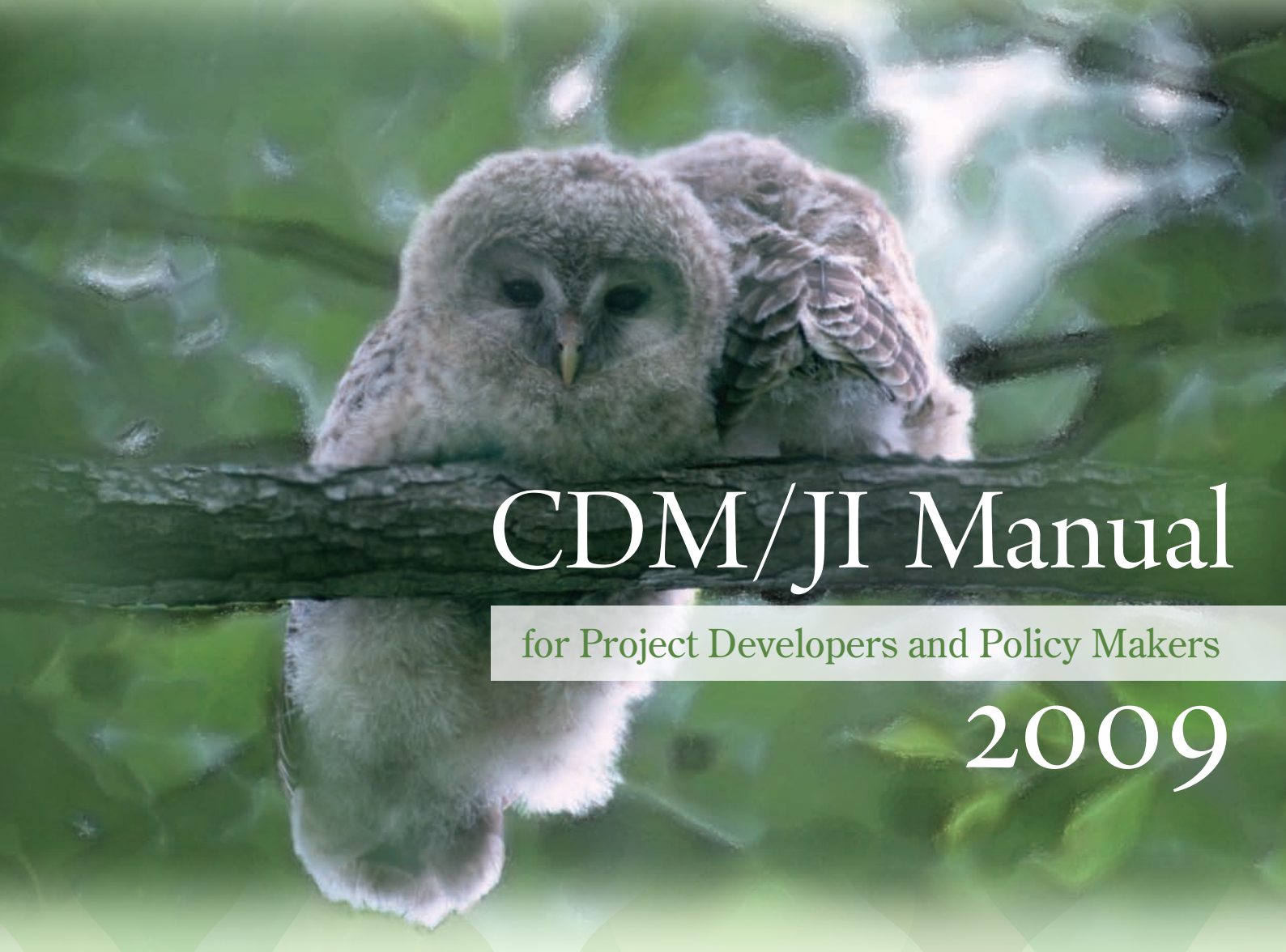

CDM/JI Manual

for Project Developers and Policy Makers

2009

Ministry of the Environment, Japan

CDM/JI Manual

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Preface

The Kyoto Protocol, which was adopted at the third Conference of the Parties (COP3) to the United Nations Framework Convention on Climate Change (UNFCCC) held in December 1997, came into force in February 2005. In order to assist the Parties to achieve their GHG emission reduction targets, the Protocol defines three innovative "flexibility mechanisms" to lower the overall costs to meet the targets. These mechanisms are comprised of the Clean Development Mechanism (CDM), Joint Implementation (JI) and International Emissions Trading (IET). Japan, taking into consideration the use of those mechanisms, plans to advance its emissions reduction activities.

Since 1999, the Ministry of the Environment, Japan (MOE) has been supporting feasibility studies on CDM and JI projects carried out by Japanese private companies and NGOs. Those studies are to accumulate know-how and experience on project findings and related rules both international and domestic, with an aim of finding promising projects. Global Environment Centre Foundation (GEC) has been managing the CDM/JI Feasibility Study Programme as the secretariat.

As the CDM/JI related rules and procedures are rapidly evolving and getting more and more complex, there has been growing demand for a comprehensive guide for the CDM/JI, both in Annex I Parties and non-Annex I Parties. Eyeing the entry into force of the Kyoto Protocol in February 2005, MOE and GEC responded to this demand by releasing the first version of the CDM Manual in December 2004 that aimed at being a comprehensive guide for a wide range of stakeholders to further promote CDM project activities.

The COP/MOP1 officially adopted the Marrakesh Accords, including the CDM Modalities and Procedures and the JI Guidelines, as well as recognised the endeavours that the CDM Executive Board (EB) had undertaken. Moreover, the JI Supervisory Committee (JISC) was officially established, and started to work from its 1st meeting in February 2006. JI-related rules are also rapidly being formulated referencing the EB efforts and CDM related rules, where appropriate. Under these circumstances, we are pleased to release the CDM/JI Manual 2008, with the technical assistance of Pacific Consultants Co., Ltd.

We hope this manual will be of help to many CDM/JI project developers and policy makers and thus would contribute to the implementation of high-quality CDM/JI projects worldwide.

Ministry of the Environment, Japan (MOE)

This CDM/JI Manual 2009 is updated to the results of the EB50 (16 October 2009) and the JISC 18(23 October 2009). For the most recent versions of the references please visit the UNFCCC website: http://unfccc.int/.

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List of Abbreviations

AAU	Assigned Amount Unit
AR	Afforestation and Reforestation
AR WG	Afforestation and Reforestation Working Group
ACM	Approved Consolidated Methodology
AIE	Accredited Independent Entity
AE	Applicant Entity
AM	Approved Methodology
CDM	Clean Development Mechanism
CDM-AP	CDM Accreditation Panel
CDM AR M&P	CDM AR Modalities and Procedures (Decision 19/CP.9, contained in the document FCCC/CP/2003/6/Add.2)
CDM-AT	CDM Assessment Team
CDM M&P	CDM Modalities and Procedures (Decision 17/CP.7, contained in the document FCCC/CP/2001/13/Add.2)
CER	Certified Emission Reduction
COP	Conference of the Parties to the UNFCCC
COP/MOP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CPA	CDM Programme Activity
DFP	Designated Focal Point
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
ERU	Emission Reduction Unit
GHG	Greenhouse Gas
GWP	Global Warming Potential
HFCs	Hydrofluorocarbons
IET	International Emissions Trading
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
ITL	International Transaction Log
JI	Joint Implementation
JI-AP	Joint Implementation Accreditation Panel
JISC	Joint Implementation Supervisory Committee
lCER	Long-term CER
LULUCF	Land Use, Land-Use Change and Forestry
Meth Panel	Methodologies Panel
NGO	Non-Governmental Organization
NM	New Methodology
NPV	Net Present Value
OE	Operational Entity
PDD	Project Design Document
PFCs	Perfluorocarbons
PoA	Programme of Activities
RIT	Registration and Issuance Team
RMU	Removal Unit
SSC	Small Scale CDM
SSC WG	Small Scale Working Group
SOP	Share of Proceeds
tCER	Temporary CER
UNFCCC	United Nations Framework Convention on Climate Change

1 Introduction to CDM

1.1 What is CDM?

Clean Development Mechanism (CDM) is a mechanism that is based on the provision of Article 12 of the Kyoto Protocol. It is a scheme for greenhouse gas (GHG) emission reduction through cooperation between developed countries (Annex I Parties to the United Nations Framework Convention on Climate Change (UNFCCC)), which are committed to certain GHG emission reduction targets under the Kyoto Protocol, and developing countries (non-Annex I Parties), which do not have any commitments to reduce GHG emissions. The purpose of CDM is to assist to accomplish the GHG reduction targets of Annex I Parties (investing countries) under the Kyoto Protocol, as well as to contribute to sustainable development of non-Annex I Parties (host countries). Under the CDM, Annex I Parties implement projects (e.g. projects of landfill gas (methane) recovery with power generation) resulting in reduction of GHG emissions within the territories of non-Annex I Parties.

Annex I Parties are able to acquire all or parts of the credits (certified emission reductions: CERs) which result from the projects. Non-Annex I Parties will benefit (economic, social, environmental and technological) from CDM projects (Figure 1-1).

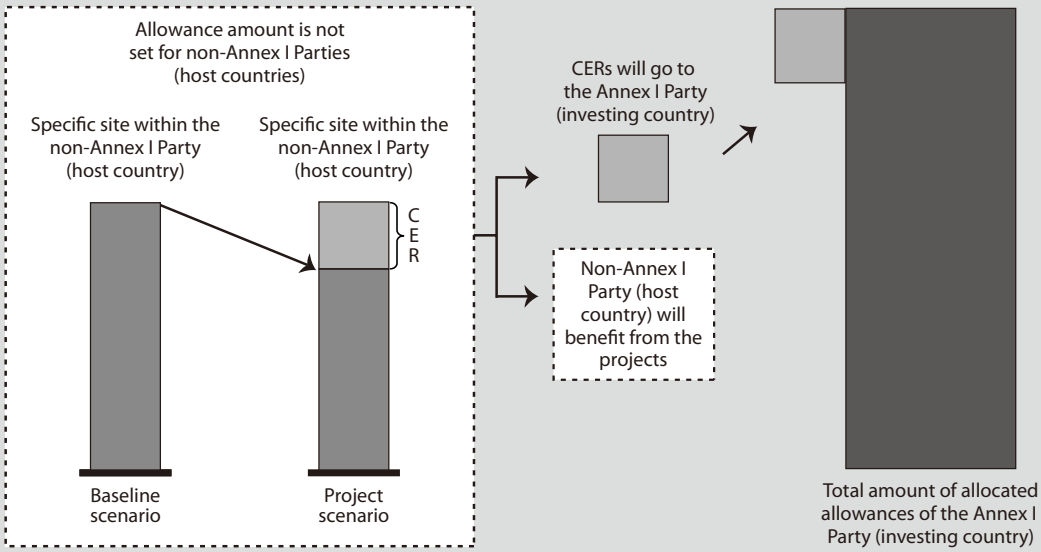


Figure 1-1 Outline of the CDM

Under the CDM, since credits are generated in developing countries that do not have AAUs (Assigned Amount Units[1]), the total amount of permitted emissions in the Annex I Parties increases. The total GHG emissions around the world would increase if CERs would be issued more than actual reductions. Therefore, CDM requires the projects to follow strict procedures set out by the CDM Executive Board

1 Credits equivalent to the initial Assigned Amounts of Annex I Parties calculated in a way prescribed in the Kyoto Protocol. AAUs are issued within the national registry of each Annex I Party prior to the First Commitment Period.

(EB) in order to ensure that the amount of CERs is not overestimated. The procedures include a third-party assessment of emission reductions by Designated Operational Entities (DOEs) through processes called validation and verification, and a final approval of project registration and issuance of CERs by the EB. The Kyoto Protocol requires that the DOE shall certify emission reductions on the basis of:

- Voluntary participation approved by each Party involved;
- Real, measurable, and long-term benefits related to the mitigation of climate change; and
- Reductions in emissions that are additional to any that would occur in the absence of the certified project activity.

[Kyoto Protocol, Article 12. 5]

1.2 Key Concepts of CDM

1.2.1 Baseline scenario and project scenario

Baseline is defined as "the scenario that reasonably represents the anthropogenic emissions by sources of greenhouse gases that would occur in the absence of the proposed project activity" [CDM Modalities and Procedures (CDM M&P), para.44]. Difference between the baseline emissions and GHG emissions after implementing the CDM project activity (project emissions) is emission reductions.
A baseline (scenario and emissions) shall be established [CMP/2005/8/Add.1, p16 para.45]:

- By project participants in accordance with provisions for the use of approved and new methodologies;
- In a transparent and conservative manner regarding the choice of approaches, assumptions, methodologies, parameters, data sources, key factors and additionality, and taking into account uncertainty;
- On a project-specific basis;
- In the case of SSC CDM project activities, in accordance with simplified procedures developed for such activities;
- Taking into account relevant national and/or sectoral policies and circumstances, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the project sector.

1.2.2 Additionality

The concept of "additionality" is closely related to that of "baseline", and has to be paid particular attention to when setting up a baseline scenario and developing a methodology. It is defined in the CDM M&P[2] that "A CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity" [CDM M&P, para.43].
Project participants have to write explanation of how and why this project activity is additional and therefore not the baseline scenario in accordance with the selected baseline methodology [PDD GL ver.7, p12]. "The tool for the demonstration and assessment of additionality" provides a general

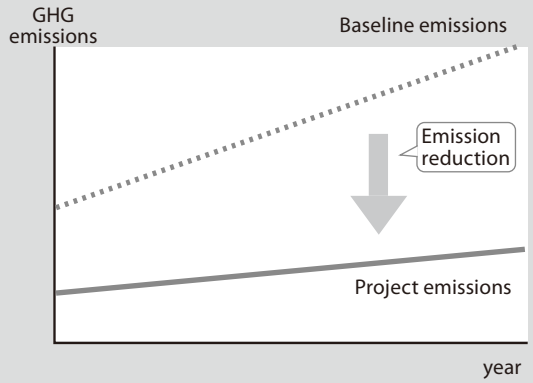


Figure 1-2 Concepts of emission reduction

2 CDM M&P refers to Decision 3/CMP.1: Modalities and procedures for a clean development mechanism as defined in Article 12 of the Kyoto Protocol, contained in the document FCCC/KP/CMP/2005/8/Add.1, page 6-29.

framework for demonstrating and assessing additionality.

The additionality tool provides a general framework for demonstrating and assessing additionality and is to be applicable to a wide range of project types. The use of this tool to assess and determine additionality does not replace the need for the baseline methodology to provide for a stepwise approach justifying the selection and determination of the most plausible baseline scenario alternatives.

Project participants proposing new baseline methodologies may incorporate this additionality tool, but may also propose other tools for the demonstration of additionality. Project participants can also use the "conbined tool to identify the baseline scenario and demonstrate additionality" (Combined Tool) [EB 28, Annex 14], which provides a procedure for baseline scenario identification as well as additionality demonstration.

The Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol at its first session (CMP1) confirmed that the use of the additionality tool is not mandatory for project participants, and that in all cases the project participants may propose alternative methods to demonstrate additionality for consideration by the EB, including those cases where the additionality tool is attached to an approved methodology [Decision 7/CMP.1[3], para.28].

3 Decision 7/CMP.1, "Further guidance relating to a clean development mechanism", contained in the document FCCC/KP/CMP/2005/8/Add.1, page 93-99. The use of the "tool for the demonstration and assessment of additionality" is not mandatory for project participants, and that in all cases the project participants may propose alternative methods to demonstrate additionality for consideration by the EB, including those cases where the "tool for the demonstration and assessment of additionality" is attached to an approved methodology; Detailed descriptions of the additionality tool are found in Appendix 5 (Decision 7/CMP.1 para.28). The EB revised the "combined tool to identify the baseline scenario and demonstrate additionality" to expand its applicability to newly built facilities where the alternative scenarios to the project activity are available options to project participants (EB 28, Annex 14).

1.3 CDM institutions

The institutions for CDM are depicted in Figure 1-3.

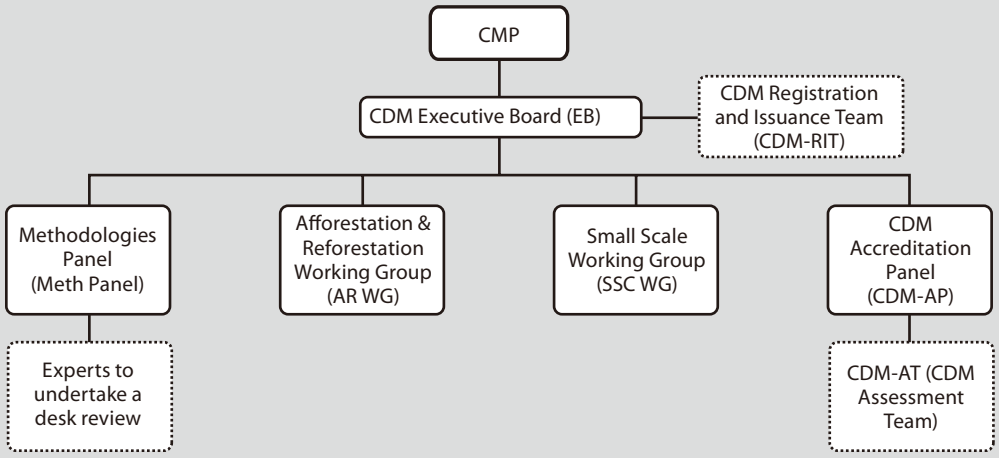


Figure 1-3 CDM institutions

1.3.1 CMP

The Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP) is the ultimate decision-making body of the CDM [EB 47, Annex 61, para.2].
This body has authority over, and provides guidance to, the EB through the adoption of decisions and resolutions, published in reports of the CMP.
They set direction and establish precedents which serve as reference for future decision making and basis for operating procedures. CMP decisions are treated as directives – mandatory requirements or rules intended to ensure the successful implementation of the Kyoto Protocol (KP).
All decisions taken by the EB must be consistent with and not contradict decisions of the CMP.

The CMP shall further as follows [CMP/2005/8/Add.1, p7 para.2-4].

- Decides on the recommendations made by the EB on its rules of procedure, and in accordance with provisions of Decision 17/CP.7 [CP/2001/13/Add.2, p20-49], the present annex and relevant decisions of the CMP;
- Decides on the designation of operational entities (OEs) accredited by the EB;
- Reviews annual reports of the EB;
- Reviews the regional and subregional distribution of designated operational entities (DOEs) and CDM project activities.

1.3.2 CDM Executive Board (EB)

For the actual operation of the CDM, the EB is the body that supervises the CDM, under the authority and guidance of the CMP [CDM M&P, para.5]. The EB comprises of 10 members and 10 alternates from Parties to the Kyoto Protocol. Since the EB held its first meeting in November 2001, it has been holding a meeting[4] every 2 to 3 months.

Decisions of the EB must be consistent with and support the formal decisions of the CMP, and are hierarchical in nature and published in the reports and report annexes of the EB. Taking into account both the rule-making and rule enforcing roles of the EB, decisions of the EB can be divided into three main classes [EB 47, Annex 61, para.3, 6].

- Decisions of an operational nature relating to the functioning of the regulatory body;
- Decisions of a regulatory nature relating to the supervision of the CDM in implementing its modalities and procedures throughout the project activity cycle;
- Rulings relating to the observance of the modalities and procedures by the project participants and/or operational entities, including the following categories: accrediting and provisionally designating operational entities; approving methodologies; registering CDM project activities; issuing certified emissions reduction units.

Decisions of a regulatory nature are intended to ensure the successful implementation of the modalities and procedures for CDM. There is a hierarchical relationship between decisions taken by CMP and decisions of the EB of the CDM hereinafter referred to as the EB [EB 47, Annex 61, para.5].

Standards	Standards describe mandatory levels or degrees of attainment or performance, and as such, are used as reference points against which attainment and performance can be evaluated.
Procedures	Procedures contain mandatory series of actions (how to) that must be undertaken to satisfy specific requirements of the CDM modalities and procedures. Procedures are written to ensure that project participants and designated operational entities (DOEs) satisfy requirements in an agreed, uniform and consistent way, producing an effective outcome.
Guidelines	Guidelines contain supplemental information such as acceptable methods for satisfying requirements described in procedures or standards.
Clarifications	Clarifications are issued to alleviate confusion that has arisen relating to a standard or procedure.

The EB may establish committees, panels or working groups to assist it in the performance of its functions [CDM M&P, para.18]. The EB has thus, so far, established the following panels and working groups.

4 Meeting reports, agenda and relevant documents, including webcast of the meetings are available on the CDM website: http://cdm.unfccc.int/EB.

(1) CDM Accreditation Panel (CDM-AP)

The CDM-AP was established to prepare the decision making of the EB in accordance with the procedure [EB 34, Annex 1] for accrediting operational entities. The CDM-AP is composed of 10 members. In addition to the designated EB members who act as chair and vice chair, the panel shall be composed of 7 members [EB 23, Annex 1, para.13] [EB 33, para.16].

The CDM-AP is responsible for recommendations to the EB on the accreditation of an Applicant Entities (AEs), suspension, withdrawal and/or re-accreditation of accreditation of a DOE, etc. [EB 23, Annex 1, para.4].

The CDM-AP carries out the selection of the members of a CDM accreditation assessment team (CDM-AT) [EB23, Annex 1, para.5]. The CDM-AT, under the guidance of CDM-AP, undertakes the detailed assessment of the AEs and/or DOEs, identify nonconformities and report to the CDM-AP [EB 34, Annex 1, para.3(d)].

(2) Methodologies Panel (MP)

The MP[5] was established to develop recommendations to the EB on guidelines for methodologies for baselines and monitoring plans and prepare recommendations on submitted proposals for new baseline and monitoring methodologies.

The MP is responsible for recommendations to the EB on baseline and monitoring methodologies, revisions to the template of PDD, etc. [EB 46, Annex 12, para.2-3].

The MP is composed of 20 members. 2 members of the EB will act as Chair and vice Chair of the panel, respectively. 2 other members of the EB will be designated to support Chair and vice Chair. In addition to the designated EB members, the panel shall be composed of 16 members [EB 46, Annex 12, para.5].

(3) Small Scale Working Group (SSC WG)

The SSC WG was established to prepare recommendations on submitted proposals for new baseline and monitoring methodologies for small scale CDM project activities, etc. [EB 23, Annex 20, para.II(1)].

The SSC WG is composed of 8 members. 2 members or alternate members of the EB will act as Chair and Vice-Chair of WG, respectively. In addition to the Chair and Vice-Chair, the WG shall be composed of 6 members, 2 of whom are members from the Meth Panel [EB 23, Annex 20, para. II(3)].

(4) Afforestation and Reforestation Working Group (A/R WG)

The A/R WG is responsible for recommendations to the EB on baseline and monitoring methodologies for A/R CDM, revisions to the PDD for A/R CDM, etc. [EB 23, Annex 14, para.2-3].

The A/R WG is composed of 8 members. 2 members or alternate members of the EB will act as Chair and Vice-Chair of the WG, respectively. In addition to the Chair and Vice-Chair, the WG

5 Since the MP held its first meeting in June 2002, it has been holding a meeting every 2 to 3 months. The MP is shown in: http://cdm.unfccc.int/Panels/meth.

shall be composed 8 members [EB 23, Annex 14, para.5] [EB 31, para.48].

(5) Registration and Issuance Team (RIT)

RIT serves to prepare appraisals of requests for registration and issuance of CERs assessing whether their requirements are met and/or appropriately dealt with by DOEs for consideration by the EB [EB 46, Annex 58, para.5].

The RIT is composed of not less than 20 members [EB46 Annex58, para7].

1.3.3 Designated Operational Entity (DOE)

A DOE[6] is either a domestic legal entity or an international organization accredited and designated, on a provisional basis until confirmed by the CMP, by the EB.

A DOE has the following two key functions in the CDM project cycle:

- Validation: It validates and subsequently requests registration of a proposed CDM project activity
- Verification and Certification: It verifies emission reduction of a registered CDM project activity, certifies as appropriate and requests the EB to issue Certified Emission Reductions (CERs) accordingly.

A DOE can perform either validation or verification and certification on the same CDM project activity. However, upon request, the EB may allow a single DOE to perform all these functions within a single CDM project activity [CMP/2005/8/Add.1, p12, para.27(e)]. In case of SSC CDM project activities, the same DOE may undertake validation, and verification and certification.

The EB requested AEs/DOEs to implement the Validation and Verification Manual (VVM) [EB 44, Annex 3] with immediate effect and to fully integrate the requirements of VVM into their management system. The EB further noted that it has been and remains essential for all AEs/DOEs to validate and verify the requirements included in the VVM [EB 44, para.11-12].

(1) Procedure for accrediting OEs [EB 48, Annex 3, para.3]

The responsibility of each actor involved in the accreditation process is as follows:

- The CMP designates operational entities, or withdraws their designation, based on a recommendation by the EB;
- The EB takes the decision whether or not to accredit an AE and recommend it to the CMP for designation, and to fully or partially suspend a DOE, or to withdraw accreditation of a DOE;
- The CDM-AP serves as the technical panel of the EB in accordance with its terms of reference and makes recommendations to the EB on effective implementation of the CDM accreditation process;
- A CDM-AT, in accordance with the CDM accreditation procedure and under the guidance

6 The list of DOEs is shown in: http://cdm.unfccc.int/DOE/list/index.html.

of the CDM-AP, undertakes the assessment of an AE and/or DOE, to identify the level of conformity to the CDM accreditation requirements and reports to the CDM-AP;

- The secretariat supports the implementation of the CDM accreditation procedure.

(2) The validity of accreditation

The accreditation of the OE for any "sectoral scope" shall be valid for 3 years from the date of accreditation by the EB. The designation by the CMP shall be valid until the expiry date of the accreditation. A regular surveillance shall be undertaken within this 3-year-period [EB 34, Annex 1, para.70].

The EB is authorized to conduct "spot-check" activities (i.e. unscheduled surveillance) of DOEs at any time [EB 34, Annex 1, para.89].

1.4 CDM typology

CDM project activities can be divided into the following types depending on the size and kinds of activity undertaken. Project participants who wish to develop a CDM project activity should first determine in which of the following categories the project activity would fit, as different modalities and procedures and formats apply to each project type.

Table 1-1 Classification of CDM project activities

Clean Development Mechanism (CDM)		
	1. Emission Reduction Type CDM	
		Large Scale CDM CDM project activities which reduce GHG emissions from fossil fuel combustion, fossil fuel consumption, mining, and fugitive emission in host countries.
		Small Scale CDM (SSC) CDM project activities which fall into three limits/types as follows: Type I: Renewable energy project activities with a maximum output capacity of 15 MW (or an appropriate equivalent) Type II: Energy efficiency improvement project activities which reduce energy consumption, on the supply and/or demand side, with a maximum output of 60 GWh per year (or an appropriate equivalent) Type III: Other project activities that result in emission reductions of less than or equal to 60 kt CO_2 equivalent annually [CMP/2006/10/Add.1, page 8, para. 28]
	2. Sink or Removal Type CDM / Afforestation and Reforestation (A/R) CDM	
		Large Scale A/R CDM CDM project activities to result in GHG removals by sinks through afforestation and reforestation in host countries.
		Small Scale A/R CDM (SSC A/R) Those that are expected to result in net anthropogenic GHG removals by sinks of less than 16 kt CO_2 per year and are developed or implemented by low-income communities and individuals as determined by the host Party [CMP/2007/9/Add.1, page 26].

1.4.1 Emission Reduction Type CDM

(1) Overview of large scale CDM project activities

The activities include fossil fuel combustion, fossil fuel consumption, mining, and fugitive emission. Comparing with the GHG emission reduction limits of SSC CDM project activities as mentioned below, other project activities are called "large scale" CDM project activities. Project participants wishing to develop such a project activity should prepare a fully completed project design document (CDM PDD) and submit it for validation and registration. The detail procedure

is discussed in section 1.5.

The modalities and procedures, formats and relevant guidelines for CDM project activities are listed in Appendix 1. Sectoral scope wise list of approved methodologies (AMs) and approved consolidated methodologies (ACMs) with further discussion are provided in Appendix 2.

(2) Overview of small scale CDM (SSC) project activities

The framework of SSC would enable project participants to use a fast-track approach for CDM procedures which could help reduce transaction costs compared to those of large scale CDM. SSC project activities are to meet certain eligibility criteria. Once a project activity is classified as SSC, then it can:

- benefit from being able to use the simplified modalities and procedures for SSC project activities;
- use a simplified PDD form (SSC-PDD);
- apply a shortened review period; and
- have the same operational entity undertake validation as well as verification and certification.

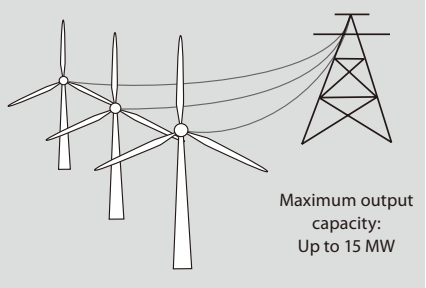
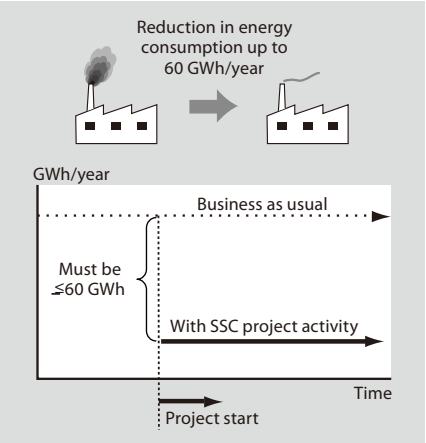
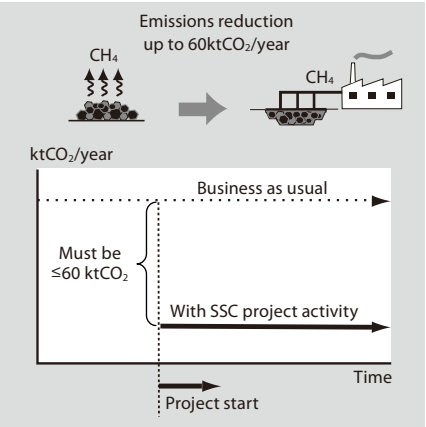
To use the simplified modalities and procedures for SSC project activities, a proposed project activity shall:

- Meet the eligibility criteria for SSC CDM project activities set out in paragraph 28 of Decision 1/CMP.2 (types I to III described below);
- Conform to one of the project categories in appendix B to Annex II to Decision 21/CP.8 (refer to Appendix 2 for the categories); and
- Not be a debundled component of a larger project activity, as determined through appendix C to Annex II to Decision 21/CP.8.

The modalities and procedures, formats and relevant guidelines for SSC project activities are listed in Appendix 1.

(3) Definition of small scale CDM (SSC) project activities

Three project types are currently recognized as eligible SSC project activity under emission reduction type CDM project activities. Each type of SSC project activity consists of several technologies and measures. The three types of SSC project activities are the following:

Type	Contents
Type I:  Type I - Renewable energy project activities	• Type I project activities shall have a maximum output capacity of 15 MW (or an appropriate equivalent) [CMP/2006/10/Add.1, p8, para.28(a)]. • Type I covers renewable energy project activities, including solar, hydro, wind, hybrid systems, renewable or biomass, geothermal. • Maximum "output" is defined as installed/rated capacity, as indicated by the manufacturer of the equipment or plant. • As MW(e) is the most common denomination, and MW(th) only refers to the production of heat which can also be derived from MW(e), the EB agreed to define MW as MW(e) and otherwise to apply an appropriate conversion factor [Glos version 5, p30].
Type II:  Type II - Energy efficiency improvement project activities	• Type II project activities or those relating to improvements in energy efficiency which reduce energy consumption, on the supply and/or demand side, shall be limited to those with a maximum output of 60 GWh per year (or an appropriate equivalent) [CMP/2006/10/Add.1, p8, para.28(b)]. • Type II covers supply side project activities and end-use project activities concerning residential, service, industry, agricultural machineries and cross-cutting technologies, which result in improvement in per unit power for the service provider or in reduction of energy consumption in watt-hours in comparison with the approved baseline. • Demand side, as well as supply side, projects shall be taken into consideration, provided that a project activity results in a reduction of maximum 60 GWh. • A total saving of 60 GWh is equivalent to 4000 hours of operation of a 15 MW plant or 60*3.6 TJ = 216 TJ, where TJ stands for terajoules [Glos version 5, p30]. • When energy consumption is reduced due to the reduction in activity level and not due to higher energy efficiency, the resulting emission reduction cannot be attributed to the CDM project activity.
Type III:  Type III - Other project activities	• Type III project activities, otherwise known as other project activities, shall be limited to those that result in emission reductions of less than or equal to 60 kt CO_2 equivalent annually [CMP/2006/10/Add.1, p8, para.28(c)]. • Type III covers project activities concerning agriculture, fuel switching, industrial processes, transport, waste management and HFC. Possible example in the agricultural sector include improved manure management, improved fertilizer usage, and improved water management.

The three types of project activities outlined above are mutually exclusive. In a project activity with more than one component that will benefit from the simplified modalities and procedures for SSC project activities, each component shall meet the threshold criterion of each applicable type, e.g. for a project with both a renewable energy and an energy efficiency component, the renewable energy component shall meet the criterion for "Type I: renewable energy" and the energy efficiency component shall meet that for "Type II: energy efficiency improvement".

(4) Project activity with more than one component

The EB agreed that the sum of the size of components of a project activity belonging to the same type should not exceed the limits for SSC project activities [EB 28 Rep, para.56]. The EB also agreed that a project activity with more than one component may submit one PDD, provided the information regarding the sections covering the type and categories and technology/measure of the SSC project activity and application of the baseline and monitoring methodology in the CDM-PDD are provided separately for each component [EB 28 Rep, para.57]. Two different project activities will be considered to be applying the same technology if they provide the same kind of output and use the same kind of equipment and conversion process. Two different project activities will be considered to be using the same measure if they constitute the same course of action and result in the same kind of effect (e.g. two projects using the same management practice such as fuel switch) [CDM Glos version 5, p27].

(5) Leakage in SSC project activities

Leakage is defined as the net change of GHG which occurs outside the project boundary, and which is measurable and attributable to the CDM project activity.

In the cases where leakage is to be considered, it shall be considered only within the boundaries of non-Annex I Parties [CDM Glos version 5, p20].

For SSC energy CDM project activities involving renewable biomass, there are three types of emission sources of leakage that are potentially significant (>10% of emission reductions) and attributable to the project activities, such as shift of pre-project activities, emissions related to the production of the biomass and competing uses of the biomass [EB 28, Annex 35, para.2-5].

The EB noted that the emission impact of continued use of displaced equipment outside the project boundary is subject to uncertainty and difficult to quantify. It therefore clarified that leakage from equipment transfer from within to outside the project boundary may be excluded from consideration in SSC methodologies.

(6) Additionality in small scale CDM (SSC)

A simplified baseline and monitoring methodology may be used for a SSC project activity if the project participants are able to demonstrate to a DOE that the project activity would otherwise not be implemented due to the existence of one or more of the barriers listed below. Project participants shall provide an explanation to show that the project activity would not have occurred

anyway due to at least one of the following barriers (Appendix B of the simplified modalities and procedures for small-scale CDM project activities). http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html.

- Investment barrier: a financially more viable alternative to the project activity would have led to higher emissions;
- Technological barrier: a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions;
- Barrier due to prevailing practice: prevailing practice, existing regulatory, or policy requirements would have led to implementation of a technology with higher emissions;
- Other barriers: without the project activity, for another specific reason identified by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emissions would have been higher.

It may be mentioned here that the EB has agreed to a compilation of non-binding best practice examples to demonstrate additionality [EB 35, Annex 34] to assist the development of PDDs for SSC CDM project activities, which incorporates public inputs and an analysis of additionality in registered SSC project activities. A general guidance to the SSC methodologies (version 2.1) is available on the UNFCCC site: http://cdm.unfccc.int/Reference/Guidclarif/index.htm.

(7) Bundling of small scale CDM (SSC)

Overview of bundling

Bundle is defined as bringing together of several SSC project activities to form a single CDM project activity or portfolio without the loss of distinctive characteristics of each project activity. Project activities within a bundle can be arranged in one or more sub-bundles, with each project activity retaining its distinctive characteristics. Such characteristics include its technology/measure, location, and application of simplified baseline methodology. Project activities within a sub-bundle belong to the same type. The sum of the output capacity of projects within a sub-bundle must not be more than the maximum output capacity limit for its type [CDM Glos version 5, p12]. For example, four fuel switching projects of the same type, same category and technology/measure each of which directly emit 10,000tCO_2, 18,000tCO_2, 9,000tCO_2 and 20,000tCO_2 equivalent per year could be bundled together for the purposes of CDM project registration, as long as separate monitoring plans are submitted for each one and the total capacity is within the maximum allowable limit of 60,000tCO_2 equivalent per year (Figure 1-4).

Sub-bundle is defined as an aggregation of project activities within a bundle having the characteristics that all project activities within a sub-bundle belong to the same type [CDM Glos version 5, p29].

The benefits of bundling are as follows:

- Reduction of project development costs
- Reduction of Engineering, Procurement and Construction (EPC) costs
- Reduction of Operation and Maintenance costs (O&M)
- Reduction of transaction costs (general and CDM)
- Increase of total investment volume

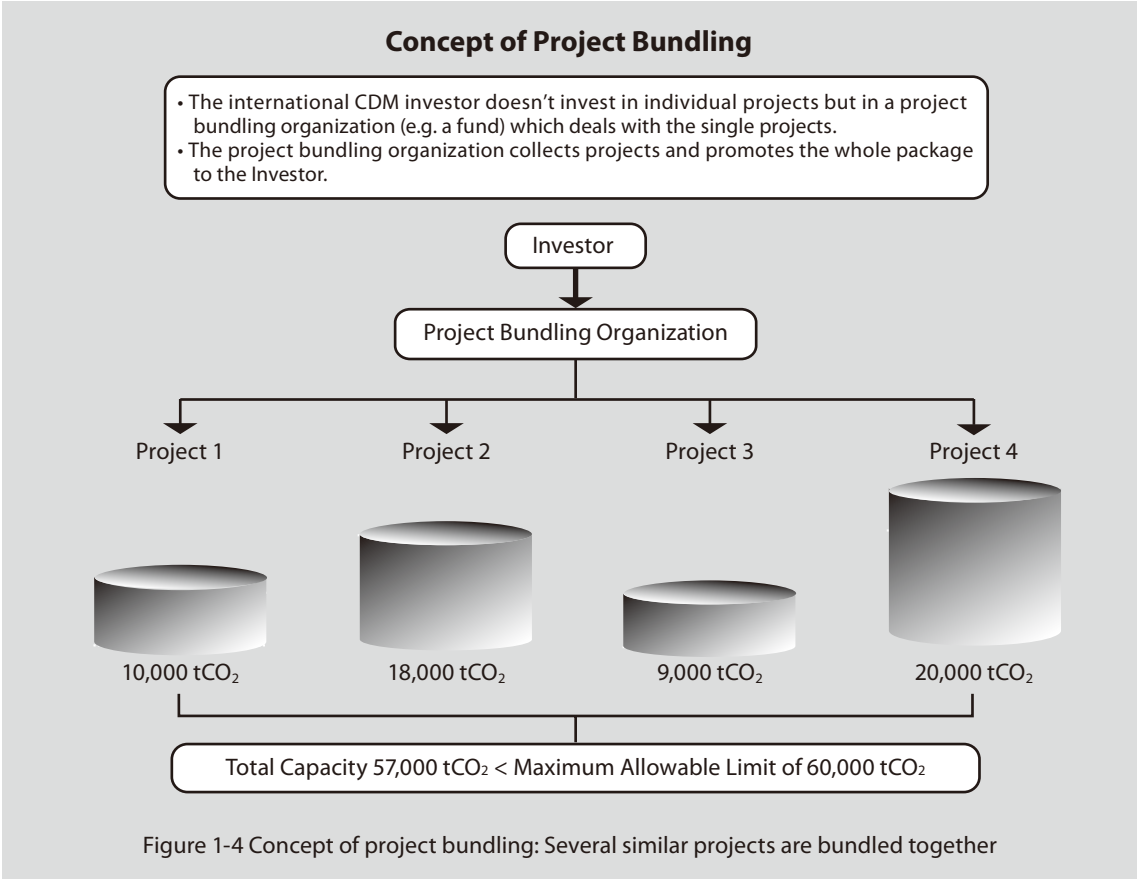


Figure 1-4 Concept of project bundling: Several similar projects are bundled together

Box 1-1: What does "same technology/measure" mean?

"Same technology/measure" is often used in the SSC, especially when considering bundling. The term was defined as follows:

(a) Two different project activities will be considered to be applying the same technology if they provide the same kind of output and use the same kind of equipment and conversion process.

(b) Two different project activities will be considered to be using the same measure if they constitute the same course of action and result in the same kind of effect (e.g. two projects using the same management practice such as fuel switch) [CDM Gros version 5, p27].

Table 1-2 Information on bundling of SSC project activities

General characteristics
Project activities wishing to be bundled shall indicate this when making the request for registration. Project participants shall at registration provide a written statement along with the submission of the bundle indicating: • That all project participants agreed that their individual project activities are part of the bundle; • One project participant who represents all project participants in order to communicate with the EB in accordance with approved Modalities and Procedures for Communication. Composition of bundles The composition of bundles shall not change over time (i.e. the submission of project activities to be used in a bundle shall be made at the same time). A project activity shall not be taken out of a bundle nor shall a project activity be added to the bundle after registration. Crediting period All project activities in the bundle shall have the same crediting period (i.e. the same length and same starting date of the crediting period). Modalities and procedures Each SSC project in the bundle should comply with the simplified modalities and procedures for SSC project activities and use an approved simplified baseline and monitoring methodology included in Appendix B of the simplified modalities and procedures for SSC project activities. Submission to the EB Bundled project activities shall be submitted in a single submission to the EB and pay only one fee proportional to the amount of expected average annual emission reductions of the total bundle; Request for review If three EB members or a Party involved in a component project activity requests the review of the component project activity, the total bundle remains under review and the implications and recommendations on the review of project activity shall lead to a decision by the EB to register or not register the bundle.
Form
• A form with information related to the bundle must be included in the submission. • The form should cover issues such as the title of the bundle, general description, project participants, locations, types and categories, estimated amount of emission reduction, crediting period and monitoring plans. Formats • Form for submission of bundled small scale project activities: F-CDM-SSC-BUNDLE, version 02 The most recent versions are available on the UNFCCC CDM website: http://unfccc.int/cdm. Guidelines • Guidelines for completing F-CDM-SSC-BUNDLE, version 01 [EB 34, Annex 10] • General principles for bundling [EB 21, Annex 21] • Clarifications relating to bundling of small scale CDM project activities [EB 20, para.60] The most recent versions are available on the UNFCCC CDM website: http://unfccc.int/cdm.
Small scale limits
• The sum of the size (capacity for Type I, energy saving for Type II, and direct emissions of project activity for Type III) of the technology or measure utilized in the bundle should not exceed the limits for SSC project activities as set in paragraph 28 of the Decision 1/CMP.2. • It should be demonstrated that the bundle will remain under the limit for the type every year during the crediting period. The total emission reduction estimated for the crediting period must be included in the draft SSC-CDM-PDD and further monitored. • If a bundle goes beyond the limits for the selected SSC project activities type, the emission reduction that can be claimed for this particular year will be capped at the maximum emission reduction level estimated for the bundle by the project participants in the "Bundle" form for that year during the crediting period.

Table 1-2 Information on bundling of SSC project activities

Validation and verification
• One DOE can validate this bundle. • One verification report is adequate, one issuance will be made at the same time for the same period, and a single serial number will be issued for all the project. • For projects submitting multiple CDM-SSC-PDDs, all CDM-SSC-PDDs shall be made publicly available for comments at validation stage at the same time. If, for corrective actions the DOE considers that major changes would be required in any of the project activities of the bundle, and that this would require the CDM-SSC-PDD to be made publicly available for comments another time, the whole bundle would need to be made publicly available for public comments. The DOE validating the bundle shall consider the public comments for each of the CDM-SSC-PDDs.
Letter of approval
The letter of approval by the host Party has to indicate that the Party is aware that the component project activity(ies) taking place in its territory is part of the bundle.
Issuance
If a bundle of project activities is submitted with a single or different CDM-SSC-PDDs it shall have only one identifier for purposes of issuance of CERs.
Use of a single PDD covering all activities
• If all project activities in the bundle belong to the same type, same category and technology/measure, project participants may submit a single CDM-SSC-PDD covering all activities in the bundle. If project participants use the same baseline for all the project activities in the bundle, it should be justified by considering the particular situation of each project activity in the bundle. As an example two project activities using the same technology to produce electricity but connected to different grids must use different baselines. A common monitoring plan can be utilized for the bundle with the submission of one monitoring report, under conditions to be specified. If different baselines are used, the proposed procedure for sampling must consider this situation, including the proportionate representative samples of each baseline used. In this case (a single PDD is used) a single verification and certification report shall be submitted by the DOE. • In all other cases (if the bundle includes project activities with (a) the same type, same category and different technology/measure; (b) same type, different categories and technologies/measures; and (c) different types): Project participants would have to make the submission of the bundle using a CDM-SSC-PDD for each of the component project activities contained in the bundle. Different monitoring plans will be required for project activities in the bundle and separate monitoring reports must be prepared. In these cases a single verification and certification report can be submitted for the bundle provided that it appraises each of the component project activities of the bundle separately and covers the same verification period.
Overall monitoring plan
• If project activities are bundled, a separate monitoring plan shall apply for each of the constituent project activities, or an overall monitoring plan shall apply for the bundled project, as determined by the DOE at validation. • Only projects within the same category and technology/measure can use an overall monitoring plan. [Simplified M&P, para.34]

Debundling

Debundling is defined as the fragmentation of a large project activity into smaller parts. A SSC project activity that is part of a large scale project activity is not eligible to use the simplified modalities and procedures for SSC project activities. A large scale project activity or any component of a large scale project activity shall follow the regular CDM modalities and procedures. A proposed SSC project activity shall be deemed to be a debundled component of a large project activity if there is a registered SSC project activity or a request for registration by another SSC project activity:

- by the same project participants;
- in the same project category and technology/measure;
- registered within the previous 2 years; and
- whose project boundary is within 1 km of the project boundary of the proposed SSC activity at the closest point.

However, if a proposed SSC project activity is deemed to be a debundled component, but total size of such an activity combined with the previously registered SSC project activity does not exceed the limits for SSC project activities as set in paragraph 28 of the Decision 1/CMP.2, the project activity can qualify to use the simplified modalities and procedures for SSC project activities [CDM Glos Version 5, p17].

The EB further clarified that in cases where a DOE has, in assessing the possibility that a SSC project is a debundled component of a large scale project activity, determined that two or more project activities are taking place within one kilometer of each other and with the same project participants:

(a) The DOE shall ensure that these projects are described in the PDD and that the validation report contains specific details on how it has been determined that the project activities are not a debundled component of a large scale project activity;

(b) The DOE shall consider the project activities to be a debundled component of a large scale project activity even in cases where they are taking place in different project categories, if the project activities are type 1 project activities providing energy to the same user and are registered, or submitted for registration, with 2 years of each other.

[EB 36, Annex 27].

1.4.2 Programme of activities (PoA) and CDM programme activity (CPA)

(1) CDM programme activity (CPA)

CDM programme activity (CPA) is defined as a project activity under a programme of activities (PoA). A CPA is a single, or a set of interrelated measure(s), to reduce GHG emissions or enhance GHG removals by sinks, applied within a designated area defined in the baseline methodology.

The applied approved methodology shall define whether the CPA is undertaken in a single facility/installation/land or undertaken in multiple facilities/installations/land. In the case of CPAs which individually do not exceed the SSC threshold, SSC methodologies may be used once they have first been reviewed and, as needed, revised to account for leakage in the context of a CPA [EB 32, Annex 38, p1].

(2) Programme of activities (PoA)

A PoA is a voluntary coordinated action by a private or public entity which coordinates and implements any policy/measure or stated goal (i.e. incentive schemes and voluntary programmes), which leads to GHG emission reductions or enhancement of GHG removals that are additional to any that would occur in the absence of the PoA, via an unlimited number of CPAs.

Project participants shall use "Procedures for registration of a PoA as a single CDM project activity and issuance of certified emission reductions for a programme of activities" (version 03) [EB 47, Annex 29, p1].

(3) Boundary

The physical boundary of a PoA may extend to more than one country provided that each participating non-annex I host Party provides confirmation that the PoA, and thereby all CPAs, assists it in achieving sustainable development.

(4) Treatment of local/regional/national policies and regulations

- A PoA shall comply with all current guidance by the EB concerning the treatment of local/regional/national policies and regulations.
- PoAs addressing mandatory local/regional/national policies and regulations are permissible provided it is demonstrated that these policies and regulations are systematically not enforced and that noncompliance with those requirements is widespread in the country/region. If they are enforced, the effect of the PoA is to increase the enforcement beyond the mandatory level required.

(5) Coordinating or managing entity

- A PoA shall be proposed by the coordinating or managing entity which shall be a project participant authorized by all participating host country DNAs involved and identified in the modalities of communication as the entity which communicates with the EB, including on matters relating to the distribution of CERs.
- Project participants of the PoA shall make arrangements with the coordinator or managing entity, relating to communications, distribution of CERs and change of project participants.
- The coordinating entity of the PoA shall identify measures to ensure that all CPAs under its PoA are neither registered as an individual CDM project activity nor included in another registered PoA and that the CPA is subscribed to the PoA. These measures are to be validated and verified by DOE.

(6) Baseline and additionality

All CPAs of a PoA shall apply the same approved baseline and monitoring methodology, involving one type of technology or set of interrelated measures in the same type of facility/installation/land.

The PoA shall demonstrate that net reductions in anthropogenic emissions or net anthropogenic greenhouse gas removals by sinks for each CPA under the PoA are real and measurable, are an accurate reflection of what has occurred within the project boundary, and are uniquely attributable to the PoA. The PoA shall therefore define at registration, the type of information which is to be provided for each CPA to ensure that leakage, additionality, establishment of the baseline, baseline emissions, eligibility and double counting are unambiguously defined for each CPA within the PoA [EB 32, Annex 38, para.7-8].

If the approved methodology is put on hold or withdrawn, not for the purpose of inclusion in a consolidation, no new CPAs shall be added to the PoA in accordance with the timelines indicated in procedures "NAME". If the methodology is subsequently revised or replaced by inclusion in a consolidated methodology, the PoA shall be revised accordingly and changes validated by a DOE and approved by the EB. Once changes have been approved by the EB, each CPA included in the PoA thereafter has to use the new version of the PoA. CPAs included prior to the methodology being put on hold, shall apply the new version of the PoA at the time of the renewal of its crediting period [EB 32, Annex 38, para.12].

(7) Duration

- The duration of the PoA, not exceeding 28 years and 60 years for A/R project activities, shall be defined by the entity at the time of request for registration of the PoA.
- Any CPA can be added to the PoA at any time during the duration of the PoA by the coordinating/managing entity. The entity shall inform the EB of the adding of CPA(s) through a DOE using a pre-defined format.

(8) Crediting period

The crediting period of a CPA will be either a maximum of 7 years (20 years for A/R project activities) which may be renewed at most 2 times or a maximum of 10 years (30 years for A/R project activities) with no option of renewal. However, the duration of crediting period of any CPA shall be limited to the end date of the PoA regardless of when the CPA was added.

(9) The start date of any CPA

The start date of any CPA is not, or will not be, prior to the commencement of validation of the PoAs, i.e. the date on which the CDM-POA-DD is first published for global stakeholder consultation [EB 47, Annex 29, para.5(d)].

However, PoAs which have commenced validation prior to 31 December 2009 may include CPAs with a starting date between 22 June 2007 and the commencement of validation of the PoA, if

a list of such specific CPAs is provided to validating DOE and UNFCCC secretariat prior to 31 January 2010 [EB 47, para.72].

(10) Monitoring

The emission reductions of each CPA shall be monitored as per the registered monitoring plan according to the methodology applied to the registered PoA. The method or approach used to verify emission reductions (that may include random sampling) shall ensure the accuracy of these emission reductions.

(11) Registration fee

- The registration fee for a PoA is based on the total expected annual emission reductions of the CPA(s) that will be submitted together with the request for registration of the PoA. The calculation of the amount to be paid and the procedures for payment will follow mutatis mutandis the existing rules for the payment of a registration fee [EB 37, Annex 20].
- For each CPA which is included subsequently, no fee is to be paid.
- Fees are to be paid by the coordinating/managing entity to the secretariat [EB 33, para.60].

(12) Formats

- Small Scale CDM Programme of Activities Design Document form: SSC-PoA-DD [EB 33, Annex 43]
- Small Scale CDM Programme Activity Design Document form: PoA-CPA-SSC-DD [EB 33, Annex 44]
- CDM Programme of Activities Design Document form: PoA-DD [EB 33, Annex 41]
- CDM Programme Activity Design Document form: PoA-CPA-DD [EB 33, Annex 42]

The most recent versions are available on the UNFCCC CDM website: http://cdm.unfccc.int/Reference/PDDs_Forms/PoA/.

(13) Procedures/Guidances

- Procedures for registration of a programme of activities (PoA) as a single CDM project activity and issuance of certified emission reductions for a programme of activities (version 3) [EB 47, Annex 29]
- Procedures for review of erroneous inclusion of a CPA (version 01) [EB 47, Annex 30]
- Procedures for approval of the application of multiple methodologies to a programme of activities (version 01) [EB 47, Annex 31]
- Guidance on programme of activities [EB 35, para.15]
- Guidance on payment of a registration fee for a PoA [EB 33, para.60]
- Guidance on eligibility of activities under the CDM (version 01) [EB 33, para.30]
- Guidance for determining the occurrence of de-bundling under a PoA (version 02) [EB 47, Annex 32]

- Guidance on the registration of a programme of activities as a single CDM project activity (version 02.1) [EB 32, Annex 38]

The most recent versions are available on the UNFCCC CDM website: http://cdm.unfccc.int/ProgrammeOfActivities/index.html.

1.4.3 Sink or removal type CDM (A/R CDM)

(1) Overview of A/R CDM project activities

It has been determined in the Marrakech Accords that Land use, Land-use Change and Forestry (so called LULUCF or sink) under the CDM is limited to afforestation and reforestation (A/R) during the first commitment period. Forest management and revegetation are therefore not allowed under the A/R CDM scheme. A/R CDM and emission reduction CDM project activities have similar aspects, such as provisions for participation requirements, project cycle and procedures. However, the unique characteristic of A/R CDM project activities originating from the issue of temporal storage of GHG removals in forest, which is referred to as "non-permanence", results in a distinctive crediting scheme for A/R CDM project activities. The modalities and procedures, formats and relevant guidelines for A/R CDM project activities are listed in Appendix 1.

In this section, a brief overview is provided on what project participants need to know in order to plan an A/R CDM project activity, as well as on SSC A/R project activities. Following the overview of A/R CDM project activities in this section, more technical information is explained with respect to key points covered in a project design document for A/R CDM project activities (CDM-AR-PDD), such as baseline, additionality, monitoring, calculation of GHG removals by sinks, and issue of nonpermanence in subsequent section 2.3.

(2) Participation requirements

As mentioned above, all provisions of Section F ("Participation requirements") of the CDM M&P apply to A/R CDM project activities (i.e. Participation in a CDM project activity is voluntary; Parties involved have to be a Party to Kyoto Protocol; Parties need to establish DNA; Annex I Party has to calculate and record assigned amount as well as maintains national registry, etc.).

In order to host an A/R CDM project activity, a non-Annex I Party needs to determine thresholds for forest definition in addition to the participation requirements mentioned above, and report to the EB through its DNA. The thresholds are:

- A single minimum tree crown cover value between 10 and 30 percent;
- A single minimum land area value between 0.05 and 1 hectare; and
- A single minimum tree height value between 2 and 5 metres.

(3) Project cycle of A/R CDM project activities

The project cycle and approval process of A/R CDM project activities is similar to that of emission reduction CDM project activities, as outlined in Figure 1-6, respectively. Project participants need to check whether their A/R CDM project activity is a large scale A/R CDM project activity or a small scale A/R CDM project activity (see (6)), and whether an approved methodology is applicable. Then they need to proceed with drafting of a CDM-AR-PDD, submission of a new methodology if necessary, validation, and registration for issuance of credits (in case of A/R CDM project activities, tCERs and lCERs are issued).

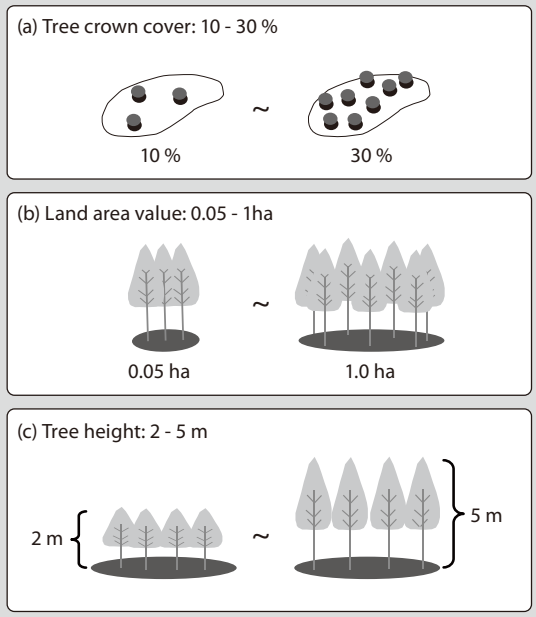


Figure 1-5 Thresholds for forest definition

(4) tCERs and lCERs

The project participants shall select one of the following approaches to addressing nonpermanence of an afforestation or reforestation project activity under the CDM [CMP/2005/8/Add.1, p70, para.38]: (i) issuance of tCERs for the net anthropogenic greenhouse gas removals by sinks achieved by the project activity since the project start date, (ii) issuance of lCERs for the net anthropogenic greenhouse gas removals by sinks achieved by the project activity during each verification period

The approach chosen to address non-permanence shall remain fixed for the crediting period including any renewals [CMP/2005/8/Add.1, p70, para.39].

Each tCER shall expire at the end of the commitment period subsequent to the commitment period for which it was issued. The expiry date shall be included as an additional element in its serial number. An expired tCER may not be further transferred [CMP/2005/8/Add.1, p71, para.42].

Each lCER shall expire at the end of the crediting period or, where a renewable crediting period is chosen, at the end of the last crediting period of the project activity. The expiry date shall be included as an additional element in its serial number. An expired lCER may not be further transferred [CMP/2005/8/Add.1, p71, para.46].

(5) Overview of approval process of A/R CDM project activities and A/R CDM methodologies

The basic steps of approval process of A/R CDM project activities are the same as emission

reduction CDM project activities. In this section, brief explanation of the approval process is given in a step-by-step manner.

Step 1: Determine if your project qualifies as a small scale A/R CDM project activity

Project participants should first consider if their project meets the eligibility criteria of small scale A/R CDM project activities as listed below.

- Net GHG removals by sinks of less than 16 kt CO_2 per year; and
- Developed or implemented by low-income communities and individuals as determined by the host Party

If the project does not qualify as a small scale A/R CDM project activity, proceed to Step 2 below.

Step 2: Determine if an approved baseline and monitoring methodology is applicable to your project

Project participants need to apply one of the methodologies approved by the EB or propose a new baseline and monitoring methodology (AR-NM) for A/R CDM project activities in accordance with the "procedures for the submission and consideration for a proposed new baseline and monitoring methodology for A/R CDM project activities" (Version 07) [EB37, Annex 04]. In case an approved methodology (AR-AM) can be used, the DOE may proceed with the validation of the A/R CDM project activity and submit CDM-AR-PDD for registration. If not, project participants must submit a AR-NM using format CDM-AR-NM, along with the draft CDM-AR-PDD, and have it approved by the EB.

Project participants who wish to apply an AR-AM to their project activity must check the applicability of AR-AMs. A list of the AR-AM is provided in Appendix 2.

Step 3: Propose a new baseline and/or monitoring methodology

The procedure for proposing a AR-NM is identical to that for emission reduction of CDM project activity which are described in Figure 1-7. One difference is that the main body to make analysis/ recommendation for proposed methodologies is Afforestation and Reforestation Working Group (A/R WG) instead of Methodologies Panel (Meth Panel).

Project participants intending to propose a AR-NM for consideration and approval by the EB should prepare the A/R methodologies form for proposed new baseline and monitoring methodology (CDM-AR-NM) along with a draft CDM-AR-PDD and as a minimum, complete sections A to D, including relevant annexes and submit through a DOE (or an AE).

Having checked that the "CDM: Proposed new A/R methodology form" (F-CDM-AR-NM) has been duly filled by the DOE and documentation provided by the DOE is complete, the secretariat shall prepare a draft pre-assessment using the latest version of the "CDM: Proposed new A/R methodology assessment form" (F-CDM-AR-NMas) to assess the quality of the submission and forward it along with the documentation submitted by the project participant (CDM-AR-NM & CDM-AR-PDD) to 1 member of the A/R WG for consideration. This member is

to assess the quality of the submission, grade it between 1 and 2, and substantiate the appraisal (one paragraph). If the member grades the documentation as being 2, the documentation is to be sent back to the project participants. If the grade is 1, the documentation shall be considered as received by the EB and be forwarded by the secretariat for consideration of the EB and the A/R WG. The A/R WG shall finalize its recommendation to the EB within 2 meetings of the panel.

A DOE/AE may voluntarily undertake a pre-assessment of a AR-NM before submitting it. If a voluntary pre-assessment has been undertaken, no pre-assessment by the A/R WG is needed. Once the secretariat has confirmed that the F-CDM-AR-NM has been duly filled by the DOE and documentation provided by the DOE is complete, the submitted methodology may be in such case, be considered as received.

The secretariat shall make the proposed AR-NM publicly available on the UNFCCC CDM website and invite public inputs for a period of 15 working days. Public inputs on a proposed AR-NM shall be made using the "Proposed new A/R methodology - public comment form" (F-CDM-AR-NMpu).

Comments shall be forwarded to the A/R WG at the moment of receipt and made available to the public at the end of the 15 working day period.

Whenever a proposed AR-NM is submitted to the A/R WG, it shall analyze it and, if possible at its next meeting, make a recommendation regarding the approval of the proposed AR-NM to the EB. The EB shall consider the proposed AR-NM at the next meeting following the receipt of the recommendation regarding the approval ("A" case) or non-approval ("C" case) of the proposed AR-NM by the A/R WG.

Reference documents for "Procedures for the Submission and Consideration of a Proposed New Methodology for Afforestation and Reforestation Project Activities" (Version 07) [EB 37, Annex 04] are available on the CDM website: http://cdm.unfccc.int/Reference/Procedures/.

Step 4: Draft an A/R Project Design Document (CDM-AR-PDD)

Project participants then need to fill out an CDM-AR-PDD, which includes information such as general description of the project activity, the baseline methodology and additionality, the monitoring methodology and plan, and calculations of GHG removals by sinks. The information required in the CDM-AR-PDD will be discussed in section 2.3.

Step 5: Validate the A/R CDM project activity

Validation is the process of independent evaluation of a proposed A/R project activity by a DOE against the requirements of the A/R CDM project activities as set out in the modalities and procedures for A/R CDM project activities (CDM A/R M&P) and relevant decisions of the CMP, on the basis of the A/R PDD.

Step 6: Register the CDM project activity

Registration is the formal acceptance by the EB of a validated project as an A/R CDM project

activity.

Registration is the prerequisite for the verification, certification and issuance of tCERs or lCERs related to the A/R project activity.

(6) Small scale A/R CDM (SSC A/R) project activity

SSC A/R project activities are those that are expected to result in GHG removals by sinks of less than 16 kt CO_2 per year and are developed or implemented by low-income communities and individuals as determined by the host Party. If a SSC A/R project activity results in GHGs removals greater than 16kt CO_2 per year, the excess removals will not be eligible for the issuance of tCERs or lCERs.

The Project Design Document Form for small scale afforestation and reforestation project activities (CDM-AR-SSC-PDD) and Guidelines for completing CDM-AR-PDD and CDM-AR-NM can be downloaded from:

- CDM-SSC-AR-PDD: http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/
- Guidelines: http://cdm.unfccc.int/Reference/Guidclarif/pdd/

1.5 CDM project cycle

1.5.1 Overview of CDM project cycle

The project cycle is common to all CDM project types.

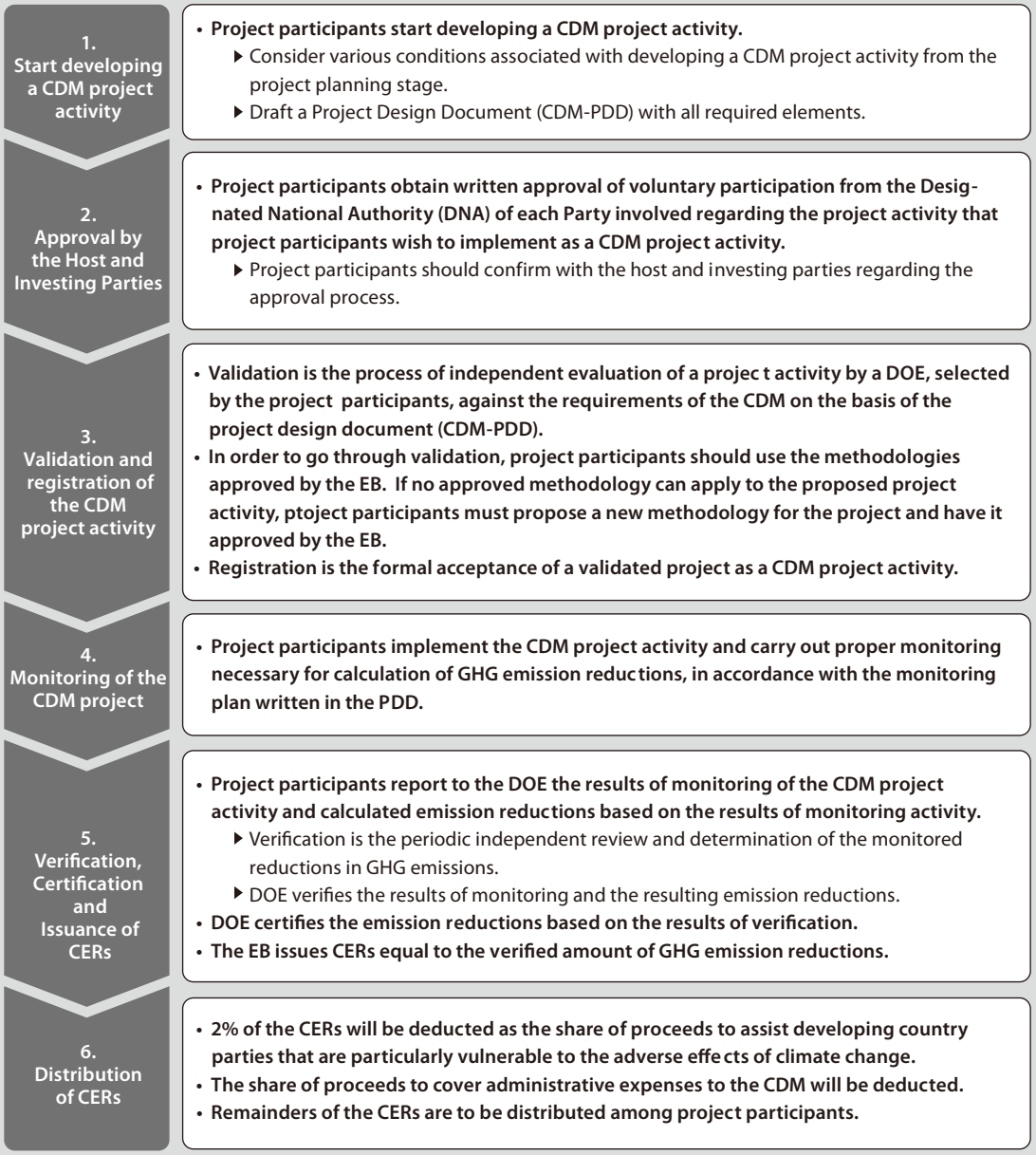


Figure 1-6 CDM project cycle

1.5.2 Start developing a CDM project activity

(1) Applicability of approved methodologies

Project participants who wish to apply an approved methodology to their project activity must check the applicability conditions of AMs and ACMs. Project participants could propose new baseline and monitoring methodologies, if they cannot find a suitable methodology for their project.

The lists of AMs and approved consolidated methodologies (ACMs) are regularly updated on the CDM website: http://cdm.unfccc.int/methodologies/PAmethodologies/approved. html.

The AMs and ACMs approved by the EB as of the results of EB50 (13-16 October 2009) are listed in Appendix 2.

(2) Proposal of a new baseline and monitoring methodology (NM)

EB37 revised the procedures for submission and consideration of a proposed new methodology (NM) [EB 37, Annex 3]. Figure 1-7 shows the procedures for proposing a NM. If project participants intend to propose a NM for consideration and approval by the EB, they should prepare the methodologies forms for NM along with a draft project design document (PDD) and as a minimum, complete sections A to C, including relevant annexes.

A fee of USD 1,000 shall be charged to project participants when submitting a proposed NM for regular project activities (not applicable to methodologies for small scale and afforestation and reforestation project activities). If the proposed NM is approved and the project activity for which it was developed is registered, the registration fee shall be lowered by that amount [EB 37, Annex 3, para.6].

Project participants should select and contract a DOE/AE for submission of a NM. In case of a DOE, project participants should ensure that the DOE is accredited to perform validation of the sectoral scope of the proposed project activity.

Once project participants submit necessary documentations (NM and draft CDM-PDD) to the EB through the DOE/AE, a member of the Meth Panel would conduct a pre-assessment of the quality of the submission. Alternatively, the DOE/AE may voluntarily undertake a pre-assessment of a NM before submitting it. In such case, no pre-assessment by the Meth Panel is needed.

If the result of the pre-assessment is satisfactory (grade 1), the proposed NM is made publicly available on the CDM website to invite public inputs for a period of 15 working days. Comments shall be forwarded to the Meth Panel at the moment of receipt and made available to the public at the end of the 15 working days. If the result is unsatisfactory (grade 2), the documentation is sent back to the project participants.

For submissions rated grade 1, after the NM being made publicly available for public inputs, the secretariat shall be responsible for compiling different inputs and prepare draft recommendations for consideration by the Meth Panel. The secretariat may request the project participants to make available additional technical information necessary to further clarify or assist in analysing the

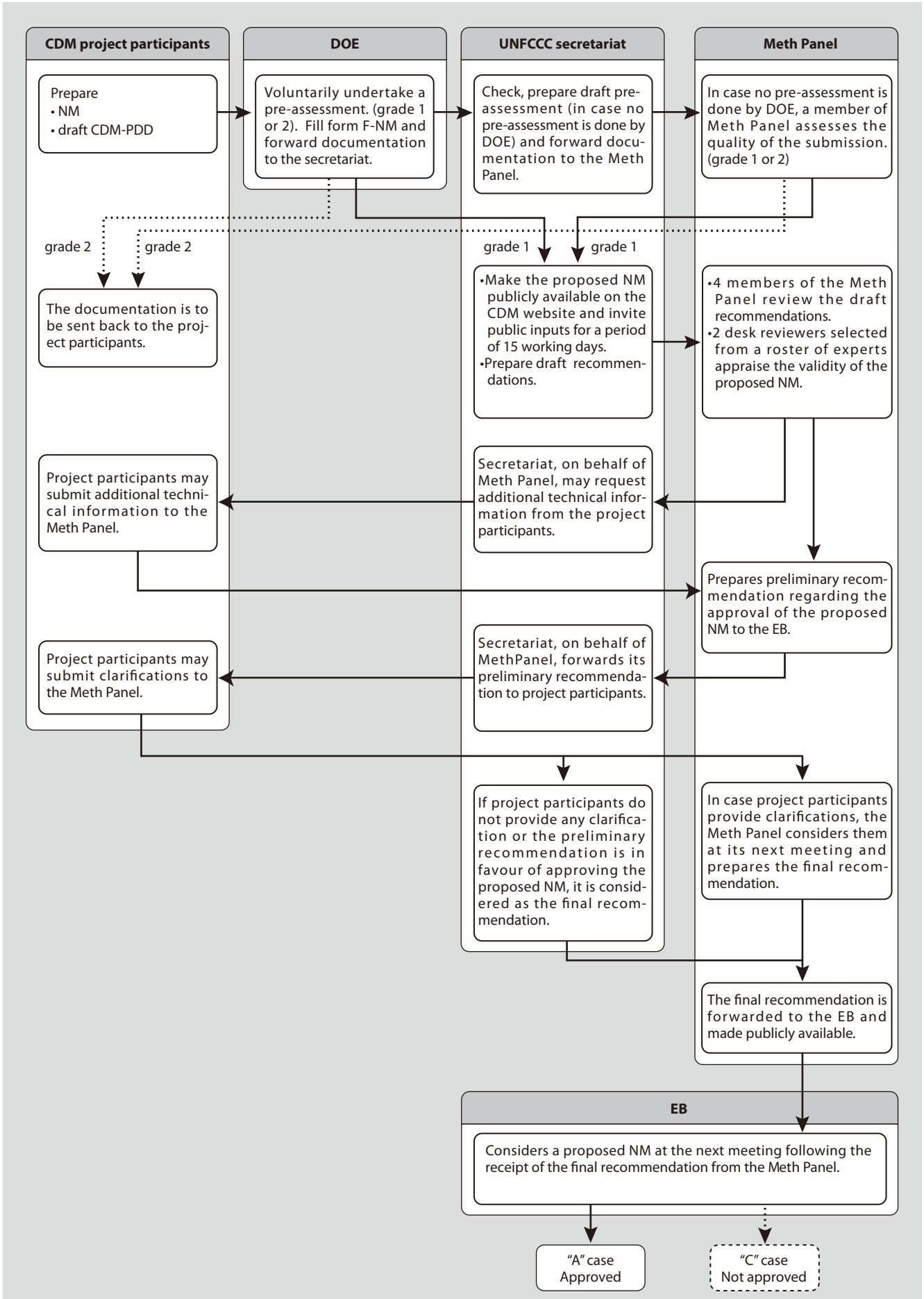


Figure 1-7 Procedures for new methodology submission

proposed NM with a deadline for responding. 4 members of the Meth Panel shall independently review the draft recommendation prepared by the secretariat.

The Chair and the Vice-Chair of the Meth Panel, with the assistance of the secretariat and in consultation with the 4 selected Meth Panel members, shall, no later than 7 working days after the receipt of the proposed NM, select 2 experts from a roster of experts who are to undertake a desk review to appraise the validity of the proposed NM. The 2 reviewers should provide inputs independently.

The Meth Panel, taking into consideration public comments and the recommendations by the desk reviewers, shall prepare a preliminary recommendation regarding the approval of the proposed NM and forward it to project participants through the secretariat. After the receipt of the preliminary recommendation of the Meth Panel by the project participants, the project participants may submit clarifications to the Meth Panel, through the secretariat, on technical issues concerning the proposed NM raised in the preliminary recommendation by the Meth Panel, within 4 weeks. If technical clarifications to a preliminary recommendation by the Meth Panel are not submitted within 3 months by the project participants, the case shall be considered as withdrawn [EB 37, para.24].

If the preliminary recommendation is in favor of approving or not approving the proposed NM, or the project participants do not provide any clarifications, the preliminary recommendation is to be considered as a final recommendation. If project participants provide clarifications, the Meth Panel shall consider them at its next meeting and prepare its final recommendation to the EB. The Meth Panel, in its recommendation to the EB, rates the proposed new methodology as follows:

- To approve the proposed methodology with minor changes ("A" case);
- Not to approve the proposed methodology ("C" case).

The final recommendation is forwarded to the EB and is made publicly available. The EB shall consider the proposed NM at the next meeting following the receipt of the final recommendation by the Meth Panel.

The EB shall expeditiously, if possible at its next meeting but not later than 4 months after the date of receipt of the proposed NM, review the proposed NM in accordance with the CDM modalities and procedures. Once approved by the EB, it shall make the approved methodology publicly available and the DOE may proceed with the validation of the project activity and submit the CDM-PDD for registration [EB 37, Annex 3, para.3].

The EB32 modified its process for considering proposed NMs to improve the efficiency of the methodology approval and its consideration by the panels/working groups. The new procedures provide the panels/working groups a more pro-active role in recommending methodologies for approval. The procedures provide for increased dialogue with the project participants to facilitate the methodological approval process. Furthermore, the EB shall only consider the cases put forward by the panels/working groups for approval or non-approval [EB 32, para.33].

For further details of the submission and approval process, refer "Procedures for the submission and consideration of a proposed new methodology (Version 13)" [EB 37, Annex 3] available on the website: http://cdm.unfccc.int/Reference/Procedures/index.html.

Prior consideration of the CDM

Guidance on the demonstration and assessment of prior consideration of the CDM (Version 02) [EB 48, Annex 61]

(a) New project activities

- The EB decided that for project activities with a starting date on or after 2 August 2008, the PP must inform a Host Party DNA and the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status.
  - Such notification must be made within 6 months of the project activity start date.
  - Such notification is not necessary if a PDD has been published for global stakeholder consultation or a NM proposed to the EB before the project activity start date.
- When validating a project activity with a start date on or after 2 August 2008 DOEs shall ensure by means of confirmation from the DNA or UNFCCC secretariat that such a notification has been provided. If such a notification has not been provided the DOE shall determine that the CDM was not seriously considered in the decision to implement the project activity.
- Additionally for project activities for which a PDD has not been published for global stakeholder consultation or a NM proposed or request for revision of an AM is requested, every subsequent 2 years after the initial notification the PPs shall inform the DNA and/or the UNFCCC secretariat of the progress of the project activity.

(b) Existing project activities

- Proposed project activities with a start date before 2 August 2008, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, are required to demonstrate that the CDM was seriously considered in the decision to implement the project activity. Such demonstration requires the following elements to be satisfied:
  - The PP must indicate awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project. Evidence to support this would include, inter alia, minutes and/or notes related to the consideration of the decision by the EB of Directors, or equivalent, of the PP, to undertake the project as a CDM project activity.
  - The PP must indicate, by means of reliable evidence, that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation. Evidence to support this should include, inter alia, contracts with consultants for CDM/PDD/methodology services, Emission Reduction Purchase Agreements or other documentation related to the sale of the potential CERs, evidence of agreements or negotiations with a DOE for validation services, submission of a NM to the EB, publication in newspaper, interviews with DNA, earlier correspondence on the project with the DNA or the UNFCCC secretariat;
- If evidence to support the serious prior consideration of the CDM as indicated above is not available the DOE shall determine that the CDM was not considered in the decision to implement the project activity.

The EB agreed to adopt the revised "Guidelines on demonstration and assessment of the prior consideration of the CDM" (version 03), in order to clarify the EB's expectations with regard to the validation of real and continuing actions to secure CDM status [EB 49, Annex 22].

(3) Draft of a Project Design Document (PDD)

Project participants need to draft a project design document (PDD), which describes the project activity as well as the application of the baseline and monitoring methodology to the project activity.

Project participants should check with the CDM website for the most current version of the project design document (CDM-PDD). As of October 2009, CDM-PDD Version 03.2 is the most recent version : http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/index.html. Chapter 2 explains in detail how to fill out a PDD.

1.5.3 Approval by the Host Party and Investing Party(ies)

The project activities for emission reduction or removal enhancement are required to obtain approvals of all the Parties involved before they can be officially registered as CDM project activities. The Parties involved are normally both the Host Party and the Investing Party(ies).

The Party's approval shall be the written approval of voluntary participation which was issued from the designated national authorities (DNAs), including confirmation by the Host Party that the project activity assists it in achieving sustainable development [CDM M&P, para.40 (a)].

The national procedures and process for the Party's approval for CDM projects are decided by each Party. Those procedures could contain the criteria of sustainable development for the Party.

While project participants have to receive written approval by the Parties involved, the timing to receive the approval can be quite flexible: project participants can attach the approval to their PDD on the occasion of the stage of project development, PDD development, or validation. However, the approval shall be attached before the request of the registration of the project activities as CDM.

Since some Parties require validation before requesting for approval, project participants should closely check the approval procedures of the Parties involved.

It is possible to register a CDM project activity in which there is no Annex I Party involved. Such project activities are called "unilateral CDM", which means that approval by Annex I Party would not be necessary to register a CDM project activity. Annex I Parties can acquire CERs from a unilateral project activity after submitting a letter of approval regarding the project activity to the EB [EB 18, para.57]. Representatives of holding accounts of entities authorized by non-Annex I Parties to participate in the project activity shall make a request to forward CERs to accounts in national registries in order for an Annex I Party to acquire CERs [EB 20, para.71].

1.5.4 Validation and registration of the CDM project activity

The validation and registration process is shown in Figure 1-8.

(1) Validation

Validation is the process of independent evaluation of a proposed project activity by a DOE against the requirements of the CDM on the basis of the PDD. Project participants should select and contract a DOE to undertake validation.

First, project participants submit a PDD to a DOE, who reviews the PDD and opens it for public inputs.

During this review process, DOEs usually draw attention of the project participants to the points in the PDD that need to be clarified and/or improved through Corrective Action Requests (CARs) and Clarifications. In this way, project participants are given the opportunity to improve the PDD.

After the deadline for receipt of public inputs, the DOE determines whether the proposed project activity should be validated. Once the decision is made, the DOE informs project participants its determination on the validation of the project activity.

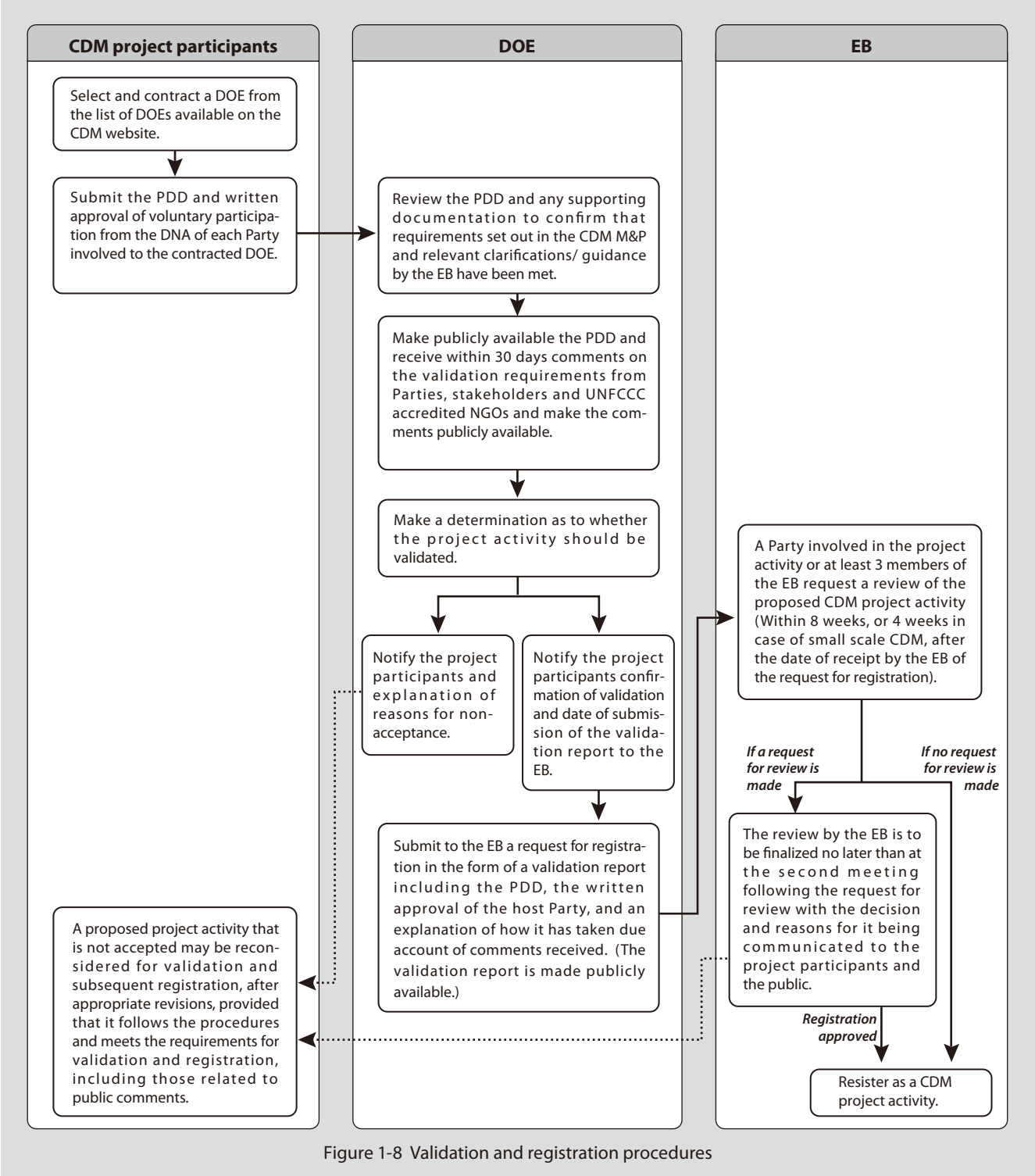


Figure 1-8 Validation and registration procedures

Points of validation

The DOE selected by project participants to validate a project activity, being under a contractual arrangement with them, shall review the project design document and any supporting documentation to confirm that the following requirements have been met [CDM M&P, para.37]:

(a) The participation requirements are satisfied [CDM M&P, para.28-30];
   - Participation in a CDM project activity is voluntary;
   - Parties participating in the CDM shall designate a national authority for the CDM;
   - A Party not included in Annex I may participate in a CDM project activity if it is a Party to the Kyoto Protocol.

(b) Comments by local stakeholders have been invited, a summary of the comments received has been provided, and a report to the designated operational entity on how due account was taken of any comments has been received;

(c) Project participants have submitted to the designated operational entity documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts and, if those impacts are considered significant by the project participants or the host Party, have undertaken an environmental impact assessment in accordance with procedures as required by the host Party;

(d) The project activity is expected to result in a reduction in anthropogenic emissions by sources of greenhouse gases that are additional to any that would occur in the absence of the proposed project activity [CDM M&P, para.43-52];

(e) The baseline and monitoring methodologies comply with requirements pertaining to:
   - Methodologies previously approved by the EB; or
   - Modalities and procedures for establishing a new methodology, as set out in paragraph 38 below;

(f) Provisions for monitoring, verification and reporting are in accordance with Decision 17/CP.7, the present annex and relevant decisions of the CMP;

(g) The project activity conforms to all other requirements for CDM project activities in Decision 17/CP.7, the present annex and relevant decisions by the CMP and the EB.

The EB approved the CDM validation and verification manual (hereinafter referred as the VVM) for DOEs for their validation and verification work. The document provides requirements to DOEs for their validation and verification work and promotes quality and consistency in the preparation of their validations and verification reports [EB 44, Annex 3].

(2) Registration

Registration is the formal acceptance by the EB of a validated project as a CDM project activity.

Registration is the prerequisite for the verification, certification and issuance of CERs related to that project activity.

As shown in Figure 1-8, the registration by the EB shall be deemed final 8 weeks, or 4 weeks

in case of SSC CDM project activities, after the date of receipt by the EB of the request for registration, unless a Party involved in the project activity or at least 3 members of the EB request a review of the proposed CDM project activity.

The review by the EB shall be made in accordance with the following provisions:

- It shall be related to issues associated with the validation requirements;
- It shall be finalized no later than at the second meeting following the request for review, with the decision and the reasons for it being communicated to the project participants and the public.

The Registration and Issuance Team (RIT) assists the EB's appraisal process of the project activities requested for registrations. The EB members refer to the RIT's appraisals and made decisions for necessity of reviews.

For detailed procedural instructions for the registration and review of a proposed CDM project activity, refer to the following documents on the "Procedures" page of the CDM website: http://cdm. unfccc.int/Reference/Procedures:

- Procedures for registration of a proposed CDM project activity
- Procedures for review as referred to in paragraph 41 of the CDM M&P

The EB agreed to adopt the "Guidelines for the consideration of request for review and review cases" (version 01). These guidelines compiles the major criteria for decision-making during the review process as requested by paragraph 13 of Decision 2/CMP.4 [EB 49, Annex 21].

(3) Changes from the project activity as described in the registered PDD

If there are permanent changes which would impact at least one of the following aspects, the DOE shall notify and request approval of changes from the project activity as described in the registered PDD.

Changes which may impact the additionality of the project activity [EB 48, Annex 67, para.4-11]

- Within this category are the changes which may impact the validity of investment analysis or barrier analysis established at the time of project registration, thus affecting the additionality of the project activity.
- Such changes may include: (a) Changes in the effective output capacity due to increased installed capacity or increased number of units, or installation of units with lower capacity or units with a technology which is less advanced than that described in the PDD; (b) Addition of component or extension of technology; (c) Removal or addition of one (or more) site of a project activity registered with multiple-sites; (d) Different values of those actual operational parameters relevant to determination of emission reduction which are within the control of project participant and which result in the IRR passing the benchmark as described in the registered PDD.
- The additionality of the project activity established at the time of registration reflect specific

conditions applicable to the project activity (investment/costs variables, barriers, relevant regulations) at the time when the decision to proceed with CDM took place. Therefore when project has not been implemented as described in the PDD, these conditions may change and the additionality of the project activity should be re-assessed.

- The DOE shall assess how the affected data/information in the registered PDD have been derived, and validate if the assumptions underlying this original data/information is correct.
- The re-assessment of additionality shall be based on all original input data, thereby – in case of investment analysis – in principle only modifying the changed key parameters in the original spreadsheet calculations.
- In the case only barriers have been claimed to demonstrate additionality, it shall be explained why the barriers are still valid under new circumstances.

Changes in the scale of CDM project activity [EB 48, Annex 67, para.10-11]

- Within this category are the changes which cause a project activity no longer meeting the criteria for SSC CDM project activities as established by the CMP, therefore, simplified modalities applicable to SSC project activities, including the applicability and the application of relevant SSC baseline methodologies, may no longer be applicable.
- The assessment of changes in this category shall refer to the types of SSC project activities as per the CMP decision (Type I, Type II, Type III).

Changes which impact the applicability/application of baseline methodology [EB 48, Annex 67, para.12-13]

- Within this category are the changes in the implementation of project activity which result in: (a) The original methodology would no longer be applicable; or (b) Another methodology would have been applicable; or (c) Another baseline scenario would be more appropriate.
- A baseline shall be established on a project-specific basis, therefore, when a project activity has not been implemented as described in the PDD, the applicability and application of baseline methodology with which the project has been registered shall be reassessed.

If there are permanent changes from the registered project activity under situations (a) the project has never been implemented in accordance with description in the registered PDD, or (b) permanent changes occur after the project activity has been implemented in accordance with the description in the PDD and issuance of CERs has taken place, Procedures for notifying and requesting approval of changes from the project activity as described in the registered PDD(ver.1)[EB 48, Annex 66], shall be applied by the DOE.

1.5.5 Monitoring of the CDM project

The procedures from monitoring through issuance are shown in Figure 1-9.

(1) Implement monitoring activities

As shown in Figure 1-9, the first step that project participants must take to ensure issuance of CERs as planned is to properly implement the monitoring activities according to the monitoring plan stated in the registered PDD, since it is a condition for verification, certification and the issuance of CERs [CDM M&P, para.56-58].

Project participants then prepare a monitoring report for the period they would like to have verified and CERs issued. The length of such period can vary according to the interests of project participants.

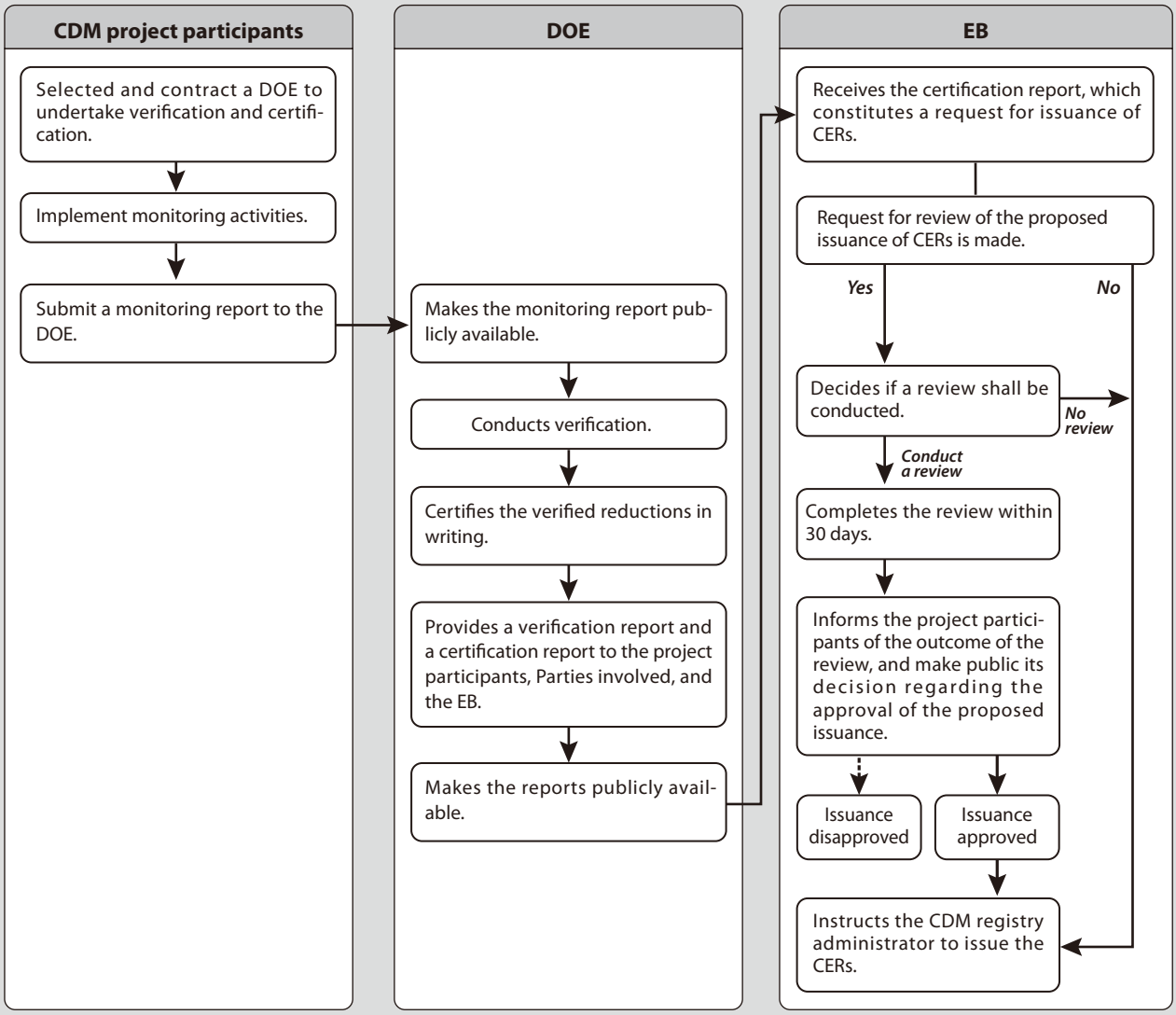


Figure 1-9 Procedures from monitoring through issuance

For example, the lengths of verified periods of CERs that have already been issued range from one month to seven years. A monitoring report covers all the items contained in the monitoring plan, as shown below:

- The collection and archiving of all relevant data necessary for estimating or measuring GHG emission occurring within the project boundary during the crediting period;
- The collection and archiving of all relevant data necessary for determining the baseline of GHG emission within the project boundary during the crediting period;
- The identification of all potential sources of, and the collection and archiving of data on, increased GHG emission outside the project boundary that are significant and reasonably attributable to the project activity during the crediting period;
- The collection and archiving of information relevant to the provisions in paragraph 37 (c) (of the CDM M&P, regarding the analysis of the environmental impacts of the project activity);
- Quality assurance and control procedures for the monitoring process;
- Procedures for the periodic calculation of the GHG emission reductions by the proposed CDM project activity, and for leakage effects; and
- Documentation of all steps involved in the calculations of emission reductions and leakage. [CDM M&P, para.53].

(2) Provide monitoring report to DOE for verification and certification

A DOE verifies and certifies the emission reductions achieved during the period covered by the monitoring plan. Project participants must select and contract a DOE different from the one that undertook validation of the corresponding project. In case of SSC CDM project activities, the same DOE may undertake validation, and verification and certification.

The monitoring report forms the basic document for the verification process. It should ideally address the following and must be in line with the monitoring plan of the registered PDD:

- Project performance data
- Project and baseline emission factors
- Documentation of GHG emission reduction calculations
- Leakage

The UNFCCC guidelines do not specify any specific format in which the monitoring report is to be prepared. It is left to the project participant to formulate their own format. Based on best practices, the following are desirable to ensure a complete and concise monitoring report:

- A cover page
- A contents page
- An introduction
- A list of the references
- A brief description of the CDM project activity
- Monitoring parameters

- The step by step calculation
- A check against the baseline requirements
- Quality control and quality assurance (QA/QC) procedures
- Calibration / maintenance of measurement and analytical instruments
- Environmental Impacts
- An appendix of spreadsheet including parameters, calculations, variations of reduction and its reasons/ justifications

(3) Pitfalls of monitoring reports

There are difficulties not easily recognized in preparing a monitoring report and having it verified. Several pitfalls are explained based on experience with verification of monitoring reports. Good practices are also presented as appropriate.

Pitfall 1: What is indicated in the registered PDD is ideal and hence not reflected in practice.

Good Practice: It must be ensured that what is committed in the monitoring plan of the registered PDD is actually adhered-to and demonstrated through appropriate evidences. It is advisable to do the following:

- Ensure that the commitments are practicable for implementation by the project participant and initiate appropriate steps to facilitate implementation of the same. The DOE at the time of validation should also ensure to verify that systems are in place for such implementation;
- An initial verification of the CDM project activity also ensures to dissolve all such discrepancies;
- The process also requires that periodic internal audits be done by the project participant and corrective actions effected.

Pitfall 2: Systems are not in place. Based on experience, the most common lack of system relates to the calibration procedures and evidence thereof.

Good Practice: It must be ensured that all relevant procedures – for calibration, maintenance, internal audits, emergency preparedness, corrective actions and performance reviews must be in place either at the time of validation stage or during the initial verification. The procedures must clearly address roles, responsibilities and authorities of all personnel involved.

Pitfall 3: Vast difference in the estimates of the PDD and actual monitoring report, leading to a higher claim on the CER's than the estimates in the PDD. It is acceptable only when the CDM project activity involves an *ex-post* monitoring of the baseline emissions.

Good Practice: A critical analysis of the gap between *ex-ante* estimated CERs detailed in the PDD, and the actual CERs claimed in the monitoring report, should be provided in the monitoring report by the project participants. Such analysis should also be provided in the verification report by the DOE. In case higher CERs are being claimed due to increased production levels beyond

rated capacities, then this shall also be justified together with technical specifications that support increased loads beyond the rated capacities.

Pitfall 4: *Ex-post* monitoring not evident. It is sometimes seen that the monitoring report adopts a baseline value that has been determined *ex-ante*.

Good Practice: It is advisable that the PDD, the validation report and the applied approved methodology are reviewed and understood before embarking on the preparation of the monitoring report. Internal audit and/or an initial verification of the project activity by the DOE are also recommended.

Pitfall 5: Detailed excel sheet calculations not available.

Good Practice: The monitoring report should ideally be accompanied by a spreadsheet that clearly demonstrates the references of numbers, that the calculation is correct.

Pitfall 6: Current environmental permits and legal obligations not fulfilled.

Good Practice: Established management procedures must ensure requirements towards complying with all identified and applicable obligations, together with the responsibilities for adherence and maintenance of relevant records/evidences towards the same.

1.5.6 Verification, certification and issuance of CERs

(1) Verification and certification

The DOE, upon receipt of a monitoring report by the project participants, shall review and determine the monitored GHG emission reductions that have occurred as a result of a registered CDM project activity during the period covered by the monitoring report. During this process of verification, the DOE shall:

(a) Determine whether the project documentation provided is in accordance with the requirements of the registered PDD and relevant provisions;
(b) Conduct on-site inspections, as appropriate;
(c) Use additional data from other sources, if appropriate;
(d) Review monitoring results and verify that the monitoring methodologies for the estimation of GHG emission reductions have been applied correctly and their documentation is complete and transparent;
(e) Recommend to the project participants appropriate changes to the monitoring methodology for any future crediting period, if necessary;
(f) Determine the GHG emission reductions that would not have occurred in the absence of the CDM project activity using calculation procedures consistent with those contained in the registered PDD and in the monitoring plan;

(g) Identify and inform the project participants of any concerns relating to the conformity of the actual project activity and its operation with the registered PDD. Project participants shall address the concerns and supply relevant additional information; and

(h) Provide a verification report to the project participants, the Parties involved and the EB. The report shall be made publicly available.

[CDM M&P, para.62].

Project participants would need to provide clarifications and additional information as requested by the DOE during the verification process. In particular, project participants should be ready to answer questions by the DOE during on-site inspections, which may comprise a review of performance records, interviews with project participants and local stakeholders, collection of measurements, observation of established practices and testing of the accuracy of monitoring equipment.

Following verification, the DOE will certify in writing that the project activity achieved the GHG emission reductions as verified. It shall inform the project participants, Parties involved and the EB of its certification decision in writing immediately upon completion of the certification process and make the certification report publicly available [CDM M&P, para.63].

(2) Issuance of CERs

The certification report submitted to the EB by the DOE constitutes a request for issuance of CERs equal to the verified amount of GHG emissions reductions [CDM M&P, para.64]. The issuance shall be considered final 15 days after the date of receipt of the request for issuance, unless a Party involved in the project activity or at least 3 members of the EB request a review (see subsequent paragraph) of the proposed issuance of CERs [CDM M&P, para.65]. When the request for issuance becomes final or the EB decides to approve the issuance as the result of a review, the EB instructs the CDM registry administrator to issue the specified quantity of CERs into the pending account of the EB in the CDM registry [CDM M&P, para.66].

(3) Review of the issuance of CERs [CDM M&P, para.65] [Decision 3/CMP.1, Annex and EB 29, Annex 16]

The issuance of certified emission reductions (CERs) by the EB shall be considered final 15 days after the date of receipt by the EB of the request for issuance, unless a Party involved in the project activity or at least 3 members of the EB request a review of the proposed issuance of CERs. A request for review shall provide reasons for the request for review and any supporting documentation. Such a review shall be limited to issues of fraud, malfeasance or incompetence of the DOE and be conducted as follows:

(a) Upon receipt of a request for such a review, the EB, at its next meeting, shall decide on its course of action. If it decides that the request has merit, it shall perform a review and decide whether the proposed issuance of CERs should be approved;

(b) The EB shall complete its review within 30 days following its decision to perform the review; and

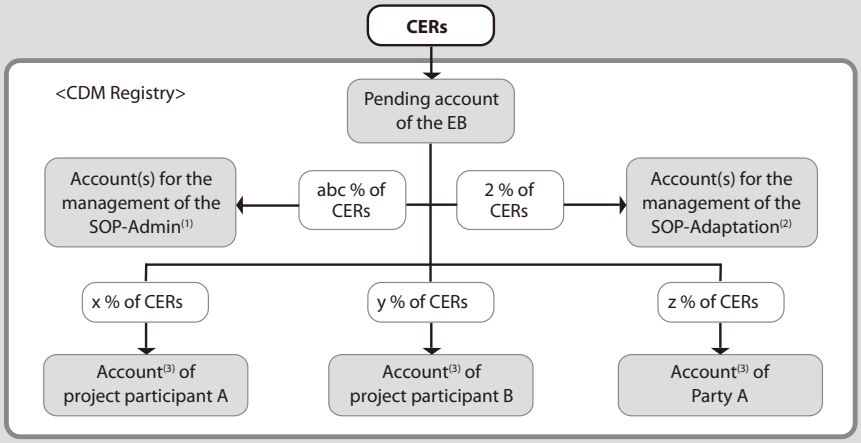
(c) The EB shall inform the project participants of the outcome of the review, and make public its decision regarding the approval of the proposed issuance of CERs and the reasons for it.

If the EB decides not to approve a proposed issuance of CERs and if a DOE is found to be in the situation of fraud, malfeasance or incompetence, the DOE shall reimburse the costs incurred as a result of the review. This provision is subject to review as experience accrues.

1.5.7 Distribution of CERs

Upon issuance of CERs, the CDM registry administrator shall promptly forward the CERs to the registry accounts of project participants involved, in accordance with their request, having deducted the quantity of CERs corresponding to the share of proceeds (SOP) to cover administrative expenses for the EB (SOP-Admin) and to assist in meeting costs of adaptation for developing countries vulnerable to adverse impacts of climate change (SOP-Adaptation), respectively, to the appropriate accounts in the CDM registry for the management of the share of proceeds. From the pending account, the issued CERs are promptly forwarded to the following accounts within the CDM registry. Figure 1-10 shows how CERs are issued and distributed among different accounts within the CDM registry.

Accounts	Amount of CERs to be forwarded
Accounts for the management of the share of proceeds	The share of proceeds to cover administrative expenses for the EB (SOP-Admin): in accordance with the amount of CERs, and to assist in meeting costs of adaptation (SOP-Adaptation): 2 % of issued CERs
Accounts of Parties and project participants involved	In accordance with the request by project participants



(1) SOP-Admin (SOP-Administration) means the share of proceeds to cover administrative expenses for the EB. The amount is determined in accordance to the amount of CERs (refer to section 1.5 for details.).
(2) SOP-Adaptation means the share of proceeds to assist in meeting costs of adaptation.
(3) It may be a permanent holding account or temporary holding acount. Temporary accounts for Annex I Parties and project participants from such Parties are created for the purposes of receiving CERs forwarded to them from the pending account and for transferring such CERs to accounts in national registries, until national registries for such Parties and entities would be operational [EB12, para. 35(b)].

Figure 1-10 Issuance of CERs into the CDM registry

1.5.8 Management of Kyoto units

The holdings, transfers and acquisitions of Kyoto units[7] will be tracked and recorded through a computerized system of registries that consist of the following:

- Each Party included in Annex I shall establish and maintain a national registry to ensure the accurate accounting of the issuance, holding, transfer, acquisition, cancellation and retirement of Kyoto units. Each Party shall designate an organization as its registry administrator to maintain the national registry of that Party. Any two or more Parties may voluntarily maintain their respective national registries in a consolidated system, provided that each national registry remains distinct. A national registry shall be in the form of a standardized electronic database which contains, inter alia, common data elements relevant to the issuance, holding, transfer, acquisition, cancellation and retirement of Kyoto units. The structure and data formats of national registries shall conform to technical standards to be adopted by the CMP for the purpose of ensuring the accurate, transparent and efficient exchange of data between national registries, the CDM registry and the international transaction log (ITL) [CMP/2005/8/Add.2, Decision 13/CMP.1, Annex, p28].
- The EB shall establish and maintain a CDM registry to ensure the accurate accounting of the issuance, holding, transfer and acquisition of CERs by Parties not included in Annex I. The EB shall identify a registry administrator to maintain the registry under its authority. The CDM registry shall be in the form of a standardized electronic database which contains, inter alia, common data elements relevant to the issuance, holding, transfer and acquisition of CERs.

  The structure and data formats of the CDM registry shall conform to technical standards to be adopted by the CMP for the purpose of ensuring the accurate, transparent and efficient exchange of data between national registries, the CDM registry and the international transaction log. The CDM registry shall make non-confidential information publicly available and provide a publicly accessible user interface through the Internet that allows interested persons to query and view it [CMP/2005/8/Add.1, Decision 3/CMP.1, Annex, Appendix D, p27-28].
- The secretariat shall establish and maintain an ITL to verify the validity of transactions, including issuance, transfer and acquisition between registries, cancellation and retirement of ERUs, CERs, AAUs and RMUs and the carry-over of ERUs, CERs and AAUs [CMP/2005/8/Add.2, Decision 13/CMP.1, Annex, para.38, p31].

For detailed procedural instructions for issuance of CERs, refer to the following documents on the "Procedures" page of the CDM website: http://cdm.unfccc.int/Reference/Procedures:

7 "Kyoto units" is defined here to include AAUs, RMUs, ERUs, CERs, tCERs and lCERs. Note that it is not a formal UNFCCC term and is used here for the purpose of convenience only.

1.6 Costs related to CDM project cycle

There are two types of costs associated with preparing and implementing a CDM project activity. The first type is the costs for developing the project activity that are common to any commercial project development, e.g. feasibility assessment, initial costs for construction and equipments, operation and maintenance costs, cost of capital, etc. Since these costs are not particular to CDM project activities, this manual does not discuss them in detail. The second type of costs is the ones due to specific requirements of the CDM scheme, which is sometimes referred to as "transaction costs", which are incurred at different stages of CDM project cycle. The following fees are to be paid to the UNFCCC secretariat, which have been determined by the UNFCCC process, i.e. COP, CMP or the EB.
Therefore, they can be clearly calculated according to the UNFCCC prescriptions:

- NM submission (USD 1,000: Only applicable if project participants submit a NM)
- Registration fee
- SOP-Admin
- SOP-Adaptation

Regarding the registration fee, EB37 clarified the following [EB 37, Annex 20]:

(a) The registration fee shall be the share of proceeds applied to the expected average annual emission reduction for the project activity over its crediting period.
(b) SOP-Admin is USD 0.10/CER issued for the first 15,000 t-CO_2 and USD 0.20/CER issued for any amount in excess of 15,000 t-CO_2, for which issuance is requested in a given calendar year.
(c) The maximum registration fee payable based on this calculation shall be USD 350,000.
(d) No registration fee has to be paid for CDM project activities with expected average annual emission reduction over the crediting period below 15,000 tCO_2 equivalent.
(e) No registration fee and share of proceeds at issuance have to be paid for CDM project activities hosted in least developed countries. The exemption from these payments is determined at the date of registration of the project activity. In the event a country which hosts a project activity is categorized as a least developed countries after the date of registration, no share of proceeds is to be paid at any subsequent issuance.
(f) The registration fee shall be deducted from the share of proceeds for administrative expenses. In effect, the registration fee is an advance payment of the SOP-Admin for the emission reductions achieved during the first year. If an activity is not registered, any registration fee above USD 30,000 shall be reimbursed.

On the other hand, the following costs that are borne by project participants vary depending on the specific circumstances of the project at hand and the service providers. It is also possible that project

participants absorb the costs by carrying out the task in-house, e.g. development of a PDD by its own staff. Costs for the followings are typically paid to others, e.g. DOEs, consultants, and lawyers:

- Project finding and assessment
- New methodology development and submission
- PDD development
- Validation
- Host Party approval
- Contract negotiation and legal costs
- Monitoring
- Verification/Certification

1.7 Resent status of CDM

Figure 1-11 illustrates the trend of registered projects.
1,882 projects have been registered on November, 2009. According to the number of registered projects that are categorized by host country, China has the greatest proportion (653: 34.7%), followed by India (466: 24.8%), and Brazil (165: 8.8%).
According to the classification by project types, hydro power has the largest share (505: 26.8%), followed by wind power (266: 14.1%), biogas (260: 13.6%), and biomass (249: 13.2%). Therefore, renewable projects absorb a large percentage of registered projects.

Figure 1-12 shows the distribution of estimated emission reduction.
The estimated emission reduction by 2012 is 1.75 billion t-CO_2. According to total amount of expected emission reduction categorized by host countries, half are from China (937Mt-CO_2: 53.6%). This is followed by India (247Mt-CO_2: 14.1%), and Brazil (137Mt-CO_2: 7.8%).
According to total amount of expected emission reduction that are categorized by project types, HFC accounts for the largest share (485Mt-CO_2: 27.7%), followed by N_2O (248Mt-CO_2: 14.2%).

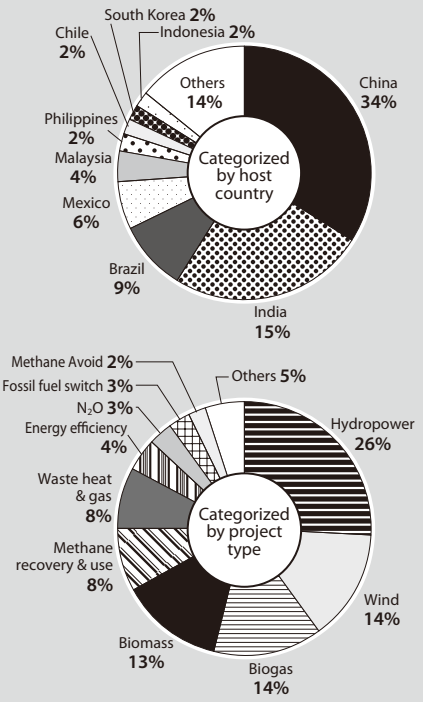


Figure 1-11 Status of registered projects

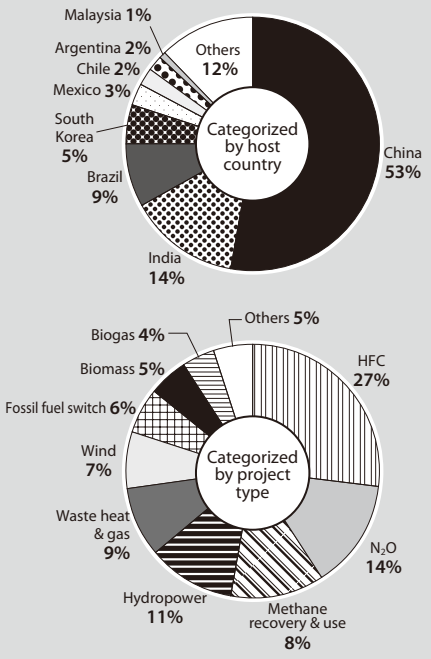


Figure 1-12 Status of estimated emission reductions by 2012

Figure 1-13 illustrates the trend of rejected projects.
There are 126 rejected projects as of November, 2009.
In the classification by host country, India has the greatest proportion (41: 32.5%), followed by China (29: 23.0%), and Brazil (21: 16.7%).
By project type, biomass has the largest share (27, 21.4%), followed by waste heat & waste gas (25, 19.8%) and hydropower (23, 18.3%). The major reasons for rejection are as follows;

- Further substantiation of the additionality of the project is required.
- Further clarification is required on how the DOE has validated the investment analysis or barrier analysis.
- The DOE is requested to provide details regarding how it has been confirmed that the project complies with the requirements of the approved methodology.

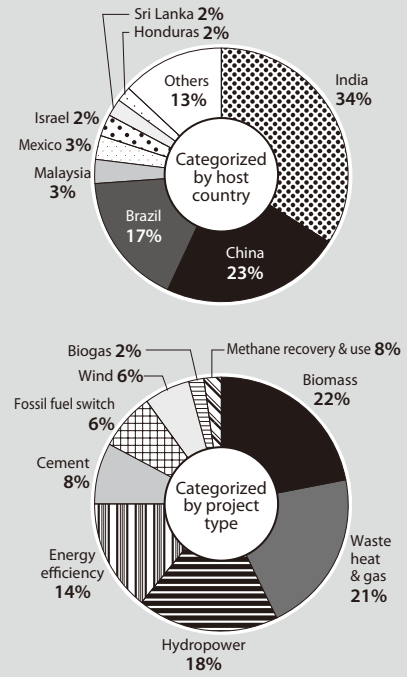


Figure 1-13 Status of rejected projects

Figure 1-14 illustrates the trend of projects requested for review.
589 projects were submitted to "request for review" from EB37 to EB50. Classified by host country, China has the largest share (360: 61.1%), followed by India (100: 17.0%). According to the classification by project types, hydropower provides the greatest share (225: 38.2%), followed by Waste heat & waste gas has the second largest share (93: 15.8%), and wind power (83: 14.1%) comes next. The major reasons for "request for review" are quite similar to the reasons for reject;

- Further substantiation of the additionality of the project is required.
- Further clarification is required on how the DOE has validated the investment analysis or barrier analysis.
- The DOE is requested to provide details regarding how it has been confirmed that the project complies with the requirements of the approved methodology.

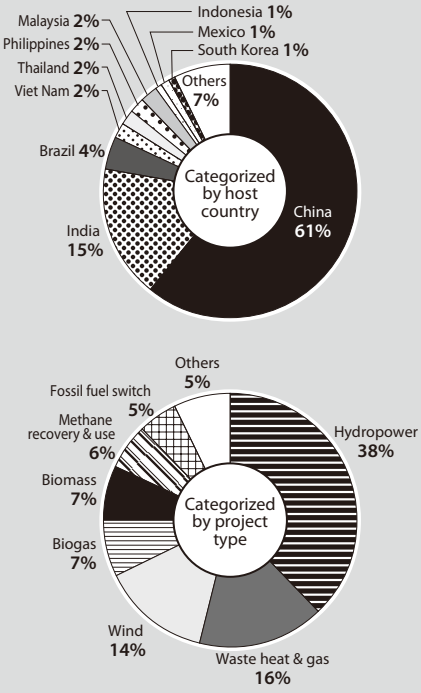


Figure 1-14 Status of projects requested for review

2 Project Design Document

2.1 Overview of the PDD

Project participants willing to develop a CDM project shall submit information using the Project Design Document (hereinafter, PDD) and submit it for validation and registration.

Project Design Document presents information on the essential technical and organizational aspects of the project activity and is a key input into the validation, registration, and verification of the project as required under the Kyoto Protocol to the UNFCCC.

PDD contains information on the project activity, the approved baseline methodology applied to the project activity, and the approved monitoring methodology applied to the project. It shall include the discussions and justifications about the choice of baseline methodology and the applied monitoring concept, including monitoring data and calculation methods.

Project participants can find instructions about how to complete the PDD in Part II section B of the "Guidelines for completing CDM-PDD and CDM-NM" (Version 07) [EB 41, Annex 12]: "Specific guidelines for completing the Project Design Document (CDM-PDD)". This manual references the information contained in the Guidelines, moreover tries to give supplementary information that may assist project participants in completing the PDD.

2.2 Contents of the PDD

The contents of a PDD for large scale CDM project and small scale CDM project are quite similar. Project participants shall describe the following contents in the PDD.

Title	Large scale CDM	Small scale CDM
SECTION A. General description of [small-scale] project activity		
Title of the [small-scale] project activity	A.1.	A.1.
Description of the [small-scale] project activity	A.2.	A.2.
Project participants	A.3.	A.3.
Technical description of the [small-scale] project activity	A.4.	A.4.
Location of the [small-scale] project activity	A.4.1.	A.4.1.
Host Party(ies)	A.4.1.1.	A.4.1.1.
Region/State/Province etc.	A.4.1.2.	A.4.1.2.
City/Town/Community etc	A.4.1.3.	A.4.1.3.
Details of physical location, including information allowing the unique identification of this project activity (maximum one page)	A.4.1.4.	A.4.1.4.
Category(ies) of project activity	A.4.2.	-
Type and category(ies) and technology/measure of the small-scale project activity	-	A.4.2.
Technology to be employed by the project activity	A.4.3.	-
Estimated amount of emission reductions over the chosen crediting period	A.4.4.	A.4.3.
Public funding of the [small-scale] project activity	A.4.5.	A.4.4.
Confirmation that the small-scale project activity is not a debundled component of a large scale project activity	-	A.4.5.
SECTION B. Application of a baseline and monitoring methodology		
Title and reference of the approved baseline and monitoring methodology applied to the [small-scale] project activity	B.1.	B.1.
Justification of the choice of the methodology and why it is applicable to the project activity	B.2.	-
Justification of the choice of the project category	-	B.2.
Description of the project boundary	-	B.3.
Description of the sources and gases included in the project boundary	B.3.	-
Description of how the baseline scenario is identified and description of the identified baseline scenario	B.4.	-
Description of baseline and its development	-	B.4.
Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered small-scale CDM project activity	-	B.5.

Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (assessment and demonstration of additionality)	B.5.	-
Emission reductions	B.6.	B.6.
Explanation of methodological choices	B.6.1.	B.6.1.
Data and parameters that are available at validation	B.6.2.	B.6.2.
Ex-ante calculation of emission reductions	B.6.3.	B.6.3.
Summary of the ex-ante estimation of emission reductions	B.6.4.	B.6.4.
Application of a monitoring methodology and description of the monitoring plan	B.7.	B.7.
Data and parameters monitored	B.7.1.	B.7.1.
Description of the monitoring plan	B.7.2.	B.7.2.
Date of completion of the application of the baseline and monitoring methodology and the name of the responsible person(s)/entity(ies)	B.8.	B.8.
SECTION C. Duration of the project activity/crediting period		
Duration of the project activity	C.1.	C.1.
Starting date of the project activity	C.1.1.	C.1.1.
Expected operational lifetime of the project activity	C.1.2.	C.1.2.
Choice of the crediting period and related information	C.2.	C.2.
Renewable crediting period	C.2.1.	C.2.1.
Starting date of the first crediting period	C.2.2.1.	C.2.2.1.
Length of the first crediting period	C.2.1.2.	C.2.1.2.
Fixed crediting period	C.2.2.	C.2.2.
Starting date	C.2.2.1.	C.2.2.1.
Length	C.2.2.2.	C.2.2.2.
SECTION D. Environmental impacts		
Documentation on the analysis of the environmental impacts, including trans boundary impacts	D.1.	-
If required by the host Party, documentation on the analysis of the environmental impacts of the project activity	-	D.1.
If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party	D.2.	D.2.
SECTION E. Stakeholders' comments		
Brief description how comments by local stakeholders have been invited and compiled	E.1.	E.1.
Summary of the comments received	E.2.	E.2.
Report on how due account was taken of any comments received	E.3.	E.3.
CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY	Annex 1	Annex 1
INFORMATION REGARDING PUBLIC FUNDING	Annex 2	Annex 2
BASELINE INFORMATION	Annex 3	Annex 3
MONITORING INFORMATION	Annex 4	Annex 4

When completing the CDM-PDD, project participants should be aware of the following guidelines:

- The CDM-PDD shall be completed and submitted in English language to the EB.
- The CDM-PDD template shall not be altered, that is, shall be completed using the same font without modifying its format, font, headings or logo.
- Tables and their columns shall not be modified or deleted. Rows may be added, as needed.
- The CDM-PDD shall include in section A.1 the version number and the date of the document.
- If sections of the CDM-PDD are not applicable, it shall be explicitly stated that the section is left blank on purpose.
- The presentation of values in the CDM-PDD, including those used for the calculation of emission reductions, should be in international standard format e.g. 1,000 representing one thousand and 1.0 representing one. The units used for weights/currency (Lakh/crore etc) should be accompanied by their equivalent S.I. units/norms (thousand/million) as part of the requirement to ensure transparency and clarity.
- Bearing in mind paragraph 6 of CDM M&P, project participants shall submit documentation that contains confidential /proprietary information in two versions:
  - One marked up version where all confidential/proprietary parts shall be made illegible by the project participants (e.g. by covering those parts with black ink) so that this can be made publicly available.
  - A second version containing all information which shall be treated as strictly confidential by all handling this documentation (DOEs/AEs, EB members and alternates, panel/ committee and working group members, external experts requested to consider such documents in support of work for the EB, and the secretariat).
- In accordance with paragraph 6 of CDM M&P information used to determine additionality, to describe the baseline methodology and its application, and to support an environmental impact assessment, shall not be considered proprietary or confidential. Project participants shall therefore, in accordance with paragraph 45 (b) of CDM M&P describe the choice of approaches, assumptions, methodologies, parameters, data sources, key factors. The scope and detail of the description in the PDD should allow interested parties to trace the rationale of the project.

2.2.1 SECTION A. General description of [small-scale] project activity

A.1. Title of the project [small-scale] project activity

Describe the title of the project. It is preferable to include proper names, such as host country or regional names, and type description of the project activity that gives a better understanding of what the project is about.

A.2. Description of the [small-scale] project activity

Provide an overview of the project, by describing the scope of the project, project participants, contribution to the sustainable development achieved by the project activity, and important matters.

A.3. Project participants

Describe the name and the country name of project participants in table form. The contact information and details of project participants should be described in Annex I. Addition or withdrawal of project participants is possible later.

A.4. Technical description of the [small-scale] project activity

A.4.1. Location of the [small-scale] project activity

Describe the geographical location of the project activity, preferably using a map.

A.4.1.1. Host Party(ies)	Describe host country name in which the project activity is implemented.
A.4.1.2. Region/State/Province etc.	Describe the region name in which the project activity is implemented.
A.4.1.3. City/Town/Community etc.	Describe the municipality name in which the project activity is implemented.
A.4.1.4. Details of physical location, including information allowing the unique identification of this [small-scale] project activity (maximum one page)	Describe the latitude, the longitude and the address in which the project activity is implemented.

A.4.2. Category(ies) of project activity [Type and category(ies) and technology/measure of the small-scale project activity]

The list of categories is provided below. Describe the category of the project activity referencing the sector which the DOE has accredited. In addition, in the case of small scale CDM projects, describe briefly the overview or characteristics of the technology which will be installed in the project activity.

1 Energy industries (renewable-/non-renewable sources)	9 Metal Production
2 Energy Distribution	10 Fugitive emissions from fuels (solid, oil and gas)
3 Energy demand	11 Fugitive emissions from production and consumption of halocarbons and sulphur hexa fluoride
4 Manufacturing industries	12 Solvent use
5 Chemical industries	13 Waste handling and disposal
6 Construction	14 Afforestation and reforestation
7 Transport	15 Agriculture
8 Mining/mineral production	

A.4.3. Technology to be employed by the project activity [8]

Describe briefly the overview or characteristics of the technology which will be installed in this project activity. If it is not easy to understand from the description alone, use the flow diagrams or illustrations. The feature of a relevant technology can also become clear by comparing with the same kind of technology used in developed countries or other developing countries. When technology transfer is accompanied, it is preferable to describe the effects of the technology transfer.

A4.4. Estimated amount of emission reductions over the chosen crediting period[9]

Describe the estimation of green house gas emission reduction of each year and the total amount of green house gas emission reduced during the credit period by using the following table form.

Years	Annual estimation of emission reductions in tones of CO_2e
Total estimated reductions (tones of CO_2e)	
Total number of crediting years	
Annual average over the crediting period of estimated reductions (tones of CO_2e)	

A.4.5. Public funding of the [small-scale] project activity[10]

Describe whether the project will use public fund or not. In case public funding from Annex-I Parties is used, describe the detail in Annex 2.

A.4.5. Confirmation that the small-scale project activity is not a debundled component of a large scale project activity [11]

Demonstrate the proposed project is not a debundled component of a large scale project activity in the case of the project is a small scale project.

2.2.2 SECTION B. Application of a baseline and monitoring methodology

Project participants, when applying an approved methodology, must be careful in assessing the applicability of the methodology to the proposed project activity. Project participants can find the most recent list of approved methodologies and approved consolidated methodologies on the CDM web site in order to check if there is an approved methodology applicable to the project activity. Following are

8 Only large scale CDM project
9 In the case of small scale CDM project, section No. is "A.4.3.".
10 In the case of small scale CDM project, section No. is "A.4.4.".
11 Only small scale CDM project

the points that project participants should check:

- The proposed project activity meets all the conditions set out in the "Applicability" part of an approved methodology.
- Some approved methodologies state that they are applicable to project activity with a certain baseline scenario. An example is ACM0006 "Consolidated methodology for electricity generation from biomass residues", which provides a list of baseline scenarios to which the methodology can be applied.

If there is no applicable approved methodology, project participants should propose a new methodology. Details procedure for the development of proposed new baseline and monitoring methodologies (CDM-NM) could be found in Part III of the document "Guidelines for completing the project Design Document (CDM-PDD) and the proposed new baseline and monitoring methodologies (CDM-NM)" (Version 07) [EB 41, Annex 12].
The most recent version is available on the UNFCCC CDM website: http://cdm.unfccc.int/Reference/Guidclarif/pdd/index.html.

B.1. Title and reference of the approved baseline and monitoring methodology applied to the [small-scale] project activity

Describe the title of the applied methodology and the list of references. Also, fill in the baseline information in Annex 3.

B.2. Justification of the choice of the methodology and why it is applicable to the project activity [Justification of the choice of the project category][12]

Project participants shall justify the eligibility of the selected methodology by using the most suitable approach described as follows when selecting the baseline methodology [Glos ver. 5, p7].

- Existing actual or historical emissions, as applicable; or
- Emissions from a technology that represents an economically attractive course of action, taking into account barriers to investment; or
- The average emissions of similar project activities undertaken in the previous five years, in similar social, economic, environmental and technological circumstances, and whose performance is among the top 20 per cent of their category

B.3. Description of the sources and gases included in the project boundary [Description of the project boundary][13]

Describe the source and provide an overview of the target gas(es) which are reduced by the proposed project activity. Use the following table form to show these in the baseline scenario and project scenario.

Project boundary is defined in approved methodologies, usually with regard to the spatial extent and gases to be included. To illustrate the spatial extent included in the project boundary, it

12 In the case of small scale CDM project activities, there are three types of projects. Project participants shall describe that their project matches one of those.

13 Small scale CDM projects use simplified modalities and procedures, therefore, boundaries for projects are defined in methodologies.

is useful to include a schematic of the project site and relevant equipments, delineating the project boundary. As for the gases to be included, use the table format in the CDM-PDD. If the methodology gives an option to include or exclude certain sources and gases from the project boundary, project participants should explain and justify the choice.

	Source	Gas	Included?	Justification/Explanation
Baseline	Source 1	CO_2	Yes/No	
		CH_4	Yes/No	
		N_2O	Yes/No	
Project activity	Source 1	CO_2	Yes/No	
		CH_4	Yes/No	
		N_2O	Yes/No	

B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario [Description of baseline and its development]

Describe what steps are used to determine the baseline scenario, and provide explanation of the specific baseline scenario. To identify a baseline, first, list up all baseline scenarios which are envisioned.

A baseline shall be deemed to reasonably represent the GHG emissions that would occur in the absence of the proposed project activity if it is derived using an approved baseline methodology. Different scenarios may be elaborated as potential evolutions of the situation existing before the proposed CDM project activity. The continuation of the current activity could be one of them; implementing the proposed project activity may be another; and many others could be envisaged. Baseline methodologies shall require narrative descriptions of all reasonable baseline scenarios. Based on the selected baseline methodology, project participants must describe how a baseline scenario is identified among possible baseline scenarios in the CDM-PDD. To elaborate the different scenarios, different elements shall be taken into consideration, including related guidance issued by the EB. For instance, the project participants shall take into account national/sectoral policies and circumstances [EB 22, Annex 3], ongoing technological improvements, investment barriers, etc.

B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered [small-scale] CDM project activity (assessment and demonstration of additionality)

Based on the selected baseline scenario, describe the reasons why the project is not a baseline scenario by demonstrating the additionality of the proposed project.

The following issues may be included in the description;

- explanation of the baseline scenario specified by applying the methodology
- explanation of the project activity

- explanation that the baseline emission is larger than the project emission

A lot of applied baseline methodologies are obligated to use "Tool for the demonstration and assessment of additionality (hereinafter, the additionality tool)". If so, demonstrate the additionality of the project using the tool. The additionality tool provides for a step-wise approach to demonstrate and assess additionality (see Appendix 4).

Furthermore, if the starting date of the project activity is earlier than the date of validation, project participants shall provide evidence that incentive from the CDM had large influence on the decision to proceed with the project activity. This evidence shall be based on documentation, preferably a public or legal document, which is available at, or before the start of the project activity.

B.6. Emission reductions

Baseline methodologies specify how emission reductions must be calculated in the PDD. In section B.6.1. "Explanation of methodological choices", project participants are required to state which equations will be used in calculating emission reductions, as well as to explain and justify their choices made among different options presented in the baseline methodology applied to the project activity.

Choice of scenarios/cases	Project participants are to explain and justify which scenario or case applies to the project activity. For example, the applied baseline methodology presents different components for baseline emissions and project emissions. Project participants should choose which components are included in the calculation and the reason, based on the proposed project activity and baseline scenario identified in section B.4.
Choice of methodological approach	In case the applied baseline methodology offers different methodological approaches, project participants should explain and justify their choice. For example, in ACM0002, four methods are presented for the calculation of the "operating margin". Project participants should explain their choice and give reasons why that choice is appropriate for the proposed project activity.
Choice of default values	Baseline methodologies sometimes present different default values to be chosen according to the specific circumstances of each project activity. Project participants are to make a choice, explain the choice and give reasons why that choice has been made.

Some of the default values frequently used in emission reduction calculations are shown below. The EB agreed that the IPCC default values should be used only when country or project specific data are not available or difficult to obtain [EB 25, para.59]. At EB26, it was clarified that the '2006 IPCC Guidelines for National Greenhouse Gas Inventories' shall be considered as the latest version [EB 26, para.68].

<table>
<tr><td>Oxidation factor of fuel</td><td>The default carbon oxidation factor is 1 irrespective of different fuel types. Source: 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 3: Energy, p. 1.20, Intergovernmental Panel on Climate Change (IPCC), 2006.</td></tr>
<tr><td>Default Carbon Content (CC) of different types of Fuels (kg/GJ)</td><td>Refers to 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 3: Energy, Table 1.4, pp. 1.23-1.24, Intergovernmental Panel on Climate Change (IPCC), 2006.</td></tr>
<tr><td>Default Net calorific Values (NCV) of different types of Fuels (TJ/Gg)</td><td>Refers to 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 3: Energy, Table 1.2, pp. 1.18-1.19, Intergovernmental Panel on Climate Change (IPCC), 2006.</td></tr>
<tr><td>Global Warming Potential (GWP)</td><td>Under the Kyoto Protocol, global warming potentials should be those provided by the IPCC Second Assessment Report (1996) based on the effects of the GHGs over a 100-year time horizon.

<table>
<tr><th colspan="2">Global Warming Potential (GWP) values</th></tr>
<tr><td>CO_2- Carbon dioxide</td><td>1</td></tr>
<tr><td>CH_4 - Methane</td><td>21</td></tr>
<tr><td>N_2O - Nitrous Oxide</td><td>310</td></tr>
<tr><td>HFCs - Hydrofluorocarbons</td><td>140 – 11,700</td></tr>
<tr><td>PFCs - Perfluorocarbons</td><td>6,500 – 9,200</td></tr>
<tr><td>SF_6- Sulphur hexafluoride</td><td>23,900</td></tr>
</table>
Source: GWP for a 100 year time horizon in Table 4, p. 22, Climate Change 1995: Science of Climate Change, Intergovernmental Panel on Climate Change (IPCC), 1996.</td></tr>
</table>

B.6.1. Explanation of methodological choices

Describe the calculation formula for estimating the GHG emission reduction and provide explanation of each calculation formula.

The estimated amount of GHG emission reduction shall be described according to each gases and each sources expressed by CO_2 equivalent value.

B.6.2. Data and parameters that are available at validation

By using a table form, describe the data and parameters used in the calculation of GHG emission reduction that are available when validation is undertaken. Detailed information should be included in Annex 3 "Baseline information".

Only following data should be included:

- Determined only once and remains fixed throughout the crediting period;
- Available at the time of validation; and
- Not monitored throughout the crediting period.

And following should not be included:

- Data that is calculated with equations provided in the methodology; or
- Default values specified in the methodology.

Data/Parameter:	
Data Unit:	
Description:	
Source of data used	
Value applied:	
Justification of the choice of data or description of measurement methods and procedures actually applied:	
Any comment:	

B.6.3. *Ex-ante* calculation of emission reductions

Describe how each equation is applied, in a manner that enables the reader to trace the calculation.

B.6.4. Summary of the *ex-ante* estimation of emission reductions

Describe the project activity emissions, baseline activity emissions, leakage, and emission reductions during the project period using the following table form.

Years	Estimation of project activity emissions (ton of CO_2e)	Estimation of baseline activity emissions (ton of CO_2e)	Estimation of leakage (ton of CO_2e)	Estimation of emission reductions (ton of CO_2e)
Total (ton of CO_2e)				

B.7. Application of a monitoring methodology and description of the monitoring plan

Describe the monitoring plan in detail. Identification of the data to be monitored, and the quality of it should be considered along with the guidance about the monitoring of the applied methodology.

The results of the monitoring plan are subject to verification by the DOE and used for the calculation of the emission reductions achieved through the project activity. Since the difference between the baseline emissions and actual project emissions is to be claimed as CERs, it is very important to develop a detailed and realistic monitoring plan.

Data monitored and required for verification and issuance are to be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

B.7.1. Data and parameters monitored

Describe data and parameters that are monitored using the following table form.

Data that is determined only once for the crediting period but that becomes available only after validation of the project activity (e.g. measurements after the implementation of the project activity) should be included here.

Data/Parameter:	
Data Unit:	
Description:	
Source of data to be used	
Value of data applied for the purpose of calculating expected emission reductions in section B.5:	
Description of measurement methods and procedures to be applied:	
QA/QC procedures to be applied:	
Any comment:	

It is important that project participants strictly follow the monitoring procedures set out in the monitoring methodology, including recording frequency and measurement methods, if specified. If project participants are not able to follow all the requirements strictly, the differences should be explained and justified. For each data and parameter, a table should be filled out that includes information such as:

- Data unit
- Description of the data
- Source of data

  The source(s) of data that will be actually used for the proposed project activity (e.g. which exact national statistics). Where several sources may be used, explain and justify which data sources should be preferred.
- Value of data applied for the calculation of ex-ante emission reduction estimation
- Measurement methods and procedures

  Where data or parameters are supposed to be measured, specify the measurement methods and procedures, including a specification which accepted industry standards or national or international standards will be applied, which measurement equipment is used, how the measurement is undertaken, which calibration procedures are applied, what is the accuracy of the measurement method, who is the responsible person / entity that should undertake the measurements and what is the measurement interval.
- QA/QC procedures

  A description of the QA/QC procedures (if any) that should be applied. Below are examples of QA/QC procedures to be applied from some of the registered CDM project activities.

Parameter (Examples)	QA/QC procedures to be applied (Examples)
Total amount of landfill gas captured	The gas management information and monitoring system will be certified under the ISO 9000 Quality Management System
Quantity of HFC 23 supplied to the destruction process after purity adjustment	A QA/QC organization will be formed and QA/QC procedures that are equivalent to JIS (Japanese Industrial Standard) in terms of equipment and analytical method will be set. Will be measured using two flowmeters in parallel with weekly calibration.
Electricity supplied to the grid by the project	These data will be directly used for calculation of emission reductions. Sales record and other records are used to ensure the consistency. The electricity meter will be calibrated on a yearly basis by the electricity distributor in order to accurately monitor electricity sales.
Gross electricity produced	Meters will be subject to a regular maintenance and testing regime to ensure accuracy. Their readings will be double-checked by the electricity distribution company.

In addition, many PDDs make general statements about the QA/QC procedures in place. Below are some examples:

- Description of the quality assurance practices such as how monitoring records are taken and kept, how often the site is audited, how the personnel are trained, etc.;
- Statement that the project developer has a quality assurance system, e.g. ISO series, in place.

- Comments

  Any comments should be stated here. Relevant background documentation should be provided in Annex 4.

B.7.2. Description of the monitoring plan

Describe how the data and parameters listed in section B.7.1. will be monitored. Provide a detailed description of monitoring methods, flow of implementation and implementation structure of monitoring. It is important that the calculation of GHG emission reduction, which was estimated in the feasibility study, is clearly indicated.

Project participants should also indicate the operational and management structure to implement the monitoring activities proposed in the PDD. In order to monitor emission reductions and any leakage effects generated by the project activity. Clearly indicate the responsibilities for and institutional arrangements for data collection and archiving. The monitoring plan should reflect good monitoring practice appropriate to the type of project activity. A chart showing the organizational structure, as well as a description of the responsibilities of relevant parties and personnel, would be useful.

2.2.3 SECTION C. Duration of the project activity/crediting period

The starting date of a CDM project activity is defined as the date on which the implementation or construction or real action of a project activity begins. It has always been the EB's view that the starting date of a CDM project activity is the earliest of the dates at which the implementation or construction or real action of the project activity begins [EB 33, para.76].

C.1. Duration of the project activity

C.1.1. Starting date of the project activity

Describe the starting date of project activities, such as construction of related facilities or actual operation.

The CDM-PDD should contain not only the date, but also a description of how this start date has been determined, and a description of the evidence available to support this start date. Further, it should be noted that if this starting date is earlier than the date of publication of the CDM-PDD for global stakeholder consultation by a DOE, Section B.5 above should contain a description of how the benefits of the CDM were seriously considered prior to the starting date [EB 41, para.68].

C.1.2. Expected operational lifetime of the project activity

State the expected operational lifetime of the project activity.

C.2. Choice of the crediting period and related information

Project participants should state their choice regarding the crediting period. The crediting period for a CDM project activity is the period for which reductions from the baseline are verified and certified by a DOE for the purpose of issuance of certified emission reductions (CERs).

C.2.1. Renewable crediting period

A single crediting period may be a maximum of 7 years. The crediting period may be renewed at most two times (maximum 21 years), provided that, for each renewal, a DOE determines that the original project baseline is still valid or has been updated taking account of new data, where applicable, and informs the EB accordingly.

C.2.2. Fixed crediting period

The length and starting date of the period is determined once for a project activity with no possibility of renewal or extension once the project activity has been registered. The length of the period can be a maximum of 10 years for a proposed CDM project activity.

Project participants should note the following points regarding crediting period:

- A crediting period shall not extend beyond the operational lifetime of the project activity.

- The starting date of a CDM project activity does not need to correspond to the starting date of the crediting period for this project activity.
- The starting date and length of the first crediting period has to be determined before registration.
- Be sure to state the dates in "DD/MM/YYYY" format, which means that if the date is "1st June 2006", it should be written as "01/06/2006".
- The crediting period of a project activity cannot commence prior to the date of registration.

2.2.4 SECTION D. Environmental impacts

The environmental impact section of PDDs of some of the registered project activities contain information on:

- Name and description of relevant national laws and regulations on the environmental impact (Environmental Impact Assessment/standards) required by the national or local authority and applicability of these to CDM project activity;
- Description of environmental impacts study on environment and local community;
- Analysis of environmental impacts (positive or negative) of before and after project implementation;
- Results of impacts in each category such as air and water quality, noise level, natural resources, human settlement etc.;
- Result of monitoring of EIA required on CDM activity;
- Conclusion of whether the project activity leads to any significant negative impact or not;
- Summary of the EIA (including the scopes of EIA, the magnitude and frequency of impacts, the result of EIA and actions to mitigate impacts).

2.2.5 SECTION E. Stakeholders' comments

Stakeholders are defined as "the public, including individuals, groups or communities affected, or likely to be affected, by the proposed CDM project activity or actions leading to the implementation of such an activity". On the occasion of implementing a project, project participants shall raise comments in a fair and transparent manner. The comments from stakeholders are very important issues for realizing the project. If the stakeholders would not agree, there are possibilities to extend or call off the project. Therefore, following issue should be noted when the comments from stakeholder would be raised.

- Secure sufficient time for submitting comments.
- Provide support that leads to positive suggestions.

Taking into account confidentiality provisions of the CDM modalities and procedures. The local

stakeholder process shall be completed before submitting the proposed project activity to a DOE for validation.

(1) Below are examples from the stakeholders' comments section of PDDs of some of the registered project activities.

- Brief description how comments by local stakeholders have been invited and compiled.
- Identification of stakeholders at different stages of the project (the local governments, relevant committees, local people, consultants, project participants etc.)
- Process of invitation and announcement of the stakeholders' meeting/consultation.
- Description of the meeting/consultation (presentation of the CDM project, the objectives, exchange of comments)
- Description and result of survey given to each stakeholder regarding the project activity.

(2) Summary of the comments received.

- Summary and/or list of comments received by each party of stakeholders such as suggestions, concerns, complaints etc.)
- Analysis of the comments (whether stakeholders agree with the project activity or not)

(3) Report on how due account was taken of any comments received.

- Description of how relevant comments and important mentions were considered in the preparation of CDM-PDD.
- Description of consultation with stakeholders and efforts to respond to their expectations.
- Description of measures taken or will be taken by the project entity to answer the comments of stakeholders.

2.3 A/R CDM project activities: Technical aspects

This section discusses technical aspects of A/R CDM project activities and key items to be covered in the CDM-AR-PDD format. First, this section overlooks the structure of the CDM-AR-PDD, followed by more detailed explanations on Sections of the PDD. The explanations focus on key issues that are specific to A/R CDM project activities rather than covering every item. PDD Format (CDM-AR-PDD) and Guidelines for completing CDM-AR-PDD, CDM-AR-NM, version 09 [EB 42, Annex 12] can be downloaded from the CDM web site: http://cdm.unfccc.int/Reference/index.html.

(1) Contents of CDM-AR-PDD, version 03
A. General description of the proposed A/R CDM project activity
B. Duration of the project activity/crediting period
C. Application of an approved baseline and monitoring methodology
D. Estimation of ex ante net anthropogenic GHG removals by sinks and estimated amount of net anthropogenic GHG removals by sinks over the chosen crediting period
E. Monitoring plan
F. Environmental impacts of the proposed A/R CDM project activity
G. Socio-economic impacts of the proposed A/R CDM project activity
H. Stakeholders' comments
(2) Annexes
Annex 1: Contact information on participants in the proposed A/R CDM project activity
Annex 2: Information regarding public funding
Annex 3: Baseline information
Annex 4: Monitoring plan

2.3.1 Section A. General description of the proposed A/R CDM project activity

In Section A, project participants are expected to provide overview and general information of their project activities. The items that are specific to CDM-AR-PDD and not required in the CDM-PDD template will be explained in the followings.

(1) Section A.4.5. Approach for addressing non-permanence

In accordance with paragraph 38 and section K of the A/R CDM M&P, project participants need

to select one of the following approaches to address non-permanence:

- Issuance of tCERs
- Issuance of lCERs

The approach chosen to address non-permanence shall remain fixed for the crediting period including any renewals.

Non-permanence issue is explained in detail below.

The issue of non-permanence arises from nature of GHG removals in forest. Unlike emission reductions, GHGs removed by forest may be released back into the atmosphere in an occasion of forest fires, die back from pests or even harvesting.

The issue of non-permanence should be addressed through two different crediting systems named tCER and lCER. The differences between the two are illustrated with a hypothetical project case shown in Figure 2-1. Each graph has the same changes in net anthropogenic GHG removals while issuance of the credits is different reflecting the differences between tCERs and lCERs. The assumptions made here are:

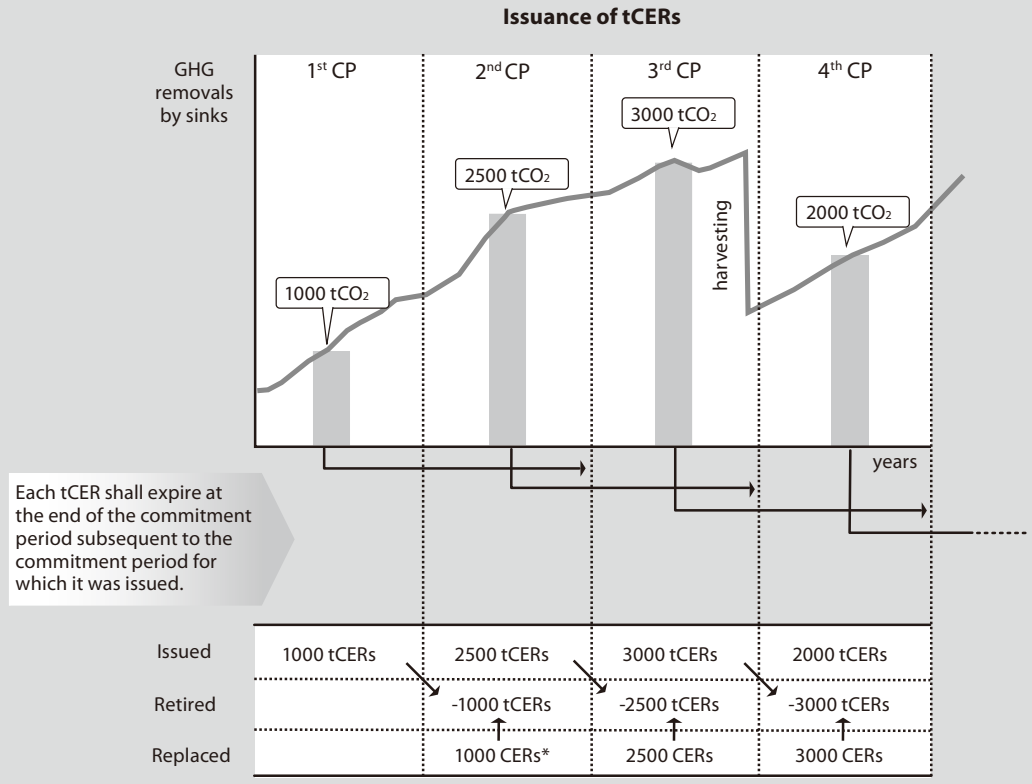
- Commitment periods would be of 5-year interval after the first commitment period;
- Credits would be used (and retired) for achieving the target of a Party; and
- Replacement of the credits expired would be done by the concerned Party (this situation would vary among countries and the project participants themselves may be held responsible for replacement).

Each lCER shall expire at the end of the crediting period or, where a renewable crediting period is chosen, at the end of the last crediting period of the project activity. Each tCER shall expire at the end of the commitment period subsequent to the commitment period for which it was issued.

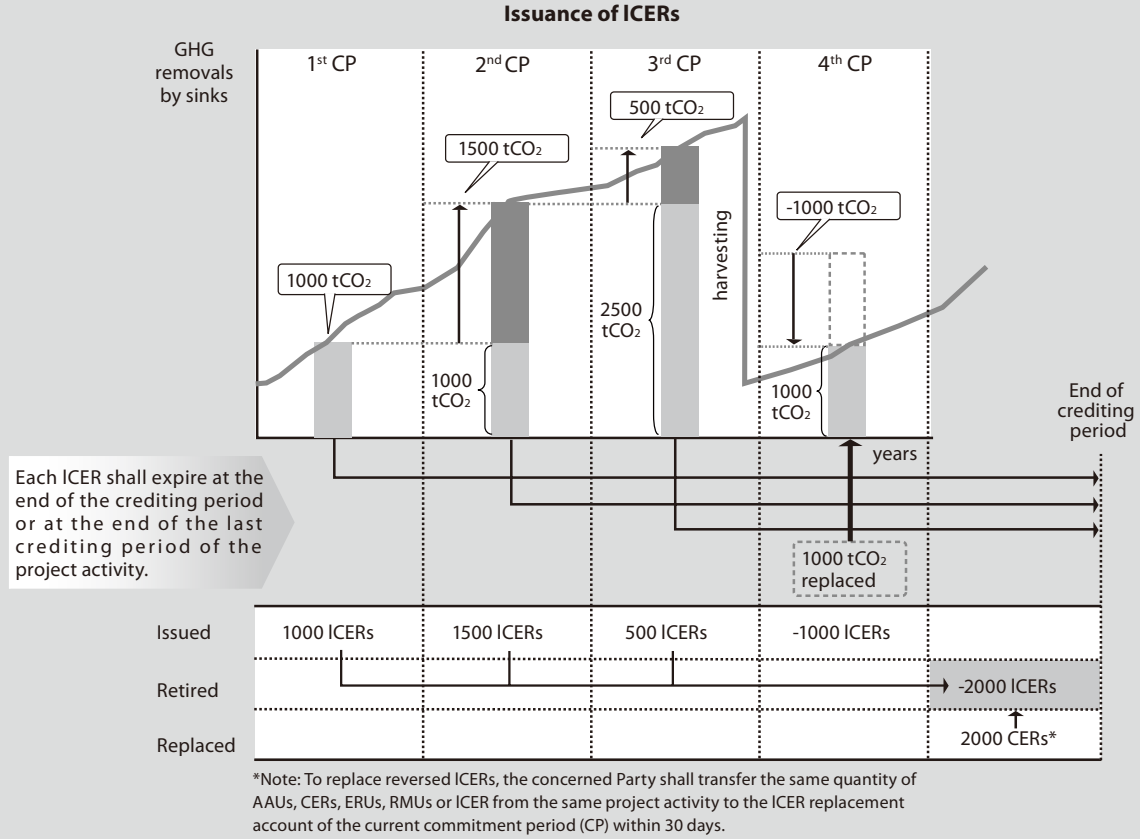
(2) Section A.4.6. Estimated amount of net anthropogenic GHG removals by sinks over the chosen crediting period:

Project participants need to provide estimation of net anthropogenic GHG removals by sinks as well as annual estimates for the chosen crediting period in the table below:

Summary of results obtained in Sections C.5., D.1. and D.2.				
Years	Estimation of baseline GHG removals (tCO_2e)	Estimation of actual net GHG removals (tCO_2e)	Estimation of leakage (tCO_2e)	Estimation of net GHG removals (tCO_2e)
Year A				
Year B				
Year C				
Year …				
Total (tCO_2e)				



*Note: To replace tCERs, the concerned Party shall transfer the same quantity of AAUs, CERs, RMUs or tCERs to the tCER replacement account of the current commitment period (CP).



*Note: To replace reversed lCERs, the concerned Party shall transfer the same quantity of AAUs, CERs, ERUs, RMUs or lCER from the same project activity to the lCER replacement account of the current commitment period (CP) within 30 days.

Figure 2-1 Differences between tCER and lCER

2.3.2 Section B. Duration of the project activity/crediting period

(1) Section B.3 Choice of crediting period and related information

Project participants need to state whether the proposed A/R CDM project activity will use a renewable or a fixed crediting period (They must choose only one crediting period).

- Renewable crediting period: A maximum of 20 years which may be renewed at most two times (maximum 60 years)
- Fixed crediting period: A maximum of 30 years

Project participants who choose a renewable crediting period should be aware that, for each renewal, a DOE determines and informs the EB that the original project baseline is still valid or has been updated taking account of new data where applicable.

2.3.3 Section C. Application of an approved baseline and monitoring methodology

As mentioned earlier, project participants need to refer to the CDM website for approved methodologies applicable to their project activities. In case an applicable methodology for the project activity does not exist, project participants need to propose a new baseline and/or monitoring methodology. In any case, the following sections need to be filled out with information taken from the methodology (either approved or proposed new ones) applied to the project activity.

(1) Section C.1. Assessment of the eligibility of land

The EB agreed to the "Procedures to demonstrate the eligibility of lands for afforestation and reforestation CDM project activities" (Version 01) [EB 35, Annex 18].

(2) Section C.5. Identification of the baseline scenario

- C.5.1: Description of the application of the procedure to identify the most plausible baseline scenario (separately for each stratum defined in C.4., if procedures differ among strata)
- C.5.2: Description of the identified baseline scenario (separately for each stratum defined in Section C.4.)

The detailed information regarding baseline is given as follows:

Baseline

The baseline for a proposed A/R CDM project activity is the scenario that reasonably represents the sum of the changes in carbon stocks in the carbon pools within the project boundary that would have occurred in the absence of the proposed project activity. A baseline shall be deemed to reasonably represent the sum of the changes in carbon stocks in the carbon pools within the project boundary that would occur in the absence of the proposed A/R CDM project activity if it is

derived using a baseline methodology referred to in paragraphs 12 and 13 of the CDM A/R M&P.

Establishment of Baseline net GHG removals

The baseline net GHG removals by sinks for a proposed A/R CDM project shall be established:

- By project participants in accordance with provisions for the use of approved and new baseline methodologies (contained in Decision 19/CP.9, the CDM A/R M&P and relevant decisions of the COP/MOP);
- In a transparent and conservative manner regarding the choice of approaches, assumptions, methodologies, parameters, data sources, key factors and additionality, and taking into account uncertainty;
- On a project-specific basis;
- In the case of small scale A/R CDM project activities, in accordance with simplified modalities and procedures developed for such activities;
- Taking into account relevant national and/or sectoral policies and circumstances, such as historical land uses, practices and economic trends.

Carbon pools and baseline net GHG removals

In calculating the baseline net GHG removals by sinks and/or actual net GHG removals by sinks, project participants may choose not to account for one or more carbon pools, and/or emissions of the GHGs measured in CO_2 equivalents, while avoiding double counting. This is subject to the provision of transparent and verifiable information that the choice will not increase the expected net anthropogenic GHG removals by sinks. Project participants shall otherwise account for all significant changes in carbon pools and/or emissions of the GHGs measured in CO_2 equivalents by the sources that are increased as a result of the implementation of the A/R project activity, while avoiding double counting.

Baseline approaches

In choosing a baseline methodology for an A/R CDM project activity, project participants shall select from among the following approaches the one deemed most appropriate for the project activity, taking into account any guidance by the EB, and justify the appropriateness of their choice:

- Existing or historical, as applicable, changes in carbon stocks in the carbon pools within the project boundary;
- Changes in carbon stocks in the carbon pools within the project boundary from a land use that represents an economically attractive course of action, taking into account barriers to investment;
- Changes in carbon stocks in the pools within the project boundary from the most likely land use at the time the project starts.

(3) Section C.6. Assessment and demonstration of additionality

The concept of additionality in A/R CDM project activities is basically the same as that of the emission reduction CDM. The concept of additionality in A/R CDM is defined in A/R CDM M&P as follows:

"The proposed A/R CDM project activity is additional if the actual net GHG removals by sinks are increased above the sum of the changes in carbon stocks in the carbon pools within the project boundary that would have occurred in the absence of the registered A/R CDM project activities."

The "Tool for the demonstration and assessment of additionality in A/R CDM project activities" (Version 02) [EB 35, Annex 17] provides for a step-wise approach to demonstrate additionality in A/R CDM projects. It has the basic structure similar to that of the emission reduction CDM projects. The main difference is that the additionality tool for A/R CDM project activities has an extra step "STEP 0. Preliminary screening based on the starting date of the A/R project activity."

The EB agreed to the "Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities" (CT-AR) (Version 01) [EB 35, Annex 19]. The CT-AR provides a general framework and a step-wise approach to identify the baseline scenario and simultaneously demonstrates additionality in A/R CDM project activities. It applies the same approach used in the combined tool to identify the baseline scenario and demonstrate additionality for non-A/R project activities, while including specific guidance for use in the A/R CDM project activities. The CT-AR is consistent with the revised tool for the demonstration and assessment of additionality in A/R CDM project activities and facilitates development of new baseline and monitoring methodologies by providing a stepwise procedure to identify the baseline scenario and demonstrate additionality.

(4) Section C.7. Estimation of the ex ante baseline net GHG removals by sinks

Project participants are asked to present final results of their calculations using the following tabular format.

Year	Annual estimation of baseline net anthropogenic GHG removals by sinks in tonnes of CO_2e
Year A	
Year B	
Year C	
Year …	
Total estimated baseline net GHG removals by sinks (tCO_2e)	
Total number of crediting years	
Annual average over the crediting period of estimated baseline net GHG removals by sinks (tonnes of CO_2e)	

2.3.4 Section D. Estimation of ex ante actual net GHG removals by sinks, leakage and estimated amount of net anthropogenic GHG removals by sinks over the chosen crediting period

Project participants should calculate the ex ante actual net GHG removals by sinks and leakage for the chosen crediting period using the approach provided in the selected approved baseline and monitoring methodology (annually, for each gas, pool, source, in units of CO_2 equivalent). Use a stepwise approach and name components being calculated. List numerical values and sources of all data used in the above calculation.

The actual net GHG removals by sinks is the sum of verifiable changes in carbon stocks, minus the increase in emissions of the GHGs measured in units of CO_2 equivalent by the sources that are increased as an attributable result of the implementation of the proposed A/R CDM project activity within the project boundary.

Leakage is defined as the increase of anthropogenic emissions by sources of GHG which occurs outside the project boundary, and that is measurable and attributable to the proposed A/R CDM project activity. The EB has provided guidance regarding leakage [EB 22, Annex 15]. The accounting of decreases of carbon pools outside the project boundary is to be considered as leakage and that, in particular:

- In the case of deforestation as land clearance outside the project boundary due to activity shifting, effects on all carbon pools shall be considered;
- In the case of fuel wood collection or similar activities outside the project boundary, only the gathered volume of wood that is non-renewable shall be considered as an emission by sources if forests are not significantly degraded due to this activity. The equation (Eq. 3.2.8) for fuel wood gathering as outlined in IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry (IPCC-GPG) (2003) could be applied in combination with household surveys or Participatory Rural Appraisal (PRA). In the case that forests are significantly degraded, accounting rule 1 applies. "Not significantly degraded" means that the extracted volume results in emissions which are between 2% and 5 % of net actual GHG removals by sinks. If the extracted wood volume results in emissions which are below 2% of the net actual GHG removals by sinks, this type of leakage can be ignored.

The EB approved the tool for testing the significance of GHG emissions in A/R CDM project activities [EB 31, Annex 16]. The tool assists project participants to transparently demonstrate, which GHG emission sources, possible decreases in carbon pools and leakage emissions are insignificant for a particular CDM A/R project activity and therefore can be neglected. Or when required by the applicability conditions of approved methodologies, whether increases in GHG emissions by sources for a particular CDM A/R project activity are significant. The EB also clarified that this tool supersedes the guidance provided by the EB in the EB 22 Annex 15 para. 3(b), concerning ignoring leakage emissions from extraction of non-renewable fuel wood [EB 31, para.47].

2.3.5 Section E. Monitoring plan

In the section E of monitoring, project participants describe, according to the monitoring methodology they selected, methods to collect and archive data necessary for estimating net GHG removals by sinks. The results of monitoring will be used to calculate the difference between GHG removals in baseline scenario and in project scenario. The monitoring plan needs to provide detailed information related to the collection and archiving of all relevant data needed to estimate or measure verifiable changes in carbon stocks in the carbon pools and the emissions of GHG occurring within the project boundary, to determine the baseline, and to identify increased emissions outside the project boundary.

(1) **Section E.2. Sampling design and stratification**

Project participants need to describe the sampling design that will be used in the project for the ex-post calculation of actual net GHG removals by sinks and, in case the baseline is monitored, the baseline net GHG removals by sinks. The sampling design should describe stratification, determination of number of plots & plot distribution, etc.

(2) **Section E.4.1. Data to be collected or used in order to monitor the verifiable changes in carbon stock in the carbon pools within the project boundary resulting from the proposed A/R CDM project activity**

Project participants need to archive monitored data for 2 years following the end of the (last) crediting period. When archiving data, header of tables and titles of columns should not be modified and columns should not be deleted. If necessary, rows are added at the bottom of the table.

2.3.6 Section F. Environmental impacts of the proposed A/R CDM project activity

Section F.1. Documentation on the analysis of the environmental impacts, including impacts on biodiversity and natural ecosystems, and impacts outside the project boundary of the proposed A/R CDM project activity.

This analysis should include, where applicable, information on:

- hydrology;
- soils;
- risk of fires; and
- pests and diseases.

(Project participants need to attach relevant documentation with the AR-PDD)

2.3.7 Section G. Socio-economic impacts of the proposed A/R CDM project activity

Section G.1. Documentation on the analysis of the major socio-economic impacts, including impacts outside the project boundary of the proposed A/R CDM project activity.

This analysis should include, where applicable, information on:

- local communities;
- indigenous peoples;
- land tenure;
- local employment;
- food production;
- cultural and religious sites; and
- access to fuel wood and other forest products.

(Project participants need to attach relevant documentation with the AR-PDD)

3 Joint Implementation (JI)

3.1 What is JI?

3.1.1 General

The Joint Implementation (JI)[14] is one of the Kyoto mechanisms, along with the CDM and Emissions Trading, which allows Annex I Parties to transfer to or acquire from other Annex I Parties emission reduction units (ERUs) resulting from GHG emission reduction or sink projects, as shown in Figure 3-1 [Kyoto Protocol, Article 6].

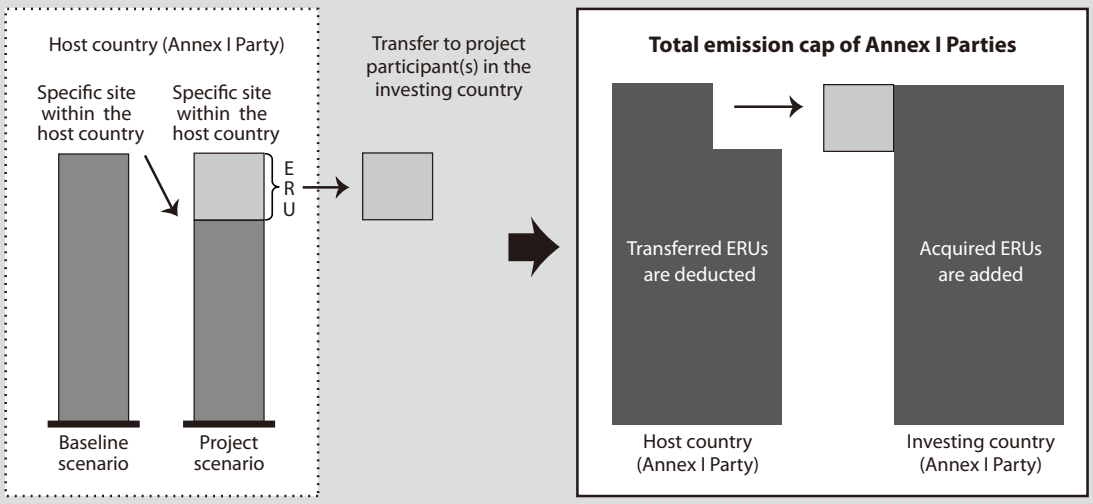


Figure 3-1 Outline of the JI

Whereas the CDM is a mechanism for project activities undertaken in non-Annex I countries that do not have a commitment inscribed in Annex B of the Kyoto Protocol, JI project activities take place in Annex I countries with a commitment inscribed in Annex B. Therefore, undertaking JI projects and transferring ERUs do not increase the total allowable emissions from Annex I countries. ERUs shall only be issued for a crediting period starting after the beginning of the year 2008 [Kyoto Protocol, Article 6].

Eligibility requirements[15] for an Annex I Party to transfer and/or acquire ERUs are as follows [JI guidelines, para.21]:

(a) It is a Party to the Kyoto Protocol
(b) Its assigned amount has been calculated and recorded
(c) It has in place a national system for the estimation of GHG emissions and removals
(d) It has in place a national registry

14 Joint Implementation is a term that refers to the mechanism referred to in Article 6 of the Kyoto Protocol.
15 Refer to paragraph 21 of Decision 9/CMP.1 [CMP/2005/8/Add.2, p6] for the exact wording.

(e) It has submitted annually the most recent required inventory, including the national inventory report and the common reporting format. For the first commitment period, the quality assessment needed for the purpose of determining eligibility to use the mechanisms shall be limited to the parts of the inventory pertaining to emissions of GHG from sources/sector categories from Annex A to the Kyoto Protocol and the submission of the annual inventory on sinks

(f) It submits the supplementary information on assigned amount and makes any additions to, and subtractions from, assigned amount

3.1.2 Verification Procedures

There are two different verification procedures that are commonly referred to as "Track 1" and "Track 2".

(1) Track 1 (Party-verified) Procedure

If a host Party meets all the eligibility requirements, the host Party may verify reductions in GHG emissions or enhancements removals from a JI project as being additional to any that would otherwise occur. Upon such verification, the host Party may issue the appropriate quantity of ERUs [JI guidelines, para.23].

(2) Track 2 (Independently Verified) Procedure

If a host Party does not meet the eligibility requirements, the verification of reductions from a JI project shall occur through the verification procedure under the JI Supervisory Committee (JISC).

However, the host Party may only issue and transfer ERUs upon meeting the eligibility requirements of (a), (b), and (d) above [JI guidelines, para.24].

Hence, where a host Party does not meet all of the eligibility requirements, "Track 2" has to be applied. Otherwise it has the choice between "Track 1" and "Track 2", i.e. "it may at any time elect to use the verification procedure under the JISC" [JI guidelines, para.25].

3.2 JI institutions and procedures

3.2.1 JI institutions[16]

The institutions for the JI consist of the following:

(1) CMP

The Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP) shall provide guidance regarding the implementation of Article 6 and exercise authority over the JI Supervisory Committee [JI guidelines, para.2].

(2) Designated Focal Point (DFP)

A Party involved in a JI project shall inform the secretariat of its designated focal point for approving JI projects. In addition, a Party involved in a JI project shall inform the secretariat of its national guidelines and procedures for approving JI projects, including the consideration of stakeholders' comments, as well as monitoring and verification [JI guidelines, para.20].

(3) JI Supervisory Committee (JISC)

JISC is an organization that supervises the verification of ERUs generated by JI project activities, a revision of the format of the JI PDD, and various guidances [CMP/2005/8/Add.2, p14 para.2] [CMP/2005/8/Add.2, p3 para.3], and corresponds to the EB in CDM.

(4) Accredited Independent Entity (AIE)

An accredited independent entity (AIE) is an entity accredited by the JISC in accordance with standards and procedures contained in Appendix A of the JI guidelines. An AIE is responsible for the determination of whether a project's ensuing GHG emission reductions or enhancements of removals meet the relevant requirements of Article 6 of the Kyoto Protocol and the JI guidelines. In short, the AIE under the JI scheme has similar functions with the DOE under the CDM, but is more responsible for its determination. Under the CDM, the DOE is responsible to validate the PDD, and to check the applicability of the approved methodology to the proposed project. Under the JI, the AIE has to assess the concepts of baseline setting and monitoring in accordance with the criteria for baseline setting and monitoring set out in Appendix B of JI guidelines because there are no approved methodologies (AMs). In the case the project participants select to use the CDM AM to the proposed JI project, the AIE shall assess whether all explanations, descriptions and analyses refer to the selected CDM methodology.

The assessment of an applicant IE under the JI accreditation process consists of three main

16 The JISC, AIE, JI-AP and JI-ATs are only relevant for JI Track 2.

elements: desk review, on-site assessment, and witnessing [JISC 09, Annex 1, para.4]. Those elements are the same as CDM accreditation process. The scope of accreditation of an AIE refers to both its functions (determination regarding PDDs or determination of GHG emission reductions or enhancements of removals) and its sectoral scope [JISC 09, Annex 1, para.6]. The list of sectoral scopes was adopted at JISC 04, as shown in Table 3-1. The listing of scopes is the same as the one for the accreditation under the CDM except for the scope 14, reflecting the difference in the relevant provisions in the Marrakesh Accords.

Applicant IE may choose to apply for one or more sectoral scopes [JISC 09, Annex 1, paras.9 and 10].

A list of independent entities is available electronically on the UNFCCC JI website: http://ji.unfccc.int/AIEs/List.

Table 3-1 List of Sectoral Scopes (Version 01)	
1	Energy industries (renewable/non-renewable sources)
2	Energy distribution
3	Energy demand
4	Manufacturing industries
5	Chemical industries
6	Construction
7	Transport
8	Mining/mineral production
9	Metal production
10	Fugitive emissions from fuels (solid, oil and gas)
11	Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride
12	Solvent use
13	Waste handling and disposal
14	Land-use, land-use change and forestry
15	Agriculture

Source: "List of sectoral scopes (version 01)" [JISC 04, Annex 2]

(5) Accreditation Panel (JI-AP)

JI-AP corresponds to the CDM-AP in CDM.

In accordance with the detailed procedures to operationalize the accreditation of independent entities, the JI-AP shall make recommendations to the JISC regarding [JISC 02, Annex 4, para.3]:

(a) The accreditation of an applicant independent entity;

(b) The suspension of accreditation of an accredited independent entity (AIE);

(c) The withdrawal of accreditation of an AIE;

(d) The re-accreditation of an AIE.

The tasks identified in the paragraph above imply that, inter alia, the following activities are to be carried out by the JI-AP [JISC 02, Annex 4, para.4]:

(a) Selecting the members of a JI accreditation assessment team (JI-AT) as and when required;

(b) Identifying and defining key areas or issues to be addressed by a JI-AT;

(c) Receiving and considering recommendations by a JI-AT with regard to an application of an applicant independent entity;
(d) Determining whether to recommend to the JISC the suspension of accreditation of an AIE;
(e) Determining the need for witnessing activity(ies) in cases where no suspension was agreed by the JISC;
(f) Determining whether, in the case of re-accreditation, an on-site visit and witnessing of the AIE are required;
(g) Deciding, based on a recommendation by a JI-AT, on the inclusion of an applicant independent entity in the publicly available list of applicant independent entities that meet organizational and operational requirements but which have not yet been assessed against those requirements relating to performing determination activities;
(h) Making recommendations to the JISC on the above issues, as applicable.

(6) JI Assessment Team (JI-AT)

A JI-AT, operating under the guidance of the JI-AP, shall be an ad-hoc team chosen by the JI-AP relevant to the scope(s) of an assignment and taking into consideration the issues of consistency of the assessment [JISC 08, Annex 1, para.6-7].

A JI-AT shall undertake an assessment of an applicant independent entity (IE) and/or accredited IE (AIE) and prepare an assessment report to the JI-AP. A JI-AT is established based on the characteristics of the applicant IE or AIE and the sectoral scopes that the applicant IE is applying for or AIE is accredited [JISC 08, Annex 1, para.3].

The following activities are carried out by a JI-AT [JISC 08, Annex 1, para.4]:

(a) A desktop review of the application and relevant documentation of an applicant IE;
(b) Deciding on number of witnessing activities required and finalizing its work plan, in particular, for the witnessing activities with regard to the scope(s) and detail of the on-site assessment of the applicant IE;
(c) On-site assessment of the office(s) managing the operations of the applicant IE;
(d) Witnessing of the activities performed by the applicant IE;
(e) Verification of the implementation of corrective actions to address non-conformities;
(f) Preparation of a preliminary report on the assessment of the applicant IE;
(g) Preparation of a final report;
(h) To conduct a spot-check assessment of an AIE as mandated by the JI-AP;
(i) Making recommendations to the JI-AP on the above issues, as applicable, in accordance with the JI accreditation procedure.

(7) JISC Review Team (JISC-RT)

Experts selected to participate in a JISC-RT shall fulfill the tasks assigned to them within the team. Within the scope of the review decided on by the JISC, a JISC-RT, under the guidance of the JISC members, responsible for supervising the review, shall: (a) provide inputs; (b) prepare requests

for clarification and/or further information to the accredited independent entity (AIE) and/or project participants; and (c) analyse information received during the review [JISC 03, Annex 4, para.8].

3.2.2 JI procedures and administrative costs

The scheme for the JI accreditation procedure is shown in Figure 3-2.

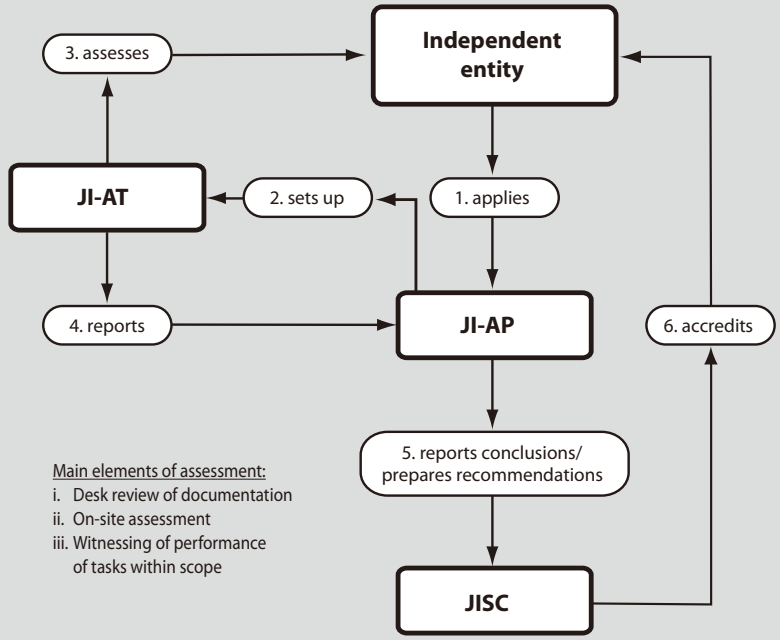


Figure 3-2 JI Accreditation Procedure (Source: JISC 09, Annex 1, page 4, Figure 1)

Figure 3-3 describes the verification procedure under the JISC, Track 2 procedure. The procedure involves 2 kinds of determinations by the AIE(s). The first determination is according to paragraph 33 of the JI guidelines (often referred to as "determination" or "determination of PDD"), which corresponds to validation under the CDM. The other is according to paragraph 37 of the JI guidelines (often referred to as "verification" or "determination of ERUs"), which corresponds to verification under the CDM. The JISC will undertake appraisals of the first determinations with inputs from experts, as appropriate.

It is necessary to pay the administrative costs, such as fees, expenses, the verification report cost and repayment, for the activity of the JI supervisory board. The cost level and the timing etc. of payment are same as SOP-Admin in CDM [JISC 08, Annex 9].

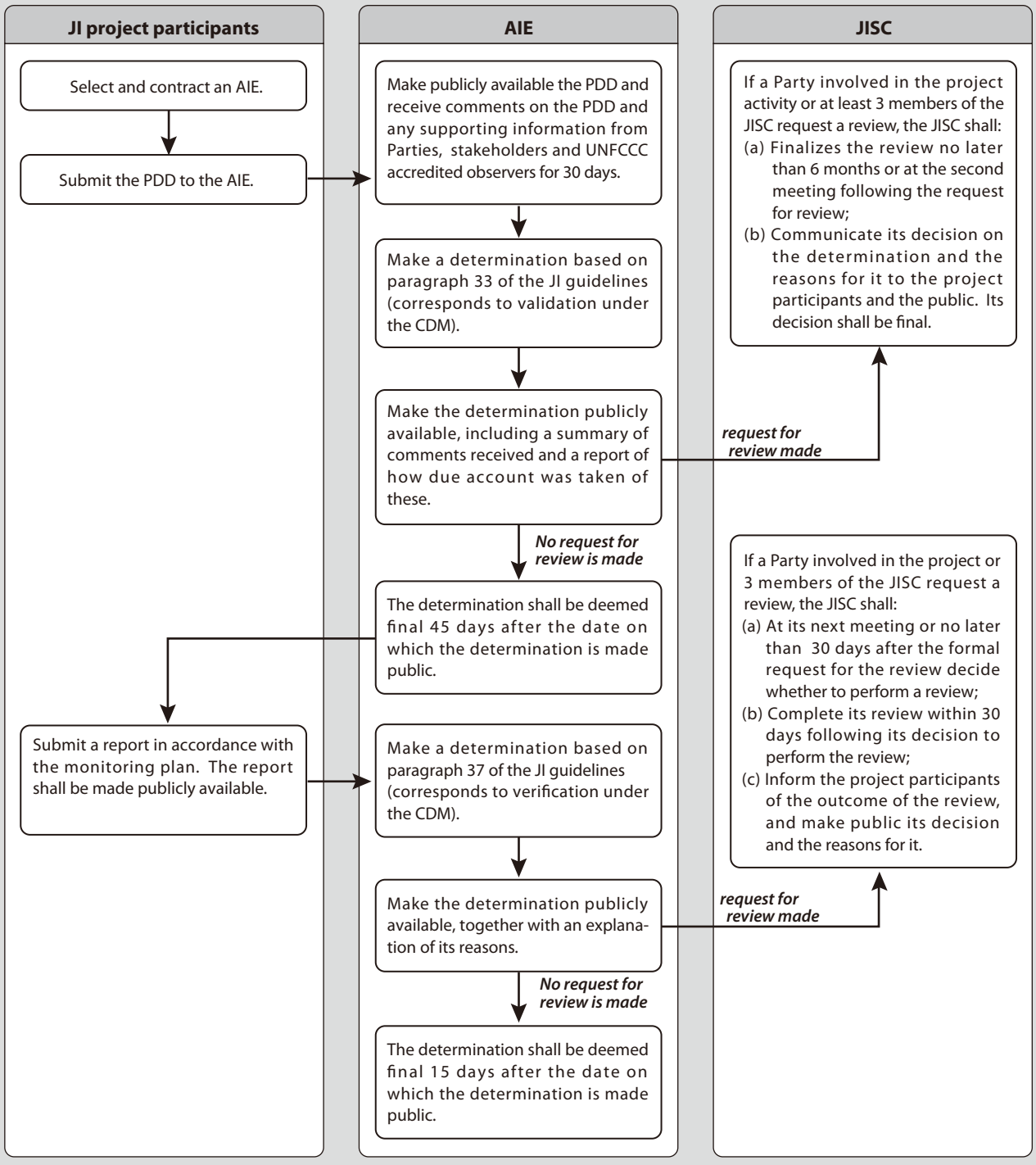


Figure 3-3 Verification procedure under the JISC (Track 2 procedure)

3.3 JI-PDD format

Project participants shall submit to an accredited independent entity a PDD that contains all information needed for the determination of whether the project [CMP/2005/8/Add.2, p7 para.31]:

- Has been approved by the Parties involved;
- Would result in a reduction of GHG emissions or an enhancement of removals that is additional to any that would otherwise occur;
- Has an appropriate baseline and monitoring plan in accordance with the criteria set out in appendix B.

The JI-PDD form and the guidelines for users of the JI-PDD form as of Oct 2009, are available on: http://ji.unfccc.int/Ref/Docs.html.

Forms	Guidelines
JI PDD form (version 01)	• Guidelines for users of the JI PDD form (version 04) [JISC 18, Annex 4] • Guidance on criteria for baseline setting and monitoring (version 02) [JISC 18, Annex2] • Provisions for the charging of fees (version 02) [JISC 08, Annex 9]
JI SSC PDD form (version 01.1)	• Guidelines for users of the JI SSC PDD form and the form for submission of bundled JI SSC projects (version 04) [JISC 18, Annex 5] • Provisions for JI SSC Projects (version 03) [JISC 18, Annex 3].
JI PoA PDD form (version 01)	Guidelines for users of the JI PoA PDD form (version 01)
JI LULUCF PDD form (version 01)	Guidelines for users of the JI LULUCF PDD form (version 04) [JISC 18, Annex 6]
Form for submission of bundled JI SSC projects (version 01.1)	• Guidelines for users of the JI SSC PDD form and the form for submission of bundled JI SSC projects (version 04) [JISC 18, Annex 5]

3.3.1 Points of PDD

(1) JI-PDD Section A.5. "Project approval by the Parties involved"

The JISC discussed possible options with regard to the timing of the submission of written project approvals by Parties involved, confirmed that at least one other Party, in addition to the host Party(ies), should be involved in a JI project and clarified that [JISC 06, para.21]:

- At least the written project approval(s) by the host Party(ies) should be provided to the AIE and made available to the secretariat by the AIE when submitting the determination report regarding the PDD for publication in accordance with paragraph 34 of the annex to Decision 9/CMP.1 (JI guidelines);
- At least one written project approval by a Party involved in the JI project, other than the host

Party(ies), should be provided to the AIE and made available to the secretariat by the AIE when submitting the first verification report for publication in accordance with paragraph 38 of the JI guidelines, at the latest.

(2) JI-PDD Section B. "Baseline"

A baseline has to be set in accordance with Appendix B of the JI guidelines and further guidance on criteria for baseline setting and monitoring developed by the JISC. As appropriate, project participants may, but are not obliged to, apply CDM AMs. If an AM is used, all explanations, descriptions and analyses shall refer to the selected methodology.

In particular, the following steps should be adhered to:

- Referencing of the approved baseline and monitoring methodology applied to the project;
- Justification of the choice of the methodology and why it is applicable to the project; and
- Description of how the methodology is applied in the context of the project.

(3) JI-PDD Section C. "Crediting period"

Projects starting as of 2000 may be eligible as JI projects if they meet the requirements of the JI guidelines. ERUs shall only be issued for a crediting period starting after the beginning of 2008. The project participants shall choose the starting date of the crediting period to be on or after the date the first emission reductions or enhancements of removals are generated by the JI project. The crediting period shall not extend beyond the operational lifetime of the project. The end of the crediting period can be after 2012, subject to the approval by the host Party.

The JISC noted that, in principle, under the JI Track 2 procedure, a determination referred to the JI guidelines may relate to emission reductions by sources or enhancements of removals by sinks achieved during a monitoring period starting before the date a positive determination regarding a PDD was final in accordance with paragraph 35 of the JI guideline. In this context, the AIE shall also assess whether the emission reductions by sources or enhancements of removals by sinks were monitored and calculated in accordance with the determination regarding the PDD [JISC 11, para.35].

(4) JI-PDD Section G. "Stakeholders' comments"

Information on stakeholders' comments on the project, as appropriate, shall provide:

- A list of stakeholders from whom comments on the project have been received;
- Nature of the comments; and
- Whether and how the comments have been addressed.

3.3.2 Criteria for baseline setting and monitoring[17]

The JISC is responsible for "the review and revision of reporting guidelines and criteria for baselines and

17 This term corresponds to "baseline and monitoring methodologies" in the CDM.

monitoring in Appendix B of the JI guidelines for consideration by the CMP, giving consideration to relevant work of the CDM EB, as appropriate" [JI guidelines, para.3(d)]. Project participants should follow Appendix B of the JI guidelines regarding criteria for baseline setting and monitoring, as well as "Guidance on criteria for baseline setting and monitoring (version 02)[18]" [JISC 18, Annex 2] provided by the JISC, both of which are described below. It has been decided by the CMP that methodologies for baselines and monitoring, including methodologies for small scale project activities, approved by the CDM EB, may be applied by project participants under JI, as appropriate [Decision 10/CMP.1, para.4(a)].

(1) Baseline Setting

Criteria for baseline setting [JI guidelines, Appendix B]

- The baseline for a JI project is the scenario that reasonably represents the GHG emissions or removals that would occur in the absence of the proposed project. A baseline shall cover emissions from all gases, sectors and source categories listed in Annex A, and removals by sinks, within the project boundary.
- A baseline shall be established:
  - On a project-specific basis and/or using a multi-project emission factor;
  - In a transparent manner with regard to the choice of approaches, assumptions, methodologies, parameters, data sources and key factors;
  - Taking into account relevant national and/or sectoral policies and circumstances, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the project sector;
  - In such a way that ERUs cannot be earned for decreases in activity levels outside the project activity or due to force majeure;
  - Taking account of uncertainties and using conservative assumptions.
- Project participants shall justify their choice of baseline.

Regarding the baseline setting criteria above, JISC has given the following guidance (version 02) [JISC 18, Annex 2].

Project boundary

In the case of a JI project aimed at reducing GHG emissions (refer to Section 4.5 in the case of a JI LULUCF project), the project boundary shall:

(a) Encompass all GHG emissions which are:
  - Under the control of the project participants;
  - Reasonably attributable to the project; and
  - Significant, i.e., as a rule of thumb, would by each source account on average per year over the crediting period for more than 1 percent of the annual average GHG emissions of GHGs, or exceed an amount of 2,000 tonnes of CO_2 equivalent, whichever is lower.

(b) Be defined on the basis of a case-by-case assessment with regard to the criteria referred to in (a) above. If a CDM-AM is used, the project boundary shall be defined in line with the AM.

18 The document is to be reviewed by the JISC periodically.

Leakage

- Leakage is the net change of GHG emissions and/or removals which occurs outside the project boundary, and that can be measured and is directly attributable to the JI project.
- Project participants must undertake an assessment of the potential leakage of the proposed JI project and explain which sources of leakage are to be calculated, and which can be neglected. Leakage to be included shall be quantified and a procedure provided for an *ex ante* estimate.

Basic features of a baseline

The baseline for a JI project:

- Is the scenario that reasonably represents the GHG emissions or removals that would occur in the absence of the project;
- Shall cover emissions from all gases, sectors and source categories listed in Annex A of the Kyoto Protocol, and/or removals within the project boundary.

Basic options for the establishment of a baseline

- A baseline shall be established on a project-specific basis and/or using a multi-project emission factor, taking into account the project boundary.
- A multi-project emission factor may be used and its application shall be justified. Sector-wide baselines may e.g. be used if:
  - The physical characteristics of the sector justify the application of a standard emission factor across the sector (e.g. in the case of an integrated electricity network with no major transmission constraints, the physical characteristics of the system may imply that the impact of a project on emissions can be assessed irrespective of its location); and/or
  - The emissions intensity does not vary significantly across the sector (e.g. in the case of diesel power generation in off-grid electricity systems, the emission factor for electricity generation may be based on standard factors with a reasonable degree of accuracy).

Identification of a baseline

- A baseline shall be identified by listing and describing plausible future scenarios on the basis of conservative assumptions and selecting the most plausible one.
- A baseline shall be established taking into account relevant national and/or sectoral policies and circumstances, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the project sector. Key factors that affect a baseline shall be taken into account, e.g.:
  - Sectoral reform policies and legislation;
  - Economic situation/growth and socio-demographic factors in the relevant sector as well as resulting predicted demand. Suppressed and/or increasing demand that will be met by the project can be considered in the baseline as appropriate (e.g. by assuming that the same level of service as in the project scenario would be offered in the baseline scenario);

- Availability of capital (including investment barriers);
- Local availability of technologies/techniques, skills and know-how and availability of best available technologies/techniques in the future;
- Fuel prices and availability;
- National and/or subnational expansion plans for the energy sector, as appropriate; and
- National and/or subnational forestry or agricultural policies, as appropriate.

• Furthermore, each baseline shall be established:
  - In a transparent manner with regard to the choice of approaches, assumptions, methodologies, parameters, data sources and key factors;
  - Taking account of uncertainties and using conservative assumptions; and
  - In such a way that ERUs cannot be earned for decreases in activity levels outside the project activity or due to force majeure.
• In establishing a baseline the project participants shall draw on the list of standard variables contained in Appendix B to the "Guidance on criteria for baseline setting and monitoring (version 02)", as appropriate.
• The project participants shall justify their choice of baseline taking into account Annex 1 to the "Guidance on criteria for baseline setting and monitoring (version 02)", which explains about additionality. If the baseline approach chosen differs from approaches already taken in comparable cases (same GHG mitigation measure, same country, similar technology, similar scale) that an AIE has positively determined, the differences shall be explained and justified.
• In any case:
  - The project participants shall set a baseline in accordance with Appendix B of the JI guidelines;
  - The host Party/Parties (as well as the other Parties involved) has/have to approve the project; and
  - The AIE has to determine whether the project has an appropriate baseline in accordance with the criteria set out in Appendix B of the JI guidelines.

(2) Monitoring

Criteria for monitoring [JISC 18, Annex 2, para.30]

• Project participants shall include, as part of the PDD, a monitoring plan that provides for:
  - The collection and archiving of all relevant data necessary for estimating or measuring GHG emissions and/or removals occurring within the project boundary during the crediting period;
  - The collection and archiving of all relevant data necessary for determining the baseline of GHG emissions and/or removals within the project boundary during the crediting period;
  - The identification of all potential sources of, and the collection and archiving of data on increased GHG emissions and/or reduced removals outside the project boundary that are significant and reasonably attributable to the project during the crediting period.

The project boundary shall encompass all GHG emissions and/or removals under the control of the project participants that are significant and reasonably attributable to the JI project;

- The collection and archiving of information on environmental impacts, in accordance with procedures as required by the host Party, where applicable;
- Quality assurance and control procedures for the monitoring process;
- Procedures for the periodic calculation of the reductions of GHG emissions and/or enhancements of removals by the proposed JI project, and for leakage effects, if any. Leakage is defined as the net change of GHG emissions and/or removals which occurs outside the project boundary, and that is measurable and attributable to the JI project;
- Documentation of all steps involved in the calculations referred to in paragraphs 4 (b) and (f) of appendix B of the JI guidelines.

- Revisions, if any, to the monitoring plan to improve the accuracy and/or applicability of information collected shall be justified by project participants and shall be submitted as part of the determination referred to in paragraph 37 of the JI guidelines by the AIE.
- The implementation of the monitoring plan and its revisions, as applicable, shall be a condition for verification.

Regarding the monitoring criteria above, the JISC has given the following guidance (version 02) [JISC18, Annex 2, para.31-41].

- As part of the PDD, a monitoring plan has to be established by the project participants in accordance with appendix B of the JI guidelines.
- The monitoring plan shall, inter alia:
  - Describe all relevant factors and key characteristics that will be monitored, and the period in which they will be monitored, in particular also all decisive factors for the control and reporting of project performance;
  - Specify the indicators, constants and variables used taking into account paragraph below;
  - Draw on the list of standard variables contained in appendix B to this document, as appropriate;
  - Describe the methods employed for data monitoring (including its frequency) and recording;
  - Present the quality assurance and control procedures for the monitoring process. This includes, as appropriate, information on calibration and on how records on data and/or method validity and accuracy are kept and made available on request;
  - Clearly identify the responsibilities and the authority regarding the monitoring activities;
  - On the whole, reflect good monitoring practices appropriate to the project type. In the case of JI LULUCF projects, this includes applying the good practice guidance, as

developed by the IPCC; and

- Provide a complete compilation of the data that needs to be collected for its application. This includes data that is measured or sampled and data that is collected from other sources (e.g. official statistics, expert judgment, proprietary data, IPCC, commercial and scientific literature etc.). Data that is calculated with equations should not be included in the compilation. The information in the monitoring plan shall be provided in tabular form.

- The indicators, constants, variables and/or models used shall be reliable (i.e. provide consistent and accurate values) and valid (i.e. be clearly connected with the effect to be measured), and shall provide a transparent picture of the emission reductions or enhancements of removals (to be) monitored. In particular, it is recommended with regard to:
  - Project-specific indicators to use, to the extent possible, indicators that are already used in normal business practice and/or have to be reported e.g. to local authorities. Such indicators might also be used to cross-check project operations (e.g. changes in the ratio of fuel input and energy output could indicate that the project equipment is not working properly and leakage effects have occurred);
  - Leakage indicators to use data from suppliers/utilities and/or available public statistics and/or to conduct surveys, as business-linked indicators might not be available and leakage effects can be controlled less effectively by the project participants.

    Default values, may be used, as appropriate. In the selection of default values, accuracy and reasonableness shall be carefully balanced. The default values chosen should originate from recognized sources, be supported by statistical analyses providing reasonable confidence levels and be presented in a transparent manner.
- Emission reductions or enhancements of removals shall be estimated/calculated in accordance with Annex 2 of the guidance on criteria for baseline setting and monitoring, which is described further down.
- If a national or international monitoring standard has to be and/or is applied to monitor certain aspects of the project, this standard shall be identified and a reference as to where a detailed description of the standard can be found shall be provided. Whenever possible, internationally recognized standards/methods with regard to monitoring (as well as calibration, as appropriate) should be applied.
- In any case:
  - The project participants shall set a monitoring plan in accordance with appendix B of the JI guidelines, in particular covering the criteria listed in paragraph above;
  - The host Party/Parties (as well as the other Parties involved) has/have to approve the project; and
  - The AIE has to determine whether the project has an appropriate monitoring plan in accordance with the criteria set out in appendix B of the JI guidelines.
- Project participants shall ensure that monitoring occurs in accordance with the monitoring plan.
- If statistical techniques are used for monitoring, these shall be documented and used in a

conservative manner.

- In accordance with paragraph 36 of the JI guidelines, project participants shall submit to an AIE a monitoring report on reductions in GHG emissions or enhancements of removals that have already occurred. This report will be made publicly available.
- The project participants are encouraged to improve the monitoring process and its results. Revisions, if any, to the monitoring plan to improve the accuracy and/or applicability of information collected shall be justified by project participants and shall be submitted for the determination referred to in paragraph 37 of the JI guidelines by the AIE. In this case the AIE shall determine whether the proposed revisions improve the accuracy and/or applicability of information collected, compared to the original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans and, in case of a positive determination, shall proceed with the determination referred to in paragraph 37 of the JI guidelines.
- Data monitored and required for determination according to paragraph 37 of the JI guidelines are to be kept for two years after the last transfer of ERUs for the project.

(3) Additionality

In accordance with Article 6 of the Kyoto Protocol, a joint implementation project has to provide a reduction in emissions by sources, or an enhancement of removals that is additional to any that would otherwise occur.

Having identified a baseline, additionality can be demonstrated, inter alia, by using one of the following approaches:

- Provision of traceable and transparent information showing that the baseline was identified on the basis of conservative assumptions, that the project scenario is not part of the identified baseline scenario and that the project will lead to reductions of GHG emissions or enhancements of removals;
- Provision of traceable and transparent information that an accredited independent entity has already positively determined that a comparable project (to be) implemented under comparable circumstances (same GHG mitigation measure, same country, similar technology, similar scale) would result in a reduction of GHG emissions or an enhancement of removals that is additional to any that would otherwise occur and a justification why this determination is relevant for the project at hand.
- Application of the most recent version of the tool for the demonstration and assessment of additionality approved by the CDM Executive Board (allowing for a grace period of two months when the PDD is submitted for publication on the UNFCCC JI website), or any other method for proving additionality approved by the CDM Executive Board.

The approach chosen, including its appropriateness, shall be justified as a basis for the determination referred to in paragraph 33 of the annex to Decision 9/CMP.1 on guidelines for the implementation of Article 6 of the Kyoto Protocol [Annex 1 to the Guidance of criteria for

baseline setting and monitoring version 02 (JISC 18, Annex 1)].

(4) Calculation of emission reductions or enhancements of removals

- The emission reductions or enhancements of removals generated by the project have to be estimated ex ante in the PDD of the project and calculated ex post according to the monitoring plan included in the PDD:
  - On a periodic basis;
  - At least from the beginning until the end of the crediting period;
  - On a source-by-source/sink-by-sink basis;
  - In tonnes of CO_2 equivalent, using global warming potentials defined by Decision 2/CP.3 or as subsequently revised in accordance with Article 5 of the Kyoto Protocol.
- Reductions of GHG emissions or enhancements of removals generated by joint implementation (JI) projects are estimated/calculated by comparing the quantified GHG emissions or removals within the project boundary in the baseline scenario with those in the project scenario and adjusting for leakage. In practice, this estimation/calculation can be conducted, as appropriate, in one of the following two ways:
  - Assessment of emissions or removals in the baseline scenario and in the project scenario:
    (i) Estimation/calculation of GHG emissions or removals within the project boundary in the baseline scenario;
    (ii) Estimation/calculation of GHG emissions or removals within the project boundary in the project scenario;
    (iii) Difference of the results of the estimations/calculations referred to in subparagraphs (i) and (ii) above;
    (iv) Adjustment of the result of subparagraph (iii) above for leakage.
  - Direct assessment of emission reductions:
    (i) Direct estimation/calculation of the difference between the GHG emissions within the project boundary in the baseline scenario and in the project scenario (e.g. in the case of landfill gas projects, the emission reductions can be calculated by multiplying the methane captured with an appropriate factor based on the global warming potential of methane);
    (ii) Adjustment of the result of subparagraph (i) above for leakage.
- The project boundary chosen affects the identification of sources/sinks for which emissions or removals have to be assessed when estimating/calculating reductions of GHG emissions or enhancements of removals.
- A number of key factors, e.g. those referred to this document as well as project-specific factors such as operation mode and/or technical performance, influence:
  - The baseline scenario and the baseline emissions or removals; and
  - The activity level of the project and the emissions or removals as well as risks associated with the project; and should therefore be taken into account, as appropriate, not only

when establishing a baseline, but also when estimating/calculating the emission reductions or enhancements of removals (to be) generated by the project.

- Data sources used to define project and baseline scenarios, to assess leakage effects and to estimate/calculate emission reductions or enhancements of removals shall be clearly identified, reliable and transparent.
- In the estimations/calculations referred to above emission factors, including default emission factors, may be used, as appropriate. In the selection of emission factors, accuracy and reasonableness shall be carefully balanced. The choice of emission factors shall be justified.
- The estimations/calculations referred to above shall, in particular, be based on conservative assumptions and the most plausible scenarios, and be conducted in a transparent manner. In this context the project participants may draw on appendix A to this document, as appropriate [Annex 2 to the Guidance of criteria for baseline setting and monitoring version 02 (JISC 18, Annex 2)].

3.4 JI small scale projects[19]

3.4.1 JI small scale thresholds

In paragraph 14 of Decision 3/CMP.2, the CMP amended the thresholds for joint implementation (JI) SSC projects in accordance with the revised thresholds for SSC project activities under the clean development mechanism (CDM) as defined in paragraph 28 of Decision 1/CMP.2. On this basis version 02 of the document at hand was developed by the JISC [JISC 18, Annex 3].

In accordance with paragraph 14 of Decision 3/CMP.2, referring to paragraph 28 of Decision 1/CMP.2, three types of JI SSC projects are defined:

- Renewable energy projects with a maximum output capacity of up to 15 megawatts (MW) (or an appropriate equivalent) (hereinafter referred to as type I JI SSC projects);
- Energy efficiency improvement projects which reduce energy consumption, on the supply and/or demand side, by up to 60 gigawatt hours (GWh) per year (or an appropriate equivalent) (hereinafter referred to as type II JI SSC projects);
- Other projects that result in emission reductions of less than or equal to 60 kilotonnes (kt) of carbon dioxide (CO_2) equivalent annually (hereinafter referred to as type III JI SSC projects).

With reference to CDM related clarifications, the following additional definitions and/or clarifications apply to the JI SSC project types listed in paragraph above:

- Type I JI SSC projects:
  - "Maximum output capacity" is defined as installed/rated capacity, as indicated by the manufacturer of the equipment or plant, disregarding the actual load factor of the plant;
  - "15 megawatts" is defined as 15 MW(e)[20]. "Appropriate equivalent" is defined as appropriate equivalent of 15 MW(e). Project proposals may also refer to MW(p) or MW(th). In these cases an appropriate conversion factor to MW(e) has to be applied.[21]
- Type II JI SSC projects:
  - "Energy efficiency improvement" is the improvement in the service provided per unit power, i.e. projects which increase unit output of traction, work, electricity, heat and/or light per MW input are energy efficiency improvement projects;
  - The reduction of energy consumption is measured in watt-hours with reference to a baseline. Lower consumption as a result of lower activity shall not be taken into consideration;
  - Demand side, as well as supply side, projects shall be taken into consideration, provided that a project results in a reduction of maximum 60 GWh per year;
  - "60 gigawatt hours" is defined as 60 GWh(e). "Appropriate equivalent" is defined

19 This section is based on the "Provisions for JI SSC Projects" (Version 03) [JISC 18, Annex 3].

20 (e) denominates electric, (p) peak and (th) thermal.

21 E.g. 45 MW(th) may be regarded as equal to 15 MW(e).

as appropriate equivalent of 60 GWh(e) and is calculated applying an appropriate conversion factor.

- Type III JI SSC projects:
  - Type III JI SSC projects are limited to projects that result in emission reductions of less than or equal to 60 kt CO_2 equivalent annually;
  - They could include, inter alia, agricultural projects, fuel switching, industrial processes and waste management.

3.4.2 Project categories

JI SSC projects have to conform to one of the project categories for the small scale CDM project activities (Type I, II, III). Additional project categories under JI may be approved by the JISC either on its own initiative or based on submissions by project participants. Project participants may make a substantiated request in writing to the JISC providing information about the project/technology and a definition of the new project category proposed.

3.4.3 Bundling and debundling

JI SSC projects can be bundled at the following stages in the project cycle under the verification procedure under the JISC:

- SSC PDD;
- Determination referred to in paragraph 33 of the JI guidelines (so-called determination);
- Monitoring;
- Determination referred to in paragraph 37 of the JI guidelines (so-called verification).

The provisions for bundling and debundling are similar to those for the SSC project activities.

3.4.4 Baseline setting and monitoring

- In baseline setting and monitoring, appendix B of the JI guidelines and the "Guidance on criteria for baseline setting and monitoring", as well as other guidance of the JISC, specifically that referred to in paragraph 2 of the JI guidelines, shall be taken into account. In particular, where applicable project participants, may opt to apply approved CDM simplified baseline and monitoring methodologies for SSC project activities, in accordance with paragraph 4 (a) of Decision 10/CMP.1. If an approved CDM baseline and monitoring methodology is used, the most recent valid version of the CDM methodology shall be applied when the project design document (JI SSC PDD) is submitted for publication on the UNFCCC JI website in accordance with paragraph 32

of the JI guidelines, allowing for a grace period of two months. The approved CDM methodology shall be used in its totality, including all explanations, descriptions and analyses.

- Leakage only has to be considered within the boundaries of non-Annex I Parties, if applicable.
- If projects in a bundle referred to in section above use the same baseline, this has to be justified by considering the particular situation of each project in the bundle.
- If projects are bundled, a separate monitoring plan shall apply for each of the constituent projects or an overall monitoring plan, which, inter alia, may also propose to monitor performance of the constituent projects on a sample basis, shall apply for the bundled projects. In the latter case the projects have to be located in the territory of the same host Party, have to pertain to the same project category and have to apply the same technology or measure, and the AIE shall determine that the overall monitoring plan reflects good monitoring practice appropriate to the bundled projects and provides for collection and archiving of the data needed to calculate the emission reductions achieved by the bundled projects.

3.5 Recent status of JI project

Figure 3-4 illustrates the trend of registered projects.

73 projects have been registered on November, 2009. A large proportion of the host countries are east Europe countries, such as Poland, Ukraine, Czech Republic. The major project types are Landfill gas, Wind, Biomass energy, and N_2O.

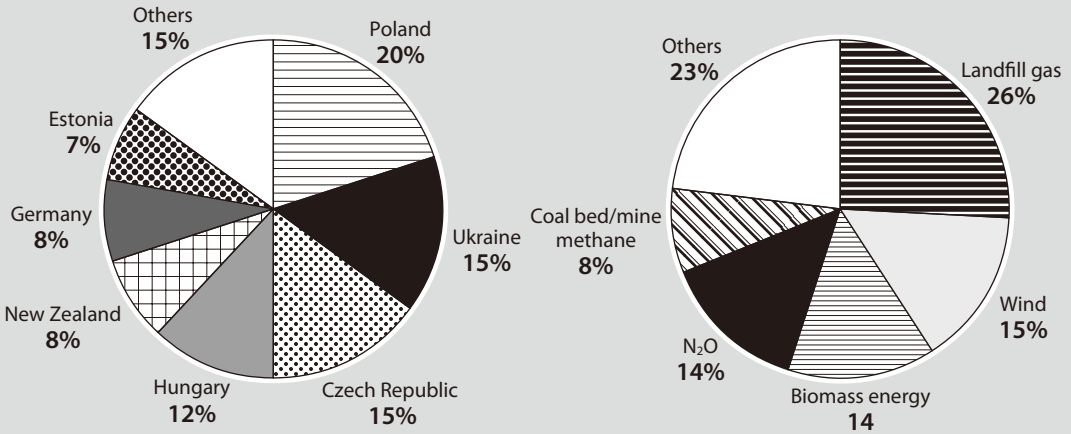


Figure 3-4 Status of registered JI projects

Figure 3-5 shows the distribution of estimated ERUs.

ERUs can only be issued for the emission reductions made after the beginning of the year 2008. According to the amount of estimated emission reductions, Ukraine and Germany are two great contributors. The emission reduction of N_2O destruction projects accounts for 44% of total emission reductions from JI projects.

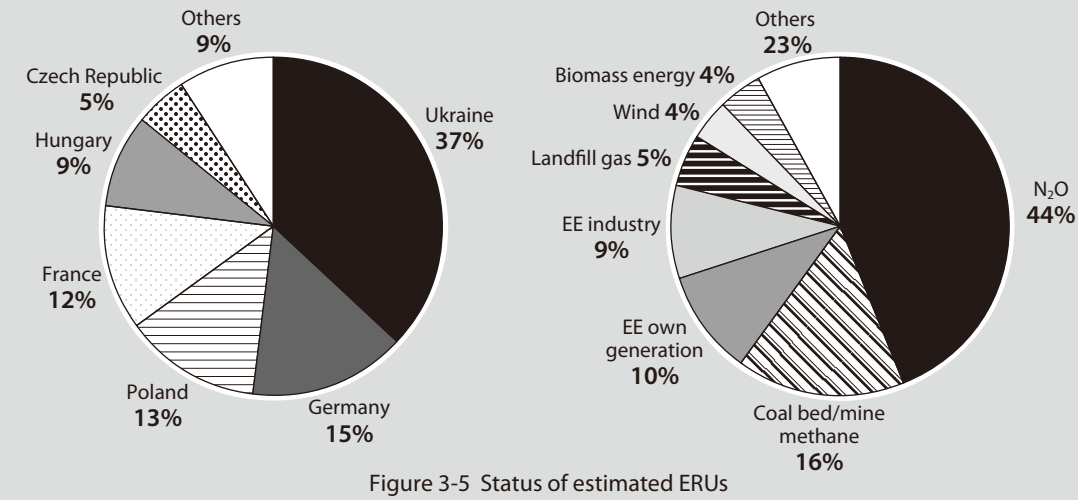


Figure 3-5 Status of estimated ERUs

Figure 3-6 describes the distribution of issued ERUs.

2.92 million ERUs have been issued as of November, 2009. ERUs issued are mainly from N_2O destruction, coal bed/mine methane and energy efficiency in industry.

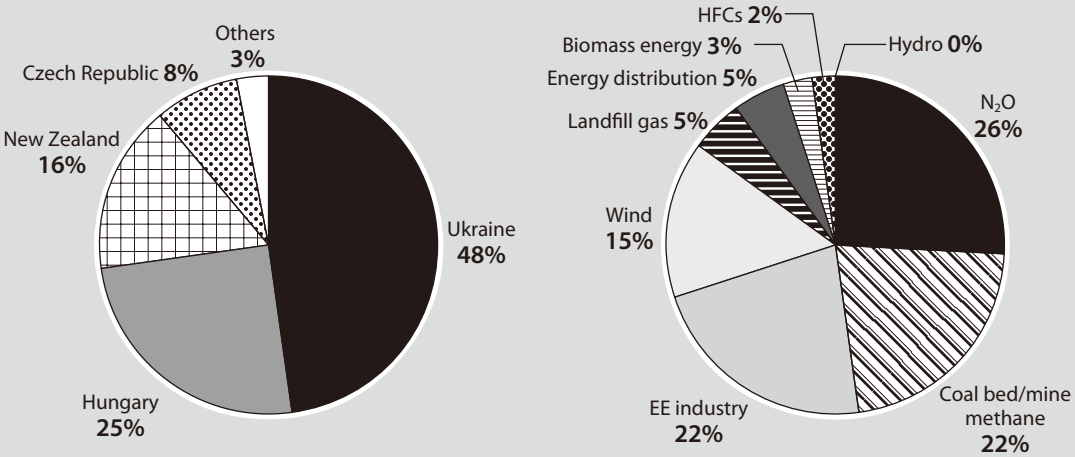


Figure 3-6 Status of issued ERUs

4 Japan's Approach towards CDM/JI implementation

4.1 Approval of CDM/JI Projects

In order to facilitate the implementation of JI and CDM projects, the Japanese government established institutional arrangements based on the government's Guideline of Measures to Prevent Global Warming (approved 19 March 2002).

The Global Warming Prevention Headquarters were established inside the Cabinet on December 19, 1997 with the aim of steadily implementing the Kyoto Protocol and to comprehensively advance concrete and effective measures for the prevention of global warming.

4.1.1 Designated National Authority (DNA) of Japan

The Japanese DNA is the Liaison Committee for the Utilization of the Kyoto Mechanisms, established under the Steering Committee of the Global Warming Prevention Headquarters. It is comprised of officials at the division director level of the Cabinet Secretariat, Ministry of the Environment, Ministry of Economy, Trade and Industry, Ministry of Foreign Affairs, Ministry of Agriculture, Forestry and Fisheries, and the Ministry of Land, Infrastructure and Transport, all of which have a close involvement with JI and CDM projects. The Liaison Committee for the Utilization of the Kyoto Mechanisms, which consists of the ministers concerned and act on behalf of Japan, is responsible for decisions relating to the approval of CDM/JI projects and authorization of the voluntary participation of legal entities in the projects.

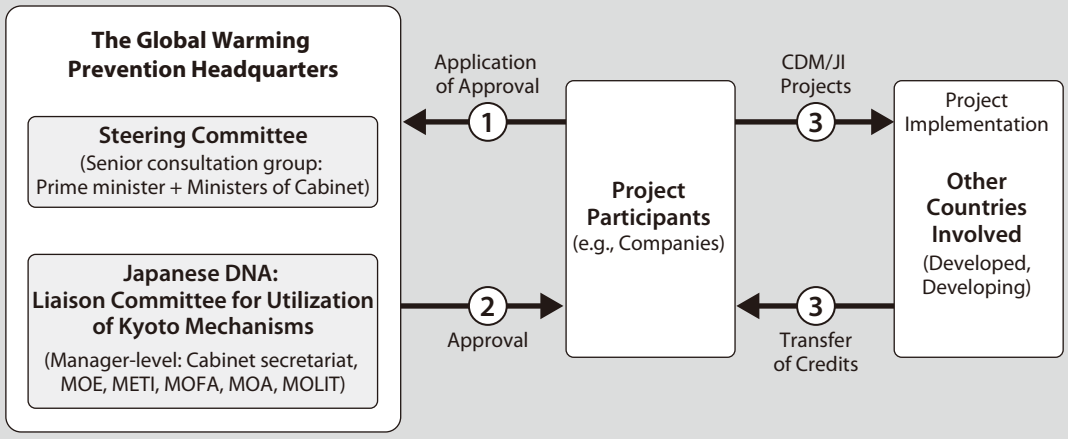


Figure 4-1 Project Approval Procedure of Japanese DNA

(Source: Ministry of the Environment, Japan, http://www.env.go.jp/earth/ondanka/mechanism/03.pdf)

4.1.2 Guidelines for approval of projects relating to CDM/JI

(1) Applications relating to CDM/JI projects

Applicants seeking Japanese governmental approval for implementation of CDM and JI projects are required to complete the necessary section of the application form and submit the application to a contact point for applications at one of the ministries in the Liaison Committee for Utilization of the Kyoto Mechanisms (hereinafter "the Liaison Committee"). On receipt of an application, the ministry that has received it provides copies of the application to the ministry requested by the applicant. That ministry will examine the application in accordance with the criteria for approval, and report the results of examination to the Liaison Committee.

In cases in which official funds are part of the funding sources of a CDM-related project and the applicant must obtain affirmation from the Japanese government that the said official funds will not result in a diversion of Japanese official development assistance (ODA) and are separate from and not counted towards the financial obligations of Japan, the ministry in charge of providing project support will obtain a confirmation from the official body that provided the said funds as to whether or not the funds are counted as ODA. In the event that the funds are counted as ODA, the said ministry will obtain a confirmation from Japan's Ministry of Foreign Affairs as to whether or not the said official funds constitute a diversion of ODA, and then report the findings to the Liaison Committee.

The Liaison Committee decides which ministry is to be in charge of providing project support. Based on the results of examination by the ministry in charge of providing project support, the Liaison Committee determines whether or not to approve a project. If the project is approved, the ministry in charge of providing project support will transmit a Letter of Japanese Government Approval to the applicant. If the project is not approved, the ministry in charge of providing project support will notify the applicant of that fact in writing, along with the reason for the project's failure to obtain approval. If a project has not been approved, however, the applicant may re-apply after making revisions to the application documents in order to address the reasons the previous submission failed to obtain approval.

The approval process is to be conducted as expeditiously as possible. The standard processing time is one month. Guidelines and documents for approval of CDM/JI projects are available on the official site for the Prime minister of Japan and his cabinet.

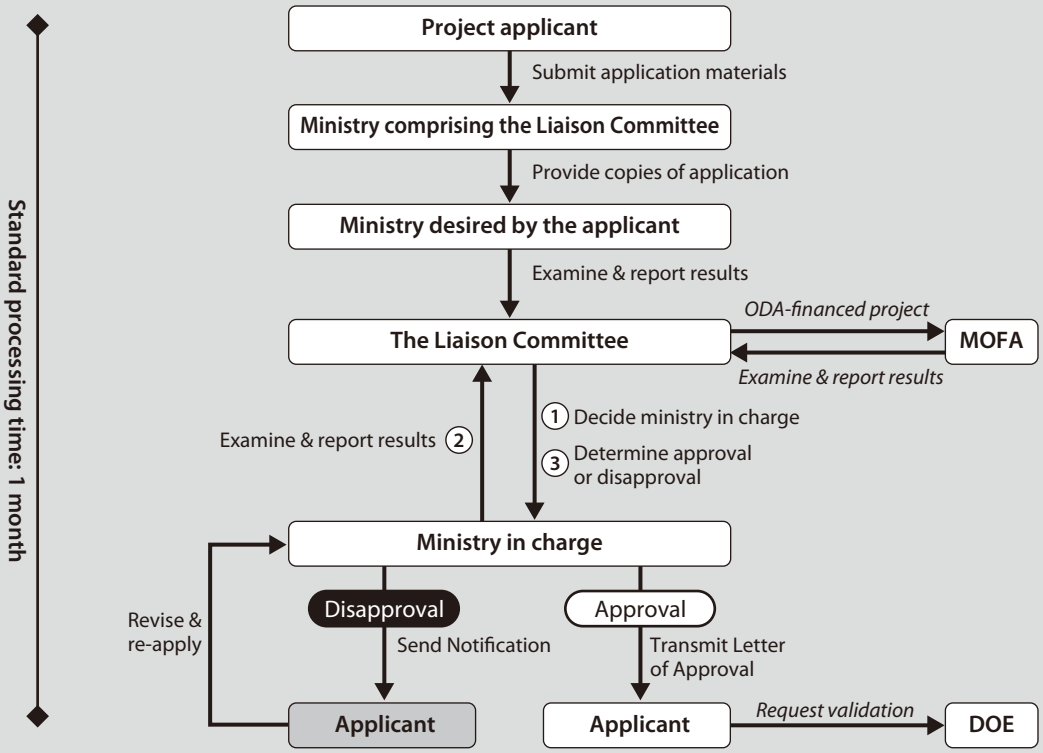


Figure 4-2 Applications relating to CDM/JI projects

(2) Criteria for approval

The examination process of the Liaison Committee is not the same as the examination to be done by bodies such as a Designated Operational Entity or the CDM Executive Board.

Examination of applications for approval will be conducted in accordance with the following criteria.

- The project does not contravene the details of international agreements such as the Kyoto Protocol and Marrakech Accords.
- The project participant(s) are not experiencing management difficulties or other circumstances, such as insolvency, that would clearly obstruct proper implementation of the project.

(3) Reporting on CDM and JI projects

The project participant(s) is (are) to report to the ministry in charge of providing project support in accordance with the required items described in the Guide to Project Reporting. If more than one ministry is in charge of providing project support, the project participant(s) may report to any one of the ministries, and the ministry that receives the report is to promptly provide copies of the said report to the other ministry (or ministries) in charge of providing project support.

(4) Communications and negotiations with host country Parties and international bodies concerned

The ministry in charge of providing project support is (are) to ascertain the state of progress from

the time of project approval until issuance of emission reductions, etc., under the Kyoto Protocol, and to provide supplementary assistance for approval, etc., as well as issuance of emissions reduction units, etc., by host country Parties and international bodies concerned. In order to fulfill the tasks, the ministry in charge of providing project support may provide guidance and advice to the project participants and may require them to provide reports relating to the projects.

The Ministry of Foreign Affairs, in consultation with the ministries providing project support, shall carry out affairs such as communications with Japanese Overseas Establishments and diplomatic procedures with host countries and international bodies concerned, from the start of the project until the issuance of emissions reduction units, etc., under the Kyoto Protocol, as well as necessary administrative tasks such as negotiations with the relevant agencies of the country concerned.

(Source: Official site for the Prime minister of Japan and his cabinet, http://www.kantei.go.jp/foreign/policy/ondanka/1016sisin_e.html)

4.1.3 Domestic Designated Operational Entities (DOEs)

There are 5 domestic Designated Operational Entities (DOEs) in Japan, for validation, verification and certification of CDM/JI projects. Among these, Japan Quality Assurance Organisation (JQA) happens to be the world's first entity recognized as a DOE. Others in Japan include TÜV Rheinland Japan Ltd. and branches of foreign DOEs. Each DOE has sectoral scopes[22] for validation, verification and certification as indicated below:

Table 4-1 Japanese DOEs and Sectoral Scope

Entity name	Sectoral scopes for validation	Sectoral scopes for verification and certification
Japan Quality Assurance Organisation (JQA)	1-15	1-15
JACO CDM., LTD	1-3, 14	1-3
Deloitte Tohmatsu Evaluation and Certification Organization (Deloitte-TECO)	1-3	1
Japan Consulting Institute (JCI)	4, 5, 10	-
Japan Management Association (JMA)	1-4, 6, 8, 9, 14	1-4, 6, 8, 9, 14

22 Sectoral scopes

No.	Sectoral scope	No.	Sectoral scope
1	Energy industries (renewable-/ non-renewable sources)	9	Metal production
2	Energy distribution	10	Fugitive emissions from fuels (solid, oil and gas)
3	Energy demand	11	Fugitive emissions from production and consumption of halocarbons and sulphur hexa fluoride
4	Manufacturing industries	12	Solvent use
5	Chemical industries	13	Waste handling and disposal
6	Construction	14	Afforestation and reforestation
7	Transport	15	Agriculture
8	Mining/ mineral production		

(1) Japan Quality Assurance Organisation (JQA)

JQA is a not-for-profit organization specializing in registration services for ISO management systems as well as safety testing and certification for compliance to a variety of standards, both national and international. JQA started its operation in 1957, initially as a designated inspection body under Japan's Export Inspection Law.

(2) Japan Audit and Certification Organisation for Env. And Quality (JACO)

JACO CDM actively contributes to solutions in the global warming issue toward a sustainable development of society. In particular, the company is specialized in validation of CDM project activities and verification of the monitored reduction in anthropogenic GHG emissions.

(3) Deloitte Tohmatsu Evaluation and Certification Organization (Deloitte-TECO)

The company provides the following services: (a) certification based on international standards for Environmental Management Systems, Quality Management Systems, Information Security Management Systems and Food Safety Management Systems; (b) environmental due diligence; (c) CDM validation and verification in GHG reduction activities; (d) environmental rating.

(4) Japan Consulting Institute (JCI)

Established in 1955, Japan Consulting Institute (JCI) has been providing consulting services in developing countries to help their economies industrialize. It also performs supervision and monitoring of plant construction, operation and maintenance, in line with Japanese governmental policies and international standards. JCI CDM Center was established in September 2002 as a specialized operating unit in the JCI's organization to undertake validation, verification and certification of CDM/JI project activities.

(5) Japan Management Association (JMA)

In April 2006, Japan Management Association (JMA) established the GHG Certification Center (JMA CC). Its objectives are to promote good management; provide clients with impartial or neutral GHG emissions validation and verification activities that gain the trust of all stakeholders; and thereby contribute to sustainable development of the domestic and international communities. JMA CC functions as a third party certification body in CDM projects and JI projects based on the Kyoto Protocol and the J-VETS (Japan's Voluntary Emission Trading Scheme) program by the initiative of the Ministry of the Environment.

4.2 Support from Japan's Ministry of the Environment for CDM/JI

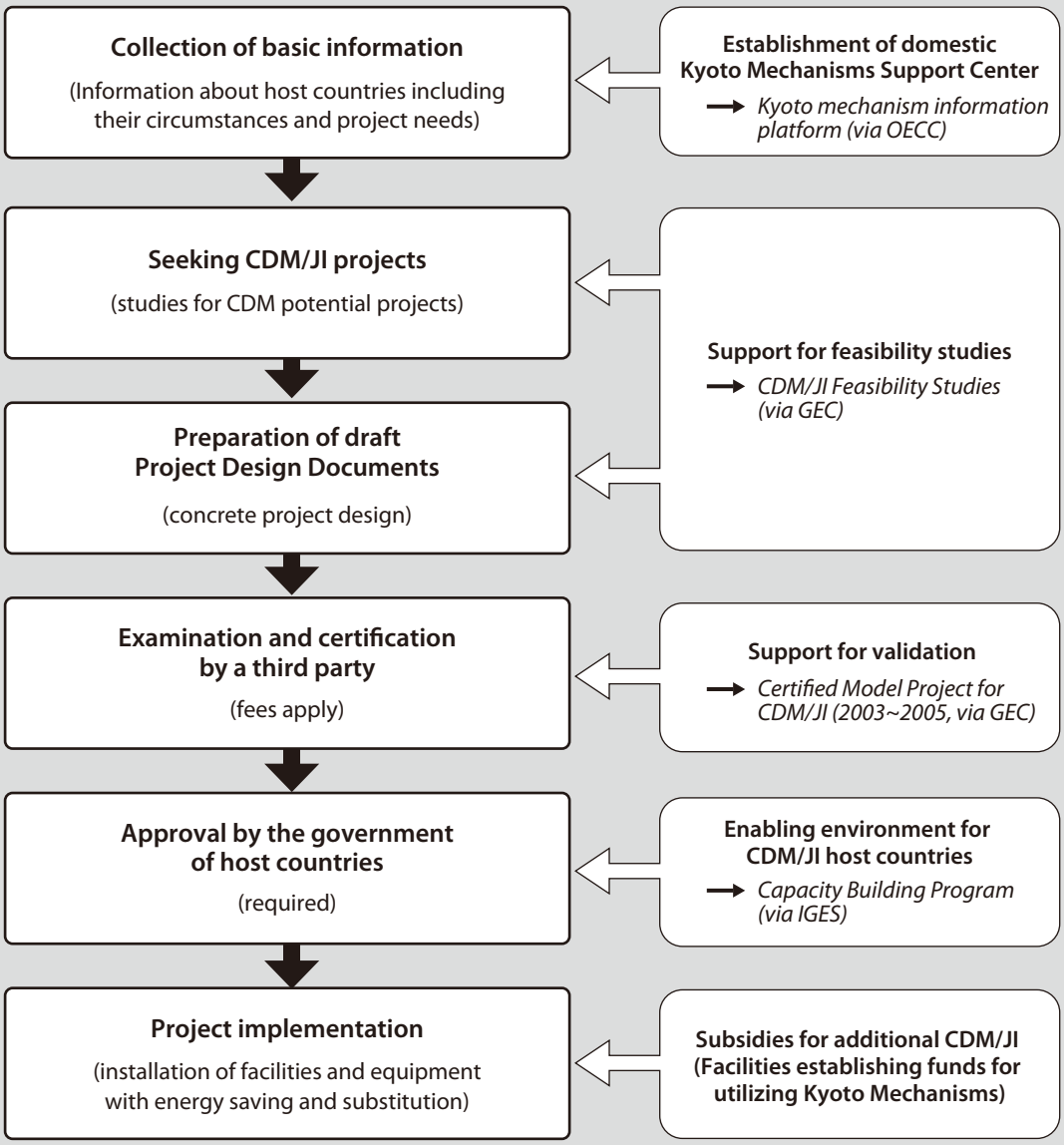


Figure 4-3 The Japan Ministry of the Environment's Support for CDM/JI

4.2.1 Kyoto Mechanisms Information Platform

With the cooperation of experts on the Kyoto Mechanisms, the Ministry of the Environment Japan (MOE) established a support center in Japan to collect and consolidate general and specific information

for those who wish to participate in the Kyoto Mechanisms. The support center (a) provides important information about Kyoto Mechanisms, (b) collects information about hosting countries including their project needs, the legal acceptability and supporting method, and (c) connects technologies and finance of participants with the host country. The Kyoto Mechanisms Information Platform is managed by the Overseas Environmental Cooperation Center, Japan (OECC).
The Kyoto Mechanisms Information Platform provides information as follows:

- Information for CDM/JI participants in Japan
  - Rules of the Mechanisms
  - Promising CDM/JI projects
  - Situation of host countries, etc
- Information for counterparts in host countries
  - Japanese CDM/JI participants
  - Cost-effective clean technologies by CDM/JI, etc.

Kyoto Mechanisms Information Platform website: http://www.kyomecha.org/e/index.html.

4.2.2 CDM/JI Feasibility Studies

Since 1999, the Ministry of the Environment, Japan commissioned the Global Environment Centre Foundation (GEC) to serve as the secretariat for the CDM/JI Feasibility Study (FS) Program. The purpose of the program is to explore promising CDM/JI projects, and to provide the information to project developers and policy makers. These studies include on-site examination, emission reduction calculations and the drafting of PDDs.
The program mainly focuses on the areas of waste management, biomass utilization, and afforestation/reforestation. Some projects resulting from the program are now at methodology proposal or validation stage.

GEC CDM/JI Feasibility Study Program website: http://gec.jp/gec/gec.nsf/en/Activities-CDMJI_FS_Programme-Top.

4.2.3. Capacity building program for CDM/JI host countries

The Ministry of the Environment, Japan is making efforts to enhance CDM/JI capacity building for stakeholders in host countries. The Institute for Global Environmental Strategies (IGES), established by an initiative of the Japanese government in 1998, is a research institute that conducts pragmatic and innovative strategic policy research to support sustainable development in the Asia-Pacific region. The Clean Development Mechanism (CDM) Program of IGES, conducts training and other activities

in support of the CDM in developing countries in Asia. The program disseminates information, contributes to the establishment of networks in Japan and target countries, and builds capacity to initiate, develop and implement CDM projects.

- CDM Capacity Building - enabling environment for CDM projects: Local personnel training will contribute to realizing CDM projects through coordination between CDM host country governments and project proponents. The project will propose the reform of CDM rules based on experience from capacity building activities.
- Enabling environment for Joint Implementation (JI) and Green Investment Scheme (GIS) projects: To improve the policy and institutional frameworks for JI and GIS, the characteristics of promising JI and GIS projects, including expected greenhouse gas (GHG) emission reductions and financial and technological needs, will be examined.

IGES also conducts activities as follows:

- Enhancing developmental benefits of CDM projects: This activity is aimed at developing policy frameworks for effective implementation of CDM in sectors (e.g. waste management, biomass and other renewable sources of energy, and small-scale projects), which have high potential to deliver sustainable development benefits.
- Carbon Credit Procurement Assistance: The Program identifies and develops CDM projects in the target countries and carries out purchasing support for the New Energy and Industrial Technology Development Organisation (NEDO), which is affiliated with the Japanese government.

IGES CDM Program website: http://www.iges.or.jp/en/cdm/programme.html.

4.2.4 Co-benefits CDM model projects

In addition to GHG mitigation CDM projects are expected to contribute to technology transfer and sustainable development of developing countries. It is also strongly desirable for that "co-benefits" type CDM projects will be implemented projects that not only mitigate GHG emissions, but also address local needs for environmental quality improvement (i.e., projects with synergistic benefits).

These subsidized projects are implemented as CDM model projects that address the needs of Asian developing countries facing environmental problems such as air pollution, water pollution, and waste-related issues, in order to promote co-benefits CDM projects that aim to achieve the co-benefits of climate change mitigation and environmental pollution countermeasures.

The government provides a subsidy to cover half of the initial investment for a CDM model project aimed at achieving co-benefits, on condition that 50% and above of the credits obtained from the project will be transferred to the government at no cost.

- Eligible candidates: Private organizations

- Projects to be subsidized: Co-benefits CDM model projects aimed at reducing greenhouse gas emissions and preventing environmental pollution
- Amount of subsidy: Half of the initial investment

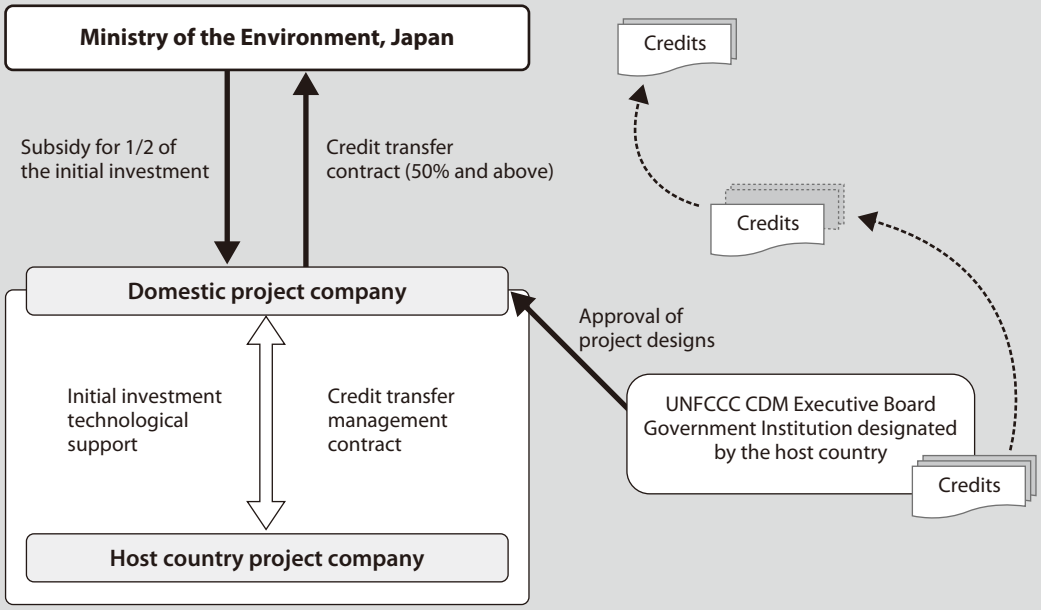


Figure 4-4 Structure of Co-benefits CDM Model Projects

Table 4-2 Target Areas of Co-benefits

Target Area	Measures	Environmental improvement benefits	Global warming prevention benefits
Air pollution	Improvements in combustion efficiency	Decrease in air contaminants (SOx, NOx and dust)	Reduction in CO_2 emissions
	Fuel switching	Decrease in air contaminants (SOx, NOx and dust)	Reduction in CO_2 emissions
	Traffic measures	Decrease in air contaminants (SOx, NOx and dust)	Reduction in CO_2 emissions
Water pollution	Prevention of methane gas from sludge in rivers	Water quality improvement and odor control	Reduction in CH_4 (methane) emissions
Wastes	Proper landfill of organic waste	Proper waste treatment	Reduction in CH_4 (methane) emissions
	Use of biomass waste	Reduce the amount of waste	Reduction in CH_4 (methane) emissions

Box 4-1: Co-Benefits CDM Model Projects

Project-1: Reduction of methane gas emissions and environmental improvement at a closed landfill site (Malaysia)

This project aims to reduce greenhouse gases emitted from a landfill site by changing it from anaerobic to semi-aerobic conditions, and also aims to prevent environmental pollution by stabilizing the conditions of the landfill, to improve the quality of leachate, and to prevent foul odors.

< Prevention of climate change >
- Reduction of greenhouse gas emissions

< Prevention of environmental pollution >
- Stabilization of the environment of the landfill and its safe closure
- Improvement in the quality of leachate
- Prevention of foul odors

Project-2: Biogas power generation project (phase 1) using wastewater discharged from an ethanol factory (Thailand)

This project aims to treat wastewater discharged from an ethanol factory, where wastewater is currently treated in an anaerobic open lagoon, by using an anaerobic waste fermenter and thereby preventing environmental pollution by improving the quality of wastewater and preventing foul odors. At the same time, it aims to reduce greenhouse gases discharged into the atmosphere and to provide a local power utility with electricity generated from wastewater, thereby reducing the consumption of fossil fuels.

< Prevention of climate change >
- Reduction in greenhouse gas emissions

< Prevention of environmental pollution >
- Improvement in the quality of wastewater
- Prevention of foul odors
- (Reduction in the size of the anaerobic open lagoon)

(Source: Global Environment Centre Foundation (GEC), http://gec.jp/gec/jp/Activities/cdm/sympo/2009/osaka01moe.pdf)

4.2.5 Support Tools for the Implementation of Co-benefits Projects

Further information about support tools for the implementation of co-benefits projects is available on the Kyoto Mechanisms information platform website: http://www.kyomecha.org/cobene/e/tools.html.

(1) Good Practices Matrix

The aim of this matrix is to provide reference information which national and local government policy makers, private businesses, ODA administrators and others can use in reviewing initiatives in each area and identifying future actions to be taken.

In this Good Practices Matrix, typical cases of co-benefits projects already being implemented in the areas of air, water and waste are classified according to specific industry sector and emissions source.

(2) Catalog for Identification of Co-benefits Projects

The aim of this catalog is to provide reference information which national and local government policy makers, private businesses, ODA administrators and others can use to identify the potential of co-benefits projects.

In this catalog, the processes involved in co-benefits projects which can be implemented in the areas of air, water and waste are presented using simplified diagrams, and comparing a problem and solution are presented.

4.2.6 Manual for Quantitative Evaluation of the Co-Benefits Approach to Climate Change Projects

In order to effectively promote the use of the co-benefits approach in developing countries, it is important to have concrete methods to evaluate co-benefits for both climate and local environment.

To properly determine the benefits of a project, quantitative evaluation methodologies are desirable, but it is also important to use simple methods, so that when project participants actually use the evaluation methodology they are not required to deal with additional burdens, like the need to invest new funds, install sophisticated measurement devices, or engage in cumbersome monitoring tasks.

The objective of the evaluation manual referred to here is to encourage project parties to willingly and efficiently introduce and promote co-benefits-type CDM projects, by presenting the simplest and most qualitative methods possible to evaluate two or more project benefits on the environmental and climate change dimensions.

Here we focus on three categories of environmental pollution countermeasures (water quality improvement, air quality improvement, and waste management) within the co-benefits approach. We also summarize evaluation methodologies, the equations to be used, and examples of actual calculations in order to support and promote projects that will contribute to environmental pollution countermeasures while also acting as climate change countermeasures.

The Manual for Quantitative Evaluation of the Co-Benefits Approach to Climate Change Projects is available on the Ministry of the Environment website (the Kyoto Mechanisms information platform website): http://www.env.go.jp/en/earth/, http://www.kyomecha.org/cobene/e/tools.html.

4.3 Other organizations' support for CDM/JI

Japan Kyoto Mechanisms Acceleration Programme (JKAP) is an aggregation of support programmes provided by the Government of Japan. It was established under the coordination of several ministries and governmental organizations in March, 2005. It offers a wide range of support schemes, from capacity building to assistance right up to point of the issuance of emissions credits. Japanese and host country stakeholders are encouraged to utilize these programmes for the successful implementation of Kyoto Mechanisms projects and the realization of sustainable development. The participating ministries and governmental organizations are as follows:

Ministries: MOFA / METI / MOE
Governmental organizations: GEC / IGES / JBIC / JETRO / JICA / NEDO / NEXI / OECC / JCF

Further information about JKAP is available on the Kyoto Mechanisms Information Platform website: http://www.kyomecha.org/e/jkap/jkap.html.

4.3.1 Global Environment Centre Foundation (GEC)

The Global Environment Centre Foundation (GEC) was established in 1992 as a support body for the United Nations Environment Programme (UNEP) International Environmental Technology Centre (IETC). Since it was established GEC focused activities on the transfer of Environmentally Sound Technologies (ESTs) to help realize environmental conservation and sustainable development in developing countries.

In 2007, GEC implemented the Clean Development Mechanism (CDM)/Joint Implementation (JI) Feasibility Study Programme, commissioned by the Ministry of the Environment, Japan in order to promote global warming countermeasures leading to sustainable development. Furthermore, in addition being subcontracted by the Japan International Cooperation Agency (JICA) to train environmental policymakers and other personnel from developing countries, GEC has been actively tackling other environmental issues, such as implementing projects to transfer Japan's "eco-town" concept to cities in developing countries, in collaboration with IETC.

GEC is exploring promising CDM/JI projects, and providing the following information to project developers and policy makers:

- Reports of CDM/JI Feasibility Studies
- CDM/JI Manual for Project Developers and Policy Makers (Published by the Ministry of the Environment, Japan)
- CER Estimation Toolkit

- CDM Methodologies Guidebook, etc.

GEC CDM/JI Feasibility Study Program website: http://gec.jp/gec/gec.nsf/en/Activities-CDMJI_FS_Programme-Top.

4.3.2 Institute for Global Environmental Strategies (IGES)

The Institute for Global Environmental Strategies (IGES), established by an initiative of the Japanese government in 1998, is a research institute that conducts pragmatic and innovative strategic policy research to support sustainable development in the Asia-Pacific region. In the face of mounting challenges, the mission of IGES is to create effective strategies and propose practical solutions to support sustainable development, particularly in the Asia-Pacific region, while looking ahead 50 or even 100 years into the future.

Ministry of the Environment Japan (MOEJ) has launched the Clean Development Mechanism (CDM) Program as a capacity building program and appointed the Institute for Global Environmental Strategies (IGES) as an implementing organization. The Clean Development Mechanism (CDM) Program conducts training and other activities in support of CDM in developing countries in Asia. The program disseminates information, contributes to the establishment of networks in Japan and the target countries, and builds capacity to initiate, develop and implement CDM projects. The following are the publications of IGES:

- Kyoto Protocol Related Information
  - CDM in Charts
  - IGES GHG Emissions Data
  - IGES Registry Data
  - Options on the Post-2012 Kyoto Mechanisms under the International Negotiation
- CDM/JI Project Data
  - IGES CDM Project Database
  - IGES CDM Project Data Analysis
  - IGES CDM Review and Rejected Project Database
  - IGES CDM Review and Rejected Project Data Analysis
  - IGES JI Project Database
  - IGES CDM Investment Analysis Database
- CDM in Asian Countries (CDM Country Fact Sheets)
- CDM Emission Reductions Calculation Sheet Series

IGES CDM Program Publications website: http://www.iges.or.jp/en/cdm/report.html.

4.3.3 Japan International Cooperation Agency (JICA)

Assistance by Japan International Cooperation Agency (JICA) focuses on capacity development, which includes institution-building, organization strengthening and human resource development. This is designed to assist people in the developing countries to become self-reliant, solving their countries' problems through their own efforts. The field of cooperation covers a wide range, including environmental management, mining industries, energy conservation, infrastructure, agriculture, and so forth. Regarding CDM/JI projects, JICA implements its cooperation mainly in two fields as follows:

- Capacity development of Designated National Authorities (DNA)
- Capacity development of sector ministries for each field of CDM/JI projects (such as renewable energy, energy conservation, afforestation and reforestation, etc.)

JICA website: http://www.jica.go.jp/english/.

4.3.4 New Energy and Industrial Technology Development Organization (NEDO)

Focused on the developing countries of Asia, the New Energy and Industrial Technology Development Organization (NEDO) is conducting CDM capacity building activities not only to elevate awareness and understanding of the mutual benefits of CDM projects but also to help establish CDM acceptance systems in host countries. These activities are also intended to lead to smooth implementation of CDM projects.

NEDO has edited and published CDM manuals for Thailand and Vietnam and has organized working groups tasked with making an actual PDD (Project Design Document) as case studies in Indonesia and Cambodia.

Since the Asian CDM Seminar, held in Tokyo in March 2002, NEDO has hosted or supported CDM seminars and workshops in Thailand, Mongolia, China, the Philippines, Malaysia and Vietnam.

Especially in China, NEDO has been cooperating with the Chinese government by means of capacity building to set up provincial CDM centers in Hebei province and Shandong province. In the fiscal year 2006 NEDO has served capacity building program focused on some industry sectors such as the iron and steel industry and the cement industry, and the results are encouraging proposals to be applied to both NEDO's Feasibility Studies (FS) and Credit Purchase Program.

NEDO website: http://www.nedo.go.jp/english/.

4.3.5 Overseas Environmental Cooperation Center, Japan (OECC)

The Overseas Environmental Cooperation Center, Japan (OECC) was established in 1990 with the support of the then-Environment Agency (currently Ministry of the Environment) of Japan for the promotion of international cooperation from the non-governmental perspective.

Many of activities are funded and achieved in line with the environmental policy of the Ministry of the Environment, the Ministry of Foreign Affairs, the Japan International Cooperation Agency (JICA), the Japan Bank for International Cooperation (JBIC), and so on. These accomplishments are thus utilized for policy making of international environmental cooperation and execution of environmental cooperative projects.

The Internet-based Kyoto Mechanisms Information Platform is operated by the OECC, is a major information vehicle of the JKAP Framework. By providing basic information, the Platform assists stakeholders to reduce the risk and costs of activities, and realize smooth project activities in this field. The OECC also serves as the Secretariat of the Asia-Pacific Seminar on Climate Change, where major climate change players in the region freely exchange views, experiences and lessons learned. A Help Desk Service for the Kyoto Mechanisms is another service provided by the OECC.

OECC website: http://www.oecc.or.jp/english/index.htm.

Appendix

1 List of necessary forms and related documents

2 Approved methodologies

3 Methodological Tools

4 Tool for the demonstration and assessment of additionality Version 5.2

1 List of necessary forms and related documents

Below are brief descriptions and lists of necessary forms and related documents. The most recent information and versions can be easy linked by visiting the UNFCCC CDM website: http://cdm.unfccc.int/Reference/index.html.

1.1 Project activity design

Project participants shall submit information on their proposed project activity using the Project design document. Specific PDDs exist for different project types:

Table A-1 Project activity design

Project design document	
CDM	**CDM-PDD** - Project Design Document form , ver.03.2 [EB 25, Annex 15]
SSC	**CDM-SSC-PDD** - Project Design Document form for Small-Scale project activities, ver.03 [EB 28, Annex 34]
A/R	**CDM-AR-PDD** - Project Design Document form for Afforestation and Reforestation project activities, ver.04 [EB 35, Annex 20]
SSC A/R	**CDM-SSC-AR-PDD** - Project Design Document form for Small-Scale Afforestation and Reforestation project activities, ver.02 [EB 35, Annex 22]

1.2 Proposal of a new baseline and/or monitoring methodology

In order to propose a new methodology, project proponents must complete the (1) Proposed New Baseline and Monitoring Methodologies form along with the PDD. Through a designated operational entity or an applicant entity, the documents are submitted to the Board for its consideration and approval, if appropriate, using form CDM: Proposed new methodology form (F-CDM-PNM). This is set out in the (2) Procedures for submission and consideration of a new methodology.

For small scale projects, project participants willing to submit a new small-scale project activity category or revisions to a methodology shall make a request in writing to the Board providing information about the technology/activity and proposals on how a simplified baseline and monitoring methodology would be applied to this category.

A downloadable form shall be used for submitting queries or proposals to be considered by the Executive Board through the working group to assist the Executive Board in reviewing proposed methodologies and project categories for small-scale CDM project activities.

Table A-2 Proposal of a new methodology	
(1) Form for new methodology	
CDM	• **CDM-NM** - Proposed new baseline and monitoring methodologies form, ver.03.1 [EB 38, Annex 6] • **F-CDM-NM** - CDM: Proposed new methodology form, ver.01 [EB 26, Annex 23]
SSC	• **F-CDM-SSC-Subm** - CDM: Submissions on Small Scale Methodologies and Procedures ver.03.1 [EB 34, Annex 11] • **F-CDM-SSC-NM** - CDM: Proposed new Small Scale methodologies form, ver.01 [EB 34, Annex 12]
A/R	• **CDM-AR-NM** - Proposed new baseline and monitoring methodology for A/R, ver.03 [EB 32, Annex 20] • **F-CDM-AR-NM** - CDM: Proposed New A/R Methodology Form, ver.01
SSC A/R	• **F-CDM-SSC-AR-Subm** - CDM: Submissions on Small Scale A/R Methodologies and Procedures, ver.02 [EB 38, para.31] • **F-CDM-SSC-AR** - CDM: Recommendation Form for Small Scale A/R Methodologies and Procedures, ver.01 [EB 38, para.31]
(2) Procedures	
CDM	Submission and consideration of a proposed new methodology, ver.13 [EB 37, Annex 3]
SSC	Submission and consideration of a proposed new small scale methodology, ver.3 [EB 40, Annex 2]
A/R	Submission and consideration of a proposed new methodology for AR project activities, ver.7 [EB 37, Annex 4]

1.3 Guidelines for completing the documents

The guidelines below seek to assist project participants in completing the following documents:

(a) Project Design Document;

(b) Proposed New Baseline and Monitoring Methodologies.

Table A-3 Guidelines for documents	
Guidelines	
CDM	Guidelines Project Design Document (CDM-PDD) and the Proposed new baseline and monitoring methodologies (CDM-NM) , ver.07 [EB 41, Annex 12]
SSC	• Simplified Project Design document (CDM-SSC-PDD) and the form for proposed new Small Scale Methodologies (CDM-SSC-NM) , ver.05 [EB 34, Annex 09] • Guidelines for completing the form for submission of bundled Small-Scale CDM project activities (F-CDM-SSC-BUNDLE) , ver.01 [EB 34, Annex 10]
A/R	Guidelines for completing the project design document for A/R (CDM-AR-PDD), the proposed new methodology for A/R: baseline and monitoring (CDM-AR-NM) , ver.09 [EB 42, Annex 12]
SSC A/R	Simplified PDD for SSC-AR (CDM-SSC-AR-PDD) and submissions on methodologies for SSC-AR CDM project activities (F-CDM-SSC-AR-Subm) , ver.04 [EB 35, Annex 23]

1.4 Modalities and Procedures

The Project design document and the Guidelines for completing it, including a glossary of terms (Approval, authorization, project participants etc.) have been developed by the Executive Board on the basis of the Modalities and procedures.

Table A-4 Modalities and Procedures	
Modalities and Procedures	
CDM	Modalities and procedures for a CDM as defined in Article 12 of the Kyoto Protocol [Decision 3/CMP.1]
SSC	Simplified modalities and procedures for SSC project activities, and its Appendix B [Decision 4/CMP.1, Annex II], Revision of SSC project activities' definition [Decision 1/CMP.2, para.28]
A/R	Modalities and procedures for afforestation and reforestation project activities under the CDM in the first commitment period of the Kyoto Protocol [Decision 5/CMP.1]
SSC A/R	Simplified modalities and procedures for small scale afforestation and reforestation project activities under the CDM in the first commitment period of the Kyoto Protocol and measures to facilitate their implementation [Decision 6/CMP.1]

The most recent versions are available on the UNFCCC CDM website: http://cdm.unfccc.int/Reference/COPMOP/index.html.

Find a brief description and graphical representation of the CDM project activity project cycle by visiting the UNFCCC CDM website: http://cdm.unfccc.int/Projects/pac/index.html.

The Glossary of CDM terms, ver.05 [EB 47, para.71] is also useful in assisting project participants when filling out the various CDM forms. This document explains the terms used in the Procedures, Guidance, Clarification, Tools and Forms. The most recent version is available on the UNFCCC CDM website: http://cdm.unfccc.int/Reference/glossary.html.

2 Approved methodologies

Legend for Scope column:

No.	Sectoral Scope	No.	Sectoral Scope
1	Energy industries (renewable-/ non-renewable sources)	9	Metal production
2	Energy distribution	10	Fugitive emissions from fuels (solid, oil and gas)
3	Energy demand	11	Fugitive emissions from production and consumption of halocarbons and sulphur hexa fluoride
4	Manufacturing industries	12	Solvent use
5	Chemical industries	13	Waste handling and disposal
6	Construction	14	Afforestation and reforestation
7	Transport	15	Agriculture
8	Mining/ mineral production		

Note: (i) Color gradation denotes the frequency of application of each methodology for registered project activities: 0 ☐, 1 to 5 ☐ and over 5 ☐.
(ii) Number(s) in the Scope column denotes Sectoral Scope Number(s) as indexed in the legend table.
(iii) No approved methodology till date for sector numbers: 6 and 12.

Table A-5 List of Large Scale CDM Methodologies (as of 21 Oct 09)

Meth. No.	*Scope*	*Main Keywords*	*Place of Application*	*Title of the Methodology*	*Ver. No.*
APPROVED LARGE SCALE METHODOLOGIES					
AM0001	11	Fugitive emissions, HFC 23 (CHF_3) destruction	HCFC-22 production facility	Incineration of HFC 23 waste streams	5.2
AM0007	1, 4	Biomass (excl. non-renewables), Bagasse power	Grid connected biomass cogeneration plant	Analysis of the least-cost fuel option for seasonally-operating biomass cogeneration plants	1
AM0009	10	Fugitive emissions from fuels, Utilization in dry gas, LPG and condensate production	Oil wells	Recovery and utilization of gas from oil wells that would otherwise be flared or vented	4
AM0014	1, 4	EE supply side, Natural gas, Cogeneration	Power plants producing electricity/district heat	Natural gas-based package cogeneration	4
AM0017	3	EE Demand side, EE industry (end-use savings), Steam	Industry, Fossil fuel fired boiler	Steam system efficiency improvements by replacing steam traps and returning condensate	2
AM0018	3	EE Demand side, EE industry (end-use savings), Steam	Industry, Steam generator	Steam optimization systems	2.2
AM0019	1	Renewables (excl. biomass)	Wind, geothermal, solar, hydro, wave and/or tidal electric power plant	Renewable energy project activities replacing part of the electricity production of one single fossil-fuel-fired power plant that stands alone or supplies electricity to a grid, excluding biomass projects	2
AM0020	3	EE Demand side, EE service, Water pump	Municipal water utility	Baseline methodology for water pumping efficiency improvements	2
AM0021	5	N_2O reduction	Adipic acid production plant	Baseline Methodology for decomposition of N2O from existing adipic acid production plants	3
AM0023	10	EE Supply side, Energy distribution, Leak reduction	Natural gas transmission/ distribution system	Leak reduction from natural gas pipeline compressor or gate stations	3
AM0024	1, 4	EE Supply side, EE own generation (of electricity), Waste heat recovery and utilization	Electricity production in cement plant using waste heat/gas	Methodology for greenhouse gas reductions through waste heat recovery and utilization for power generation at cement plants	2.1

Table A-5 List of Large Scale CDM Methodologies (as of 21 Oct 09)

Meth. No.	*Scope*	*Main Keywords*	*Place of Application*	*Title of the Methodology*	*Ver. No.*
AM0025	1, 13	Waste, Composting, Gasification, Mechanical/ Thermal treatment, Incineration, Anaerobic digestion, Flaring, Power generation	MSW treatment facility	Avoided emissions from organic waste through alternative waste treatment processes	10.1
AM0026	1	Grid-connected electricity generation from renewable sources	Hydro, wind, solar, geothermal, wave and tidal electric power plant	Methodology for zero-emissions grid-connected electricity generation from renewable sources in Chile or in countries with merit order based dispatch grid	3
AM0027	5	Biomass (excl. non-renewables) processing for use in production	Chemical plant	Substitution of CO_2 from fossil or mineral origin by CO_2 from renewable sources in the production of inorganic compounds	2.1
AM0028	5	N_2O reduction	Nitric acid & caprolactam production plants	Catalytic N_2O destruction in the tail gas of Nitric Acid or Caprolactam Production Plants	4.2
AM0029	1	EE Supply side, Fossil fuel switch, Natural gas	Natural gas fired grid-connected electricity generation plant	Methodology for Grid Connected Electricity Generation Plants using Natural Gas	3
AM0030	9	PFCs reduction, Metal production	Aluminium smelting facility	PFC emission reductions from anode effect mitigation at primary aluminium smelting facilities	3
AM0031	7	Transport, Bus Rapid Transit (BRT) system	Urban public transport system	Methodology for Bus Rapid Transit Projects	3
AM0034	5	N_2O reduction	Nitric acid production plants	Catalytic reduction of N_2O inside the ammonia burner of nitric acid plants	3.4
AM0035	1, 11	Fugitive emissions, SF_6 emission reduction, SF_6 recycle, SF_6 leak reduction	Electric grid of the electric utility	SF6 Emission Reductions in Electrical Grids	1
AM0036	1, 4	Biomass (excl. non-renewables) utilization, Fossil fuel switch	Biomass boiler	Fuel switch from fossil fuels to biomass residues in boilers for heat generation	2.2
AM0037	5, 10	Fugitive emissions from fuels, Tail gas recovery, Use in production	Oil and natural gas processing facility	Flare (or vent) reduction and utilization of gas from oil wells as a feedstock	2.1
AM0038	9	EE Demand side, EE industry (end-use saving), Metal production	Silicomanganese production	Methodology for improved electrical energy efficiency of an existing submerged electric arc furnace used for the production of SiMn	2
AM0039	13	Waste, Co-composting	Organic wastewater treatment facility, Landfill	Methane emissions reduction from organic waste water and bioorganic solid waste using co-composting	2
AM0041	4	EE Supply side, Kiln replacement, Methane avoidance	Charcoal production	Mitigation of Methane Emissions in the Wood Carbonization Activity for Charcoal Production	1
AM0042	1, 14	Biomass excl. non-renewables, Co-firing, Plantation	Biomass fired grid-connected power plant	Grid-connected electricity generation using biomass from newly developed dedicated plantations	2
AM0043	10	EE Supply side, Pipe replacement, Energy distribution, Loss reduction	Natural gas transmission/ distribution grid	Leak reduction from a natural gas distribution grid by replacing old cast iron pipes or steel pipes without catholic protection with polyethylene pipes	2
AM0044	1	EE Demand side, EE industry (end-use savings), Boiler rehabilitation or replacement	Industrial boiler	Energy efficiency improvement projects: boiler rehabilitation or replacement in industrial and district heating sectors	1

Meth. No.	*Scope*	*Main Keywords*	*Place of Application*	*Title of the Methodology*	*Ver. No.*
AM0045	1	EE Supply side, Energy distribution, Loss reduction	Transmission/distribution of electricity/district heat	Grid connection of isolated electricity systems	2
AM0046	3	EE Demand side, EE household, Light bulb	Domestic houses and appliances	Distribution of efficient light bulbs to households	2
AM0047	1, 5	Biofuels, Biodiesel	Chemical plant producing waste oil/ fat	Production of biodiesel based on waste oils and/or waste fats from biogenic origin for use as fuel	2
AM0048	1	EE supply side, Cogeneration	Power plants producing electricity/district heat	New cogeneration facilities supplying electricity and/or steam to multiple customers and displacing grid/off-grid steam and electricity generation with more carbon-intensive fuels	2
AM0049	1, 4	EE supply side, Gas based energy generation	On-site power plants producing electricity/ district heat	Methodology for gas based energy generation in an industrial facility	3
AM0050	5	Fossil fuel switch, Naphtha, Natural Gas	Integrated ammonia-urea manufacturing facility	Feed switch in integrated Ammonia-urea manufacturing industry	2.1
AM0051	5	N_2O reduction	Nitric acid production plants	Secondary catalytic N_2O destruction in nitric acid plants	2
AM0052	1	EE supply side, Decision Support System (DDS)	Hydropower plant producing electricity	Increased electricity generation from existing hydropower stations through Decision Support System (DDS) optimization	2
AM0053	1, 5	Biogas, Waste, Organic matter, Landfills, Liquid waste treatment, Animal waste management systems	Biogas processing system and distribution grid	Biogenic methane injection to a natural gas distribution grid	1.1
AM0054	1	EE Supply side, Residual fuel oil, Oil/water emulsion technology	Industry, Residual fuel oil fired boiler	Energy efficiency improvement of a boiler by introducing oil/water emulsion technology	2
AM0055	1, 4	EE Supply side, EE own generation (of electricity), Recovery and utilization of waste gas	Refinery generating heat using waste gas that is flared currently	Baseline and Monitoring Methodology for the recovery and utilization of waste gas in refinery facilities	1.2
AM0056	1	EE Demand side, EE industry (end-use savings), Boiler replacement or rehabilitation, Fuel switch	Industry, Fossil fuel fired steam boiler(s)	Efficiency improvement by boiler replacement or rehabilitation and optional fuel switch in fossil fuel-fired steam boiler systems	1
AM0057	4, 13	Agricultural waste, Biomass, On-site power generation	Pulp and paper industry	Avoided emissions from biomass wastes through use as feed stock in pulp and paper production or in bio-oil production	2.2
AM0058	1	Energy distribution, Heat supply to residential and commercial consumers	District heating system, Existing power plant, Heat only boilers	Introduction of a new primary district heating system	3
AM0059	9	PFCs reduction, Metal production, Electrical energy use efficiency	Aluminium smelting facility	Reduction in GHGs emission from primary aluminium smelters	1.1
AM0060	3	EE Demand side, EE industry (end-use savings), Chiller	Chillers of large commercial and industrial buildings and facilities	Power saving through replacement by energy efficient chillers	1.1
AM0061	1	EE Supply side, Rehabilitation/ improvement measures	Fossil fuel fired power plant	Methodology for rehabilitation and/ or energy efficiency improvement in existing power plants	2.1
AM0062	1	EE Supply side, Turbine retrofit	Fossil fuel fired power plant	Energy efficiency improvements of a power plant through retrofitting turbines	1.1

Table A-5 List of Large Scale CDM Methodologies (as of 21 Oct 09)

Meth. No.	*Scope*	*Main Keywords*	*Place of Application*	*Title of the Methodology*	*Ver. No.*
AM0063	5	CO_2 extraction/ utilization/ flare	CO_2 production facility, tail gas	Recovery of CO_2 from tail gas in industrial facilities to substitute the use of fossil fuels for production of CO_2	1.1
AM0064	10	Mine methane, Methane capture/ utilization/ destruction	Operating mine (excl. coal mine)	Methodology for methane capture and utilization or destruction in underground, hard rock, precious and base metal mines	2
AM0065	4, 9, 11	Replacement of SF_6/ SO_2	Magnesium industry	Replacement of SF_6 with alternate cover gas in the magnesium industry	2.1
AM0066	9	EE Demand side, EE industry, Waste heat utilization	Sponge iron manufacturing facility furnace(s) and kiln(s) pre-heating raw material(s)	GHG emission reductions through waste heat utilization for pre-heating of raw materials in sponge iron manufacturing process	2
AM0067	2	EE Supply side, Energy distribution, Transformer replacement/ installation	Transformers of power distribution grid	Methodology for installation of energy efficient transformers in a power distribution grid	2
AM0068	3, 9	EE Demand side, EE industry (end-use savings), Modifying ferroalloy production facility	Existing ferroalloy production facility	Methodology for improved energy efficiency by modifying ferroalloy production facility	1
AM0069	1, 5	Waste, Biogas utilization, Fossil fuel replacement, Town gas production	Town gas factory, Landfill site, Wastewater treatment facility	Biogenic methane use as feedstock and fuel for town gas production	1
AM0070	4	EE household, Refrigerator	Refrigerator manufacturer	Manufacturing of energy efficient domestic refrigerators	2
AM0071	11	HFC-134a reduction, Switch of refrigerant	Domestic refrigeration appliance manufacturer	Manufacturing and servicing of domestic refrigeration appliances using a low GWP refrigerant	1
AM0072	1	Fossil fuel displacement, Geothermal resource, Space heating	Centralized heating system of buildings, Geothermal district heating system	Fossil Fuel Displacement by Geothermal Resources for Space Heating	2
AM0073	13, 15	Animal waste, Waste management, Anaerobic treatment	Livestock farm, Central treatment plant, Animal waste management system	GHG emission reductions through multi-site manure collection and treatment in a central plant	1
AM0074	1	Fugitive emissions, Permeate gas utilization	Natural gas processing facility, Booster station	Methodology for new grid connected power plants using permeate gas previously flared and/or vented	1
AM0075	1, 5	Biogas utilization, Fossil fuel replacement, Supply to end-users	Biogas producing site, Biogas processing facility	Methodology for collection, processing and supply of biogas to end-users for production of heat	1
AM0076	1	EE Demand side, EE industry (end-use savings), Fossil fuel trigeneration	Industrial facility	Methodology for implementation of fossil fuel trigeneration systems in existing industrial facilities	1
AM0077	1, 10	Fugitive emissions, Associated gas recovery,	Oil well	Recovery of gas from oil wells that would otherwise be vented or flared and its delivery to specific end-users	1
AM0078	4, 11	Fugitive emissions, SF_6 destruction	LCD manufacturer, LCD etching plant	Point of use abatement device to reduce SF6 emissions in LCD manufacturing operations	1.1
AM0079	11	Fugitive emissions, SF6 emission reduction	Gas insulated electrical equipment (GIEE) testing facility	Recovery of SF6 from gas insulated electrical equipment in testing facilities	1
AM0080	13	Wastewater	Aerobic wastewater treatment plant	Mitigation of greenhouse gases emissions with treatment of wastewater in aerobic wastewater treatment plants	1

Meth. No.	*Scope*	*Main Keywords*	*Place of Application*	*Title of the Methodology*	*Ver. No.*
AM0081	1, 5	EE Demand side, EE industry, Coke oven gas utilization (COG)	Coke oven plant	Flare or vent reduction at coke plants through the conversion of their waste gas into dimethyl ether for use as a fuel	1
AM0082	9	Biomass utilization (Renewable reducing agent), Fossil fuel switch	Iron ore reduction process	Use of charcoal from planted renewable biomass in the iron ore reduction process through the establishment of a new iron ore reduction system	1
AM0083	13	Landfill gas avoidance, Waste, In-situ aeration	Landfill site	Avoidance of landfill gas emissions by in-situ aeration of landfills	1
APPROVED CONSOLIDATED METHODOLOGIES					
ACM0001	13	Landfill gas capture, Waste, Flaring, Power generation, Injection to natural gas distribution grid	Landfill site	Consolidated baseline and monitoring methodology for landfill gas project activities	11
ACM0002	1	Grid-connected electricity generation from renewable sources	Hydro, wind, geothermal, solar, wave and tidal electric power plant	Consolidated methodology for grid-connected electricity generation from renewable sources	10
ACM0003	4	Biomass residue, Renewable biomass, Alternative fuel, Less carbon intensive fossil fuel	Cement plant	Emissions reduction through partial substitution of fossil fuels with alternative fuels or less carbon intensive fuels in cement manufacture	7.3
ACM0005	4	Clinker reduction, Additives	Cement plant	Consolidated baseline methodology for increasing the blend in cement production	5
ACM0006	1	Biomass residue	Biomass residue fired power plants, Cogeneration plants	Consolidated methodology for electricity generation from biomass residues	9
ACM0007	1	EE supply side, Waste heat utilization, Combined cycle power generation	Power plants producing electricity/district heat	Methodology for conversion from single cycle to combined cycle power generation	3
ACM0008	8, 10	Fugitive emissions from fuels, Methane capture/ utilization/destruction	Coal bed/ mine	Consolidated methodology for coal bed methane, coal mine methane and ventilation air methane capture and use for power (electrical or motive) and heat and/or destruction through flaring or flameless oxidation	6
ACM0009	1, 4	Fossil fuel switch, Coal/ Petroleum fuel, Natural gas	Industry, District heating system, Boiler	Consolidated baseline and monitoring methodology for fuel switching from coal or petroleum fuels to natural gas	3.2
ACM0010	13, 15	Animal waste	Livestock farm	Consolidated methodology for GHG emission reductions from manure management systems	5
ACM0011	1	Fossil fuel switch, Coal/ Petroleum fuel, Natural gas	Power plant producing electricity	Consolidated baseline methodology for fuel switching from coal and/ or petroleum fuels to natural gas in existing power plants for electricity generation	2.2
ACM0012	1, 4	EE supply side, EE own generation (of electricity)	Industrial facility generating waste energy	Consolidated baseline methodology for GHG emission reductions from waste energy recovery projects	3.1
ACM0013	1	EE supply side, Supercritical coal fired power plant	Fossil fuel fired power plants producing electricity/district heat	Consolidated baseline and monitoring methodology for new grid connected fossil fuel fired power plants using a less GHG intensive technology	2.1

Table A-5 List of Large Scale CDM Methodologies (as of 21 Oct 09)

Meth. No.	*Scope*	*Main Keywords*	*Place of Application*	*Title of the Methodology*	*Ver. No.*
ACM0014	13	Methane reduction, Wastewater treatment	Industrial wastewater treatment	Mitigation of greenhouse gas emissions from treatment of industrial wastewater	3.1
ACM0015	4	Alternative raw material that do not contain carbonates (AMC)	Cement kilns for production of clinker	Consolidated baseline and monitoring methodology for project activities using alternative raw materials that do not contain carbonates for clinker production in cement kilns	2
ACM0016	7	Transport, Mass Rapid Transit System (MRTS), Bus lane, Rail-based infrastructure	Urban public transport system	Baseline methodology for mass rapid transit projects	1
ACM0017	1, 5	Biofuel, Biodiesel, Waste oil/fat, Vegetable oil	Oil production plant, Biodiesel production plant	Production of biodiesel for use as fuel	1

Legend for Scope column:

No.	Sectoral Scope	No.	Sectoral Scope
1	Energy industries (renewable-/ non-renewable sources)	9	Metal production
2	Energy distribution	10	Fugitive emissions from fuels (solid, oil and gas)
3	Energy demand	11	Fugitive emissions from production and consumption of halocarbons and sulphur hexa fluoride
4	Manufacturing industries	12	Solvent use
5	Chemical industries	13	Waste handling and disposal
6	Construction	14	Afforestation and reforestation
7	Transport	15	Agriculture
8	Mining/ mineral production		

Note: (i) Color gradation denotes the frequency of application of each methodology for registered project activities: 0 □, 1 to 5 □ and over 5 □.
(ii) Number(s) in the Scope column denotes Sectoral Scope Number(s) as indexed in the legend table.
(iii) No approved methodology till date for sector numbers: 6 and 12.

Table A-6 List of Small Scale CDM Methodologies (as of 21 Oct 09)

Meth. No.	*Scope*	*Title of the Methodology*	*Ver. No.*
TYPE I – RENEWABLE ENERGY PROJECTS			
AMS-I.A.	1	Electricity generation by the user	13
AMS-I.B.	1	Mechanical energy for the user with or without electrical energy	10
AMS-I.C.	1	Thermal energy for the user with or without electrical energy	15
AMS-I.D.	1	Grid connected renewable electricity generation	15
AMS-I.E.	1	Switch from Non-Renewable Biomass for Thermal Applications by the User	1
TYPE II – ENERGY EFFICIENCY IMPROVEMENT PROJECTS			
AMS-II.A.	2	Supply side energy efficiency improvements - transmission and distribution	10
AMS-II.B.	1	Supply side energy efficiency improvements – generation	9
AMS-II.C.	3	Demand-side energy efficiency activities for specific technologies	13
AMS-II.D.	4	Energy efficiency and fuel switching measures for industrial facilities	11
AMS-II.E.	3	Energy efficiency and fuel switching measures for buildings	10
AMS-II.F.	3	Energy efficiency and fuel switching measures for agricultural facilities and activities	9
AMS-II.G.	3	Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass	1
AMS-II.H.	4	Energy efficiency measures through centralization of utility provisions of an industrial facility	1
AMS-II.I.	4	Efficient utilization of waste energy in industrial facilities	1
AMS-II.J.	3	Demand-side activities for efficient lighting technologies	3
TYPE III – OTHER PROJECT ACTIVITIES			
AMS-III.A.	15	Urea offset by inoculant application in soybean-corn rotations on acidic soils on existing cropland	2
AMS-III.B.	1	Switching fossil fuels	14
AMS-III.C.	7	Emission reductions by low-greenhouse gas emitting vehicles	11
AMS-III.D.	15	Methane recovery in animal manure management systems	15
AMS-III.E.	13	Avoidance of methane production from decay of biomass through controlled combustion, gasification or mechanical/ thermal treatment	16
AMS-III.F.	13	Avoidance of methane emissions through controlled biological treatment of biomass	8
AMS-III.G.	13	Landfill methane recovery	6
AMS-III.H.	13	Methane recovery in wastewater treatment	13
AMS-III.I.	13	Avoidance of methane production in wastewater treatment through replacement of anaerobic lagoons by aerobic systems	8
AMS-III.J.	5	Avoidance of fossil fuel combustion for carbon dioxide production to be used as raw material for industrial processes	3
AMS-III.K.	4	Avoidance of methane release from charcoal production by shifting from pit method to mechanized charcoaling process	4

Table A-6 List of Small Scale CDM Methodologies (as of 21 Oct 09)

Meth. No.	*Scope*	*Title of the Methodology*	*Ver. No.*
AMS-III.L.	13	Avoidance of methane production from biomass decay through controlled pyrolysis	2
AMS-III.M.	5	Reduction in consumption of electricity by recovering soda from paper manufacturing process	2
AMS-III.N.	4	Avoidance of HFC emissions in rigid Poly Urethane Foam (PUF) manufacturing	3
AMS-III.O.	5	Hydrogen production using methane extracted from biogas	1
AMS-III.P.	4	Recovery and utilization of waste gas in refinery facilities	1
AMS-III.Q.	4	Waste gas based energy systems	2
AMS-III.R.	15	Methane recovery in agricultural activities at household/small farm level	1
AMS-III.S.	7	Introduction of low-emission vehicles to commercial vehicle fleets	1
AMS-III.T.	7	Plant oil production and use for transport applications	1
AMS-III.U.	7	Cable Cars for Mass Rapid Transit System (MRTS)	1
AMS-III.V.	4	Decrease of coke consumption in blast furnace by installing dust/sludge recycling system in steel works	1
AMS-III.W.	10	Methane capture and destruction in non-hydrocarbon mining activities	1
AMS-III.X.	3, 11	Energy Efficiency and HFC-134a Recovery in Residential Refrigerators	1
AMS-III.Y.	13	Methane avoidance through separation of solids from wastewater or manure treatment systems	2
AMS-III.Z.	4	Fuel Switch, process improvement and energy efficiency in brick manufacture	2
AMS-III.AA.	7	Transportation Energy Efficiency Activities using Retrofit Technologies	1
AMS-III.AB.	11	Avoidance of HFC emissions in Standalone Commercial Refrigeration Cabinets	1
AMS-III.AC.	5	Electricity and/or heat generation using fuel cell	1
AMS-III.AD.	4	Emission reductions in hydraulic lime production	1
AMS-III.AE.	3	Energy efficiency and renewable energy measures in new residential buildings	1
AMS-III.AF.	13	Avoidance of methane emissions through excavating and composting of partially decayed municipal solid waste (MSW)	1
AMS-III.AG.	1	Switching from high carbon intensive grid electricity to low carbon intensive fossil fuel	1
AMS-III.AH.	1	Shift from high carbon intensive fuel mix ratio to low carbon intensive fuel mix ratio	1

Legend for Scope column:

No.	Sectoral Scope	No.	Sectoral Scope
1	Energy industries (renewable-/ non-renewable sources)	9	Metal production
2	Energy distribution	10	Fugitive emissions from fuels (solid, oil and gas)
3	Energy demand	11	Fugitive emissions from production and consumption of halocarbons and sulphur hexa fluoride
4	Manufacturing industries	12	Solvent use
5	Chemical industries	13	Waste handling and disposal
6	Construction	14	Afforestation and reforestation
7	Transport	15	Agriculture
8	Mining/ mineral production		

Note: (i) Color gradation denotes the frequency of application of each methodology for registered project activities: 0 □, 1 to 5 □ and over 5 □.
(ii) Number(s) in the Scope column denotes Sectoral Scope Number(s) as indexed in the legend table.
(iii) No approved methodology till date for sector numbers: 6 and 12.

Table A-7 List of A/R CDM Methodologies (as of 21 Oct 09)

Reference	*Scope*	*Title of the Methodology*	*Ver. No.*
LARGE SCALE			
AR-AM0001	14	Reforestation of degraded land	3
AR-AM0002	14	Restoration of degraded lands through afforestation/reforestation	3
AR-AM0004	14	Reforestation or afforestation of land currently under agricultural use	4
AR-AM0005	14	Afforestation and reforestation project activities implemented for industrial and/or commercial uses	4
AR-AM0006	14	Afforestation/Reforestation with Trees Supported by Shrubs on Degraded Land	3
AR-AM0007	14	Afforestation and Reforestation of Land Currently Under Agricultural or Pastoral Use	5
AR-AM0008	14	Afforestation or reforestation on degraded land for sustainable wood production	3
AR-AM0009	14	Afforestation or reforestation on degraded land allowing for silvopastoral activities	4
AR-AM0010	14	Afforestation and reforestation project activities implemented on unmanaged grassland in reserve/ protected areas	4
AR-ACM0001	14	Afforestation and reforestation of degraded land	3
AR-ACM0002	14	Afforestation or reforestation of degraded land without displacement of pre-project activities	1
SMALL SCALE			
AR-AMS0001	14	Simplified baseline and monitoring methodologies for small-scale afforestation and reforestation project activities under the clean development mechanism implemented on grasslands or croplands	5
AR-AMS0002	14	Simplified baseline and monitoring methodologies for small-scale afforestation and reforestation project activities under the CDM implemented on settlements	2
AR-AMS0003	14	Simplified baseline and monitoring methodology for small scale CDM afforestation and reforestation project activities implemented on wetlands	1
AR-AMS0004	14	Simplified baseline and monitoring methodology for small-scale agroforestry - afforestation and reforestation project activities under the clean development mechanism	2
AR-AMS0005	14	Simplified baseline and monitoring methodology for small-scale afforestation and reforestation project activities under the clean development mechanism implemented on lands having low inherent potential to support living biomass	2
AR-AMS0006	14	Simplified baseline and monitoring methodology for small-scale silvopastoral - afforestation and reforestation project activities under the clean development mechanism	1

3 Methodological Tools

Table A-8 List of Methodological Tools (as of 21 Oct 09)

Title and Version Number	*Scope, Applicability, Procedure and Parameters*	
I. METHODOLOGY RELATED TOOLS		
1. Tool for the demonstration and assessment of additionality – Version 5.2 [EB 39, Annex 10]	Scope and applicability	The document provides a general framework for demonstrating and assessing additionality and is applicable to a wide range of project types. Some project types may require adjustments to this general framework. The steps include: STEP 1. Identification of alternatives to the project activity; STEP 2. Investment analysis; STEP 3. Barriers analysis; and STEP 4. Common practice analysis.
2. Combined tool to identify the baseline scenario and demonstrate additionality – Version 2.2 [EB 28, Annex 14]	Scope and applicability	This tool provides for a step-wise approach to identify the baseline scenario and simultaneously demonstrate additionality. Project participants proposing new baseline methodologies may incorporate this combined tool in their proposal. Project participants may also propose other tools for the identification of the baseline scenario and demonstrate additionality to the EB for its consideration. Methodologies using this tool are only applicable if all potential alternative scenarios to the proposed project activity are available options to project participants. This applies, for example, to project activities that make modifications to an existing installation that is operated by project participants, such as, for example: • energy efficiency improvements at existing installations operated by project participants; • fuel switch at existing installations operated by project participants; • changes in waste management practices at existing solid waste disposal sites operated by project participants; • reduction of N_2O, HFC-23 or PFC emissions at existing installations operated by project participants.
	Procedure	The methodological procedure involves the following four steps: STEP 1. Identification of alternative scenarios STEP 2. Barrier analysis STEP 3. Investment analysis (if applicable) STEP 4. Common practice analysis
3. Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion – Version 2 [EB 41, Annex 11]	Scope and applicability	This tool provides procedures to calculate project and/or leakage CO_2 emissions from the combustion of fossil fuels. It can be used in cases where CO_2 emissions from fossil fuel combustion are calculated based on the quantity of fuel combusted and its properties. Methodologies using this tool should specify for which combustion processes *j* this tool is being applied.
	Parameter(s) to be determined	CO_2 emissions from fossil fuel combustion in process *j* during the year *y* (tCO_2/yr) [$PE_{FC,j,y}$]
4. Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site – Version 4 [EB 41, Annex 10]	Scope and applicability	This tool calculates baseline emissions of methane from waste that would in the absence of the project activity be disposed at solid waste disposal sites (SWDS). The tool is not applicable to stockpiles. Emission reductions are calculated with a first order decay (FOD) model. The tool is applicable in cases where the SWDS where the waste would be dumped can be clearly identified. The tool is not applicable to hazardous wastes.
	Parameter(s) to be determined	Methane emissions avoided during the year *y* from preventing waste disposal at the SWDS during the period from the start of the project activity to the end of the year *y* (tCO_2e) [$BE_{CH4,SWDS,y}$].
5. Tool to calculate baseline, project and/or leakage emissions from electricity consumption – Version 1 [EB 39, Annex 7]	Scope and applicability	This tool provides procedures to estimate the baseline, project and/or leakage emissions associated with the consumption of electricity. The tool may, for example, be used in methodologies where auxiliary electricity is consumed in the project and/or the baseline scenario. The tool can also be applied in situations where electricity is only consumed in the baseline or in the project or as leakage source. This tool is not applicable in cases where captive renewable power generation technologies are installed to provide electricity in the project activity, in the baseline scenario or to sources of leakage. This tool only accounts for CO_2 emissions. This tool also refers to the latest approved version of the following tools: • "Tool to calculate the emission factor for an electricity system"; • "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion".
	Parameter(s) to be determined	• Project emissions from electricity consumption in year *y* (tCO_2/yr) [$PE_{EC,y}$] • Baseline emissions from electricity consumption in year *y* (tCO_2/yr) [$BE_{EC,y}$] • Leakage emissions from electricity consumption in year *y* (tCO_2/yr) [$LE_{EC,y}$]

Title and Version Number	*Scope, Applicability, Procedure and Parameters*	
6. Tool to determine project emissions from flaring gases containing methane – Version 1 [EB 28, Annex 13]	Scope and applicability	This tool provides procedures to calculate project emissions from flaring of a residual gas stream (RG) containing methane. This tool is applicable under the following conditions: • The RG to be flared contains no other combustible gases than methane, carbon monoxide and hydrogen; • The RG to be flared shall be obtained from decomposition of organic material (through landfills, bio-digesters or anaerobic lagoons, among others) or from gases vented in coal mines (coal mine methane and coal bed methane).
	Parameter(s) to be determined	• Project emissions from flaring of the residual gas stream in year *y* (tCO_2e) [$PE_{flare,y}$] • Flare efficiency in hour *h* based on measurements or default values [$\eta_{flare,h}$]
7. Tool to calculate the emission factor for an electricity system – Version 2 [EB 50, Annex 14]	Scope and applicability	This methodological tool determines the CO_2 emission factor for the displacement of electricity generated by power plants in an electricity system, by calculating the "combined margin" emission factor (CM) of the electricity system. The CM is the result of a weighted average of two emission factors pertaining to the electricity system: the "operating margin" (OM) and the "build margin" (BM). The OM is the emission factor that refers to the group of existing power plants whose current electricity generation would be affected by the proposed CDM project activity. The BM is the emission factor that refers to the group of prospective power plants whose construction and future operation would be affected by the proposed CDM project activity. This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity, i.e. where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).
	Parameter(s) to be determined	• Combined margin CO_2 emission factor for the project electricity system in year *y* (tCO_2/MWh) [$EF_{grid,CM,y}$] • Build margin CO_2 emission factor for the project electricity system in year *y* (tCO_2/MWh) [$EF_{grid,BM,y}$] • Operating margin CO_2 emission factor for the project electricity system in year *y* (tCO_2/MWh) [$EF_{grid,OM,y}$]
	Procedure	Project participants shall apply the following seven steps: STEP 1. Identify the relevant electricity systems. STEP 2. Choose whether to include off-grid power plants in the project electricity system (optional). STEP 3. Select a method to determine the operating margin (OM). STEP 4. Calculate the operating margin emission factor according to the selected method. STEP 5. Identify the group of power units to be included in the build margin (BM). STEP 6. Calculate the build margin emission factor. STEP 7. Calculate the combined margin (CM) emissions factor.
8. Tool to determine the mass flow of a greenhouse gas in a gaseous stream – Version 1 [EB 47, Annex 10]	Scope and applicability	This tool provides procedures to determine the mass flow of a greenhouse gas in a gaseous stream. The tool can be used to determine the mass flow of the following gases: CO_2, CH_4, N_2O, SF_6 and/or PFCs. The mass flow of a particular greenhouse gas is calculated based on measurements of (a) the total volume or mass flow of the gas stream and (b) the volumetric fraction of the gas in the gas stream. The volume flow, mass flow and volumetric fraction may be measured on a dry basis or wet basis. The tool covers most of the possible measurement combinations, providing eight different options to determine the mass flow of a particular gas. Typical applications of this tool are methodologies where the flow and composition of residual or flared gases or exhaust gases are measured for the determination of baseline or project emissions. This tool is applicable under the followings conditions: • The tool is only applicable to gaseous streams consisting of at least 99% or a larger volumetric fraction of the following gases: N_2, CO_2, O_2, CO, H_2, CH_4, N_2O, NO, NO_2, SO_2, SF_6 and PFCs and H_2O in vapor phase. Other gases may be present (e.g., hydrocarbons) provided their total concentration represents less than 1% (v/v) of the total; • The absolute pressure of the gas must be below 10 atm or 1.013 MPa.
	Parameter(s) to be determined	Mass flow of greenhouse gas *i* (CO_2, CH_4, N_2O, SF_6 or a PFC) in the gaseous stream in time interval *t* (kg/h) [$F_{i,t}$]

Table A-8 List of Methodological Tools (as of 21 Oct 09)

Title and Version Number	*Scope, Applicability, Procedure and Parameters*	
9. Tool to determine the remaining lifetime of equipment – Version 1 [EB 50, Annex 15]	Scope and applicability	The tool provides guidance to determine the remaining lifetime of baseline or project equipment. The tool may, for example, be used for project activities which involve the replacement of existing equipment with new equipment or which retrofit existing equipment as part of energy efficiency improvement activities. Methodologies referring to this tool should clearly specify for which equipment the remaining lifetime should be determined. The remaining lifetime of relevant equipment shall be determined prior to the implementation of the project activity. Project participants using this tool shall document transparently in the CDM-PDD how the remaining lifetime of applicable equipment has been determined, including (references to) all documentation used. Under this tool, impacts on the lifetime of the equipment due to policies and regulations (e.g. environmental regulations) or changes in the services needed (e.g. increased energy demand) are not considered. Methodologies referring to this tool shall, where applicable, provide specific guidance on how regulations that warrant the replacement of the equipment before it has reached the end of its technical lifetime should be addressed.
	Parameter(s) to be determined	Remaining lifetime of the baseline or project equipment (years of hours) [RL]
	Procedure	Project participants may use one of the following options to determine the remaining lifetime of the equipment: (a) Use manufacturer's information on the technical lifetime of equipment and compare to the date of first commissioning; (b) Obtain an expert evaluation; (c) Use default values.
II. AFFORESTATION AND REFORESTATION (A/R) RELATED TOOLS		
1. Tool for the demonstration and assessment of additionality in A/R CDM project activities – Version 2 [EB 35, Annex 17]	Scope	This tool provides for a step-wise approach to demonstrate additionality in A/R CDM projects.
	Procedure	Project participants shall apply the following five steps: STEP 0. Preliminary screening based on the starting date of the A/R project activity; STEP 1. Identification of alternative land use scenarios to the A/R project activity; STEP 2. Investment analysis to determine that the proposed project activity is not the most economically or financially attractive of the identified land use scenarios; or STEP 3. Barriers analysis; and STEP 4. Common practice analysis.
	Applicability	• Forestation of the land within the proposed project boundary performed with or without being registered as the A/R CDM project activity shall not lead to violation of any applicable law even if the law is not enforced; • The use of this tool to determine additionality requires the baseline methodology to provide for a stepwise approach justifying the determination of the most plausible baseline scenario. Project participants proposing new baseline methodologies shall ensure consistency between the determination of a baseline scenario and the determination of additionality of a project activity; and • This tool is not applicable to small scale afforestation and reforestation project activities.
	Parameter(s) to be determined	This procedure does not use its own parameters.
2. Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities – Version 1 [EB 35, Annex 19]	Scope	This tool provides a general framework and a step-wise approach to identify the baseline scenario and simultaneously demonstrates additionality in A/R CDM project activities. Application of this tool allows for transparent identification of baseline scenario which further allows for conservative establishing of baseline net greenhouse gas removals by sinks for a proposed afforestation or reforestation project under the CDM.
	Procedure	Project participants shall apply the following five steps: STEP 0. Preliminary screening based on the starting date of the A/R project activity; STEP 1. Identification of alternative scenarios; STEP 2. Barrier analysis; STEP 3. Investment analysis (if needed); STEP 4. Common practice analysis.

Title and Version Number	*Scope, Applicability, Procedure and Parameters*	
	Applicability	• Forestation of the land within the proposed project boundary performed with or without being registered as the A/R CDM project activity shall not lead to violation of any applicable law even if the law is not enforced. • This tool is not applicable to small scale afforestation and reforestation project activities.
	Parameter(s) to be determined	This procedure does not use its own parameters.
3. Calculation of the number of sample plots for measurements within A/R CDM project activities – Version 2 [EB 46, Annex 19]	Scope	This tool is applicable if sample plots are used for monitoring purposes. The tool estimates the number of permanent sample plots needed for monitoring changes in carbon pools at a desired precision level. Permanent sample plots are to be used because forest inventory involves: • Measurements are to be made at specific time intervals; • High covariance is expected between observations at successive sampling events.
	Applicability	This tool is applicable under the following condition: • Variables under consideration are normally distributed or may be transformed into a normal distribution. Normal distribution can be assumed when: • Many small (independent) effects contribute to each observation in an additive fashion.
	Parameter(s) to be determined	• Sample size (total number of permanent sample plots required) in the project area [n] • Sample size for stratum *i* [n_i]
4. Tool for testing significance of GHG emissions in A/R CDM project activities– Version 1 [EB 31, Annex 16]	Scope	This tool facilitates the determination of which GHG emissions by sources, possible decreases in carbon pools, and leakage emissions are insignificant for a particular CDM A/R project activity. The sum of decreases in carbon pools and increases in emissions that may be neglected shall be less than 5% of the total decreases in carbon pools and increases in emissions, or less than 5% of net anthropogenic removals by sinks, whichever is lower.
	Applicability	The tool shall be used in the application of an A/R CDM approved methodology to an A/R CDM project activity: • To determine which decreases in carbon pools, and increases in GHG emissions measured in CO_2 equivalents that result from the implementation of the A/R project activity, are insignificant and can be neglected. • To ensure that it is valid to neglect decreases in carbon pools and increases in GHG emissions by sources stated as being insignificant in the applicability conditions of an A/R CDM methodology.
	Parameter(s) to be determined	This procedure does not use its own parameters.
5. Estimation of GHG emissions related to fossil fuel combustion in A/R CDM project activities – Version 1 [EB 33, Annex 14]	Scope and applicability	This tool allows for estimating increase in GHG emissions (both project and leakage emissions) related to fossil fuel combustion in A/R CDM project activities. The sources of emissions are: vehicles (mobile sources, such as trucks, tractors, etc.) and mechanical equipments (e.g. portable equipment such as chain saws and stationary equipment such as, water pumps) required by the A/R CDM project activity.
	Parameter(s) to be determined	CO_2 emissions from fossil fuel combustion during the year *y* (tCO_2) [$ET_{FC,y}$]
6. Procedure to determine when accounting of the soil organic carbon pool may be conservatively neglected in CDM A/R project activities – Version 1 [EB 33, Annex 15]	Scope	This tool provides guidelines to determine when accounting of the soil organic carbon pool may be conservatively neglected in CDM A/R projects. The guidelines have been developed from a review of recent scientific peer-reviewed literature, and with reference to IPCC literature as appropriate. Where available evidence on change in the soil organic carbon pool under land use or land-use change remains limited, a conservative approach has been adopted.
	Applicability	The tool is applicable to those land areas within the project boundary that meet the following conditions: • The areas shall not include organic soils (e.g. peat-lands), or wetlands. • The rate of loss of carbon stocks in mineral soils due to erosion within the project boundary shall not be permanently increased above baseline rates by the CDM A/R project activity. • Fine litter (woody twigs less than 2 mm diameter, bark and leaves) shall remain on site.
	Parameter(s) to be determined	This procedure does not use its own parameters.

Table A-8 List of Methodological Tools (as of 21 Oct 09)

Title and Version Number	***Scope, Applicability, Procedure and Parameters***	
7. Estimation of direct nitrous oxide emission from nitrogen fertilization – Version 1 [EB 33, Annex 16]	Scope	This tool allows for estimating direct nitrous oxide emission from applying nitrogenous fertilizer within project boundary of an A/R CDM project activity, for both *ex ante* and *ex post* estimation.
	Applicability	This tool is not applicable when: • A/R CDM project activities are implemented on wetlands; • Flooding irrigation or any flood has occurred within period of 3 months from date of fertilization.
	Parameter(s) to be determined	Direct N_2O emission as a result of nitrogen application within the project boundary in year *t* (tCO_2e) [$N_2O_{direct\text{-}N,t}$]
8. Tool for estimation of GHG emissions from clearing, burning and decay of existing vegetation due to implementation of a CDM A/R project activity – Version 3 [EB 50, Annex 22]	Scope	This tool can be used to estimate the increase in emissions of greenhouse gases due to live woody vegetation existing within the proposed A/R project boundary—the "existing woody vegetation"—being cleared, burned, and/or left to decay as part of activities attributable to the A/R CDM project activity.
	Applicability	Step 1: The use of this tool shall be preceded by the use the approved A/R CDM Guidance on conditions under which GHG emissions from removal of existing vegetation due to site preparation are insignificant to determine whether the emissions are insignificant and may be accounted as zero, that is further use of this tool is not required. Step 2: The tool provides a simplified default approach for estimating the increase in GHG emissions resulting from the clearance, burning and decay of existing vegetation due to site preparation and project implementation practices within the A/R CDM project boundary: • Increase in CO_2 emissions. Project emissions may occur either as a result of clearance of existing live vegetation during site preparation (including by slash-and-burn practices) within the project boundary, and/or from decay of un-cleared existing live vegetation that dies as a result of competition from forest (or other vegetation) planted as part of the A/R project activity; • Increase in emissions of non-CO_2 greenhouse gases. Project emissions will occur when existing live above-ground vegetation within the project boundary is either partially or totally burned as part of site preparation, resulting in emissions of methane (CH_4) and nitrous oxide (N_2O)—although N_2O emissions are an insignificant proportion of total emissions from biomass burning and may be accounted as zero.
	Parameter(s) to be determined	• Increase in CO_2 emissions from loss of existing biomass due to site-preparation (including burning), and/or to competition from forest (or other vegetation) planted as part of the CDM-A/R project activity in year *t* (tCO_2) [$E_{BiomassLoss,t}$] • Increase in non-CO_2 emissions due to biomass burning of existing vegetation as part of site preparation in year *t* (tCO_2e) [$E_{BiomassBurn,t}$]
9. Tool for estimation of GHG emissions related to displacement of grazing activities in A/R CDM project activity – Version 2 [EB 39, Annex 12]	Scope	This tool can be used to estimate GHG emissions measurable and attributable to displacement of grazing activities caused by implementation of an A/R CDM project activity. The tool provides an annex with the default values for dry matter intake (DMI) and an equation for the calculation of DMI for livestock types. Further, it provides default values for annual net primary production (ANPP) by IPCC climate zones.
	Applicability	This tool is applicable for estimating GHG emissions caused by the displacement of grazing animals due to implementation of an A/R CDM project activity. If the grazing animals are already in a zero-grazing system or are moved to a zero-grazing system then the grazing activity that is monitored is the production of fodder. The tool can be used to estimate the emissions caused by displacement to: • Identified Forest land; • Identified Cropland; • Identified Grassland; and • Unidentified land. The tool is not applicable for estimating GHG emissions due to implementation of an A/R CDM project activity that causes displacement to: • Settlements; • Wetlands; and • Other lands – as defined by the GPG LULUCF (i.e. bare soil, rock, ice, and all unmanaged land areas that do not fall into category of forest land, cropland, grassland, settlements or wetlands.
	Parameter(s) to be determined	• Leakage due to the displacement of animals in year *t* (tCO_2e) [$LK_{Displacement,t}$]

Title and Version Number	*Scope, Applicability, Procedure and Parameters*	
10. Tool for calculation of GHG emissions due to leakage from increased use of non-renewable woody biomass attributable to an A/R CDM project activity – Version 1 [EB 39, Annex 11]	Scope	This tool allows for estimation of the increase in GHG emissions due to leakage, resulting from an increased use of non-renewable woody biomass from sources outside the project boundary, attributable to an A/R CDM project activity.
	Applicability	• This tool is applicable for estimating the increase in GHG emissions caused by increased use of non-renewable woody biomass sourced from outside the project boundary as part of an A/R CDM project activity. • This tool shall be applied whenever implementation of an A/R CDM project activity is expected to cause an increase, over its use in the baseline, of non-renewable woody biomass sourced from outside the project boundary. • This tool applies the most recent definition of renewable biomass as approved by the EB (available at http://cdm.unfccc.int/Reference/Guidclarif).
	Parameter(s) to be determined	• Leakage from the increase in woody biomass that comes from nonrenewable sources, due to project implementation in year *y* (tCO_2) [$LK_{NRB,y}$]
11. Tool for estimation of carbon stocks, removals and emissions for the dead organic matter pools due to implementation of a CDM A/R project activity – Version 1 [EB 41, Annex 14]	Scope	This tool can be used to estimate the carbon stocks, removals and emissions for the dead organic matter pools—the dead-wood and litter pools—within the boundary of a CDM A/R project activity. The tool considers carbon stocks and changes in: • Dead organic matter (DOM) existing within the project boundary at the time an A/R project commences—the "*existing DOM*"; • Dead organic matter that results from establishment of forest within the project boundary as part of A/R project activities —the "*project DOM*".
	Applicability	The tool is applicable for estimating the carbon stocks, removals and emissions for the DOM pools—including any associated increase in non-CO_2 emissions—within the boundary of a CDM A/R project. To ensure transparent accounting, the tool separately considers: • Change in *existing DOM* carbon stocks—carbon stocks in the *existing DOM* pools present at project commencement may be increasing, static or decreasing depending on the state of existing live biomass stocks, antecedent disturbance and mortality conditions, fuelwood gathering and decomposition losses. Non-CO_2 emissions may occur from burning of the *existing DOM* pools if fire is used as part of site preparation. • Change in *project DOM* carbon stocks—carbon stocks in the *project DOM* pools may increase over time due to natural mortality, and due to pruning, thinning and harvesting practices. Stocks may also increase substantially due to enhanced mortality from disturbance (including from outbreaks of pests or disease). By contrast, fire, either natural or anthropogenic, can result in a large decrease in the carbon stocks in the *project DOM* pools, as well as resulting in significant non-CO_2 emissions. Fuelwood gathering, and decomposition, will also reduce carbon stocks in the *project DOM* pools.
	Parameter(s) to be determined	• Carbon stocks in the *existing DOM*, or *project DOM*, pools (as applicable), for each vegetation class (i.e. trees or shrubs) in a stratum of area A_s, at time *t* (tC) [$C_{DOM,t}$] • Average annual change in carbon stocks in the *existing DOM*, or *project DOM*, pools (as applicable), for each vegetation class (i.e. trees or shrubs) in a stratum of area A_s, at time *t* ($tCyr^{-1}$) [$\Delta C_{DOM,t}$] • Increase in non-CO_2 emissions due to burning of DOM stocks, for each vegetation class (i.e. trees or shrubs) in a stratum of area A_s, at time *t* (tCO_2e) [$E_{DOM,burn,t}$]

Table A-8 List of Methodological Tools (as of 21 Oct 09)

Title and Version Number	*Scope, Applicability, Procedure and Parameters*	
12. Tool for the identification of degraded or degrading lands for consideration in implementing CDM A/R project activities – Version 1 [EB 41, Annex 15]	Scope	This tool provides a procedure for the identification of degraded or degrading lands for the purpose of application of A/R CDM methodologies. The definitions of degraded and degrading lands are meant to be applied exclusively in the context of A/R CDM project activities, therefore, they may not necessarily be consistent with other uses of the terms in other contexts.
	Procedure	The procedure to implement the two-stage approach is described below. The presence of one of the following is enough for demonstrating that land is "degraded" and/or "degrading": • Provide documented evidence that the area has been classified as "degraded" under verifiable local, regional, national or international land classification system or peer-review study, participatory rural appraisal, satellite imagery and/or photographic evidence in the last 10 years. • Demonstrate through a comparative study that the candidate lands in the proposed project area have similar or equivalent conditions (e.g. vegetation, soil, climate, topography, altitude, soil class and land use) and socio-economic pressures and drivers of degradation to reference degraded lands elsewhere, verifiably classified and documented as degraded lands. The proof of similarity of lands should be made through verifiable documentation and/or visual field assessment and data sets: • Demonstrate through direct evidence based on selected indicators of land degradation that the area is "degraded" and/or "degrading" through conducting either a visual assessment of the state and condition of the indicators or a verifiable participatory rural appraisal (PRA). The indicators of degradation should be locally relevant and verifiable.
13. Estimation of changes in the carbon stocks of existing trees and shrubs within the boundary of an A/R CDM project activity – Version 1 [EB 46, Annex 18]	Scope	This tool can be used to estimate the change in carbon stocks of live woody vegetation that exists within the A/R CDM project boundary at the time the project commences (the "existing woody vegetation"), and that would have occurred in the absence of the A/R CDM project activity. The changes in carbon stocks are accounted as a component of baseline net GHG removals by sinks.
	Procedure	The tool is applied in a stepwise manner, as follows: Step 1: Use the approved A/R CDM Guidance on Conditions under which the Change in Carbon Stocks in Existing Live Woody Vegetation Need not be Accounted to determine whether the change in carbon stocks in existing live woody vegetation (i.e. in trees and shrubs), expected in the absence of the project, is insignificant. If insignificant, the parameter provided by this tool—the change in carbon stocks in existing woody vegetation at time t, woody, exist, t ΔC —is accounted as zero, and further use of this tool is not required. Otherwise, proceed to Step 2. Step 2: To estimate the change in carbon stocks in existing live woody vegetation at time t that would have occurred in the absence of the project, woody, exist, t ΔC , use one of the following two methodological approaches detailed in Section II. • Method 1: carbon gain-loss approach; • Method 2: carbon stock-change approach.
	Applicability	This tool can be used to estimate the change in carbon stocks in the existing live woody vegetation present within the project boundary at the commencement of the project. The change in carbon stocks during a given time period, if significant, are accounted as a component of baseline net GHG removals by sinks. Accounting continues until such time as the existing vegetation would, in the absence of the project, have been expected to reach maturity. The tool is not applicable in situations in which the baseline scenario for the project includes significant expansion in the area of naturally regenerating trees or shrubs.1 To exclude such situations, add the following applicability condition to any methodology using this tool: • The approved methodological tool "Estimation of changes in the carbon stocks of existing trees and shrubs within the boundary of an A/R CDM project activity" may not be applied to areas within the project boundary in which significant numbers of trees and/or shrubs are expected to regenerate naturally in the absence of the project, over the project lifetime.
	Parameter(s) to be determined	Change in the carbon stocks in existing woody vegetation (i.e., in trees and shrubs) in year *t* (tCO_2yr^{-1}) [$\Delta C_{woody, exist, t}$]

Note: The most recent versions are available on the UNFCCC CDM website: http://cdm.unfccc.int/Reference/tools/index.html.

4 Tool for the demonstration and assessment of additionality Version 5.2

The "Tool for the demonstration and assessment of additionality[23]" (additionality tool) provides a general framework for demonstrating and assessing additionality and is applicable to a wide range of project types, though some project types may require adjustments. The tool does not replace the need for the baseline methodology to provide a step-wise approach to identify the baseline scenario. Project participants that propose new baseline methodologies shall ensure consistency between the determination of additionality of a project activity and the determination of a baseline scenario. Project participants can also use the "Tool for identification of baseline scenario and demonstration of additionality" (combined tool), which provides a procedure for baseline scenario identification as well as additionality demonstration. The use of the additionality tool is not mandatory for project participants when proposing new methodologies. Project participants may propose alternative methods to demonstrate additionality for consideration by the Executive Board, or may also submit revisions to approved methodologies using the tool. However, once the additionality tool is included in an approved methodology, its application by project participants using this methodology is mandatory. The additionality tool provides for a step-wise approach to demonstrate and assess additionality, as shown in Figure A-1 below.

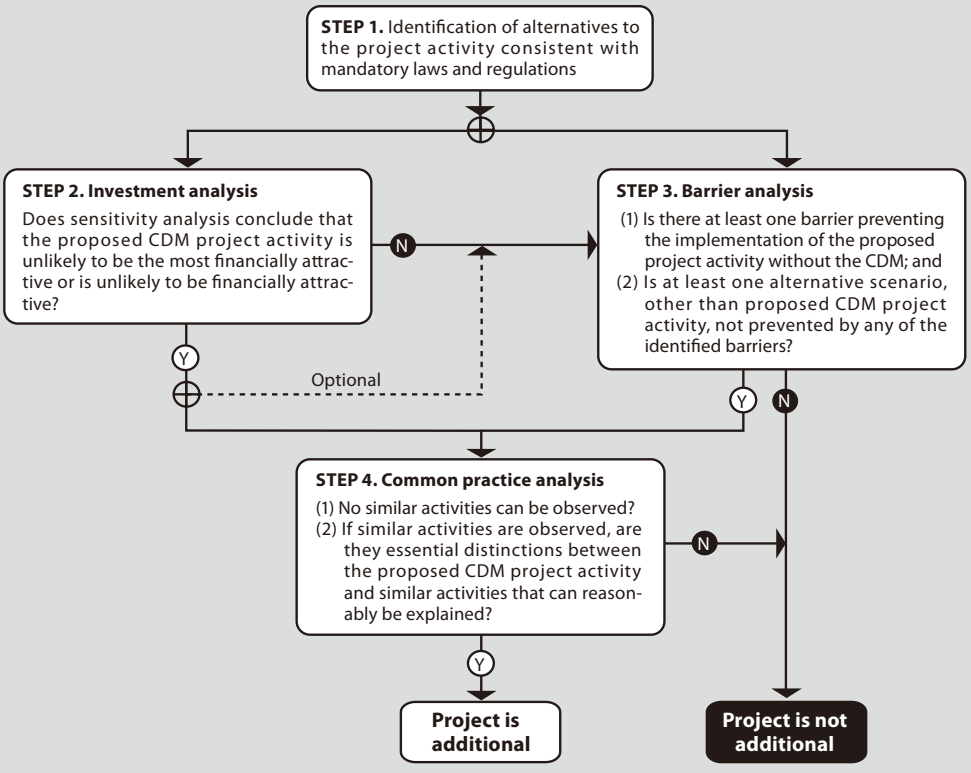


Figure A-1 Overview of the additionality tool (Source: Additionality Tool, Ver. 5.2, Page 3)

23 http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v5.2.pdf

Step 1 Identification of alternatives to the project activity consistent with current laws and regulations

▶ Sub-step 1a. Define alternatives to the project activity:

Identify realistic and credible alternative(s) available to the project participants or similar project developers that provide outputs or services comparable with the proposed CDM project activity. These alternatives are to include:

- The proposed project activity not undertaken without being registered as a CDM project activity;
- Other realistic and credible alternative scenario(s) to the proposed CDM project activity scenario that deliver outputs services (e.g., cement) or services (e.g. electricity, heat) with comparable quality, properties and application areas, taking into account, where relevant, examples of scenarios identified in the underlying methodology;
- If applicable, continuation of the current situation (no project activity or other alternatives undertaken).

▶ Sub-step 1b. Consistency with mandatory laws and regulations:

- The alternative(s) shall be in compliance with all mandatory applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air pollution. (This sub-step does not consider national and local policies that do not have legally-binding status.);
- If an alternative does not comply with all mandatory applicable legislation and regulations, then show that, based on an examination of current practice in the country or region in which the law or regulation applies, those applicable legal or regulatory requirements are systematically not enforced and that noncompliance with those requirements is widespread in the country. If this cannot be shown, then eliminate the alternative from further consideration;
- If the proposed project activity is the only alternative amongst the ones considered by the project participants that is in compliance with mandatory regulations with which there is general compliance, then the proposed CDM project activity is not additional.

The project participant should proceed to Step 2 (Investment analysis) or Step 3 (Barrier analysis). One may also select to complete both Steps 2 and 3.

Step 2 Investment analysis

Guidance provided by the Executive Board on investment analysis, attached as annex to the additionality tool, shall be taken into account when applying this Step. Project participants can

choose the appropriate analysis method from the following three options:

- Option I - Simple cost analysis: the CDM project activity generates no financial or economic benefits other than CDM related income. Document the costs associated with the CDM project activity and the alternatives identified in Step 1 and demonstrate that there is at least one alternative which is less costly than the project activity.
- Option II - Investment comparison analysis: the CDM project activity has non-CER financial or economic benefits. Select an appropriate financial indicator and compare the indicator value for the CDM project activity and that for the other alternatives. Conduct a sensitivity analysis.
- Option III - Benchmark analysis: the CDM project activity has non-CER financial or economic benefits. Select an appropriate financial indicator and compare the indicator value for the CDM project activity and the value of the identified benchmark, e.g. government bond rates. Conduct a sensitivity analysis.

Project participants should present the investment analysis in a transparent manner and provide all the relevant assumptions, preferably in the CDM-PDD, or in separate annexes to the CDM-PDD, so that a reader can reproduce the analysis and obtain the same results. Refer to all critical techno-economic parameters and assumptions (such as capital costs, fuel prices, lifetimes, and discount rate or cost of capital).

Step 3 Barrier analysis

Project participants should determine whether the proposed project activity faces barriers that:

(a) Prevent the implementation of this type of proposed project activity; and

(b) Do not prevent the implementation of at least one of the alternatives.

▶ Sub-step 3a. Identify barriers:

Project participants should identify that there are realistic and credible barriers that would prevent the implementation of the proposed project activity from being carried out if the project activity was not registered as a CDM activity. Such barriers include:

- Investment barriers, other than the economic/financial barriers in Step 2 above, inter alia:
  - Similar activities have only been implemented with grants or other non-commercial finance terms. Similar activities are defined as activities that rely on a broadly similar technology or practices, are of a similar scale, take place in a comparable environment with respect to regulatory framework and are undertaken in the relevant country/region;
  - No private capital is available from domestic or international capital markets due to real or perceived risks associated with investment in the country where the proposed CDM project activity is to be implemented, as demonstrated by the credit rating of the country

or other country investments reports of reputed origin.

- Technological barriers, inter alia:
  - Skilled and/or properly trained labour to operate and maintain the technology is not available in the relevant country/region, which leads to an unacceptably high risk of equipment disrepair and malfunctioning or other underperformance;
  - Lack of infrastructure for implementation and logistics for maintenance of the technology;
  - Risk of technology failure;
  - The particular technology used in the proposed project activity is not available in the relevant region.
- Barriers due to prevailing practice, inter alia:
  - The project activity is the "first of its kind".
- Other barriers, preferably specified in the underlying methodology as examples.

▶ Sub-step 3b. Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity):

- The projects participants should demonstrate that the identified barriers do not prevent the implementation of at least one of the alternatives. Any alternative that would be prevented by the barriers identified in Sub-step 3a is not a viable alternative, and shall be eliminated from consideration.

Project participants are to provide transparent and documented evidence, and offer conservative interpretations of this documented evidence, as to how it demonstrates the existence and significance of the identified barriers and whether alternatives are prevented by these barriers. Anecdotal evidence can be included, but alone is not sufficient proof of barriers. If both Sub-steps 3a – 3b are satisfied, projects participants are to proceed to Step 4 (Common practice analysis). But if one of the Sub-steps 3a – 3b is not satisfied, the project activity is not additional.

▶ Step 4: Common practice analysis

▶ Sub-step 4a. Analyze other activities similar to the proposed project activity:

- Project participants are to provide an analysis of any other activities that are operational and that are similar to the proposed project activity. Projects are considered similar if they are in the same country/region and/or rely on a broadly similar technology, are of a similar scale, and take place in a comparable environment with respect to regulatory framework, investment climate, access to technology, access to financing, etc. Other CDM project activities are not to be included in this analysis. Documented evidence and, where relevant, quantitative information are to be provided. On the basis of that analysis, the project

participants describe whether and to which extent similar activities have already diffused in the relevant region.

► **Sub-step 4b. Discuss any similar options that are occurring:**

- If similar activities are identified above, then it is necessary to demonstrate why the existence of these activities does not contradict the claim that the proposed project activity is financially/economically unattractive or subject to barriers. This can be done by comparing the proposed project activity to the other similar activities, and pointing out and explaining essential distinctions between them that explain why the similar activities enjoyed certain benefits that rendered it financially/economically attractive (e.g. subsidies or other financial flows) and which the proposed activity cannot use or did not face the barriers to which the proposed project activity is subject. If necessary data/information of some similar projects are not accessible for project participants to conduct this analysis, such projects can be excluded from this analysis. In case similar projects are not accessible, the PDD should include justification about non-accessibility of data/information.
- Essential distinctions may include a serious change in circumstances under which the proposed CDM project activity will be implemented when compared to circumstances under which similar projects were carried out. For example, new barriers may have arisen, or promotional policies may have ended, leading to a situation in which the proposed CDM project activity would not be implemented without the incentive provided by the CDM. The change must be fundamental and verifiable.

If Sub-steps 4a and 4b are satisfied, i.e. (i) similar activities cannot be observed or (ii) similar activities are observed, but essential distinctions between the project activity and similar activities can reasonably be explained, then the proposed project activity is additional.