitive, and accessible to a wide range of stakeholders, including local communities and Indigenous Peoples to the extent possible.”

(A6.4-STAN-METH-001, paragraph 24, 26, 51)

ANNEX

Table 1: Costs of monitoring and verification of reversals

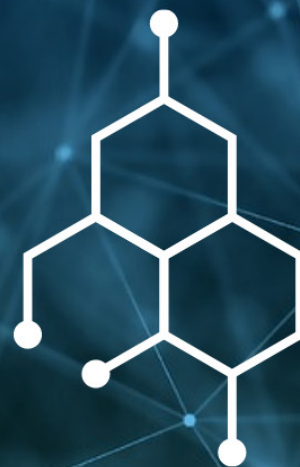
Coverage: The cost of ongoing monitoring, at an appropriate frequency, of the reservoir of GHGs and of verification and certification by a designated operational entity for at least xx years after the end of the last crediting period of the mitigation activity
Detailed description of the financial need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

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