



Annex 6

**GUIDELINE ON THE APPLICATION OF
MATERIALITY IN VERIFICATIONS**

(Version 01.0)

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I. Introduction

A. Background

1. The Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (hereinafter referred to as the CMP) adopted at its seventh session decision 9/CMP.7, i.e. the “Materiality standard under the clean development mechanism” (hereinafter referred to as the CMP materiality decision).
2. In adopting its decision, the CMP decided, inter alia, that the scope of materiality under the clean development mechanism (CDM) initially covers the stage of verification by designated operational entities (DOEs).
3. In its decision, the CMP also requested the CDM Executive Board (hereinafter referred to as the Board) to increase its interaction with DOEs in order to facilitate a uniform interpretation and application of the concept of materiality with the overall view of increasing transparency and efficiency and reducing costs.
4. This document, the “Guideline on the application of materiality in verifications” (hereinafter referred to as this Guideline), addresses the CMP request described in paragraph 3 above.

B. Objectives

5. The objectives of this Guideline are to:
 - (a) Facilitate a uniform interpretation and application of the concept of materiality by DOEs in verifications;
 - (b) Improve transparency, consistency and efficiency in verifications and verification/certification reports submitted in the CDM project cycle.

II. Scope and applicability

6. This Guideline is applicable to DOEs for the verification of all types of CDM project activities.
7. It is not applicable to:
 - (a) The verification of programmes of activities;
 - (b) The validation of project activities or programmes of activities;
 - (c) Uncertainties related to measurement;
 - (d) Addressing temporary deviations and permanent changes from the registered monitoring plan or applied methodology, regardless of whether corresponding emission reductions or removals are above or below materiality thresholds.¹

¹ In cases of temporary deviations and permanent changes from the registered monitoring plan or applied methodology, DOEs are to follow the applicable requirements in the “Post registration changes” section of the “Clean development mechanism validation and verification standard” (VVS).



III. Terms and definitions

8. In addition to the definitions contained in the “Glossary of CDM terms”, the following terms are used in this Guideline:

- (a) “Material information” is a piece of information for which its omission, misstatement or erroneous reporting could change a decision by the Board;
- (b) “Reasonable level of assurance” is a high, but not absolute, level of assurance;
- (c) “Should” is used to indicate that among several possibilities, one course of action is recommended as particularly suitable;
- (d) “May” is used to indicate what is permitted.

IV. Requirements from the CMP materiality decision

9. The CMP materiality decision prescribes that a DOE planning and conducting a verification using the concept of materiality shall achieve a reasonable level of assurance.

10. The CMP materiality decision prescribes the thresholds for the application of materiality in verifications, by defining that information is material if it might lead, at an aggregated level, to an overestimation of the total emission reductions or removals achieved by a CDM project activity equal to or higher than:

- (a) 0.5 per cent of the emission reductions or removals for project activities achieving a total emission reduction or removal of equal to or more than 500,000 tons of carbon dioxide equivalent per year;²
- (b) 1 per cent of the emission reductions or removals for project activities achieving a total emission reduction or removal between 300,000 and 500,000 tons of carbon dioxide equivalent per year;
- (c) 2 per cent of the emission reductions or removals for large-scale project activities achieving a total emission reduction or removal of 300,000 tons of carbon dioxide equivalent per year or less;
- (d) 5 per cent of the emission reductions or removals for small-scale project activities other than project activities covered under subparagraph (e) below;
- (e) 10 per cent of the emission reductions or removals for the type of project activities referred to in decision 3/CMP.6, paragraph 38 (referred to as microscale project activities).

V. Guidelines on the application of materiality in verifications

A. General information on the concept of materiality

11. Materiality is an auditing concept to be applied by DOEs in verifications in order to detect errors, omissions or misstatements in emission reductions or removals being claimed by project participants in monitoring reports for CDM project activities.³

² A year refers to a period of 12 consecutive months.



12. To achieve a balance between cost and time to conduct a verification, it is acceptable for DOEs to obtain a reasonable level of assurance on whether the claimed emission reductions or removals are free from material errors, omissions or misstatements.

13. Recognizing that circumstances may exist that could cause the information reported by project participants to be materially misstated, DOEs should plan and perform verifications with an attitude of professional scepticism and rely on their professional judgement while applying the concept of materiality.

14. The application of materiality and reasonable level of assurance imply that some data or information may not be checked. However, DOEs should design their verification and sampling plans to detect all material errors, omissions or misstatements, and any unchecked data or information should not contain any material errors, omissions or misstatements. A DOE's verification opinion applies to 100 per cent of the data and information even if the DOE may not have checked the entire data set and information.

15. Applying materiality does not mean that identified errors are not corrected; if an error, omission or misstatement is identified by the DOE, regardless of whether it is material or not, the DOE is required by the "Clean development mechanism validation and verification standard" (VVS) to request project participants to address it. Project participants then have to correct the error or, if it is not possible to do so, follow the requirements related to post-registration changes in the "Clean development mechanism project standard" (PS). However, the issue of addressing identified errors is outside the scope of this Guideline.

B. Consideration of materiality in planning the verification

16. In planning a verification the DOE should:

- (a) Identify the materiality threshold in paragraph 10 above that corresponds to the amount of emission reductions or removals the specific type of CDM project activity will achieve;
- (b) Understand the environment in which the project activity operates, the sources of project emissions within the project boundary and the leakage, the monitoring activities, the equipment used to monitor or measure activity data, the origin and application of data used to calculate or measure the emissions, data flow, the internal quality control system, and the overall organization with respect to monitoring and reporting;⁴
- (c) Conduct a risk assessment to identify and assess the risks of individual or aggregated material errors, omissions or misstatements that may occur within the threshold based on elements in subparagraphs (a) and (b) above;
- (d) Design verification and sampling plans and audit procedures⁵ whose type, timing⁶ and extent are based on and are responsive to the assessed risks of material errors, omissions or misstatements.

³ Further background information on the concept of materiality can be found in Annex A of ISO 14064-3 – Specifications with guidance for the validation and verification of greenhouse gas assertions.

⁴ Adapted from European Union. 2007. *Commission Decision of 18 July 2007 establishing guidelines for the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council.*

⁵ In accordance with paragraph 217 of the VVS.

⁶ For example, timing may refer to the specific time intervals for which the DOE may draw its samples.



17. The materiality thresholds apply to the total emission reductions or removals actually achieved. When planning a verification, the DOE should apply the applicable materiality threshold to the reported total emission reductions or removals. If, as a result of the verification, the initial reported total emission reductions or removals is revised, the DOE should reapply the materiality threshold to the revised total emission reductions or removals and, if needed, make adjustments to its verification and sampling plans.

C. Consideration of materiality in conducting the verification

18. In conducting a verification the DOE should:

- (a) Apply verification and sampling plans and audit procedures;
- (b) Assess potential errors, omissions and misstatements against the materiality threshold to determine whether they are material individually or in aggregate and whether further audit procedures are needed.

19. If an error, omission or misstatement is detected, the DOE should be aware that it may not be an isolated occurrence and may be a systemic reoccurring error. For example, other errors may exist if the DOE identifies that the error, omission or misstatement arose from a breakdown in the project participants' internal quality control and quality assurance system.

20. In cases where an immaterial error, omission or misstatement is detected, the DOE should determine whether additional audit procedures should be conducted in order to reach a reasonable level of assurance that the claimed emission reductions or removals are free from material error, omission or misstatement.

21. In cases where a material error, omission or misstatement is detected, the DOE may, depending on the circumstances of the error as per paragraph 19 above, immediately request project participants to address it, or conduct additional audit procedures to confirm or determine the context and magnitude of the error, omission or misstatement and then request project participants to address it.

22. In both paragraphs 20 and 21 above, any errors, omissions or misstatements, material or immaterial, are to be addressed (see paragraph 15 above).

23. If further audit procedures are necessary, the DOE may consider whether the overall verification and sampling plans need to be revised.

D. Reporting on the application of materiality

24. The DOE should describe in its verification/certification report the risks, the risk assessment undertaken and how the verification and sampling plans were designed to respond to these risks and ensure that all material errors, omissions or misstatements were detected.

25. The DOE should also describe whether and how the verification and sampling plans were revised to take into account the need for further audit procedures due to the nature/type of errors, omissions or misstatements detected.

26. The DOE should also document how materiality was applied in determining whether a detected error, omission or misstatement was material or immaterial either individually or in aggregate.

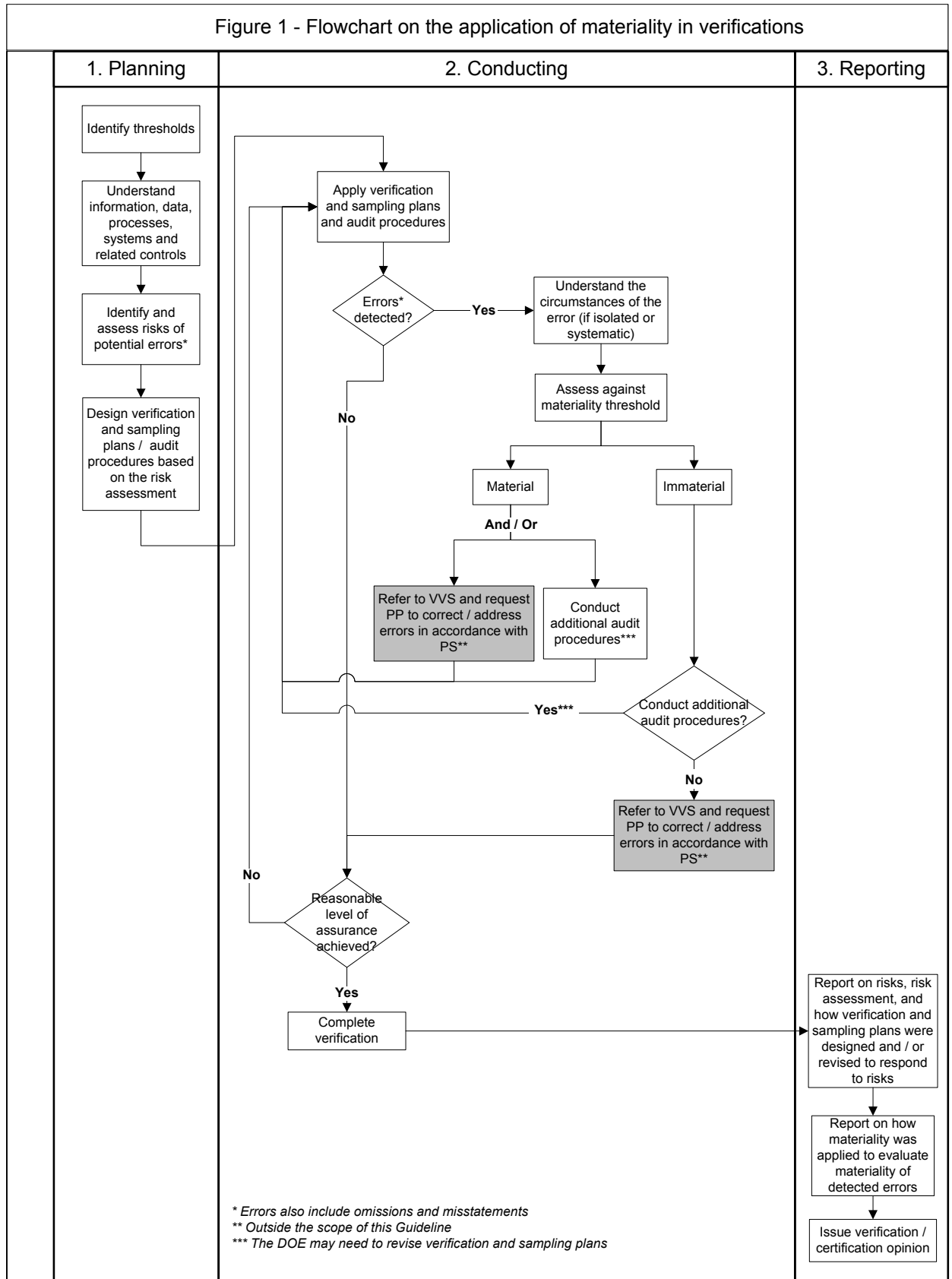
27. The DOE should state in its verification/certification opinion that the claimed emission reductions or removals are free from material errors, omissions or misstatements, with a reasonable level of assurance.



VI. Flowchart on the application of materiality in verifications

28. The flowchart in Figure 1 illustrates how materiality should be applied by DOEs in verifications based on the provisions in this Guideline.

Figure 1 - Flowchart on the application of materiality in verifications





VII. Examples of the application of materiality in verifications

A. General

29. The following are examples of situations where the concept of materiality is applied in verifications. These examples are only intended to help understand how materiality can be applied, and are not binding rules.

B. Examples in planning verifications

30. Example 1:

- (a) In planning the verification, the DOE should identify and assess the risks of individual or aggregated material errors, omissions or misstatements in consideration of the applicable materiality threshold and the required level of assurance to reach. Examples of potential causes of risk may include:⁷
 - (i) Human error in the quantification of emissions (which may be more likely to occur if personnel are unfamiliar with, or not well trained regarding, emissions processes or data recording);
 - (ii) Undue reliance on a poorly designed information system, which may have few effective quality controls; for example, the use of spreadsheets without adequate controls related to data changes/updates, version tracking, traceability, security, etc.;
 - (iii) Manual adjustment of otherwise automatically recorded activity levels; for example, manual input may be required if a flare meter becomes overloaded.
- (b) The DOE may design its verification to respond to the assessed risks by applying the following audit techniques:
 - (i) Depending on the monitoring period being verified, conduct increased sampling during the months when there is a greater likelihood of errors and issues with data quality control due to project participants' leave schedules;
 - (ii) Depending on how data is generated, processed, and reported, place greater emphasis on verifying data captured and processed manually and/or in spreadsheets versus those that are generated from an automated system.

31. Example 2:⁸

- (a) The project is a large-scale CDM project activity achieving total emission reductions of <300,000 tons of CO₂e per year; as such, a 2 per cent materiality thresholds is applied.

⁷ Drawn from ISAE 3410, Assurance Engagements on Greenhouse Gas Statements (Exposure draft - January 2011).

⁸ Adapted from an example provided by the Designated Operational Entities and Independent Entities Association (D&IA).



- (b) The verification of this project activity requires the verification of emissions from only three sources. From an initial review of top-level data, the first emission source reportedly accounts for 78.2 per cent of the total emission reductions, the second source accounts for 20 per cent of the total emission reductions and the third source reportedly accounts for 1.8 per cent of the total emission reductions (i.e. less than the materiality threshold of 2 per cent).
- (c) Based on the DOE's knowledge of how the project participants collect, measure, process, and report data for each source, the DOE determines that the second source (accounting for 20 per cent of total emission reductions) has the highest potential for errors, omissions or misstatements since the data are manually recorded in a spreadsheet. The other two sources use automated data feeds to record the data.
- (d) The verification plan is therefore designed to ensure that the majority of time to test and detect potential errors is spent on verifying the source with the highest risk for potential misstatements versus the first and third sources that together account for 80 per cent of total emission reductions.

C. Examples in conducting verifications

32. Example 3:⁹

- (a) The project is a small-scale CDM project activity achieving total emission reductions of <30,000 tons of CO₂e per year; as such, a 5 per cent materiality threshold is applied.
- (b) The project activity's monitoring plan involves surveying thousands of households. Along the audit trail the DOE checks by random sampling, following the sampling standard, whether the transfer from hand-written survey records to a project data base was performed adequately.
- (c) The sampling approach by the DOE showed that out of 200 samples, two data transfers were made erroneously. When extrapolating the resulting error to the whole data set the overestimation at a 95 per cent confidentiality interval would be less than 0.5 per cent.
- (d) The DOE requests, in accordance with the VVS, the project participants to correct the two identified errors and to review the whole data set to check whether similar errors also occurred in the remaining data set not checked by the DOE. After having confirmed that the project participants have corrected the identified errors, and having determined that there is no risk of material errors within the data set, the DOE determines that further sampling is not needed.

33. Example 4:¹⁰

- (a) The project is a large-scale CDM project activity achieving total emission reductions of 400,000 tons of CO₂e per year; as such, a 1 per cent materiality threshold is applied.
- (b) During the course of the verification, errors are identified within a data set and are identified to have been caused by errors in manual transposition.

⁹ Adapted from an example provided by D&IA.

¹⁰ Adapted from an example provided by D&IA.



- (c) Due to the cause, these errors are easily quantified, and are identified to represent an error of 0.5 per cent of the total emission reductions (i.e. less than the materiality threshold of 1 per cent).
- (d) Despite these errors being less than the materiality threshold of 1 per cent, the DOE, in accordance with the VVS, requests the project participants to correct the data set containing the errors. These errors are corrected by the project participants and the DOE confirms the corrections but also decides to test another sample of data in order to reach a reasonable level of assurance that no additional errors are present in the data set that when aggregated with other detected errors could be material.
- (e) No further errors are identified in the additional data set, and the DOE proceeds with the remaining elements of the verification as defined in its verification plan.

34. Example 5:¹¹

- (a) The project is a large-scale CDM project activity achieving total emission reductions of >500,000 tons of CO₂e per year; as such, a 0.5 per cent materiality threshold is applied.
- (b) During the course of the verification, errors are identified within a data set caused by erroneous meter readings. These errors are quantified to represent an error of 1 per cent of the total emission reductions (i.e. more than the materiality threshold of 0.5 per cent).
- (c) The DOE, in accordance with the VVS, requests the project participants to correct the data set containing the errors before conducting any further audit procedures.
- (d) The errors are caused by a failure of the meter to provide updated readings at the defined frequency and have resulted in the last reading being repeated for a period. The monitoring plan defines the approach to be applied in these circumstances and the project participants correct the data set in accordance with the defined approach.
- (e) The DOE confirms the corrections are in accordance with the monitoring plan and continues with the verification of the same data set. No further errors are identified in the data set, the DOE confirms the data set to be free from material error and proceeds with the verification as defined in the verification plan.

35. Example 6:¹²

- (a) The project is a large-scale CDM project activity achieving total emission reductions of >500,000 tons of CO₂e per year; as such, a 0.5 per cent materiality threshold is applied.
- (b) The project activity includes the operation of a back-up generator powered by fossil fuel which contributes to 2 per cent of the project emissions. Fuel consumption of the generator is monitored by a fuel balance comprising the determination of the fuel stock at the beginning and the end of the monitoring period and the determination of all fuel purchases during that period. The maximum fuel stock is equivalent to an amount of 0.1 per cent of the project emissions.
- (c) While it could be confirmed that there is no material misstatement within all other data required for the calculation of the emission reductions as well as regarding the

¹¹ Adapted from an example provided by D&IA.

¹² Provided by D&IA.



completeness, consistency and plausibility of fuel purchase data, the record for the fuel stock at the end of the monitoring period was taken manually by a single person without any corroborating evidence. The reading for the fuel stock at the beginning of the monitoring period is consistent with the one at the end of the previous period.

- (d) When planning the verification activities for this emission source the DOE will focus on the completeness, consistency and plausibility of fuel purchase data. No specific attention will be paid to the fuel stock as even in the worst case any misstatement would result in a significantly lower over-estimation of emission reductions compared to the materiality threshold and would result in an equivalent under-estimation in the following period.

36. Example 7:¹³

- (a) The project is a large-scale CDM project activity achieving total emission reductions of 150,000 tons of CO₂e per year; as such, a 2 per cent materiality threshold is applied (3,000 t CO₂e).
- (b) One of the parameters used for determining the project's baseline emissions is the measurement of the chemical oxygen demand (COD) of wastewater, which according to the monitoring plan is performed daily.
- (c) The monitoring period covers 540 days. The daily COD values are presented for verification in the emission reduction calculation spreadsheet and records are available for all 540 measurements carried out during the monitoring period. The COD values are manually transferred from the measurement records to the emission reduction calculation spreadsheet.
- (d) The DOE has assessed the reported data and found that the reported COD values are reasonable and there are no outliers which need further investigation. The DOE thus applies sampling for verifying that the COD values in the emission reduction calculation spreadsheet are consistent with the actual measurement records and selects a random sample.
- (e) The DOE identifies that for five of the records checked an error was made in transferring the data from the measurement record to the emission reduction calculation spreadsheet. The errors identified (typographical errors with some digits) do not represent more than 10 per cent of the reported value. Nonetheless, assuming that the frequency of errors in transferring data may be at least the same in the remaining data set as found in the sample (when applying the percentage of error for the COD value of the records to the total COD value for 540 records the error in the emission reduction calculation is more than 3,000 t CO₂e), the possible error in the total reported emission is therefore material. The project participants are thus requested, through a corrective action request (CAR), to correct the errors identified in the sample and once more check the remaining records and correct any further errors.
- (f) The project participants submit a revised emission reduction calculation spreadsheet in which the eight errors identified by the DOE's sample were corrected in addition to 15 other values. To further verify the data set, the DOE selects a further random sample from the remaining data set. The DOE identifies that for one of the sampled records, the value was erroneously transferred to the emission reduction calculation spreadsheet.

¹³ Provided by D&IA.



Again, the error identified (typographical errors with some digits) does not represent more than 10 per cent of the reported value.

- (g) The project participants are thus requested, through another CAR, to correct the error identified in the second sample and once more check the remaining records and correct any further errors. The project participants submit a revised emission reduction calculation spreadsheet in which the identified error is corrected. The DOE decides not to carry out further verification and does not select another sample. Even if there are possibly further errors in the remaining data set not checked by the DOE, when applying the percentage of error for the COD value identified in the sample of records to the remaining COD value the error in the emission reductions calculation is less than 3,000 tCO₂e. Hence, any possible remaining misstatement in the reported COD values would not have a material impact on reported emission reductions.

History of the document

Version	Date	Nature of revision
01.0	13 September 2012	EB 69, Annex 6. Initial adoption.
Decision Class: Regulatory Document Type: Guideline Business Function: Issuance		