



## Framework Convention on Climate Change

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### Materiality standard under the clean development mechanism

#### Technical paper

##### *Summary*

This document was prepared in order to provide relevant technical background information to inform the consideration by the Subsidiary Body for Scientific and Technological Advice, in response to decision 3/CMP.6, paragraph 30, of a materiality standard under the clean development mechanism. It is based on information contained in submissions from Parties, intergovernmental organizations and admitted observer organizations, contained in document FCCC/SBSTA/2011/MISC.2 and posted on the UNFCCC website, as well as on information from other greenhouse gas related schemes.

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## I. Background and mandate

1. The Executive Board of the clean development mechanism (CDM) (hereinafter referred to as the Board), at its fifty-first meeting,<sup>1</sup> considered the concept of materiality as it relates to the CDM and the impact of its application in the assessment of CDM project activities. The Board agreed to reconsider the introduction and use of the concept of materiality at a future meeting. The Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP), at its fifth session, requested<sup>2</sup> the Board to continue to update the *Clean Development Mechanism Validation and Verification Manual* (VVM), including by further exploring the possible introduction of the concepts of materiality and level of assurance, and to report thereon to the CMP at its sixth session.

2. The Board, at its fifty-sixth meeting, considered the possible introduction of the concepts of materiality and level of assurance. It agreed to the need for consultation with relevant stakeholders on the issue and launched a call for inputs on the matter. The Board also agreed that a discussion related to the thresholds and the scope of the application of materiality and the practical implementation of the concept in the CDM was required.

3. The CMP, at its sixth session, requested<sup>3</sup> the Subsidiary Body for Scientific and Technological Advice (SBSTA) to consider the issue of materiality with a view to recommending a draft decision on the matter for adoption by the CMP at its seventh session.

4. The CMP invited<sup>4</sup> Parties, intergovernmental organizations (IGOs) and admitted observer organizations to submit to the secretariat, by 28 March 2011, their views on the matter.

5. In addition, the CMP requested<sup>5</sup> the secretariat to compile those submissions into a miscellaneous document and to prepare a technical paper for consideration by the SBSTA at its thirty-fourth session.

6. This technical paper is a response to that request and aims to inform Parties about previous experiences with the use of the concept of materiality in other schemes, and to explore options for the introduction of the concept in the CDM.

7. The information provided in this technical paper is based on relevant submissions from Parties, IGOs and non-governmental organizations, contained in document FCCC/SBSTA/2011/MISC.2 and posted on the UNFCCC website,<sup>6</sup> as well as on information from other greenhouse gas (GHG) related schemes and public inputs.<sup>7</sup>

## II. Definitions of materiality and relevant concepts

8. The concept of materiality is derived from financial auditing. Various GHG-related schemes have since used the concept. Table 1 provides an overview of the definitions of the concept of materiality in other GHG-related schemes. It shows that all of the schemes link the materiality of information to be used by a decision maker to its likeliness to change his/her decision: an information, error or misstatement is generally regarded as material if it could influence the decisions of the user.

<sup>1</sup> Report on the fifty-first meeting of the Board, paragraph 13.

<sup>2</sup> Decision 2/CMP.5, paragraph 22.

<sup>3</sup> Decision 3/CMP.6, paragraph 30.

<sup>4</sup> Decision 3/CMP.6, paragraph 31.

<sup>5</sup> Decision 3/CMP.6, paragraph 32.

<sup>6</sup> <[http://unfccc.int/parties\\_observers/ngo/submissions/items/3689.php](http://unfccc.int/parties_observers/ngo/submissions/items/3689.php)>.

<sup>7</sup> <[http://cdm.unfccc.int/public\\_inputs/2010/materiality\\_cdm/index.html](http://cdm.unfccc.int/public_inputs/2010/materiality_cdm/index.html)>.

9. In this regard, the proposed draft standard<sup>8</sup> contained in annex 2 to the annotations of the Board at its fifty-sixth meeting suggests that, in the context of the CDM, material information could be related to non-compliance by a project with prescriptive or non-prescriptive CDM requirements or any other wrong information relevant to the estimation of GHG emission reductions achieved by the project. The verifier is a designated operational entity (DOE). The decision maker is the Board and the decision to be made is “to register or not to register the submitted project” or “to issue or not to issue the certain amount of certified emission reductions (CERs) claimed”. The DOE shall consider the information as material if it could change the decision of the Board to register the project or to issue the CERs.

10. Related to materiality is the associated concept of level of assurance, which may be defined as the degree to which the DOE is confident in the validation or verification conclusion that a CDM project, taken as a whole, is free from material errors, omissions and misstatements. In this regard, the consideration of materiality is a matter of the professional judgment and experience of the verifier.

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<sup>8</sup> “Draft standard on the use of the concept of materiality and level of assurance in the clean development mechanism”. Available at <http://cdm.unfccc.int/UserManagement/FileStorage/K0M3GVE8Z7D1BYPFTHIO2NJ95UR6A4>.

Table 1  
**Definitions of the concept of materiality in other greenhouse gas related schemes**

<i>Scheme</i>	<i>Definition of materiality</i>	<i>Link for further information</i>
European Union emissions trading scheme	<p>"Material non-conformity" means that a non-conformity to the requirements in the monitoring plan approved by the competent authority under the installation's permit, could lead to a different treatment of the installation by the competent authority;</p> <p>"material misstatement" means a misstatement (omissions, misrepresentations and errors, not considering the permissible uncertainty) in the annual emissions report that, to the professional judgment of the verifier, could affect the treatment of the annual emissions report by the competent authority, e.g. when the misstatement exceeds the materiality level</p>	<a href="http://ec.europa.eu/clima/policies/ets/index_en.htm">http://ec.europa.eu/clima/policies/ets/index_en.htm</a>
Australian National Greenhouse and Energy Reporting Act	Materiality is a concept used by auditors in determining the nature, timing and extent of procedures required to be executed, and to assess the relative significance of identified misstatements or non-compliance in the context of the overall reported information or compliance requirements. Information is material if its misstatement or non-compliance could influence the decisions of users of the greenhouse and energy information	<a href="http://www.climatechange.gov.au/reporting">http://www.climatechange.gov.au/reporting</a>
North America: The Climate Registry	A material misstatement is defined as the aggregate of errors, omissions, non-compliance with programme requirements, and/or misrepresentations that could affect the decisions of intended users of the emissions report. The concept of materiality used by the Registry is adopted from International Organization for Standardization standard 14064:2005 and refers to the threshold of omitted or misstated information on greenhouse gas emissions that could influence conclusions or decisions made on the basis of those emissions by intended users	<a href="http://www.theclimateregistry.org/">http://www.theclimateregistry.org/</a>
Alberta Greenhouse Gas Reduction Program	Materiality refers to a threshold measure for the cumulative magnitude of errors, omissions, discrepancies and misrepresentation that affect an assertion	<a href="http://environment.alberta.ca/01838.html">http://environment.alberta.ca/01838.html</a>
North America: Western Climate Initiative	<p>•Based on the verification team's own determination of the level of emissions subject to verification based on the sampling plan, the verification team concludes that total reported emissions are less than 95 percent accurate using the following equation:</p> $PA = 100 - (SOU/TRE * 100)$ <p>Where:</p> <p>PA = Percent accuracy</p> <p>SOU = The net result of summing overstatements and understatements resulting from errors, omissions and misreporting</p>	<a href="http://www.westernclimateinitiative.org/">http://www.westernclimateinitiative.org/</a>

<i>Scheme</i>	<i>Definition of materiality</i>	<i>Link for further information</i>
	<p><i>TRE = Total reported emissions</i></p> <ul style="list-style-type: none"> <li><i>•The individual or aggregate effect of one or more errors, omissions or misstatements identified in the course of verification make it probable that the judgment of a reasonable person regarding the total reported emissions would have been changed or influenced by the error, omission or misrepresentation.</i></li> </ul>	
Climate Action Reserve	Information is considered material if its omission or misstatement could be seen to influence any decisions or actions resulting from it	<a href="http://www.climateactionreserve.org/">http://www.climateactionreserve.org/</a>
The Greenhouse Gas Protocol: Corporate Accounting and Reporting Standard	The definition given for a materiality threshold is an acceptable percentage (or absolute quantity) difference between the data in the company's emission inventory and the verifier's belief of what the company's emissions would be if all omitted sources were accounted for. For example, if a company does not include a certain set of sources that the verifier thinks should be included, and those sources are estimated to emit more than the materiality threshold, this would be a material discrepancy and emissions from at least some of those sources would need to be included in the inventory	<a href="http://www.ghgprotocol.org/">http://www.ghgprotocol.org/</a>

### **III. Objectives of introducing the concept of materiality in the clean development mechanism**

11. The concept of materiality has been proposed for introduction in the CDM for several reasons, including the following:

(a) Streamlined CDM procedures and improved efficiency: the introduction of the concept of materiality is expected to reduce transaction costs by focusing the assessment of CDM project activities on issues that can have a larger impact on the estimation of their GHG emission reductions. It could help reduce the number of requests for review and avoid unnecessary delays in the CDM process;

(b) Enhanced objectivity: the concept of materiality could be introduced with clear instructions for DOEs, thereby increasing the objectivity of variable judgments that have to be made by DOEs;

(c) Enhanced consistency: DOEs and the secretariat are already applying the concept of materiality in many cases, but not always in the same way. Introducing a clear concept of materiality could increase the consistency of its application and improve the common understanding of it.

### **IV. Experience gained from other greenhouse gas related schemes**

12. The following schemes were analysed: the European Union emissions trading scheme (EU ETS); the California Air Resources Board; the United States Environmental Protection Agency Climate Leaders voluntary reporting programme; The Climate Registry reporting programme, developed by a consortium of States of the United States of America, Indian tribes, Canadian provinces and Mexican States; the Western Climate Initiative, a GHG reduction programme that is under development; as well as the national emissions trading scheme in New Zealand and the metropolitan scheme for Alberta, Canada, the Greenhouse Gas Reduction Program (the Alberta GGRP). In addition, the following standards and legislation were considered: GHG reporting legislation in Australia; the Climate Action Reserve offsets programme, designed to support the North American carbon markets; and the Greenhouse Gas Protocol (the GHG Protocol).

#### **A. Summary of the concept of materiality in other schemes**

13. All of the analysed schemes require some type of verification process. Verification is usually carried out by a third-party verifier, but sometimes by the agency implementing the scheme or by the participants themselves. In all cases, materiality is an element considered in the verification process or at least as an aspect of the scheme. Several of the schemes identified that the concept of materiality is crucial to their verification process, because it provides them with a way to help ensure that the verification process is systematic and consistent, guiding how the audit is designed and how the audit conclusions are determined and reported.

14. In some of the schemes (such as the EU ETS and the GHG Protocol) the concept has been revised over time, to strengthen its definition, assist with its application and avoid misunderstandings. Most of the schemes, even those under development and recently implemented, provide specific guidance on materiality and set quantitative materiality thresholds.

15. A summary of the findings of the review of the concept of materiality in other GHG-related schemes is presented in table 2.



Table 2

**Summary of the concept of materiality in other greenhouse gas related schemes and related standards**

<i>Scheme</i>	<i>Application</i>	<i>Is materiality defined in the scheme?</i>	<i>Quantitative/qualitative</i>	<i>Is a quantitative threshold defined?</i>	<i>Relevant supporting guidance</i>
Alberta Greenhouse Gas Reduction Program	Annual emissions reported for an installation participating in the emissions trading scheme (ETS)	Yes	Qualitative and quantitative	Yes	Technical Guidance for Completing Specified Gas Compliance Reports, version 4
Australian National Greenhouse and Energy Reporting Act	Annual information reported by corporations: greenhouse gas (GHG) emissions, GHG projects, energy use and energy production	Yes	Qualitative and quantitative	No	The National Greenhouse and Energy Reporting Audit Determination Handbook
California Air Resources Board	Total reported emissions, or reported purchases, sales, imports or exports of electricity	No. Material misstatement defined	Quantitative	Yes	Regulation for the Mandatory Reporting of Greenhouse Gas Emissions
Climate Action Reserve	Annual offsets generated by a project	Yes	Quantitative and qualitative	Yes	Verification Program Manual
European Union emissions trading scheme (EU ETS)	Annual emissions reported for an installation participating in the ETS (in order to compare with annual carbon cap)	Yes	Qualitative and quantitative	Yes	EA-6/03 – EA Document for Recognition of Verifiers under the EU ETS Directive
The Greenhouse Gas Protocol	Reported GHG emissions	Yes	Quantitative	No	The Greenhouse Gas Protocol Corporate Accounting and Reporting Standard
New Zealand's emissions trading scheme	To determine the emission sources that can be excluded or their emissions estimated using simplified calculation procedures	No	Quantitative	Yes, for one aspect	Industrial Allocation Guide to Data Collection
The Climate Registry	Annual emissions reported by participants	Yes, based on International Organization for Standardization standard 14064:2005	Quantitative and qualitative	Yes	General Verification Protocol
United States	Reported annual emissions	Yes. Based on	Quantitative	No	Design Principles

<i>Scheme</i>	<i>Application</i>	<i>Is materiality defined in the scheme?</i>	<i>Quantitative/qualitative</i>	<i>Is a quantitative threshold defined?</i>	<i>Relevant supporting guidance</i>
Environmental Protection Agency Climate Leaders GHG reporting programme		the Greenhouse Gas Protocol			Guidance
Western Climate Initiative	Annual reported emissions	Yes	Quantitative and qualitative	Yes	Final Essential Requirements of Mandatory Reporting

## B. Key issues addressed in other schemes

### 1. Scope of application

16. The concept of materiality is applied in the assessment of the following:

- (a) The GHG emissions of an entity that voluntarily reports its emissions or is obliged to report its emissions by legislation;
- (b) The GHG emission reductions of a project;
- (c) Adherence to the conditions for participating in the scheme;
- (d) Adherence to reporting requirements not related to emission calculations;
- (e) Methodologies and default factors developed by participants in the scheme to calculate emission estimates.

17. In order to apply the concept of materiality, the schemes sometimes disaggregate or aggregate elements of the reporting on emissions. This can be based on the type of emissions, on the type of emission-generating activity or over a specific period of time, as follows:

- (a) The Climate Registry requires the materiality threshold to be applied separately to direct and indirect emissions, with the estimates of both required to be within 5 per cent accuracy for a positive verification finding;
- (b) The Australian scheme allows materiality to be reported for emissions aggregated over several related facilities, if the activities undertaken are similar;
- (c) The EU ETS aggregates the emissions for the relevant reporting over the year and not for the subreporting during the year.

18. Additionally, there are two aspects popularly referred to as the quantitative and qualitative aspects of materiality, which can result in a misstatement (for a quantitative error) or a non-conformity (for a breach of a qualitative requirement).

19. Several of the schemes provide guidance on qualitative aspects of materiality. For example, the Alberta GGRP describes qualitative errors as those that erode a third-party verifier's ability to reach a necessary level of comfort with the assertion of compliance. In all of the schemes, determining whether a material qualitative discrepancy has occurred is up to the professional judgment of the third-party verifier.

### 2. Materiality thresholds

20. The quantitative thresholds set in other GHG-related schemes are listed in table 3. The table shows that a 5 per cent materiality threshold is most prevalent and that three of the schemes have tiers in the materiality threshold, which are based on the magnitude of the reported emissions or offsets generated.

Table 3

#### Quantitative materiality thresholds set in other greenhouse gas related schemes

<i>Scheme</i>	<i>Threshold</i>
Alberta Greenhouse Gas Reduction Program	2 per cent for installations with annual emissions of more than 500 kt CO <sub>2</sub> 5 per cent for installations with annual emissions equal to or less than 500 kt CO <sub>2</sub>

<i>Scheme</i>	<i>Threshold</i>
Australian National Greenhouse and Energy Reporting Act	Set by the audit team leader
California Air Resources Board	5 per cent
Climate Action Reserve	5 per cent for projects registering less than 25,000 Climate Reserve Tonnes (CRT) 3 per cent for projects registering between 25,000 and 100,000 CRT 1 per cent for projects registering more than 100,000 CRT
European Union emissions trading scheme	2 per cent for installations with annual emissions of more than 500 kt CO <sub>2</sub> 5 per cent for installations with annual emissions equal to or less than 500 kt CO <sub>2</sub>
The Greenhouse Gas Protocol	Not defined, but 5 per cent suggested as 'rule of thumb'
Joint implementation	5 per cent for projects generating less than 100 kt emission reductions/year 2 per cent for projects generating 100 kt or more emission reductions/year
New Zealand's emissions trading scheme	5 per cent (only for reporting for industrial allocation provision)
The Climate Registry	5 per cent for direct emissions 5 per cent for indirect emissions
United States Environmental Protection Agency Climate Leaders	Set by participant and/or verifier
Western Climate Initiative	5 per cent

21. The schemes have different approaches as to how to apply quantitative thresholds. While some of the schemes do not specify clearly how they should be applied, others show that quantitative thresholds can be assessed differently, as follows:

(a) The combined effect of overstatements and understatements, meaning that understatements can balance out overstatements (e.g. the Western Climate Initiative and the EU ETS);

(b) The combined effect of overstatements (understatements ignored, assuming that this is the conservative situation);

(c) The total magnitude of the errors (e.g. the Alberta GGRP and The Climate Registry).

22. The Alberta GGRP uses the following example to illustrate its requirement to consider the total magnitude of the errors: a 3 per cent overstatement combined with a 3 per cent understatement of emissions would result in a 6 per cent combined discrepancy in the facility's submission. Against a materiality threshold of 5 per cent, this is a material discrepancy despite having a net zero impact on the reported data.

23. Using another approach, the Climate Leaders programme made a deliberate decision not to set a materiality threshold, because this conflicted with the aim that the emission inventories reported under the programme had to be complete.

### 3. The relationship between materiality and uncertainty

24. The analysed schemes generally address the issue of the uncertainty of the reported data separately from materiality and do not highlight a relationship between the two concepts.

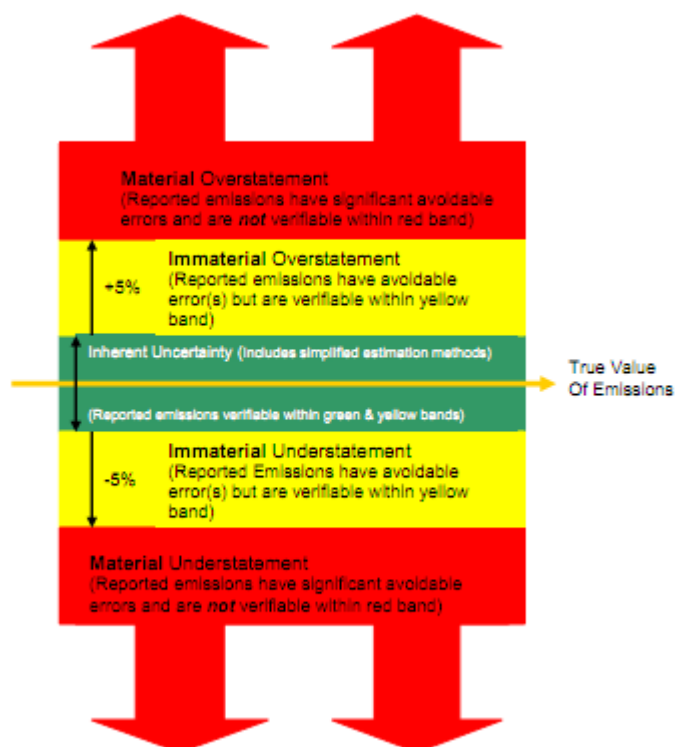
25. The Australian scheme clarifies that the two terms are distinct and should not be confused. The Climate Action Reserve states that a verification body must form a view on the materiality of all identified errors or uncertainties, and also distinguishes between reporting uncertainties and inherent uncertainties.

26. The Climate Registry illustrates its interpretation of the relationship, showing that the level of uncertainty makes up part of the quantitative threshold (see the figure below). In this scheme, the permitted use of simplified estimation methods (for up to 5 per cent of a reporter's entity-wide emissions) contributes to the inherent uncertainty, not to materiality.

27. The EU ETS addresses uncertainty extensively, but in relation to materiality simply clarifies that a misstatement, which might breach a materiality threshold, does not constitute permissible uncertainty.

28. The materiality of the uncertainty inherent in default emission factors provided by the Australian scheme and by The Climate Registry is not always considered. However, these schemes suggest that in the case that entities have adopted site-specific emission estimation techniques or default factors, then the uncertainty inherent in those techniques or methodologies should be considered when forming an opinion on materiality.

#### The Climate Registry's conceptual application of materiality and uncertainty



Source: The Climate Registry, 2010 (figure 2.1).

#### 4. The implementation of the concept of materiality in the verification process

##### *Corrective action*

29. The analysed schemes differentiate between material and immaterial errors when determining any corrective action that should be taken. In addition, some of the schemes differentiate between material misstatements and material non-conformities, for example, quantitative and qualitative aspects of materiality. All of the analysed schemes require material errors and misstatements to be corrected. With regard to immaterial errors, some of the schemes do not require these to be corrected, while others require all errors, material and immaterial, to be corrected. The Alberta GGRP requires immaterial errors to be corrected on a 'go-forward basis',<sup>9</sup> and material errors are corrected both retroactively and on a go-forward basis.

##### *The impact of the level of materiality on sampling during verification*

30. The level of materiality has an impact on the extent of the sampling during verification and, because it is related, on the time and resources required for verification. The Australian scheme states that the level of materiality should be considered in the early risk-assessment stage of planning the audit, including what will be sampled. The Californian scheme states that the sampling plan may change as issues with materiality emerge during the audit.

##### *Reporting findings*

31. The analysed schemes differ in terms of how conclusions on materiality should be reported. In the case of the EU ETS, the verifier shall record the decision on the individual sample of data, on the overall data as well as on the non-conformities identified. In the case of the Alberta GGRP, a verifier can issue a limited verification approval if the findings included immaterial, but not material, errors.

## V. Options for the implementation of the concept of materiality in the clean development mechanism

32. The identified key issues are the following:

- (a) Potential risks resulting from the application of the concept of materiality;
- (b) The scope of application of the concept of materiality;
- (c) Thresholds to define materiality;
- (d) The level of assurance;
- (e) Follow-up actions in order to implement the concept of materiality in the

CDM.

### A. Potential risks resulting from the application of the concept of materiality

33. Several concerns were raised in submissions with regard to potential risks resulting from the application of the concept of materiality in the CDM, such as overestimations of GHG emission reductions, the risk of subjectivity, inconsistencies between documents and issues related to uncertainty.

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<sup>9</sup> 'Go-forward basis' means that the corrections will apply to the next credit generation period.

34. If material information were to be overlooked by the project proponents and the DOEs, the emission reductions could be overestimated and thus the CERs may not represent real emission reductions. As at 5 April 2011, in about 84 per cent of the cases in which CERs were issued only after a request for review and the correction of the claimed emission reductions, the request for review was related to overestimations, while only 16 per cent of the cases were related to underestimations of emission reductions. It may be important to identify means of addressing this potential risk.

35. The risk may be partially mitigated by requiring DOEs to correct and report all identified material and immaterial errors, omissions and misstatements. DOEs could also be required to report on the information that they have considered to be immaterial. This would enable the Board and its support structure to review the decision made by a DOE to consider the information as immaterial. Also, the reported information could help further improve the knowledge on the application of the concept of materiality.

36. Another important risk may be the subjectivity of DOEs in assessing whether or not an information is material. This risk may be mitigated by:

- (a) Providing a clear and unambiguous definition of what information is regarded as material, including potential quantitative thresholds;
- (b) Requiring DOEs to provide adequate evidence that an information can be regarded as immaterial and to transparently report on assumptions made in assessing whether information is material;
- (c) Documenting relevant requirements transparently in the VVM;
- (d) Ensuring that DOEs have sufficient expertise to make judgments on materiality (e.g. through training).

37. Another potential risk is that the application of the concept of materiality could result in some inconsistencies. When immaterial information for a CDM project is treated differently at different stages of the project, there could be inconsistencies between the project design document, the monitoring report and the verification report. This issue could be addressed by requiring DOEs to transparently document any identified inconsistencies and to correct them where possible.

38. When a DOE assesses the materiality of information, uncertainty is often to be considered. However, the two concepts of uncertainty and materiality are different issues, which calls for separate guidance to address them. Uncertainty may generally be addressed in the development and approval of a CDM standard, whereas materiality is an issue related to the assessment of the requirements of the standard. When a high level of uncertainty is identified, this may need to be addressed independently of issues related to materiality.

## **B. Scope of application of the concept of materiality**

39. A key prerequisite for introducing the concept of materiality in the CDM is defining the scope of application of the concept, for which there are several options:

- (a) It could be applied by DOEs in performing the verification of emission reductions or removals, or be applied to both validation and verification activities. In the case of validation activities, the concept of materiality could, for example, be applied when assessing additionality using an investment analysis. In that case, materiality thresholds could be applied to the overall costs and revenue of a project activity, similar to using materiality thresholds for the emission reductions of a project;

(b) It could also be applied to the process of registration and issuance (i.e. the assessment of the requests for registration and issuance by the secretariat). If applied to registration and/or issuance, immaterial issues identified in the assessment of requests for registration or requests for issuance could, for example, not lead to a request for review. However, it may not be applied to any requests or actions originating directly from the Board, given that the Board is the decision maker and has the prerogative to determine which information it deems material for its decision-making;

(c) It could apply to quantitative information only, or to both quantitative and qualitative information;

(d) It could apply to non-prescriptive requirements only. Prescriptive requirements are requirements that are clearly spelled out in the relevant standard, for example if the methodology requires the monitoring of a parameter through an automatic monitoring system with specific conditions, while non-prescriptive requirements do not clearly specify how a requirement should be met, for example if the methodology requires the moisture content of biomass to be monitored but does not specify how it would be determined. The draft materiality standard considered by the Board proposed that the concept of materiality apply to non-prescriptive requirements only. The limitation of the application of the concept of materiality to non-prescriptive requirements only may decrease the overall risk of overestimating emission reductions and could help the DOEs to allocate their resources appropriately;

(e) In the case of programmes of activities:

(i) The concept of materiality may apply only to one activity at one location;

(ii) Several activities at more than one location may be aggregated in applying the concept of materiality;

(f) It may apply to individual monitoring periods or over a crediting year.

### **C. Thresholds to define materiality**

40. The concept of materiality can be implemented using quantitative thresholds to define which information is regarded as material. This would require DOEs to plan and perform their validations and verifications in such a way that they will not lead to an aggregated overestimation of emission reductions/removals above a predetermined materiality threshold. Setting materiality thresholds at appropriate levels is therefore important.

41. Some of the analysed schemes set materiality thresholds on the basis of the total magnitude of all the errors, regardless of whether they result in overestimations or underestimations, while others set the thresholds on the basis of the combined (or aggregated) effect of overestimations and underestimations. Since underestimations could be considered to be conservative, it may be practical to set the thresholds at an aggregated level.

42. A key question is whether only one or more materiality thresholds should be introduced. The draft materiality standard proposed to the Board included three tiers for the thresholds, based on the total annual emission reductions:

(a) 0.5 per cent of the emission reductions or removals for projects achieving total emission reductions of more than 500,000 tonnes of carbon dioxide equivalent (t CO<sub>2</sub> eq)/year;



(b) 2 per cent of the emission reductions or removals for large-scale projects achieving total emission reductions of 500,000 t CO<sub>2</sub> eq/year or less;

(c) 5 per cent of the emission reductions or removals for small-scale projects.

43. In addition to these three levels, a fourth level could be introduced for micro-scale project activities with a capacity of up to 5 MW for renewable energy and energy efficiency projects with savings of no more than 20 GWh/year.

44. Another option would be to harmonize the materiality thresholds with those in other relevant schemes, such as joint implementation (JI). The CDM and JI have similarities, but they also have differences in terms of project sizes, procedures and requirements. As at 13 April 2011, projects generating emission reductions of more than 500,000 t CO<sub>2</sub> eq represented only 5 per cent of the registered projects but accounted for more than 50 per cent of the total emission reductions registered. For this reason, it may be reasonable to differentiate between project sizes in defining materiality thresholds.

45. In defining thresholds for materiality, there may be some trade-offs between applying a low-level or a high-level of stringency. More stringent thresholds could reduce the risk of overestimations of CERs. On the other hand, less stringent thresholds could improve the efficiency of the CDM by reducing transaction costs. In addition, it has been argued that a higher level of materiality threshold would encourage participation in the CDM in countries with fewer than 10 registered projects.

#### **D. Level of assurance**

46. The level of assurance is a concept related to materiality. The level of assurance measures how confident a DOE is in providing its opinions. In the context of the CDM, it may be challenging to define the appropriate level of assurance, implement it in practice and then verify that the predefined level is met.

47. One option could be to define different levels of assurance, such as a reasonable, a limited and an absolute level:

(a) A reasonable level of assurance would require a DOE to provide not an absolute assurance but a high level of assurance that there is a relatively low level of risk that material errors, omissions and misstatements will not be prevented, identified or corrected;

(b) A limited level of assurance would not require a DOE to provide detailed information to demonstrate that its conclusion is free from material errors, omissions and misstatements;

(c) An absolute level of assurance would require 100 per cent certainty on the part of the DOE, which is often not practical to achieve. So far, other schemes have not required an absolute level of assurance.

48. In the context of the CDM, the level of assurance could be set at a reasonable or limited level. Given that generally under the CDM a high level of environmental integrity is expected, also a high level of assurance could be expected from DOEs. Thus, DOEs may be required to provide their conclusions with a reasonable level of assurance, whenever applicable.

**E. Follow-up actions in order to implement the concept of materiality in the clean development mechanism**

49. The idea of materiality is already partially included in the CDM and existing guidance may need to be revisited in the light of guidance from the CMP. For example, the VVM requires the validation report to contain information regarding GHG emissions occurring within the boundary of the proposed CDM project activity that are greater than 1 per cent of the overall expected average annual emission reductions and that are not included in the project boundary in the underlying baseline and monitoring methodology. That 1 per cent is effectively an application of a materiality threshold.

50. Furthermore, the principles of materiality are already taken into account in developing and approving baseline and monitoring methodologies, since the inclusion or exclusion of emission sources in/from a methodology is based on whether the sources are considered significant in the context of the project activities that are applicable to the methodology.

51. In this regard, a learning-by-doing approach could be followed, in which the concept of materiality is being applied by DOEs in parallel to the further development of regulatory decisions by the Board.

52. The Board may need to consider a number of follow-up actions if the concept of materiality is to be implemented in the CDM, for example:

(a) Training and capacity-building may be required, to ensure that all relevant stakeholders have a good understanding of the concept;

(b) At a later stage, a review of the experience gained with the concept could be useful, including with regard to the materiality thresholds, with a view to further improving the relevant standards, procedures and templates.

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