CLEAN DEVELOPMENT MECHANISM

**CDM-EB46-A02-STAN**

# Standard

# CDM accreditation standard

Version 07.0

United Nations
Framework Convention on
Climate Change

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# 1. Introduction

## 1.1. Background

1. The Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (hereinafter referred to as the CMP) established, as its first session, the basis of the regulatory framework for the accreditation of operational entities[1] in the clean development mechanism (CDM), as contained in its decisions 3/CMP.1, 4/CMP.1, 5/CMP.1, 6/CMP.1 and 7/CMP.1.

2. Pursuant to its mandate from the CMP to be responsible for the accreditation of operational entities, the CDM Executive Board (hereinafter referred to as the Board) has adopted various regulatory documents necessary for the operationalization of the CDM accreditation system, including the "CDM accreditation standard" (hereinafter referred to as this Standard).

## 1.2. Objectives

3. The objectives of this Standard are to:

   (a) Provide a clear and common understanding of the CDM accreditation requirements;

   (b) Contribute to the accreditation of competent and impartial operational entities.

# 2. Scope, applicability, and entry into force

## 2.1. Scope and applicability

4. This Standard sets out the requirements applicable to applicant entities (AEs) to become accredited and designated operational entities (DOEs) to remain accredited.

## 2.2. Entry into force

5. Version 07.0 of this Standard is effective as of 01 March 2018.

# 3. Normative reference

6. The following documents are indispensable for the application of this Standard:

   (a) "CDM accreditation procedure";

   (b) "Clean development mechanism validation and verification standard" (hereinafter referred to as the Validation and verification standard);

   (c) "Procedure on performance monitoring of designated operational entities" (hereinafter referred to as the DOE performance monitoring procedure).

[1] In this Standard, the term "operational entity" includes both applicant entity (AE) and designated operational entity (DOE).

# 4. Definitions

## 4.1. General terms

7. The following general terms apply in this Standard:

   (a) "Shall" is used to indicate requirements to be followed;

   (b) "Should" is used to indicate that among several possibilities, one course of action is recommended as particularly suitable;

   (c) "May" is used to indicate what is permitted.

## 4.2. CDM terms

8. In addition to the definitions contained in the "Glossary of CDM terms", the following CDM terms apply in this Standard:

   (a) Appeal - a request made by a client for a formal review of a decision taken by a DOE in respect of its validation and/or verification/certification activities;

   (b) CDM accreditation - formal recognition by the Board of an operational entity's institutional capacity, competence and impartiality to appropriately perform validation and/or verification/certification functions in accordance with the CDM rules and requirements;

   (c) CDM accreditation requirement - a requirement adopted by the CMP or the Board and with which an operational entity shall comply to become and remain accredited;[2]

   (d) Client - a project participant or coordinating/managing entity to which a DOE provides a validation or verification/certification service through a contract;

   (e) Competence - ability to apply knowledge and skills in order to perform validation and/or verification/certification activities in accordance with all CDM rules and requirements;

   (f) Complaint - formal expression of dissatisfaction, made verbally, electronically or in writing, regarding the performance of a DOE or its outsourced entities in relation to its validation or verification/certification functions, from any source, such as clients, project participants, the general public or its representatives, government bodies, non-governmental organization, etc.;

   (g) Corrective action - action to eliminate the cause of a detected non-conformity in order to prevent its recurrence;

[2] The CDM accreditation requirements are mainly contained in this Standard. However, there may be some contained in CMP and/or Board decisions and not yet reflected in this Standard if they have been adopted after the adoption of the latest version of this Standard. Such requirements will be reflected in the next revision of this Standard.

(h) Designated operational entity (DOE) - an entity designated by the CMP, based on the recommendation by the Board, as qualified to perform validation and/or verification/certification functions;

(i) Dispute - disagreement between a DOE and its client regarding the DOE's recommendation and/or opinions/decisions made at various stages in the course of its validation and/or verification/certification activities;

(j) Knowledge - the theoretical and/or practical understanding of a subject;

(k) Non-conformity - non-fulfillment of a CDM accreditation requirement;

(l) Outsourced entities – other legal entities to which the DOE outsources some of the validation and verification/certification functions;

(m) Preventive action - action to prevent the occurrence of non-conformity(ies) and improve the effectiveness of a process;

(n) Related body - an organization and/or body related to a DOE on the basis of common ownership and/or governance, personnel, shared resources, finances, contracts, marketing and payment of commission or other inducement for bringing in business or the referral of new clients, etc.;

(o) Root-cause analysis - method, approach or process for identifying the original reasons, sources, causes and/or contributing factors that initiate, trigger or generate non-conformities;

(p) Sectoral scope - group of activities and processes sharing similar sources of greenhouse gases (GHG) emissions or removals;

(q) Skill - to carry out in practice; to do;

(r) Technical area - a sub-sector of a sectoral scope defined based on the nature of technical processes, applicable methodologies, monitoring requirements and/or environmental impacts;

(s) Technical expert - a qualified person who provides specific technical, methodological and sectoral knowledge and/or expertise in a validation or verification/certification team or a technical review team;

(t) Technical review - an assessment of a validation or verification/certification opinion and report conducted independently from the validation or verification/certification team that prepared the opinion and report in order to ensure that the validation or verification/certification has been conducted in accordance with all applicable CDM validation or verification/certification requirements;

(u) Technical reviewer - a qualified person appointed to conduct the technical review in a technical review team;

(v) Technical review team - one or more persons conducting a technical review;

(w) Validation or verification/certification personnel - persons performing validation activities (validator, team leader, technical expert and technical reviewer) or verification/certification activities (verifier, team leader, technical expert and technical reviewer);

(x) Validation or verification/certification team - one or more persons conducting a validation or verification/certification;

(y) Validation or verification/certification team leader - a qualified person appointed to direct and supervise a validation or verification/certification team conducting a validation or verification/certification;

(z) Validator or verifier - a qualified person appointed to conduct a validation or verification/certification in a validation or verification/certification team.

# 5. Sectoral scopes of accreditation

9. To conduct the validation and/or verification/certification of a CDM project activity or programme of activities (PoA) and issue a validation and/or verification/certification opinion and report, a DOE shall be accredited in the sectoral scope(s) of the methodology(ies) applied by the project activity or PoA. The list of sectoral scopes is contained in Appendix 2 to this Standard.

# 6. Legal status and matters

10. A DOE shall be an entity registered under applicable national or international law so that it can function legally, enter into contracts, make decisions independently and may be sued in its own name.

11. A DOE shall not have any pending judicial process for malpractice, fraud and/or other activity incompatible with functions as a DOE.

12. A DOE shall maintain a record of all the judicial processes pending against it as well as information of any judicial cases held in the past.

13. If the subject matter of a judicial process pending or instituted against the AE/DOE is such that it is incompatible with its functions as a DOE, the AE/DOE shall promptly report the matter to the UNFCCC secretariat.

# 7. Liability and finance

## 7.1. Financial stability

14. A DOE shall demonstrate that it has the financial resources and stability required for its validation and/or verification/certification functions through:

(a) Evidence of financial resources including the previous three years' financial statements for companies existing for more than three years (balance sheets, profit and loss accounts, etc.);[3] or any other relevant evidence such as shareholder commitment for newly established companies; and

(b) Business plan or workplan or equivalent financial plan for the next three years.

[3] In this context, financial statements audited by a related body may not be considered as "externally audited financial statements".

15. A DOE shall have a process for regularly monitoring its income and expenditure to determine the financial stability and resources required for its validation and/or verification/certification functions.

### 7.2. Liability

16. A DOE shall demonstrate that it has analysed, identified and evaluated the nature, scale and impact of all potential financial risks arising from its validation and/or verification/certification functions and has adequate arrangements to cover the identified financial risks.

17. The means to cover potential financial risks shall be:

    (a) Liability insurance; and/or

    (b) Financial resource reserves, such as bank savings and/or short/long term liquidities.

## 8. Entity's management

### 8.1. Management structure

18. A DOE shall have a management structure that has overall responsibility for the performance and implementation of the entity's functions, including quality assurance procedures and final decision-making on validations and/or verifications/certifications.

19. A DOE shall document its structure, showing lines of authority, responsibilities and allocation of functions stemming from the top management. It shall include the management personnel, validation and verification/certification personnel, other personnel involved in CDM activities and any operational or supervisory committees.

20. A DOE shall document the names, qualifications, experience and terms of reference of the top management personnel and other management personnel responsible for the AE/DOE's validation and/or verification/certification functions.

21. A DOE shall establish, document, implement and maintain a procedure for the allocation of responsibility within the organization, and make it publicly available.

### 8.2. Management functions

22. A DOE's management shall manage all validation and/or verification/certification resources and activities, and:

    (a) Determine the human resource requirements;

    (b) Evaluate and demonstrate competence of personnel, qualify them, and select members of technical review teams;

    (c) Approve contract reviews;

    (d) Maintain the competence of its validation and/or verification/certification personnel;

    (e) Supervise the implementation of validation and/or verification/certification procedures;

(f) Make a final decision on validation and/or verification/certification opinions and reports;

(g) Manage all activities related to the safeguarding of the impartiality of AE/DOE functions;

(h) Establish, implement and maintain a quality management system.

23. A DOE's top management shall have overall authority and responsibility for the following functions:

(a) Formulation and development of policy matters relating to the operations of the AE/DOE;

(b) Establishment of a quality management system in line with policies formulated;

(c) Documentation of policies and procedures and their implementation;

(d) Supervision and monitoring of implementation of policies and procedures;

(e) Supervision of finances, administrative matters and dealing with contractual matters and arrangements;

(f) Final decisions on validation and/or verification/certification activities;

(g) Decisions relating to disputes and complaints;

(h) For providing adequate and competent human resources for validation and/or verification/certification functions.

24. A DOE shall establish, document, implement and maintain a procedure for the appointment, terms of reference and operation of any operational or supervisory committees that are involved in its policymaking or operational functions of validation and/or verification/certification activities.

# 9. Safeguarding impartiality

## 9.1. General

25. The DOE shall ensure its integrity at all times in its validation and verification/certification activities, and shall work in a credible, independent, non-discriminatory and transparent manner.

26. The DOE shall act impartially and avoid any conflict of interest that may compromise its ability to make impartial decisions.

27. The DOE shall ensure that there are no constraints that might influence its judgement or endanger its independence of judgement in relation to its validation and/or verification/certification activities, inter alia, by having sufficient human resources, either through internal or external resources, and financial resources and stability.

28. If the DOE is part of a larger organization, it shall ensure that no conflict of interest exists between its validation and/or verification/certification functions and the functions of other parts of the organization.

29. If the DOE has related bodies, the DOE shall ensure that no conflict of interest exists between its validation and/or verification/certification functions and the functions of the related bodies.

30. The DOE shall ensure that it and its personnel (internal and external) have no relationship[4] that creates threats to its impartiality.

## 9.2. Safeguarding impartiality at the policy level

31. The DOE shall establish, document and implement a policy on safeguarding impartiality, demonstrating its understanding of the possible influence that can be exerted on it as an organization and/or on its personnel when performing its validation and/or verification/certification functions, and stressing its commitment to fully address that issue.

32. The DOE shall ensure that its policy on safeguarding impartiality is understood and implemented at all levels of the organization.

33. The DOE shall ensure its impartiality at the policy level, inter alia, by:

    (a) Having the top management's commitment to safeguarding impartiality in the DOE's validation and/or verification/certification functions as evidenced through a defined institutional structure and impartiality policy and procedures, appropriate implementation of such policy and procedures and operation and conduct of its activities;

    (b) Having a statement that describes its understanding of the necessity of impartiality in validation and/or verification/certification functions, how it manages conflict of interest and how it ensures the objectivity of validation and/or verification/certification functions;

    (c) Taking action to respond to any threats to its impartiality arising from the actions of other parts of the organization, persons outside of the organization, outsourced entities, related bodies or other bodies or organizations;

    (d) Maintaining a professional environment and culture in the organization that supports behaviour of all personnel that is consistent with impartiality.

34. The DOE shall make publicly available its policy for safeguarding impartiality. The DOE should put this policy on its website.

## 9.3. Safeguarding impartiality at the organization level

35. A DOE shall have a documented structure that safeguards impartiality of its operations.

36. The DOE shall have a committee that safeguards the DOE's impartiality in its validation and/or verification/certification functions and ensures that the policy on safeguarding impartiality and related procedures and other systems are effectively implemented (an impartiality committee).

[4] A relationship that threatens the impartiality of the AE/DOE can be based on ownership, governance, management, personnel, shared resources, finances, contracts, marketing and payment of a sales commission or other inducement for the referral of new clients, etc.

37. The impartiality committee shall:

    (a) Be independent from all validation and verification/certification operations of the DOE, and shall report directly to the DOE's top management;

    (b) Have in its composition the participation of key interested parties[5] with a balanced representation of each of them;

    (c) Have a chairman who shall be a person independent from and external to the DOE;

    (d) Have documented terms of reference. This committee shall meet regularly, at least once a year, and a complete record of its proceedings shall be maintained;

    (e) Approve the conflict of interest analysis and the mitigation measures described in section 9.4 below as well as monitor and review the implementation of the systems to safeguard the DOE's impartiality (conflict of interest analysis, procedures and mitigation strategies and actions);

    (f) Have access to all validation and/or verification/certification files or records and be able to review them, if needed. This committee need not intervene in or review each validation or verification/certification activity, but may need to review them in order to fulfill its mandate;

    (g) Prepare an annual synthesis report of its activities, which shall be included in the DOE's annual report to the Board to be submitted in accordance with the CDM accreditation procedure.

38. In cases where the impartiality committee identifies issues through the monitoring or review of the implementation of the DOE's systems to safeguard impartiality, it shall report the instance to the DOE's top management. If the top management does not follow the advice of the impartiality committee, this committee shall have the right to report the instance to the Board through the UNFCCC secretariat.

39. The DOE shall enable a CDM assessment team, upon request, to observe meetings of the impartiality committee, as part of the DOE's accreditation process.

## 9.4. Safeguarding impartiality at the operational level

### 9.4.1. Analysis of threats against impartiality

40. The DOE shall establish, document, implement and maintain a procedure for analyzing potential threats against impartiality.

41. The procedure referred to in paragraph 40 above shall require the DOE to carry out a conflict of interest analysis at least once a year and whenever a significant change occurs in the DOE activities, such as changes in the organizational structure or of the legal status and mergers with or acquisitions of other organizations.

[5] The participation of key interested parties in an independent committee may include representatives from academic organizations, civil society, industry associations, and local/provincial/national government entities.

42. The conflict of interest analysis shall include, but not be limited to, the following risks:[6]

    (a) Source of revenue - risks from a client paying for the validation or verification/certification work. This risk is significant when the DOE has numerous contracts with the same client;

    (b) Self-interest - risks from a person or an organization acting in its own interest, for example financial self-interest;

    (c) Self-review - risks from a person or an organization reviewing its own work; assessing the CDM validation or verification/certification activities of a client to whom the DOE or its related bodies provided consultancy would be a self-review risk;

    (d) Familiarity (or trust) - risks from a person or an organization being too familiar or trusting of another person instead of seeking validation or verification/certification evidence is a familiarity risk;

    (e) Intimidation - risks from a person or an organization having a perception of being coerced openly or secretly, such as a risk to be replaced or reported to a supervisor.

43. In the conflict of interest analysis, the following activities of the DOE or its related bodies, but not limited to those activities, shall be considered as threats to impartiality:

    (a) Identification, development and/or financing of CDM project activities and PoAs;

    (b) Consultancy related to CDM project activities and PoAs;

    (c) Providing training on CDM project activities and PoAs and other related topics;

    (d) Marketing and tie-up promotion with CDM consultancy/financing organizations;

    (e) Offering/payment of commissions or other inducements for promotion or new business;

    (f) Laboratory testing and calibration for CDM project activities and PoAs;

    (g) Use of personnel for the validation and/or verification/certification of a CDM project activity or PoA who were previously associated with the CDM project participants in their personal capacity or otherwise for any activity such as development, consultancy, training, etc.;

    (h) Other organizational considerations such as performance targets in financial terms or in terms of a specific number of CDM project activities and PoAs to be validated and/or verified/certified during a period of time.

44. While carrying out the conflict of interest analysis, the DOE shall:

    (a) Evaluate sources of income and assess whether financial or other commercial factors compromise impartiality;

[6] Drawn from Annex B to ISO 14065:2007(E).

(b) Identify and document its actual/proposed involvement in CDM activities other than validation and/or verification/certification and carry out and document an analysis of actual and potential risk to impartiality;

(c) Identify and document all related bodies and identify actual/potential risks to impartiality, including potential conflicts arising from any such relationships;

(d) Disclose and document, in a transparent and comprehensive manner, the following information, as a minimum: the general types of activities carried out by the DOE, its parent organization, outsourced entities, related bodies, and personnel. The disclosure and documentation shall be detailed for all organizations and personnel listed above with regard to activities related to CDM project activities and PoAs, including development, financing, consultation and training;

(e) Clearly define the functions of its related bodies and their relationships with the DOE when describing its organizational structure. This should cover all relationships, such as:

(i) Relationships based on common ownership and governance, personnel;

(ii) Shared resources, finances, and contracts;

(iii) Marketing and payment of commission or other inducement for bringing in business or the referral of new clients, etc.

### 9.4.2. Mitigation of threats against impartiality

45. The DOE shall establish, document, implement and maintain a procedure for the mitigation of threats against its impartiality.

46. The procedure referred to in paragraph 45 above shall describe which mitigation strategies and actions are to be taken and how they will be implemented, and shall include the review of the mitigation strategies and actions whenever a change in the conflict of interest analysis has occurred. The mitigation actions may be through, inter alia:

(a) Prohibitions - certain defined activities shall not be carried out;

(b) Restrictions - certain defined activities may be carried out, but in a restricted manner with clearly defined control points to ensure mitigation;

(c) Disclosures.

47. The procedure referred to in paragraph 45 above shall ensure the following, at a minimum:

(a) The DOE shall not conduct both the validation and verification/certification of a CDM project activity or PoA, except in the situations allowed by the Validation and verification standard;

(b) The DOE shall not conduct the validation and/or verification/certification of a CDM project activity or PoA if the DOE, a parent organization, an outsourced entity or a related body has been engaged in any function that has been identified as a threat to impartiality, such as those listed in paragraph 43 above, relating to the CDM project activity or PoA;

(c) The DOE and the outsourced entities to which the DOE has outsourced one or more functions shall not have any direct relationship with the DOE's clients and the project participants of the CDM project activities or PoAs under validation and/or verification/certification other than validation and/or verification/certification activities and third party conformity assessments;

(d) The DOE shall not outsource any function to an outsourced entity that is engaged in the development, consultancy or financing of any CDM project activity or PoA;

(e) The DOE shall not use for the verification/certification of a CDM project activity or PoA personnel who was involved in the validation team of such CDM project activity or PoA, except in the cases in which a DOE is allowed to conduct both the validation and verification/certification in accordance with item (a) above ;

(f) The DOE shall not use validation or verification/certification personnel, internal or external, in the validation or verification/certification of a CDM project activity or PoA if:

(i) They, or the organization that employs them, have been involved in the development, consultancy or financing of this CDM project activity or PoA; or

(ii) They have had any professional relationships, other than a third party conformity assessment, with the project participants of this CDM project activity or PoA within the last two years;

(g) The DOE's activities shall not be marketed or offered as linked with the activities of an organization that provides services in respect of development, financial assistance and consultancy for CDM project activities or PoAs. The DOE shall not state or imply that the validation and/or verification/certification of a CDM project activity or PoA would be simpler, easier, faster or less expensive if a specified consultancy/financing organization is used;

(h) The DOE shall require its personnel, internal and external, to reveal any potential conflict of interest known to them. The DOE shall use this information as input to identifying threats to impartiality raised by the activities of such personnel or by the organizations that employ them, and shall not use such personnel, internal or external, unless any potential conflict of interests has been addressed and the measures taken to address these potential conflicts have been documented and implemented. If during the course of a validation and/or verification/certification, such instances become known, the personnel concerned shall be removed from the validation and/or verification/certification immediately;

(i) The DOE shall require its personnel, internal and external, to report any situation of influence or pressure from project participants that may threaten their independence in the course of the validation and/or verification/certification of CDM project activities or PoAs. Based on such report, the DOE shall take appropriate actions to ensure its independence in its validation and/or verification/certification activities;

(j) The conditions in the DOE's contracts with project participants shall not link their payments to the DOE to the nature of the validation or verification opinion. Payments may, however, be linked to the timing of the various stages of the validation or verification/certification;

(k) The DOE's personnel involved in validation and/or verification/certification activities shall be bound by the DOE's impartiality policy and act impartially in their work through contractual or employment conditions and assignment conditions for each validation and/or verification/certification;

(l) The DOE's personnel involved in validation and/or verification/certification activities shall not provide, while conducting the validation or verification/certification of a CDM project activity or PoA, any advice, consultancy or recommendation to the project participants on how to address any deficiencies that may be identified in the validation or verification/certification.

### 9.5. Review of effectiveness

48. The DOE shall analyse and review, at least once a year, all data and information relevant to impartiality, such as the conflict of interest analysis, the mitigation strategies and actions undertaken, any non-conformity raised with regard to impartiality and the corrective actions implemented to correct the non-conformities.

49. Based on the data/information referred to above, the DOE shall carry out, once a year, an analysis of the process to safeguard impartiality and a review of its effectiveness.

50. The recommendations of actions resulting from the review of the process of safeguarding impartiality shall be reported to the DOE's top management. The DOE shall keep a record of this review.

## 10. Human resources and competence

### 10.1. Sufficiency of human resources

#### 10.1.1. General

51. A DOE shall establish, document, implement and maintain a procedure for determining human resources having the competence prescribed in sections 10.2 and 10.3 below in order to perform its validation and/or verification/certification functions.

52. A DOE shall have sufficient resources with the necessary competence relating to the type, range and volume of estimated/planned workload for each technical area in which the DOE intends to operate or operates, within all sectoral scopes in which the DOE has applied for accreditation or has been accredited.

53. The management personnel of a DOE shall be internal resources.[7]

54. For functions other than management functions, a DOE may fulfil the requirement for sufficient resources by:

(a) Using internal resources;

(b) Using external individuals, as defined in paragraphs 59–61 below; and/or

(c) Outsourcing, as defined in paragraphs 63–68 below.

[7] Internal resources require direct employment by the AE/DOE as an employee. The physical location of such personnel is inconsequential.

55. A DOE shall evaluate, at least annually, the sufficiency of resources required to perform its validation and/or verification/certification functions taking into account the necessary competence related to the technical area(s), geographical locations of CDM project activities and PoAs, past performance of its validation and/or verification/certification functions, and expected volume of its validation and/or verification/certification activities for the future. The DOE shall document the evaluation conducted and its results.

56. The validation and verification/certification personnel, irrespective of whether they are internal or external resources, shall be under the responsibility[8] of a member of the DOE's management.

57. In each sectoral scope for which a DOE has applied for accreditation or has been accredited, and in each technical area in which the DOE intends to operate or operates, the DOE shall have:

    (a) At least one person qualified in the technical area who will participate in the validation or verification/certification team (validator, verifier, team leader or technical expert);

    (b) At least one person qualified in the technical area who will participate in the technical review team (technical reviewer or technical expert).

58. The DOE shall have personnel in accordance with paragraph 57 above for at least one technical area as defined in Appendix 2 within each sectoral scope for which it has applied for accreditation or has been accredited.[9]

### 10.1.2. Use of external individuals

59. A DOE may use external individuals,[10] who may be self-employed, part of a one-person company or employed by any other company, as validators, verifiers, technical experts, team leaders and technical reviewers, to supplement its internal resources, as provided

[8] Responsibility in this context does not refer to control of human resources in term of employment, but to the control of validation and verification activities.

[9] The requirement to "have personnel" may be satisfied by access to technical experts, provided the following is met: (a) the technical experts are qualified by the DOE, as per, inter alia, paragraph 61 of this standard; (b) the credentials of the technical experts are available (curricula vitae, records, etc.), as per, inter alia, paragraph 95(c) of this standard; (c) written consent from the technical experts that they are available whenever there is a specific validation or verification activity has been received; (d) the DOE has a contract with the technical experts prior to undertaking a specific validation or verification activity, as per, inter alia, paragraph 60(a) of this standard; (e) the technical experts demonstrate competence and are monitored as per sections 10.3.1 and 10.3.2, respectively, of this standard; and (f) the technical experts comply with all other requirements of this standard. The accreditation assessments of compliance with section 10.3.1 of this standard will, inter alia, assess the procedures/systems in place and the personnel evaluation records for demonstration of competence, including for persons who are available on call and are not employees of the DOE.

[10] The use of external individuals, as described in paragraphs 59–61, does not constitute outsourcing as described in paragraphs 63–68.

for in paragraph 54(b) above. In such cases, the DOE shall establish, document, implement and maintain a procedure for engaging external individuals.[11]

60. The procedure referred to in paragraph 59 above shall require that:

    (a) The DOE has:

        (i) A contract with the external individual if the person is self-employed or part of a one-person company; or

        (ii) A contract with the external individual or a three-party contract with the external individual and the company that employs her/him if the person is employed by a company;

    (b) The DOE takes full responsibility for any work carried out by an external individual, and obtains from the external individual a written agreement that he/she shall comply with all DOE's applicable policies and procedures, including on confidentiality and impartiality/independence. The agreement shall explicitly require the external individual to notify the DOE of any existing or prior association with any project participants of the CDM project activity or PoA he/she may be assigned to validate or verify/certify as well as actual or potential involvement in identification, development or financing of CDM project activities or PoAs.

    (c) The external individual is familiar with the DOE's procedures for validation or verification/certification functions and has access to an up-to-date set of documented procedures giving relevant instructions and information on the CDM activities.

61. Requirements with respect to competence, evaluation and qualification, monitoring of performance, maintenance of competence, training as well as personnel records, as defined in sections 10.2.3–10.2.5 below and 10.3.1–10.3.3 below, shall also apply to external individuals.

### 10.1.3. Recruitment

62. A DOE shall establish, document, implement and maintain a procedure for the recruitment of personnel so as to ensure they meet competence requirements in this Standard.

### 10.1.4. Outsourcing

63. If a DOE outsources one or more functions to an outsourced entity, the DOE shall establish, document, implement and maintain a procedure for outsourcing.[12]

64. The DOE shall outsource functions only to legal entities that comply with applicable national laws.

[11] An external individual operates as a regular member of a validation or verification/certification team or technical review team, under the supervision of the AE/DOE. A one-person team may be constituted using an external individual.

[12] Outsourcing, as described in paragraphs 63–68, does not constitute the use of external individuals as described in paragraphs 59–61.

65. The procedure referred to in paragraph 63 above shall require the DOE to:

    (a) Take full responsibility for all activities outsourced to outsourced entities;

    (b) Have a contract with any outsourced entity, ensuring that the outsourced entity and its personnel:

        (i) Performs validation and/or verification/certification activities, as applicable, in accordance with all applicable CDM rules and requirements;

        (ii) Complies with all applicable requirements in this Standard and those of the DOE's own policies and procedures, including, but not limited to, the provisions related to impartiality and confidentiality.

66. A DOE may outsource functions to outsourced entities in accordance with Appendix 1 below.

67. If a DOE outsources one or more functions referred to in Appendix 1 below, the DOE shall ensure that the outsourced entity does not further outsource this function.

68. If the outsourced entity conducts a contract review, the DOE shall ensure that the entity has access to all necessary information, including the information required to conduct the impartiality analysis in accordance with paragraph 116(c) below.

## 10.2. Competence requirements

### 10.2.1. Initial competence analysis

69. A DOE shall establish, document, implement and maintain a procedure for determining the required competence related to its validation and/or verification/certification functions.

70. A DOE shall conduct and document an initial competence analysis to determine the required competence related to its validation and/or verification/certification functions, in each sectoral scope for which the DOE has applied for accreditation or has been accredited, and for each technical area in which it intends to operate or operates.

71. The initial competence analysis shall provide competence criteria for the following DOE functions:

    (a) Management personnel responsible for the DOE's validation and/or verification/certification functions;

    (b) Validation and verification/certification personnel.

72. The DOE's competence criteria shall meet, at a minimum, the competence requirements prescribed in paragraphs 74–93 below.

73. A DOE shall evaluate, at least once every two years, the adequacy of its competence criteria taking into account the performance of validation and/or verification/certification functions.

### 10.2.2. Competence for management functions

74. The DOE shall ensure and demonstrate that its management personnel responsible for the DOE's validation and/or verification/certification functions is competent to carry out the functions referred to in paragraph 22 above.

75. The DOE shall ensure and demonstrate that its top management personnel responsible for the DOE's validation and/or verification/certification functions is competent to carry out the functions referred to in paragraph 23 above.

### 10.2.3. Competence for validation or verification/certification teams

#### 10.2.3.1. General

76. A validation or verification/certification team, whether it is composed of one or more persons, shall collectively have all knowledge and skills required in paragraphs 77–93, and the ability to apply such knowledge and skills to conduct a validation or verification/certification.

#### 10.2.3.2. Validation and verification/certification team knowledge and skills

77. A validation or verification/certification team shall collectively have the knowledge of all applicable CDM rules and requirements, as contained in CMP decisions and the Board's decisions, including those contained in the Validation and verification standard and the "Clean development mechanism project standard".

78. A validation or verification/certification team shall collectively have the skills to communicate effectively with the DOE's client, either through personal knowledge of the client's language or through an interpreter/translator.

79. A validation or verification/certification team shall collectively have the following knowledge relevant to the CDM project activity or PoA to be validated or verified/certified:

    (a) Technical and methodological aspects, including:

        (i) The technical processes and technologies, and project design, including the technical area(s) relevant to the CDM project activity or PoA;

        (ii) The CDM baseline and monitoring methodology(ies) applied, including the baseline scenario, project boundary, project scenario, calculation of GHG emission reductions or removals, environmental impact and monitoring requirements, measurement techniques, calibration and uncertainty in the measurement of the applicable parameters, and impact of failure of monitoring equipment on the measurement of emission reductions;

    (b) Regional aspects and applicable rules and requirements of the host country(ies) of the project activity or PoA;

80. A validation or verification/certification team shall include personnel qualified in the technical area(s) of the CDM project activity or PoA to be validated or verified/certified, as referred to in paragraph 101 below.

#### 10.2.3.3. Validation team knowledge and skills

81. A validation team shall collectively have the knowledge prescribed in the following knowledge areas and defined in Appendix 3 below:

    (a) Additionality assessment and baseline establishment;

    (b) GHG accounting and monitoring.

82. For the validation of a CDM project activity or PoA applying a CDM baseline and monitoring methodology allowing or requiring the use of surveys and sampling, the validation team shall collectively have the knowledge of surveys and sampling, as defined in Appendix 3 below.

83. A validation team shall collectively have the skills to assess the compliance of proposed CDM project activities and PoAs against all applicable requirements.

84. For CDM project activities under sectoral scope 16, a validation team shall include personnel qualified and permitted to practice law in the host Party of that CDM project activity. The validation team shall also include expertise in environmental, health and safety financial matters.

#### 10.2.3.4. Verification/certification team knowledge and skills

85. A verification/certification team shall collectively have the knowledge of:

    (a) Quality or environmental management systems (e.g. ISO 9001 and 14001);

    (b) GHG accounting and monitoring, as defined in Appendix 3 below.

86. For the verification/certification of a CDM project activity or PoA applying a CDM baseline and monitoring methodology allowing or requiring the use of surveys and sampling, the verification/certification team shall collectively have the knowledge of surveys and sampling, as defined in Appendix 3 below.

87. For the verification/certification of a CDM project activity or PoA undergoing post registration changes, the verification/certification team shall collectively have the knowledge of additionality assessment and baseline establishment, as defined in Appendix 2 below.

88. A verification/certification team shall collectively have the skills to assess the compliance of implemented CDM project activities and PoAs and consequent monitored emission reductions or removals against all applicable requirements.

#### 10.2.3.5. Validator or verifier auditing knowledge and skills

89. A validator or verifier shall have auditing knowledge and skills, including:

    (a) Data, information and system auditing techniques and methodologies;

    (b) Risk assessment techniques and methodologies;

    (c) Data and information sampling techniques and methodologies;

    (d) Application of the concepts of materiality and level of assurance;

(e) Collection of information through effective interviewing, listening, observing and reviewing documents, records and data;

(f) Verification of the accuracy of collected information, evaluation of the sufficiency and appropriateness of gathered evidence to support validation or verification/certification findings and conclusions;

(g) Preparation of validation or verification/certification opinions and reports.

#### 10.2.3.6. Team leader knowledge and skills

90. A validation or verification/certification team leader shall:

(a) Meet the requirements in paragraph 89 above;

(b) Have the following knowledge and skills and the ability to apply them to perform validation or verification/certification activities:

(i) Planning and making effective use of human resources and managing validation or verification teams;

(ii) Planning and organizing work effectively and performing it within the agreed time schedule, to prioritize and focus on matters of significance;

(iii) Representing the validation or verification/certification team in communications with the DOE's clients;

(iv) Understanding the validation or verification/certification process, leading the team to reach conclusions on all aspects of the validation or verification/certification and complete the validation or verification/certification opinion and report;

(v) Preventing and resolving conflicts.

### 10.2.4. Competence for technical experts

91. A technical expert shall have specific knowledge and/or skills in technical, methodological and/or sectoral aspects, and demonstrable ability to apply such knowledge and skills.

### 10.2.5. Competence for technical review teams

92. A technical review team, whether it is composed of one or more persons, shall collectively have all knowledge and skills required in paragraphs 77–89 and 91 above and the ability to apply such knowledge and skills, to conduct a technical review.

93. A technical reviewer shall meet the requirements prescribed in paragraph 89 above.

## 10.3. Management of human resources and competence

### 10.3.1. Demonstration of competence and qualification of personnel

94. A DOE shall establish, document, implement and maintain a procedure for evaluating its validation and/or verification/certification personnel, for demonstrating that they have appropriate competence and meet applicable requirements as well as for qualifying and authorizing them before they perform validation and/or verification/certification activities.

95. The procedure referred to in paragraph 94 above shall:

    (a) Include the consideration of the competence criteria, as determined in paragraphs 69–73 above, and the competence requirements in this Standard;

    (b) Address the qualification of personnel:

        (i) For all functions in validation and/or verification/certification activities, i.e. validator, verifier, team leader, technical expert, and technical reviewer;

        (ii) In all technical areas in which the DOE intends to operate or operates, within all sectoral scopes for which the DOE has applied for accreditation or has been accredited;

    (c) Ensure that records of the evaluation-demonstration-qualification-authorization process are retained.

96. The DOE shall evaluate and demonstrate competence of its personnel through the following methods, generating objective records how competence was evaluated under each method:

    (a) Review of personnel records, mentoring or training; and

    (b) An examination.

97. The review of personnel records shall include, but is not limited to, the review of curriculum vitae detailing work experience and education.

98. Mentoring activities shall be specific to the relevant function and/or technical area and shall cover the entire spectrum of responsibilities of the relevant function and/or technical area.

99. Training programmes shall be designed so as to cover the required knowledge and skills in accordance with paragraphs 101–102 below and shall comply with the requirements contained in paragraphs 108–109 below.

100. An examination shall consist of real or mock validations and/or verifications/certifications and/or any other examination necessary to demonstrate competence in accordance with paragraphs 101–102 below.[13]

101. To be qualified in a technical area, a person shall meet, as a minimum, the technical knowledge requirements applicable to the technical area as prescribed in Appendix 2 below.

102. To be qualified in a function, a person shall meet the applicable requirements as prescribed in sections 10.2.3.5, 10.2.3.6, 10.2.4 and 10.2.5 above.

[13] The “examination” may include a range of evaluation methods, such as conducting interviews, evaluating past performance in validation or verification/certification activities, on-the-job observation of performance, and written examinations, against competence criteria determined for each evaluation method. Some general guidance on evaluation methods is available in ISO 17021-2011, Annex B, and ISO 14066-2011, Annex B, which may be referred to by DOEs, if needed. If someone is evaluated in a real or mock validation or verification/certification, no other examination may be necessary.

### 10.3.2. Monitoring of performance and ensuring competence

#### 10.3.2.1. Continual monitoring and maintenance of competence

103. A DOE shall establish, document, implement and maintain a procedure for monitoring the performance of its validation and/or verification/certification personnel to ensure appropriate performance and that their competence is maintained.

104. The performance monitoring process shall include:

    (a) For personnel qualified by an examination that does not consist of a real validation and/or verification/certification, an on-the-job performance evaluation of the first validation or verification/certification conducted after the qualification of the person in order to confirm his/her competence;

    (b) For all personnel, subsequent continuous on-the-job performance evaluation.

105. A DOE shall ensure the maintenance and update of competence of its validation and verification/certification personnel to keep up with newly introduced or revised CDM rules and requirements, and shall take into account technological changes related to CDM project activities and PoAs.

106. The performance monitoring process should include three main steps:

    (a) Establishing the evaluation criteria (qualitative and/or quantitative);

    (b) Selecting the appropriate evaluation method; typical methods include review of validation/verification reports, on-site observation, interview and/or feedback from stakeholders;

    (c) Conducting the evaluation.

107. The monitoring methods and frequency should depend on the type, range and volume of work performed by different personnel and the level of importance of their activities.

#### 10.3.2.2. Training

108. A DOE shall establish, document, implement and maintain a procedure for providing training to the personnel:

    (a) Who are not yet qualified to perform validation and/or verification/certification activities, and require prior training to ensure having appropriate competence before being qualified;

    (b) Who are already qualified to perform validation and/or verification/certification activities in order to ensure maintenance of competence.

109. The DOE shall:

    (a) Identify training needs taking into account the outcomes of the evaluation-qualification process, the performance monitoring in actual validation and/or verification/certification activities and new technical and regulatory needs;

    (b) Evaluate the effectiveness of training provided;

(c) Maintain records pertaining to the trainings provided, including: qualification of the trainer(s), content, modalities and duration.

#### 10.3.3. Personnel records

110. A DOE shall maintain up-to-date personnel records of management and administrative personnel and the validation and/or verification/certification personnel including those external to the DOE. These records shall include relevant documentation related to recruitment, evaluations, qualifications, performance monitoring, training, experience, affiliations, professional status, and any consultancy services that the personnel have provided.

# 11. Information management

## 11.1. Information to be made available in the public domain

111. A DOE shall maintain publicly available a list of all CDM project activities and PoAs for which it has conducted the validation or verification/certification.

## 11.2. Confidentiality

112. A DOE shall establish, document, implement and maintain a policy and mechanism to safeguard the confidentiality of information obtained or created during the course of validation and/or verification/certification functions, except where provisions in CMP decisions require them to be made publicly available.

113. The personnel engaged by a DOE shall also be bound by these confidentiality requirements, and the DOE shall have a mechanism to ensure compliance, such as by obtaining signed confidentiality agreements.

114. A DOE shall not disclose any information about the project participants who are involved in the CDM project activities and PoAs for which the DOE provided validation or verification/certification services, that is not required to be made publicly available to a third party without the project participant's prior written consent. The DOE should inform the project participant before releasing confidential information to a third party, if required by law.

# 12. Validation and verification/certification process

## 12.1. Contract review

115. A DOE shall establish, document, implement and maintain a procedure for reviewing contracts with clients for the provision of validation and verification/certification services.

116. Before submitting a proposal/quotation to a potential client and entering into a contract for the validation or verification/certification of a CDM project activity or PoA, a DOE shall conduct a contract review and ensure that:

(a) It is accredited in the sectoral scope(s) of the CDM project activity or PoA to be validated or verified/certified;

(b) It has sufficient human resources, internal or external, with the required competence to undertake the validation or verification/certification;

(c) It has no impartiality issues with the conduct of the validation or verification/certification, and all impartiality requirements contained in section 9 above are met;

(d) Considerations such as location(s) of the client's operations, time required to complete the validation or verification/certification and any other issues influencing the validation or verification/certification, such as language, safety conditions, etc., have been taken into account.

117. In order to confirm the elements described in paragraph 116 above, the DOE shall obtain or have access to the following information:

(a) The draft project or programme design document of the CDM project activity or PoA to be validated or verified/certified, that defines the project boundaries and sites included in the assessment, the nature of the data needed for validation or verification/certification and the CDM baseline and monitoring methodology(ies) applied;

(b) Information about the project participants and/or coordinating/managing entity, the host Party and its designated national authority (DNA);

(c) Information about persons or organizations engaged in the identification, development, consultancy and financing of the project activity or PoA;

(d) Scope of the validation or verification/certification;

(e) Contract period and the liability conditions.

118. Before entering into a contract with a project participant for the validation or verification/certification of a CDM project activity or PoA, the DOE shall approve the contract review conducted in accordance with paragraph 116 above.

119. A DOE shall have a legally enforceable contract with the client for the provision of validation and verifications/certification services and such contract shall be in the name of the DOE.

120. For each validation or verification/certification conducted, a DOE shall document and maintain records of the complete details of the contract review process (conduct and approval of contract reviews), including the justification for the decision to undertake the validation or verification/certification and the contract.

## 12.2. Selection of the validation or verification/certification personnel

121. A DOE shall establish, document, implement and maintain a procedure for the selection of members of validation and verification/certification teams and members of technical review teams.

122. For each validation or verification/certification to be conducted, the DOE shall ensure, in addition to compliance with team competence requirements, that:

    (a) At least one member of the validation or verification/certification team is qualified in the technical area(s) of the CDM project activity or PoA to be validated or verified/certified;

    (b) At least one member of the technical review team is qualified in the technical area(s) of the CDM project activity or PoA to be validated or verified/certified.

123. For each validation or verification/certification to be conducted, the DOE shall ensure that:

    (a) Each member of the validation or verification/certification team and each member of the technical review team informs the DOE, prior to accepting the assignment, about any known existing, former or envisaged link to the CDM project activity or PoA to be validated or verified;

    (b) All members of the validation or verification/certification team and all members of the technical review team have no conflict of interest with respect to the CDM project activity or PoA to be validated or verified, and meet all impartiality requirements contained in section 9 above.

124. A DOE shall have formal rules and/or contractual conditions to ensure that each member of the validation or verification/certification team and each member of the technical review team acts in an impartial and independent manner.

125. In selecting members of a validation or verification/certification team, the DOE shall consider and document the following aspects:

    (a) Complexity of the CDM project activity or PoA;

    (b) Risks associated with the project activity or PoA;

    (c) Technological and regulatory aspects;

    (d) Size and location of the facility;

    (e) Type and amount of field work necessary for the validation or verification/certification process.

126. In advance of the validation/verification, the DOE shall provide the CDM PPs the names and tasks of the validation/verification team members and sufficient background information to allow the CDM PPs to object to the appointment of any particular member(s), with sufficient justification, and for the DOE to reconstitute the team in response to any valid objection.

## 12.3. Validation and verification/certification

127. A DOE shall establish, document, implement and maintain a procedure for performing its validation and/or verification/certification functions in accordance with the requirements specified in the CMP decisions, the Validation and verification standard, and other relevant decisions of the Board.

128. The procedure referred to in paragraph 127 above shall ensure that:

(a) The DOE conducts a validation or verification/certification in accordance with the requirements in CMP decisions, the Validation and verification standard, the Project cycle procedure and other Board decisions;

(b) The DOE prepares a validation or verification/certification plan, and defines and documents the task allocation among validation or verification/certification team members;

(c) For the validation or verification/certification visit to the project activity or PoA site, the following personnel, at a minimum, shall participate in the visit:

(i) The team leader;[14]

(ii) The team member(s) qualified in the technical area(s) of the CDM project activity or PoA being validated or verified/certified.

### 12.4. Technical reviews

129. A DOE shall establish, document, implement and maintain a procedure for conducting technical reviews of final draft validation or verification/certification opinions and reports prepared by validation or verification/certification teams.

130. Prior to the issuance of a final validation or verification/certification opinion and report, the appointed technical review team shall conduct a technical review of the final draft validation or verification/certification opinion and report.

### 12.5. Issuance of final validation or verification/certification opinions and reports

131. A DOE shall establish, document, implement and maintain a procedure for approving and issuing final validation or verification/certification opinions and reports.

132. A validation or verification/certification opinion and report shall be approved and issued only if the technical review has established that all applicable CDM validation or verification requirements have been met.

133. A final validation and verification/certification opinion and report shall be approved and issued by a member of the DOE's management.

## 13. Quality management system

### 13.1. General

134. A DOE shall establish, document, implement and maintain a quality management system for ensuring and demonstrating consistent implementation and compliance with the CDM accreditation requirements.

[14] In the case of site visits to multiple sites, the team leader is required to visit one or more sites, as appropriate.

135. A DOE shall periodically update its quality management system, including all documents that form part of it, to reflect any changes in the CDM rules and requirements and address the outcomes of internal audits and management reviews.

## 13.2. Responsibilities of top management

136. The top management of a DOE shall demonstrate its commitment to the development and implementation of a quality management system in accordance with the CDM accreditation requirements.

137. The top management of a DOE shall put into place measures to ensure that the policies are understood, implemented and maintained at all levels of the organization.

## 13.3. CDM quality manager

138. The top management of a DOE shall appoint a member of the management as a CDM quality manager, who, regardless of other responsibilities, shall have responsibility and authority for the following:

(a) Ensuring that the DOE's procedures for complying with CDM accreditation requirements are established, documented, implemented and maintained;

(b) Reporting to the DOE's top management on the performance of the quality management system and proposing required improvements.

## 13.4. Document and record management system

### 13.4.1. Control of documents

139. A DOE shall establish, document, implement and maintain a procedure for controlling all documents that form part of its quality management system (internally generated or from external sources), such as quality manual, procedures, instructions, forms, templates, check-lists, etc., as well as all relevant CDM regulatory documents (standards, procedures, guidelines, clarifications, forms and other CMP and Board decisions). The documentation can be in any form or type of medium; for instance paper or electronic.

140. The procedure should define the controls needed for the following:

(a) Approval of documents by authorized personnel before they are issued;

(b) Re-approval of documents by personnel authorized to approve changes before they are issued;

(c) Identification of changes in documents and current revision status;

(d) Availability of authorized and applicable versions of all required documents at points of use;

(e) Prompt removal of all obsolete documents from all points of issue or use;

(f) Suitable marking of all obsolete documents retained for legal or other reasons;

(g) Identification, update and distribution of external documents.

### 13.4.2. Control of records

141. A DOE shall establish, document, implement and maintain a procedure for controlling the identification, collection, indexing, access, filing, storage, protection, retrieval, time retention and disposition of all its records.

142. Records of original observations, derived data and sufficient information used to follow an audit trail shall be maintained to demonstrate compliance with the CDM accreditation requirements.

143. Records shall be retained for a period of time consistent with its contractual and legal obligations and the CDM accreditation requirements. All records shall be held securely and safely so as to preserve all confidential information.

144. The record control procedure should protect and back up records to prevent unauthorized access to, or amendment of, these records.

### 13.4.3. Records pertaining to validation and/or verification/certification functions

145. A DOE shall establish, document, implement and maintain a procedure for maintaining and managing specific records pertaining to its validation and/or verification/certification activities, including the following records:

(a) All information in respect of requests for validation and/or verification/certification and the information received from the project participants in relation to such requests;

(b) Records pertaining to contracts, including the results of contract reviews (conduct and approval);

(c) Records pertaining to preparation and planning of validation and verification/certification activities;

(d) Records pertaining to objective evidence collected during validation and verification/certification activities;

(e) Records pertaining to findings and conclusions/opinions produced during validation and verification/certification activities;

(f) Records pertaining to validation and verification/certification opinions and reports;

(g) Records pertaining to any final decision-making;

(h) Records of complaints, disputes and appeals and their resolutions;

(i) Personnel records, including evidence of the competence of validation or verification/certification team members and technical review team members;

(j) Records of internal audits and actions taken based on the results of the audits;

(k) Records of management reviews and actions taken based on the reviews;

(l) Records pertaining to trainings provided.

146. A DOE shall securely transport or transmit specific records pertaining to its validation and/or verification/certification activities and securely maintain them in accordance with its own specified retention period.

## 13.5. Internal audits

147. A DOE shall establish, document, implement and maintain a procedure for conducting internal audits of its CDM validation and verification/certification functions and those of its outsourced entities in order to verify whether its quality management system is effective and ensure that its operations continue to comply with the CDM accreditation requirements and its own documented policies and procedures.

148. A DOE shall conduct an internal audit on its CDM validation and verification/certification functions and those of its outsourced entities at least once a year and in accordance with a predetermined schedule and procedure.

149. An internal audit shall:

(a) Address all CDM accreditation requirements;

(b) Be conducted by personnel independent of the function audited, either the DOE's own qualified personnel or an external qualified expert;

(c) Ensure adequate recording of the function audited, the audit findings and non-conformities raised;

(d) Include the verification and recording of the implementation and effectiveness of the corrections and corrective actions taken in response to the non-conformities raised in the internal audit.

## 13.6. Corrective and preventive actions

### 13.6.1. Corrective actions

150. A DOE shall establish, document, implement and maintain a procedure to identify and address non-conformities. Non-conformities may be raised as a result of the following, but not limited to:

(a) Internal audits;

(b) Unsuccessful validation or verification/certification submissions;

(c) Implementation of the DOE performance monitoring procedure;

(d) CDM accreditation assessments;

(e) Departures from the DOE's own policies and procedures; and

(f) Feedback provided by stakeholders.

151. The procedure referred to in paragraph 150 above shall ensure that:

(a) The DOE's activities and those of its outsourced entities are subject to the definition and implementation of corrective actions;

(b) Appropriate personnel are designated for the definition and implementation of the corrective actions;

(c) A root-cause analysis of the problem is carried out before defining the corrective action;

(d) The definitions of corrective actions are appropriate to the magnitude and risk of the problem;

(e) The implementation of corrective actions is done in a timely manner, including, if necessary, withholding of validation or verification/certification opinions and reports;

(f) Records of the following are maintained: corrective actions implemented, results of documentation and implementation of any required changes in the DOE's internal systems resulting from corrective actions;

(g) A monitoring of the effectiveness of the corrective actions is undertaken.

152. Where the identified departures from the DOE's own policies and procedures cast doubts on the DOE's compliance with the CDM accreditation requirements, the DOE shall increase the frequency of internal audits.

153. Where the DOE has identified non-conformities related to paragraphs 150(b) and 150(c) above, the DOE shall carry out an analysis of its technical review process and define measures to improve its effectiveness.

#### 13.6.2. Preventive actions

154. A DOE shall establish, document, implement and maintain a procedure for proactively identifying potential sources of non-conformities and areas for improvement and for implementing preventive actions to prevent the occurrence of non-conformities and/or improve the effectiveness of its validation and/or verifications/certification activities and those performed by its outsourced entities.

155. Preventive actions taken should be appropriate to the probable impact of the potential problems. All records for preventive actions should be maintained.

### 13.7. Management review

156. A DOE shall conduct a management review of its CDM validation and verification/certification functions, at least once a year, to ensure continuing suitability and effectiveness of its quality management system, the consistent implementation of its policy and procedures and continual compliance with the CDM accreditation requirements. Management reviews should be carried out with a predetermined schedule and procedure.

157. A management review should consider, with regard to the validation and/or verification/certification functions:

(a) Follow-up actions from previous management reviews;

(b) The suitability of policies and procedures;

(c) Results of internal and external audits;

(d) Feedback from stakeholders related to the fulfilment of the CDM accreditation requirements;

(e) The status of corrective and preventive actions;

(f) Results and status of quality assurance and quality control measures undertaken;

(g) The fulfilment of quality objectives;

(h) Status of complaints, disputes and appeals;

(i) Recommendations for improvement;

(j) Validations or verifications/certifications rejected or placed under review by the Board;

(k) Other relevant issues such as changes in the volume and scope of work, resources, competences and personnel training, etc.

158. A DOE shall record findings from its management reviews and the actions that arise from them.

159. The outcomes of management reviews should be actions to introduce necessary changes and make improvements in the DOE's quality management system and in the DOE's validation and verification/certification functions. These actions should be indicated as measurable objectives.

# 14. Complaint, dispute and appeal processes

## 14.1. Complaints

160. A DOE shall establish, document, implement and maintain a procedure for receiving, managing, evaluating, and investigating complaints, making decisions on them, and taking appropriate corrections and corrective actions.

161. A DOE shall make publicly available the procedure referred to in paragraph 160 above.

162. The procedure referred to in paragraph 160 above shall include the following:

(a) The designation of personnel responsible for handling of complaints;

(b) The process for receiving the complaint, gathering and verifying all necessary information for evaluating the validity of the complaint, investigating the complaint and for deciding what actions are to be taken in response to it;

(c) The criteria for determining the validity of complaints;

(d) Tracking and recording complaints, including actions undertaken in response to them;

(e) Ensuring that appropriate corrections and corrective actions are taken;

(f) Safeguarding the confidentiality of the complainant and subject of the complaint. This process should be subject to requirements for confidentiality, as it relates to the complainant and to the subject of the complaint;

(g) Ensuring that the persons engaged in the complaint handling process are different from those who carried out the validation or verification/certification activities;

(h) Acknowledging receipt of the complaint, and providing the complainant a progress report where feasible;

(i) Informing the complainant of the outcome of the investigation and the final notice of the end of the complaints handling process;

(j) Maintenance of record of complaints.

## 14.2. Disputes

163. A DOE shall establish, document, implement and maintain a procedure for handling disputes.

164. A DOE shall make the procedure referred to in paragraph 163 above available to its clients upon request or if a dispute occurs.

165. The dispute handling procedure should include the following:

(a) The process for receiving the disputes, gathering and verifying all necessary information for evaluating the validity of the disputes, investigating the disputes and for deciding what actions are to be taken in response to them;

(b) The criteria for determining the validity of disputes;

(c) Tracking and recording disputes, including actions undertaken in response to them;

(d) Ensuring that appropriate corrections and corrective actions are taken;

(e) Safeguarding the confidentiality of the disputes and subject of the disputes. This process should be subject to requirements for confidentiality, as it relates to the disputes and to the subject of the disputes;

(f) Ensuring that the persons engaged in the dispute handling process are different from those who carried out the validation or verification/certification activities;

(g) Acknowledging receipt of the disputes, and providing the disputant a progress report where feasible;

(h) Informing the disputant of the outcome of the investigation and the final notice of the end of the disputes handling process;

(i) Maintenance of record of disputes.

## 14.3. Appeals

166. The DOE shall establish, document, maintain and implement a procedure for appeals.

167. A DOE shall make the procedure referred to in paragraph 166 above publicly available.

168. The appeal process shall include:

(a) The establishment of an independent appeal panel responsible for the appeal process;

(b) Provisions to ensure that the persons engaged in the appeal process differ from those who conducted the validation or verification/certification, including the technical review and final decision-making;

(c) Provisions to ensure that the submission, investigation and decision on appeals do not result in any discriminatory actions against the appellant;

(d) An outline of the process for receiving, acknowledging and investigating the appeal after ascertaining its validity, ensuring that decisions take into account all the relevant information available and gathered as part of investigation;

(e) Tracking and recording appeals, including actions undertaken to resolve them;

(f) Ensuring that, if the investigation points towards a non-conformity, appropriate corrections and corrective actions are taken to eliminate the gaps in the system, especially if the investigation points towards any gaps in the system;

(g) Safeguarding the confidentiality of appellants and the subjects of the appeal. This process shall be subject to requirements for confidentiality;

(h) Providing progress reports on the appeal investigation and handling to the appellant and providing information/notice on the final decision;

(i) Ensuring that the final decision shall be made by the independent appeal panel.

169. The DOE shall inform the appellant of the independent appeal panel's decision. In cases where the appellant is not satisfied with the decision, the DOE shall inform the appellant that it has the option of making a complaint to the Board.

# Appendix 1. Functions that may be outsourced

## 1. Introduction

1. The table below contains the accreditation requirements contained in this Standard and provides the rules for the functions that may be outsourced as defined in paragraphs 63–68 above.

2. In the last column of the table, “YES” indicates that the function corresponding to the requirement may be outsourced, and “NO” indicates that the function shall not be outsourced. “N/A” indicates that the outsourcing is not applicable (e.g. the requirement is not a function). In cases where a requirement is for the DOE to have a documented procedure, the corresponding function that can be outsourced (if a “YES” is indicated) is that the outsourced entity shall implement the DOE’s procedure.

3. In the last column of the table, items marked with “YES” followed by a “*” indicate that the outsourcing can be done exclusively in the context of the other functions that are carried out by the outsourced body.

**Table 1. Functions that may be outsourced**

| Chapter | Requirement | Function | | Paragraphs | Outsourcing |
|---|---|---|---|---|---|
| 6 | Legal status and matters | | | 10-13 | N/A |
| 7 | Liability and finance | Financial stability | | 14-15 | NO |
| | | Liability | | 16-17 | NO |
| 8 | Entity's management | Management structure | | 18-21 | NO |
| | | Management functions | | 22-24 | NO |
| 9 | Safeguarding impartiality | General | | 25-30 | N/A |
| | | Safeguarding impartiality at the policy level | | 31-34 | NO |
| | | Safeguarding impartiality at the organization level | | 35-39 | NO |
| | | Safeguarding impartiality at the operational level | | 40-47 | YES* |
| | | Review of effectiveness | | 48-50 | NO |
| 10 | Human resources and competence | Sufficiency of human resources | General | 51-58 | NO |
| | | | Use external individuals | 59-61 | YES* |
| | | | Outsourcing | 63–68 | NO |
| | | Competence requirements | Initial competence analysis | 69-73 | NO |
| | | | Competence for management functions | 74-75 | NO |
| | | | Competence for validation or verification teams | 76-90 | NO |
| | | | Competence for technical experts | 91 and 60(c) | NO |
| | | | Competence for technical reviewers | 92-93 | NO |
| | | Management of human resource and competence | Demonstration of competence and qualification of personnel | 94-102 | NO |
| | | | Monitoring of performance and ensuring competence | 103-109 | NO |

| Chapter | Requirement | Function | | Paragraphs | Outsourcing |
|---|---|---|---|---|---|
| | | | Personnel records | 110 | NO |
| 11 | Information management | Information to be made available in the public domain | | 111-113 | NO |
| | | Confidentiality | | 112-114 | YES* |
| 12 | Validation and verification/certification process | Contract review | Validation/verification contract review | 115-117 | YES |
| | | | | 118-120 | NO |
| | | Selection of the validation or verification/certification personnel | | 121, 123-126 | YES, excluding appointment of technical review teams |
| | | | | 122 | NO |
| | | Validation and verification/certification | | 127 | YES |
| | | | | 128 | NO |
| | | Technical review | | 129-130 | NO |
| | | Issuance of final validation or verification/certification opinions and reports | | 131-133 | NO |
| 13 | Quality management system | General | | 134-135 | NO |
| | | Responsibilities of top management | | 136-137 | NO |
| | | CDM quality manager | | 138 | NO |
| | | Document and record management system | Control of documents | 139-140 | NO |
| | | | Control of records | 141-144 | YES* |
| | | | Records pertaining to validation and/or verification/certification functions | 145(a), 145(c)-145(l) 146 | YES* |
| | | | | 145(b), 145(f)–145(k) | NO |
| | | Internal audits | | 147-149 | NO |
| | | Corrective and preventive actions | | 150-155 | NO |
| | | Management review | | 156-159 | NO |

| Chapter | Requirement | Function | | Paragraphs | Outsourcing |
|---|---|---|---|---|---|
| 14 | Handling complaints, disputes and appeals | Complaints | | 160-162 | NO |
| | | Disputes | | 163-165 | NO |
| | | Appeals | | 166-169 | NO |

# Appendix 2. Sectoral scopes and sector technical knowledge

## 1. Introduction

1. This appendix lists and describes the sectoral scopes, the technical areas within each sectoral scope, and the technical knowledge required for each technical area.

## 2. Sectoral scopes and technical knowledge required

2. The following table defines the minimum technical areas and technical knowledge to be considered by a DOE to qualify its personnel in accordance with paragraph 94 above.

**Table 1. Sectoral scopes and required sector technical knowledge**

| Sectoral scope | Technical area | Typical group of activities and GHG emissions | Technical knowledge required |
|---|---|---|---|
| **SS 1: Energy industries (renewable/non-renewable sources)** | TA 1.1. Thermal energy generation | Typical activities:<br>- Power and heat generation from non-renewable energy sources and biomass, including construction of new plants, capacity increases, plant retrofitting, energy efficiency and fuel switching;<br>- District heating systems and power grids, including construction of new grids and systems, extension of existing grids and systems and interconnection of grids and systems.<br><br>Typical GHG emissions:<br>- $CO_2$ emissions from fuel combustion for power and heat generation;<br>- Upstream emissions from fuel extraction, transport and processing. | - Methods for the evaluation of mass and energy flows in energy generation activities, such as direct monitoring, mass and energy balances and use of emission factors;<br>- Characteristics of combustion devices, heat plants and power plants, such as installed capacity, fuel type, thermal efficiency and plant type;<br>- Operation of electrical power grids, dispatch of power plants and evaluation of GHG emissions from power grids by means of dispatch analysis;<br>- Methods for the evaluation of upstream GHG emissions related to fuel use, such as the use of standard GHG emission factors. |

| Sectoral scope | Technical area | Typical group of activities and GHG emissions | Technical knowledge required |
|---|---|---|---|
| | TA 1.2. Renewables | Typical activities:<br>- Power and heat generation from renewable energy sources, including construction of new plants, capacity increases, plant retrofitting, energy efficiency and fuel switching.<br><br>Typical GHG emissions:<br>- $CO_2$ emissions from fuel combustion for power and heat generation;<br>- $CO_2$ and $CH_4$ emissions from renewable energy technologies. | - Methods for the evaluation of mass and energy flows in energy generation activities, such as direct monitoring, mass and energy balances and use of emission factors;<br>- Characteristics of renewable electrical power plants, such as installed capacity, load factor, intermittency of operation, auxiliary fuel use and GHG emissions (e.g. GHG emissions from hydropower plant reservoirs, geothermal reservoirs, etc.);<br>- Operation of electrical power grids, dispatch of power plants and evaluation of GHG emissions from power grids by means of dispatch analysis. |
| **SS 2: Energy distribution** | TA 2.1. Energy distribution | Typical activities:<br>- Energy efficiency measures in power transmission and distribution.<br><br>Typical GHG emissions:<br>- $CO_2$ emissions from fuel combustion for power and heat generation. | - Energy efficiency measures in transmission and distribution power systems and evaluation of energy savings;<br>- Energy efficiency measures involving transformers and evaluation of energy savings;<br>- Transmission of power in AC and DC systems and associated energy losses;<br>- Upgrading of transmission voltage in transmission and distribution power systems. |

| Sectoral scope | Technical area | Typical group of activities and GHG emissions | Technical knowledge required |
|---|---|---|---|
| **SS 3: Energy demand** | TA 3.1. Energy demand | Typical activities:<br>- Demand-side energy efficiency measures in diverse sectors, such as pumping systems, lighting systems, household appliances and buildings.<br><br>Typical GHG emission:<br>- $CO_2$ emissions from fuel combustion (commercial and non-commercial) for power and heat generation. | - Methods for the evaluation of mass and energy flows in demand-side energy use, such as direct monitoring, mass and energy balances, energy use factors and energy efficiency factors. |
| **SS 4: Manufacturing industries** | TA 4.1. Cement and lime production | Typical activities:<br>- Cement production, in particular fuel switching and use of alternative raw materials.<br><br>Typical emissions:<br>- GHG emissions from cement production, such as those from calcination of carbonated raw materials. | - Unit operations in cement and lime production and calcination of raw materials;<br>- Potential raw materials and fuels for the production of cement and lime, such as limestone, conventional kiln fuels, dolomite, magnesite and alternative kiln fuels;<br>- Emissions, mass and energy balances in cement and lime production and calcination of raw materials;<br>- Methods to determine the carbonate content of raw materials. |

| Sectoral scope | Technical area | Typical group of activities and GHG emissions | Technical knowledge required |
|---|---|---|---|
| **SS 5: Chemical industry** | TA 5.1. Chemical industry | Typical activities:<br>- Production of chemicals, processed and manufactured materials, such as biodiesel, charcoal, upgraded biogas, ammonia, urea, $CO_2$-based chemicals and hydrogen.<br><br>Typical emissions:<br>- GHG emissions from chemical and manufacturing processes, such as transesterification, pyrolysis, carbonization, fuel reforming and gas upgrading and cleaning. | - Chemical processes, chemical reactions and stoichiometry;<br>- Unit operations in the chemical process industry;<br>- Emissions, mass and energy balances in chemical and manufacturing processes. |
| | TA 5.2. Caprolactam, nitric and adipic acid | Typical activities:<br>- Management and abatement of $N_2O$ emissions from caprolactam, nitric and adipic acid plants.<br><br>Typical GHG emissions:<br>- $N_2O$ emissions from caprolactam, nitric and adipic acid plants. | - Chemical reactions, stoichiometry, mass and energy balances in caprolactam, nitric acid and adipic acid production processes;<br>- Methods for the evaluation of GHG emission sources, in particular $N_2O$ emissions, in caprolactam, nitric acid and adipic acid production processes;<br>- $N_2O$ abatement options, including primary, secondary and tertiary abatement technologies. |

| Sectoral scope | Technical area | Typical group of activities and GHG emissions | Technical knowledge required |
|---|---|---|---|
| **SS 6: Construction** | TA 6.1. Construction | This sectoral scope covers activities related to construction of buildings, such as using less GHG intensive construction techniques and materials. This does not cover energy efficiency in buildings. Those types of activities are covered under the new sectoral scope 7-Energy Demand. No methodology has been approved so far and the sectoral technical knowledge beside is only indicative. | - Construction of buildings and foundations, load bearing structures and construction material requirement for different types of structure;<br>- GHG emission sources, in particular $CO_2$ emissions, in production and transportation of construction material;<br>- Knowledge of building and construction codes and best practices within regions to determine the baseline and baseline emissions. |
| **SS 7: Transport** | TA 7.1. Transport | Typical activities:<br>- Introduction of modal shifts, fuel switches and less GHG intensive transport modes in the transport of freight and passengers.<br><br>Typical GHG emissions:<br>- $CO_2$ emissions from fossil fuel combustion in transport activities.<br>- $CO_2$ emissions from fuel combustion for power generation. | - Modelling of transport systems and establishment of service level, travel distance and baseline transport modes;<br>- Surveys and sampling in transport projects for the determination of alternative transport scenarios;<br>- Unintended emissions from rebound effect, induced traffic and change in occupancy rates;<br>- Methods for the evaluation of GHG emissions from transport modes by means of the quantification of primary energy use and standard GHG emission factors for power and fuels. |

| Sectoral scope | Technical area | Typical group of activities and GHG emissions | Technical knowledge required |
|---|---|---|---|
| **SS 8: Mining/mineral production** | TA 8.1. Mining/mineral production | Typical activities:<br>- Management of mine methane;<br>- Capture and use of waste gas.<br><br>Typical GHG emissions:<br>- $CH_4$ emissions from metal ore and coal mining. | - Unit operations in the mining and coal industries, such as drilling, cutting, blasting, loading, hauling, ventilation and drainage;<br>- Emissions, mass and energy balances in mining and coal activities;<br>- Potential uses, flaring and venting of waste streams and mine methane in the mining and coal industries. |
| **SS 9: Metal production** | TA 9.1. Aluminium and magnesium production | Typical activities:<br>- Management of PFC emissions in aluminium production.<br><br>Typical GHG emissions:<br>- PFC emissions;<br>- Emissions of SF6 and other cover gases;<br>- $CO_2$ emissions from fuel combustion for power and heat generation. | - Unit operations in metallurgy;<br>- Emissions, mass and energy balances in metallurgy;<br>- Evaluation of specific energy consumption of furnaces and kilns based on technical data, historical values and performance tests;<br>- Anode effects, PFC emissions and mitigation measures to reduce PFC emissions in primary aluminium smelting facilities or use of cover gases, such as SF6, fluorinated gases and SO2, in magnesium casting and alloying processes. |

| Sectoral scope | Technical area | Typical group of activities and GHG emissions | Technical knowledge required |
|---|---|---|---|
| | TA 9.2. Iron, steel and Ferro-alloy production | Typical activities:<br>- Management of $CO_2$ emissions in iron production;<br>- Waste gas recovery and use in iron and steel production.<br><br>Typical GHG emissions:<br>- $CO_2$ emissions in iron reduction;<br>- $CO_2$ emissions from fuel combustion for power and heat generation. | - Unit operations in metallurgy;<br>- Emissions, mass and energy balances in metallurgy;<br>- Evaluation of specific energy consumption of furnaces and kilns based on technical data, historical values and performance tests;<br>- Energy recovery and utilization in steel, iron and ferro-alloy facilities, including blast furnace gas, coke oven gas, and converter gas. |
| **SS 10: Fugitive emissions from fuels (solid, oil and gas)** | TA 10.1. Fugitive emissions from oil and gas | Typical activities:<br>- Management of associated gas and waste gas in oil and gas facilities.<br><br>Typical GHG emissions:<br>- $CH_4$ emissions from associated gas and waste gas. | - Unit operations in the oil and gas industries;<br>- Dynamics of oil and gas reservoirs, enhanced oil recovery, gas-lifting techniques and production of associated gas;<br>- Emissions, mass and energy balances in oil and gas operations;<br>- Potential uses, flaring and venting of waste streams and associated gas in the oil and gas industries. |

| Sectoral scope | Technical area | Typical group of activities and GHG emissions | Technical knowledge required |
|---|---|---|---|
| **SS 11: Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride** | TA 11.1. Emissions of fluorinated gases | Typical activities:<br>- Mitigation of HFC emissions used as refrigerant and blowing agent;<br>- Mitigation of SF6 emissions used as insulating gas in electrical equipment;<br>- Mitigation of fluorinated gases emissions used in semiconductor manufacturing.<br><br>Typical GHG emissions:<br>- Emissions of HFC, SF6 and other fluorinated greenhouse gases. | - Applications of HFC, SF6 and other fluorinated gases in manufacturing processes;<br>- Mitigation and abatement of fluorinated GHGs emissions;<br>- Monitoring of fluorinated GHGs including the use of Fourier Transform Infrared Spectroscopy (FTIR), Quadrupole Mass Spectrometer (QMS), mass balances and gas chromatography. |
| | TA 11.2. Refrigerant gas production | Typical activities:<br>- Production of refrigerant gas HCFC-22.<br><br>Typical GHG emissions:<br>- Emissions of HFC-23. | - Unit operations in HCFC-22 production in swing and non-swing plants;<br>- Formation of HFC-23 streams in HCFC-22 production and mitigation measures;<br>- Use of mass balances in the evaluation of HFC-23 generation and emissions;<br>- Monitoring f HFC streams using mass flow meters and gas chromatography. |

| Sectoral scope | Technical area | Typical group of activities and GHG emissions | Technical knowledge required |
|---|---|---|---|
| **SS 12: Solvents use** | TA 12.1. Chemical industry | Typical activities:<br>- Projects involving the use of solvents.<br><br>Typical GHG emissions:<br>- Emissions of GHG related to the use of solvents. | - Chemical processes, chemical reactions and stoichiometry;<br>- Unit operations in the chemical process industry;<br>- Emissions, mass and energy balances in chemical and manufacturing processes. |
| **SS 13: Waste handling and disposal** | TA 13.1. Solid waste and wastewater | Typical activities:<br>- Solid waste disposal in landfills;<br>- Alternative methods of solid waste management, such as gasification, incineration, recycling and production of refuse derived fuel;<br>- Wastewater treatment systems;<br>- Biogas management.<br><br>Typical GHG emissions:<br>- $CH_4$ emissions from the anaerobic decay of organic matter contained in solid waste and wastewater. | - Biomass decay under aerobic and anaerobic conditions and the production of biogas;<br>- Types of solid waste and wastewater, their composition, characterization parameters and impact of composition on decay rates and GHG emissions;<br>- Use of decay models and standard GHG emission factors in the estimation of GHG emissions from solid waste decay and solid waste disposal sites.<br>- Alternative methods for disposal, management and treatment of waste. |

| Sectoral scope | Technical area | Typical group of activities and GHG emissions | Technical knowledge required |
|---|---|---|---|
| | TA 13.2. Manure | Typical activities:<br>- Manure management systems;<br>- Biogas management.<br><br>Typical GHG emissions:<br>- $CH_4$ emissions from the anaerobic decay of organic matter contained in manure. | - Biomass decay under aerobic and anaerobic conditions and the production of biogas;<br>- Types of manure, their composition, characterization parameters and impact of composition on decay rates and GHG emissions;<br>- Types of livestock, dietary factors and their impact on manure generation;<br>- Use of decay models and standard GHG emission factors in the estimation of GHG emissions from manure management systems. |
| **SS 14: Afforestation and reforestation** | TA 14.1. Afforestation and reforestation | Typical activities:<br>- Afforestation and reforestation projects.<br><br>Typical GHG emissions/reservoirs:<br>- Carbon stocks in biomass of trees, shrubs, dead wood, litter and soil carbon. | - Quantification of carbon stocks and change in carbon stocks in biomass of trees and shrubs, dead wood and litter, and soil organic carbon;<br>- GHG emissions attributable to the displacement (shift) of pre-project agricultural activities;<br>- Definition and identification of degraded and degrading lands in the context of CDM project activities. |

| Sectoral scope | Technical area | Typical group of activities and GHG emissions | Technical knowledge required |
|---|---|---|---|
| **SS 15: Agriculture** | TA 15.1. Agriculture | Typical activities:<br>- Management of agricultural operations to reduce emissions;<br>- Management of fertilizers application.<br><br>Typical GHG emissions:<br>- $N_2O$ emissions from fertilizers application;<br>- Change in carbon stocks due to agricultural operations;<br>- $CO_2$ emissions from fuel combustion. | - Agricultural operations and its main GHG emission sources;<br>- Use of fossil fuels and electricity in agricultural operations and methods to quantify their use and corresponding GHG emissions;<br>- GHG emissions from the production and application of synthetic and organic fertilizers, urea, dolomite and limestone;<br>- Field burning of biomass and GHG emissions;<br>- Carbon stocks in the soil and land management practices;<br>- GHG emissions attributable to the displacement (shift) of pre-project agricultural activities;<br>- Definition and identification of degraded and degrading lands in the context of CDM project activities. |
| **SS 16: Carbon capture and storage of CO2 in geological formations** | TA 16.1. Carbon Capture and Storage | This sectoral scope covers activities related to $CO_2$ capture and storage in geological reservoirs. No methodology has been approved so far and the sectoral technical knowledge beside is only indicative. | - Unit operations in carbon capture and storage (CCS) facilities;<br>- Determination of the boundaries of a geological storage, storage site and storage complex, and the migration of $CO_2$ plumes within storage sites;<br>- Estimation of emissions of CCS facilities through overall mass balance of all input and output source streams and through direct monitoring;<br>- Procedures to determine emissions from leakage events and seepage. |

# Appendix 3. Validation and verification technical knowledge

1. The validation and verification technical knowledge is defined in the table below.

**Table 1. Validation and verification technical knowledge**

| Knowledge area | Validation and/or verification technical knowledge |
|---|---|
| Additionality assessment and baseline establishment | - Additionality assessment and baseline establishment in CDM methodologies;<br>- Project evaluation and investment decision theory;<br>- NPV and IRR rules of investment appraisal;<br>- Investment under uncertainty and sensitivity analysis;<br>- Establishment of baseline scenarios based on various approaches, such as historical emissions, monitored data, benchmarking, top performers in similar activities, best available technologies, most attractive alternative technology and standard values. |
| GHG accounting and monitoring | - Greenhouse gases eligible under the Kyoto Protocol;<br>- Definition of project boundaries, gases and emission sources in CDM projects;<br>- Use of Global Warming Potential and conversion of non-$CO_2$ GHG to equivalent $CO_2$ emissions;<br>- Direct measurement of GHG emissions using flow meters and gas analysis;<br>o Indirect evaluation of GHG emissions:<br>- Use of GHG standard emission factors based on energy content and service level;<br>o Combustion of solid, liquid and gaseous fuels and approaches to evaluating GHG emissions from fuel combustion;<br>o Evaluation of GHG emissions from heat and power generation by means of GHG emission factors and quantification of energy use;<br>o Evaluation of power grid GHG emission factors based on power plant dispatch analysis;<br>o Use of mass and energy balances in the evaluation of GHG emissions;<br>- Metrology and the measurement of physical properties;<br>- Quality control of measurements, including the concepts of measurement range, measurement uncertainty (accuracy, precision and bias) and meter calibration;<br>- Statistical treatment of data, surveys and sampling in the CDM. |

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## Document information

| *Version* | *Date* | *Description* |
|---|---|---|
| 07.0 | 1 March 2018 | EB 98, Annex 4<br>Revision to revise on the job performance evaluation and to integrate the clarifications on:<br>• Non-linking of payments to the final outcome of validation or verification/certification activities (CDM-EB86-A08-CLAR);<br>• Access to technical experts and demonstration of competence (CDM-EB86-A09-CLAR);<br>• On-the-job performance evaluation of DOE personnel (CDM-EB86-A10-CLAR). |
| 06.0 | 18 July 2014 | EB 80, Annex 3<br>Revision to reflect the compliance date for implementing the revised CDM accreditation standard. |
| 05.2 | 25 April 2014 | Editorial revision to correct cross references and footnotes. |
| 05.1 | 11 October 2013 | Editorial revision to correct the sequential numbering of technical areas provided on pages 46-51. |
| 05.0 | 4 October 2013 | EB 75, Annex 2<br>Revision to:<br>Contribute to strengthening DOEs competence and performance:<br>• List of sectoral scopes and classification of methodologies (appendix 2);<br>• Sector technical knowledge (appendix 2);<br>• Demonstration of competence (paragraphs 93–101);<br>• Streamline the requirements in the Standard;<br>• Strengthen and make the Standard more comparable with other accreditation schemes by using, as appropriate, relevant elements from other international accreditation standards;<br>• Outsourcing (section 10.1.4 and appendix 1). |
| 04.0 | 11 May 2012 | EB 67, Annex 5<br>Revision to improve consistency and clarity of requirements related to human resources and competence. |
| 03 | 15 July 2011 | EB 62, Annex 1<br>• Introduction of an interim measure for initial qualification of validation/verification team members for complex technical areas (Annex D). |
| 02 | 17 September 2010 | EB 56, Annex 1<br>• Strengthening of impartiality requirements (Section XII);<br>• Clarification of requirements relating to allocation of functions to other sites (Annex A); |

| *Version* | *Date* | *Description* |
|---|---|---|
| | | • Incorporates the Guidelines for the preparation of the annual activity report by a DOE to the CDM Executive Board (version 02, EB 53 Meeting report, Annex 04). The guidelines are replaced by this standard (Annex C).<br>Includes a definition of technical areas and a strengthening of related competence requirements (Annex D). |
| 01.1 | 17 July 2009 | EB 48, Annex 2<br>Changes made in version 1.1 were of editorial nature.<br>Introduction; Terms and definitions; Legal issues; Annex A. |
| 01 | 25 March 2009 | EB 46, Annex 2<br>Initial adoption. |

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