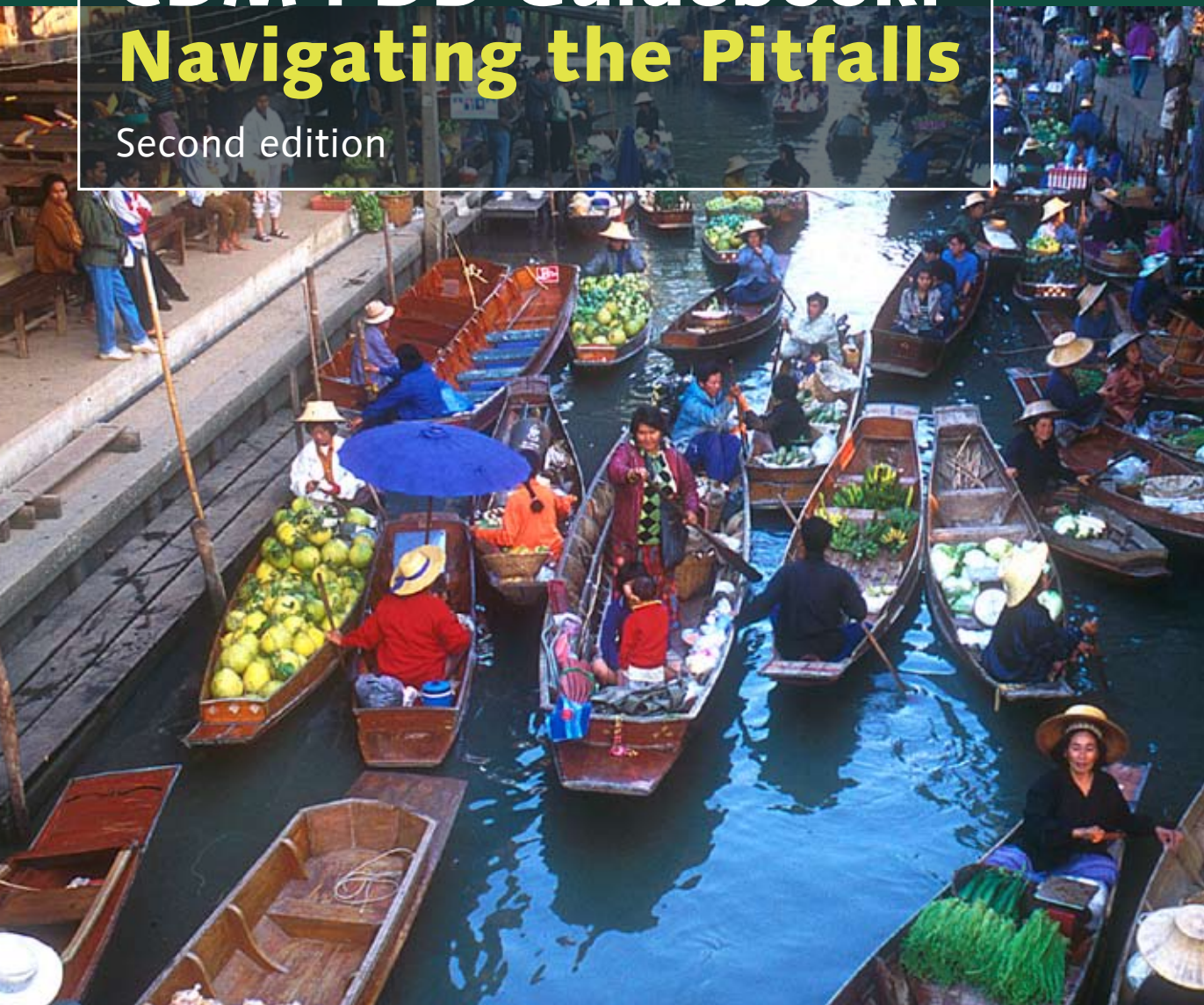


The UNEP project CD4CDM

# CDM PDD Guidebook: Navigating the Pitfalls

Second edition



# CDM PDD Guidebook: **Navigating the Pitfalls**

## Second edition

Produced by UNEP Risø Centre

Risø - DTU

April 2008



MANAGING RISK



## **Clean Development Mechanism PDD Guidebook:**

### **Navigating the Pitfalls** - Second edition

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The findings, interpretations, and conclusions expressed in this report are entirely those of the author(s) and should not be attributed in any manner to the Government of the Netherlands.

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# Preface

The Clean Development Mechanism (CDM) has picked up speed following the entry into force of the Kyoto Protocol in February 2005. By April 2008, up to 3188 CDM projects have been submitted for validation. In a years time the number of CDM projects have increased in more than four times from 744 projects submitted for validation in May 2006. A wealth of experience and knowledge has been gained by the different Designated Operational Entities (DOE) through the process of validating the submitted projects and the verification of emissions reduction, specifically with regard to common mistakes and pitfalls that the CDM project proponents fall into when preparing a CDM Project Design Documents (PDDs), during the implementation of the project and when reporting emission reductions.

This second edition includes a revised version of the pitfalls during the validation process and also includes a new section dedicated to the pitfalls faced during the verification process.

The Capacity Development for CDM (CD4CDM) Project decided to capitalize on the lessons learned by this validation process and has collaborated with Det Norske Veritas (DNV), an accredited DOE, to produce this guidebook. The guidebook targets CDM project proponents in developing countries, specifically those engaged in PDD preparation. It draws upon the extensive knowledge of DNV, which has validated about 42% of all CDM projects coming through to the validation stage and verified 35% of all projects with CERs issued.

In this second guidebook, DNV identifies 38 common pitfalls; based on the systematic analysis of all projects it validated and verified up to April 2008, and provides detailed guidance on how to avoid these pitfalls. By producing this guidebook, CD4CDM aims to indirectly contribute to the reduction of transaction time associated with CDM project validation through improving the quality of the PDDs produced.

It should be noted that this guidebook *does not* give a detailed description of how to design a CDM project or how to prepare monitoring reports. For guidance on this topic, please refer to other CDM guidebooks downloadable from <http://cd4cdm.org/>.

The CD4CDM project would like to express appreciation to the primary authors of this second edition of the Navigating the Pitfall Guidebook including Miguel Rescalvo as project manager from DNV for this edition, Gustavo Godinez, Anu Chaudary, Hendrik W. Brinks, Trine Kopperhud and Tonje Folkestad.

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UNEP Risø Centre (<http://uneprisoe.org/>)

Capacity Development for CDM Project

April 2008



# Introduction

This guidebook is designed to help readers navigate the pitfalls of preparing a Project Design Document (PDD) for Clean Development Mechanism (CDM) projects. This second edition also aims at helping project developers to navigate the pitfalls of preparing a Monitoring Report and be better prepared to face the verification process.

The purpose of a PDD is to prepare project information for relevant stakeholders. These stakeholders include the investment community, the Designated Operating Entity (DOE) performing validation of the project, the CDM Executive Board (EB), the Designated National Authorities (DNA) of the involved countries and the local population. The PDD, together with the validation report and the approval letter of the DNA, are the basis for the registration of the project and its recognition as a credible CDM project.

The PDD is about the project's design – that is, how the project intends to reduce greenhouse gas (GHG) emissions below those levels that would otherwise have been emitted<sup>1</sup>. Each and every CDM project is unique, from the project design to the application of even the simplest baseline methodology. Some of the projects submitted for validation may be very efficient in reducing emissions and score well in terms of economic, social and environmental benefits, but may still not qualify as CDM projects.

Experience has shown that the information needed to judge the suitability of a project for the CDM is vast and can take months to assemble. Also, the time required to assemble relevant information increases with the number and diversity of stakeholders involved and the complexity of the information itself.

The objective of the verification of emissions reduction is the review and ex post determination of the monitored emission reductions that have occurred during a specified verification period. The verification is about the project's reality- that is, how the project has been implemented as described in the registered PDD and is generating emissions reductions that are real and measurable which are being monitored in line with the provisions done in the monitoring plan at the time of the PDD elaboration.

This timeframe difference (project design phase vs project operational phase) is one of the main causes of the difference between the estimated emissions reduction in the PDDs and the actual emissions reduction achieved by the project. As a rule of thumb, the CDM projects are to be implemented exactly as designed and described in the PDD, including the monitoring plan developed in the PDD in line with the applicable methodology. Doing this correctly in a continuously changing business environment is not always easy and the project developers confront several pitfalls at a later stage during the verification process.

The Monitoring Report is the document that contains project information relevant to the collection and archiving of all relevant data necessary for determining the emissions reduction for a specific monitoring period. This document should also address the quality assurance and control procedures adopted during the monitoring period together with the documentation on the calculations of the anthropogenic emissions.

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1 Dec. 17/COP7, Article 43, Marrakech accords

This guidebook is based on a review of a majority of all PDDs submitted to DNV for validation and monitoring reports assessed by DNV. The advice given and the pitfalls described in this guidebook are, therefore, based on day-to-day, hands-on experience and real instances of mistakes identified during the validation and verification processes.

In summary, then, this guidebook takes a practical stance: it is concerned with the practical issues of how to get projects through the validation process and the key aspects to have into account for ensuring a successful verification of emissions reduction.

This guidebook will help those submitting a PDD by:

- Describing the most common mistakes made in the process of preparation of a PDD
- Providing guidance for completing a PDD
- Explaining the validation process and thus making it easier to understand when and how to interact with the DOE validating the project.

This second edition of the guidebook will help project developers that have registered a CDM project by:

- Describing the most common and costly mistakes made in the process of preparation of a Monitoring Report
- Providing guidance for completing a Monitoring Report
- Explaining the verification process and thus making it easier to understand when and how to interact with the DOE verifying the project activity.

# PART 1: VALIDATION

# The CDM Project Development.

## Sources of information for developing your project

When the Clean Development Mechanism was created in 1997, no-one knew exactly what the new market mechanism was going to look like in detail. The *Modalities and procedures for a clean development mechanism* were agreed upon as part of the so-called Marrakech Accords in 2001. This is the key reference on all requirements surrounding a CDM project, and can be found under the official reference *Decision 3/CMP.1*.

For example, the Modalities and Procedures say that CDM project activities need to demonstrate their additionality, to present an analysis of environmental impacts, and to make the project plans subject to a stakeholder comment period. They also define the roles of Project Participants (PPs), Designated Operational Entities (DOEs) and the different entities of the UNFCCC.

New issues constantly arise as projects are planned and implemented. Therefore, the Executive Board and the various Working Groups and Panels of the CDM have issued a number of clarifications, guidance notes and tools.

When developing a CDM project, it is worthwhile making yourself acquainted with the UNFCCC-CDM website, where all rules and decisions governing the CDM can be found. Note particularly the "Executive Board" and the "References" sections.

An overview of the most relevant links is given in Annex 1 of this leaflet.

## Choice of methodology

Different technologies require different ways of calculating and monitoring emission reductions, and therefore the CDM Executive Board has approved a number of baseline and monitoring methodologies. Each of the methodologies has precise criteria defining the technologies and situations it applies to.

One of the first items to check when developing a CDM project is whether it fits with an approved methodology. If not, you may need to propose a new methodology or a revision to an old one. This process takes anything from a few months to more than a year, increasing the costs and delaying the potential CDM-based return on your project. But if it enables you to claim emission reductions that under existing methodologies would have been ignored, it may be worth the effort. Note that it is a DOE that officially submits the proposed new methodology on behalf of the project developers.

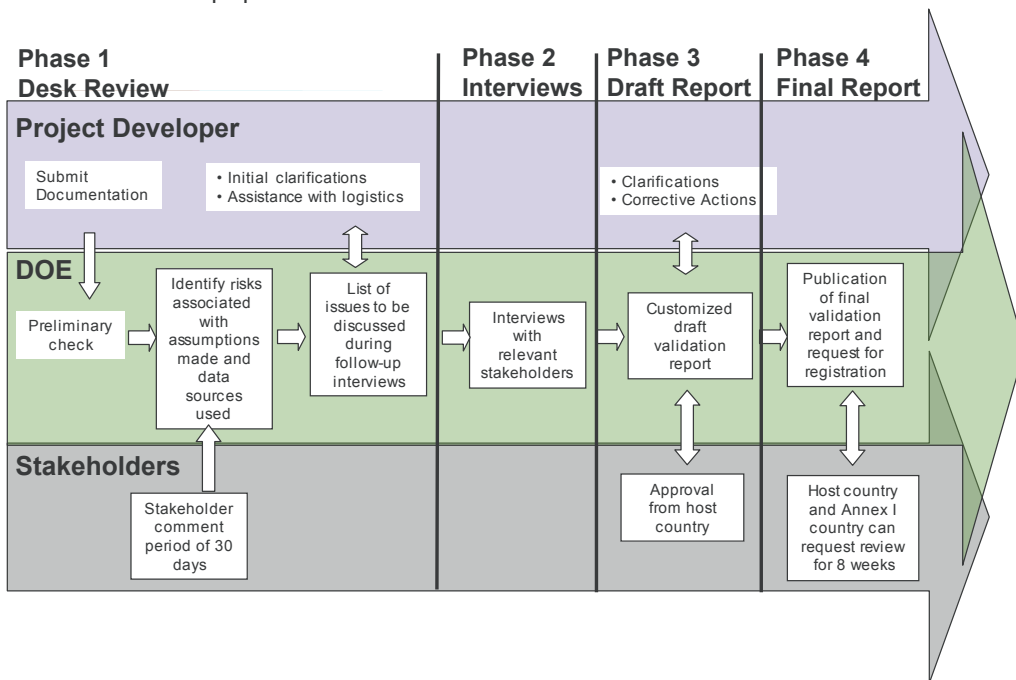
You will find a list of all approved methodologies, and procedures for proposing new methodologies, in the "Methodologies" section of the UNFCCC-CDM website.

# The Validation Process

Validation of a CDM project means a third party independent assessment of the project plans developed by a DOE, and is a requirement for registration of a CDM project. This section describes in general terms the validation process and the timeline for CDM project development. It aims at helping those submitting a potential CDM project for validation to:

- Better understand the validation process and the different stakeholders involved in this process
- Better understand what information is required by the DOE for validation of projects
- Better plan for a realistic timeline.

Figure 1 shows the interaction between the project developer, the DOE, the DNA of the host country, the CDM Executive Board (EB) and other stakeholders affected by the project activity, such as the local population.



**Figure 1 - Steps of the Validation Process**

Figure 1 shows that, whereas the project developer is responsible for the project design process, the DOE is the central player driving the validation process as a whole. The CDM Executive Board may be involved if there are deviations from the methodology that cause the DOE to request guidance from the EB.

It is also important to note the complexity of the process, in that many activities are being carried out in parallel, especially in phase 3. It is therefore crucial that the players maintain communication with each other and that each of the parties involved dedicates a project manager, acting as a central point of contact, who is responsible for driving the process along and coordinating with the other parties involved. For example, major delays can occur in phase

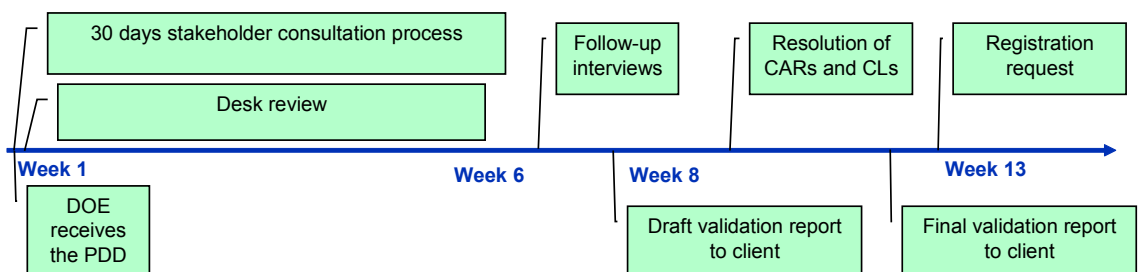
3, if project operators or DNA representatives are unavailable to respond quickly to a DOE's request for clarification.

The complexity of the process also leads to another consideration. During the first two validation phases the project developer is mostly not involved. The DOE is busy assessing the project in its totality and assembling facts and background information to construct as realistic and, most importantly, as independent a picture of the project activity as possible.

From past experience it is clear that delays often occur in phase 3. These delays are normally a consequence of the time needed by project developers to resolve issues that prevent the registration of the project, or delays in the issuance of the Letter of Approval (LoA). Given that rules and interpretations are continuously changing, if the process is delayed it may happen that the rules applied when the draft report was submitted to the project developer have changed and further modifications are needed. This is nowadays, the main cause of the long validation processes.

Figure 1 does not describe the timeline for passing through all these phases. Figure 2 below indicates the approximate time needed to perform each stage.

The desk review and the public stakeholder comments stages will typically be performed in parallel. Ideally, the validation process should take no more than 60 days (including the 30 days stakeholder consultation process). In practice, the average timeframe for a validation is well above that figure with more than 200 days on average at the end of 2007 from the commencement of the public comments period to the submission of the request for registration. The experience shows that there is not any significant difference in the time needed for the validation of a small scale project and a large scale project. Delays commonly occur when the project participant has to resolve outstanding issues (Corrective Actions Requests (CARs) and Clarification Requests (CLs)). In conclusion, the timeline of the validation will depend on the complexity of the project, and the type and number of outstanding issues that need to be resolved by the project participants.



**Figure 2 - Steps of the Validation Process**

Many DOEs use a customised validation protocol to ensure transparency of the validation outcome. Such protocols show criteria, means of verification, and the results of the validation. The common CDM and JI Validation and Verification Manual (VVM) has been developed since 2002 by a multi-stakeholder process involving government officials, private sector representatives, third party verifiers and NGOs. The sponsoring institutions have been International Emissions Trading Association (IETA) and the Prototype Carbon Fund (PCF). The VVM has

established itself as the global best practice standard and is used by all major DOEs. The manual contains process maps outlining the validation process, guidelines on how to perform a validation, and validation report and protocol templates<sup>2</sup>.

The paragraphs below explain in more detail what happens in each of the validation phases.

## Desk review

In reviewing the project information received from the project developer, the DOE validation team will first perform a risk analysis. Particular emphasis will be put on the identification of key risks to the validity of potential Certified Emission Reductions (CERs). A sector expert is involved at this stage, to ensure the quality required by the UNFCCC for validation.

As per the Validation and Verification Manual, the following areas are described in the protocol and reviewed during validation:

- project design
- baseline assessment (including additionality)
- emission reduction calculations
- monitoring plan
- environmental and social impacts including the local stakeholder process.

The desk review stage normally finishes at the same time as the 30-day public stakeholder period, and during this time the DOE works on its own, rarely contacting the project developer. In the past, this has often caused frustration and uncertainty because the project developer, having worked intensely on the PDD for weeks, is suddenly not involved in the process.

It is critical that the DOE has enough information to assess during this phase of the process and not only the PDD. This will speed up the validation process and will ensure that the site visit/interviews are focused on specific issues. It is recommended that together with the PDD, the project developers send to the DOE:

- Excel file with detailed emissions reduction calculation in a reproducible format (i.e. indicating the formulae applied and not only the final figures)
- Excel file with detailed calculation of investment analysis indicators used for the demonstration of Additionality (if applied) and evidences of the sources used for the analysis.
- Evidence of the starting date of the project in line with the Glossary of CDM Terms<sup>3</sup>
- Evidence of the consideration of the CDM benefits before the final decision to go ahead with the project (if applicable).
- Other evidences and references that may be needed in the validation process (feasibility study reports, EIA, etc)

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<sup>2</sup> The complete documentation can be downloaded at <http://www.ieta.org/ieta/www/pages/index.php?IdSitePage=200>

<sup>3</sup> <http://cdm.unfccc.int/Reference/glossary.html>

## Stakeholder consultation process

In parallel with the desk review, the DOE will typically carry out a stakeholder consultation process, as required by the CDM modalities and procedures. The DOE will publish the PDD, and invite parties, stakeholders and observers, via the UNFCCC CDM-site, to comment on the PDD within 30 days. Any issues raised by stakeholders are subsequently to be addressed in the final validation report.

## Follow-up interviews and site visits

The DOE will use phase 2 to review any additional information necessary to allow it to conclude on issues raised during the desk review. This information will typically also be sourced via interviews with project stakeholders in the host country (e.g. project operators, DNA, local community) who can provide evidence of the fulfilment of requirements where this has not been fully established in the desk review.

For many projects, information given in the project documentation, such as information on the baseline situation, can only be verified by seeing the activity in operation, and in such cases the DOE will perform a site visit to the plant. This activity is of special relevance when the baseline emissions are established ex-ante for the entire crediting period and are based on historical performance data. In such a case, the DOE will visit the plant to verify that the data reported in the PDD is accurate and reflects the reality.

The project developer is then approached in order to review the list of issues and to decide how these can be resolved. Resolution can be done via email, phone, or direct meetings between the DOE and involved stakeholders, such as representatives from the operating company and the DNA.

Past experience has shown that good communication between the DOE and the contact persons of the individual organisations and government agencies is crucial to keep the process going.

## Draft validation report and resolution of outstanding issues

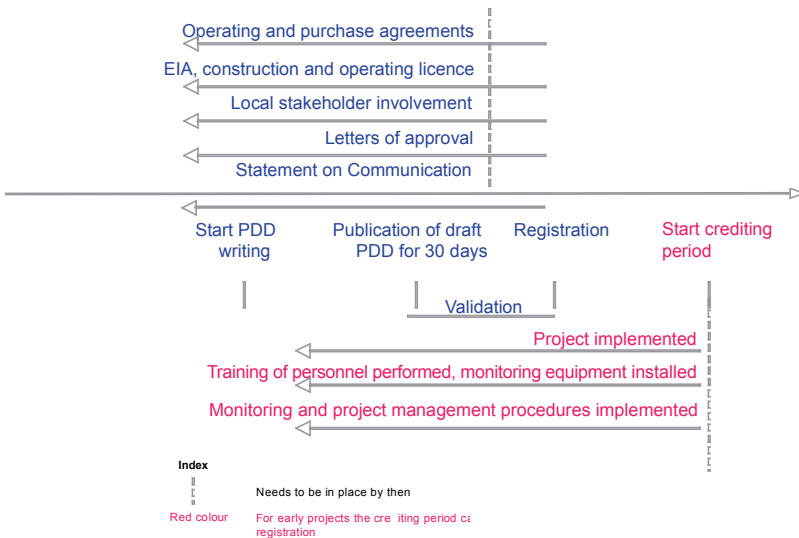
In the third phase, the DOE issues a draft validation report, which includes the initial findings, for the client to review. The draft validation report should also include issues raised by stakeholders during their 30-day consultation period, which have not already been resolved by the DOE in the desk review. Any outstanding issues that may impact the final validation opinion are presented as either:

- CARs (Corrective Action Request)– these describe the actions required for successful project validation.
- CLs (Clarification Request) – these describe the elaboration or supplementary evidence necessary for successful project validation.

This is the phase in which delays are most likely to occur, since the issues raised can take time to resolve. For example, missing LoAs from host country DNAs can take 2-5 months or more to obtain, depending on the countries involved. There is also the possibility to submit enquires to the CDM Executive Board, which can also take time to get feedback.



Figure 3 shows that most of the activities that must be carried out in order to create verifiable project emission reductions, need to be completed before registration. However, some issues can be resolved at any time up to the start of the crediting period. Activities to be completed before registration are more likely to define the critical path of the project's development.



**Figure 3 - Generic CDM Timeline**

It should be noted that the project timeline also varies between countries. For instance, a few DNAs ask for the draft, or final validation report, before starting the approval process and issuing the final LoA. The average time taken by DNAs to issue LoAs can vary considerably.

Also, DNA's revise their processes – so what might be optional one year could be mandatory the next. For example, one host country DNA will switch to requiring a draft or final validation report before starting the approval process in the future. Project developers submitting PDDs must make sure that they are up to date on the latest national requirements.

## Final validation report and opinion and request for registration

In this final phase, a validation report and opinion will be submitted to the client for review. The report will indicate whether the project, as designed and documented, meets the Kyoto Protocol criteria and CDM modalities and procedures, as well as the criteria for consistent project operations, monitoring and reporting.

Following a successful validation and the approval of the project by the DOE and the relevant DNAs, the DOE will finalise the validation report and the project will be presented to the CDM EB for registration. The validation report will then be made publicly available on the UNFCCC CDM-website. The registration is deemed final if no request for review is presented by either three EB members, or one of the Parties involved within 8 weeks (4 weeks for small-scale CDM projects) after the report is received by the CDM EB. Registration is the formal acceptance by the EB of a validated project activity as a CDM project activity and is the prerequisite for verification, certification and issuance of CERs related to the project.

# Validation Pitfalls

## Overview of key validation pitfalls.

This section gives a review of 26 key validation pitfalls, in terms of commonality, frequency and tendency to cause the longest delays. The term 'pitfall' is used broadly to mean 'issues that need to be managed' during a validation and registration process. These pitfalls were identified in an analysis of DNV's findings from the majority of projects validated by DNV up to April 2008. This analysis identified more than 100 issues, which were consolidated into 26 key validation pitfalls. In Table 1 below, these pitfalls are classified by frequency of occurrence and approximate time delay caused (based on lessons learnt from DNV's validation of CDM projects).

Sometimes entities choose to submit PDDs in the knowledge that they are not complete. This can minimise delays but also involves the risk that documentation and evidence required for project validation may not be obtained. For instance, written confirmation from the Designated National Authority (DNA) that the project is in line with sustainability criteria may be pending, and the entities may wish to have the approval granted. However, if such confirmation is not given, the project will have incurred unnecessary costs.

**Table 1 – The Key Validation Pitfalls**

	Delay more than 1 week	Delay more than 1 month
<b>Frequency more than 20%</b>	<ul style="list-style-type: none"> <li>• Lack of logic and consistency in PDD</li> <li>• Deviations from selected calculation methodology not justified sufficiently or incorrect formulas applied</li> <li>• Compliance with local legal requirements not covered sufficiently</li> <li>• Insufficient information on the stakeholder consultation process</li> <li>• Absence of baseline data</li> <li>• Poor quality of the PDD</li> </ul>	<ul style="list-style-type: none"> <li>• Start date of the project not correct. Lack of evidence of CDM consideration.</li> <li>• Evidence of EIA and/or required construction/operating permits/approvals not provided</li> <li>• Letter of Approval insufficient or delayed</li> <li>• Long delays in the validation process</li> </ul>

<p><b>Frequency less than 20%</b></p>	<ul style="list-style-type: none"> <li>• Project participants not identified clearly</li> <li>• The modalities of communication with the Executive Board in terms of CERs issuance and allocation instructions not stated clearly, or not signed by all project participants.</li> <li>• Insufficient description of the technology</li> <li>• Insufficient explanation of baseline scenarios</li> <li>• Insufficient explanation of project additionality</li> <li>• Baseline information not sufficiently supported by evidence and/or not referenced sufficiently</li> <li>• Major risks to the baseline not identified/described</li> <li>• The project boundaries not defined clearly</li> <li>• Project and/or crediting start date unclear</li> <li>• Deviations from monitoring methodology not justified sufficiently</li> <li>• Monitoring and project management procedures not defined</li> <li>• Claims in the PDD do not match with the actual situation on project site</li> <li>• Insufficient information on the measurement methods and source of data as part of data/parameter description in monitoring plan</li> <li>• Insufficient information on physical location allowing unique identification of the project activity</li> </ul>	<ul style="list-style-type: none"> <li>• Small-scale selected for a large-scale project</li> <li>• No written confirmation that funding will not result in a diversion of official development assistance</li> <li>• Non-compliance with the applicability conditions of the applied baseline methodology or compliance not explained sufficiently</li> </ul>
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# Description of Validation Pitfalls

In this section, the 26 validation pitfalls listed in the previous table are explained in more detail. Good practice and examples are presented as appropriate.

## Pitfall 1: Small-scale selected for a large-scale project

This mistake could arise if you define a full-scale project as a small-scale project.

The revised definition of small scale projects is provided in paragraph 28 of decision -/CMP.2:

Type I: Renewable energy project activities with a maximum output capacity equivalent to up to 15 megawatts (or an appropriate equivalent);

Type II: Energy efficiency improvement project activities which reduce energy consumption, on the supply and/or demand side, limited to those with a maximum output of 60 GWh per year (or an appropriate equivalent);

Type III: Other project activities limited to those that result in emission reductions of less than or equal to 60 kt CO<sub>2</sub> equivalent annually;

*Examples:*

- The eligibility of a project as a small-scale CDM project may be questioned
- The threshold for each type represents an applicability criteria. The project qualifies as small scale project only if the criteria are met for the entire crediting period. For example, if a swine manure project emissions reduction estimations foreseen that 65 kt CO<sub>2</sub> will be achieved in year 5, the project does not qualify as a small scale project and a large scale methodology has to be applied.
- When a project has more than one component, for example electricity generation and thermal generation (Type I+Type I) or a project that avoid methane emissions from biomass and generates electricity (Type III+Type I), each component shall comply with the SSC threshold. Some of the project proponents wrongly believe that a project needs to fulfil any one of the small-scale applicability criteria to be eligible as a small-scale project. For instance, a project activity with power generation capacity of 8 MW<sub>elec</sub> and thermal generation capacity of 60 MW<sub>th</sub>, was proposed as a small-scale project activity. This is not correct because though the electricity generation capacity is less than the threshold limit of 15 MW<sub>elec</sub>, the thermal generation capacity is higher than the limit of 45 MW<sub>th</sub>. Hence the project does not qualify as a small-scale activity.
- For several biomass co-generation systems and/or co-fires systems such as boilers, if the energy output exceeds 45 MW<sub>th</sub> in total, the project is not eligible as small-scale project.
- Once the project is registered as a small scale project, it could happen that for one specific year of the crediting period, the project goes beyond the limit of its type. In that case, the emission reductions that can be claimed by the project during that particular year will be capped at the limit. As an example, a project developer proposed a SSC methane recovery

in wastewater treatment PDD that qualified as small scale project as the emissions reduction estimated for each year of the 10 year crediting period where below the threshold of 60 kt CO<sub>2e</sub> for type III project. For years 3 and 4 the estimated emissions reduction were 40 kt CO<sub>2e</sub> and 45kt CO<sub>2e</sub>. During the first periodic verification it was confirmed that the actual emissions reduction for year 3 and 4 were 55 kt CO<sub>2e</sub> and 70 kt CO<sub>2e</sub> respectively. In this situation, the project proponent could claim 55 kt CO<sub>2e</sub> for year 3 and 60 kt CO<sub>2e</sub> for year 4.

*Good practice:*

A small-scale project activity needs to fulfil all the applicability criteria listed in the modalities and procedures for small scale CDM project activities and for each component of the project.

Information from reliable and conservative data sources must be supplied to justify the submission of a project as small-scale. A full description is required to show that the project is eligible as a small-scale project and is below the relevant small-scale project threshold although, for projects that are not yet implemented, this cannot be completely certain until the technology is operational. However, there should be a reasonable correlation between the stated project capacity (e.g. below 15 MW) and data on, for example, forecasted generation levels, turbine capacity etc. Where the justification of the small-scale eligibility is based on calculations, the input data and the calculations should be transparently and conservatively described.

- Bundle of several small scale projects that in total exceed the eligibility limits.

A related example is the submission of small-scale PDDs from an unbundled full-scale project. If separate projects are presented with the same project participants, in the same project category and technology/measure, registered within a two year period, and with a project boundary within 1 km of the project boundary of the proposed small-scale activity at the closest point, these will be defined as part of a debundled full-scale project. This practice is not allowed under the CDM

In practice, it is not often that full-scale projects try to debundle into several small-scale projects, but sometimes project developers bundle several projects into one full-scale PDD. Four categories <sup>4</sup>of bundling have been defined and each must be handled differently:

- Bundling of project activities of the same type, same category and technology/measure
- Bundling of project activities of the same type, same category and different technologies/measures
- Bundling of project activities of the same type, different categories and technologies/measures
- Bundling of project activities of different types.

It is also possible to bundle full-scale projects together. For example, a project to capture and combust methane from swine manure treatment was registered for two projects sites<sup>5</sup>, one in Pocillas and other in La Estrella in Chile

For all of the above categories the crediting period should be the same and the composition of bundles must not change over time. Practically, the bundling of several projects into one can

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<sup>4</sup> The EB has requested the Small-scale Working Group to come up with more detailed guidelines for these projects.

<sup>5</sup> The rules for bundling of full-scale projects are still being discussed by EB.

be a problem if a delay in one project causes a delay to the rest of the bundle. For example, any requests for review that relate to only one part of a bundled project, lack of operating licence in one project part, or the definition of how credits are distributed within the bundle, may also affect the other parts of a bundled project.

As an example, a suggestion to bundle a hydro, wind and geothermal project into one full-scale PDD by applying ACM0002 was presented. The projects in question were located in South America (see Figure 4). To do this, the same crediting period needed to be chosen for all three projects. In this example a number of risks needed to be managed. For instance, if the projects were bundled and the geothermal project did not receive an operating licence in time, the crediting period would start running with a reduced credit generation potential. Also, if the CDM EB requested a review because of problems with one project, the other two projects would be delayed as well.



Figure 4 - To bundle or not to bundle... that is the question

## Pitfall 2: Project participants not identified clearly

Sometimes there is confusion on the definition of a project participant, and it is not clear whether the project participants are, or will be, authorised by the respective Party<sup>6</sup> involved.

In the CDM Guidelines, a project participant is defined as follows:

“In accordance with the use of the term project participant in the CDM modalities and procedures, a project participant is:

a Party involved, or

- a private and/or public entity authorized by a Party involved to participate in a CDM project activity.”

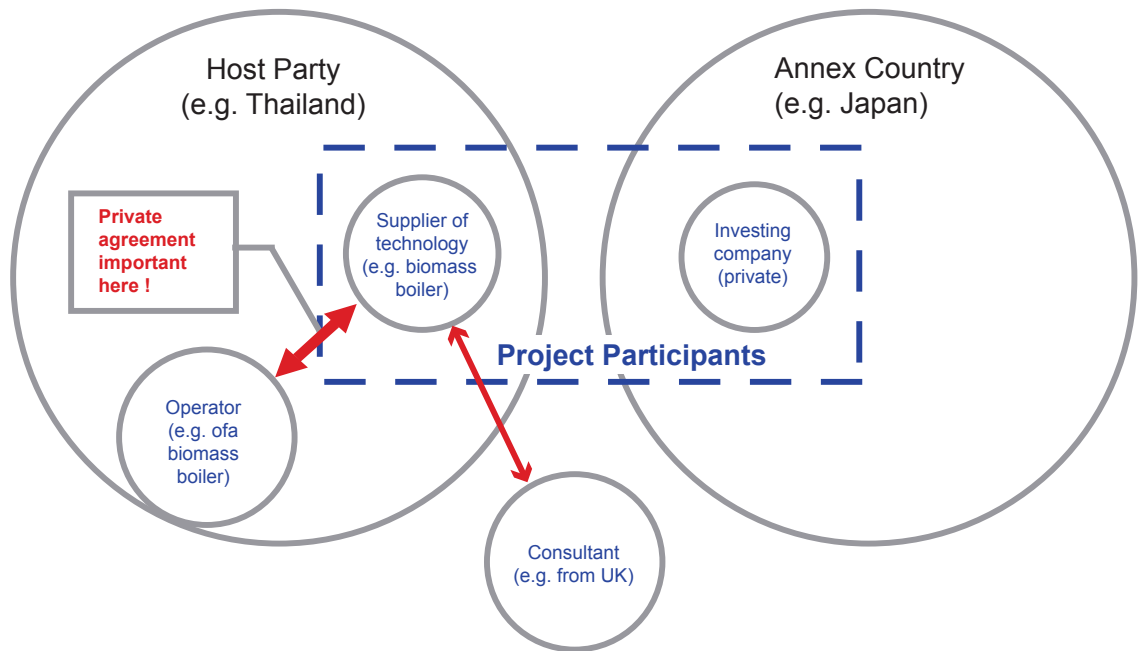
In accordance with Appendix D of the CDM modalities and procedures, the decision on the distribution of CERs from a CDM project activity shall exclusively be taken by project participants. Typically, consultants, DNAs and local municipalities do not have a share in the distribution of CERs.

*Good practice:*

The question of who is a project participant needs thorough consideration. There have been examples where the project operator has not been included as a project participant or even informed about the project being proposed as a CDM project. As an example, for a landfill gas project in Mexico, the project operator was not informed regarding the project being proposed as a CDM activity. Though the operator was not officially a project participant, the objection raised by the operator had an impact on the validation process and implementation of the project activity as the operator then threatened to stop the operation and, hence, generation of CERs, unless they are included as a project participant. As a learning point, it is not mandatory to include the operator as a project participant, however, it is wise to ensure that private agreements are in place to guarantee the generation of CERs. This is also illustrated in Figure 5 below.

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<sup>6</sup> “Party” is used as defined in the Kyoto Protocol and means a Party to the Kyoto Protocol. Annex I Party means a Party as listed in Annex I to the Convention,



**Figure 5 - Project participants: Who has a say in CER distribution?**

Often it is not clearly described whether all organisations mentioned in section A.3 of the PDD are project participants. Only actual project participants should be listed in section A.3 and Annex I of the PDD.

All private or public entity project participants will need to be authorized by a Party, i.e. a country that is signatory to the Kyoto Protocol. Authorization does not necessarily need to be provided by the country where the private or public entity is located but can also be provided by the DNA of another country participating in the project. Good practice is to explicitly mention the project participant in the Letter of Approval, or to address the LoA to the project participant.

The registration of a project activity can take place without an Annex I Party being involved at the stage of registration. However, before an Annex I Party acquires CERs for such a project activity from an account within the CDM registry, the DNA shall submit a letter of approval to the EB in order to ensure that the CDM Registry administrator forward CERs from the CDM registry to the Annex I national registry.

It should be taken into account that the name of the project participants and the name of the project itself in all the documents submitted for registration shall be exactly the same. This is the case of the names in the PDD, modalities of communication statement, Letters of Approvals. The experience shows, that more attention to this point should be paid when those documents are translated to English from their original language.

As per EB 30 report, the EB decided that where a project participant listed in the PDD published at validation is not included in the PDD submitted for registration, the DOE shall provide a letter from the withdrawn project participant confirming its voluntary withdrawal from the proposed project activity, and address this issue in its validation report.



### **Pitfall 3: Evidence of EIA and/or required construction/operating permits/approvals not provided**

Projects are sometimes submitted for validation without evidence that they have all the required operating permits/approvals to proceed. These permits/approvals are country specific. For example, if required, the DOE will ask to see a copy (a scanned, signed document is sufficient) of a valid construction permit, an operational licence and sometimes an Environmental Impact Assessment (EIA). Also, approvals, such as Environment Licences, need to be presented if required by legislation.

These documents should not be included in the PDD, as they are often in local language and can be too comprehensive. Attachments in a language other than English shall not be included, as the CDM-EB has defined that the working language for the CDM is English only.

### **Pitfall 4: Letter of approval insufficient or delayed**

Over 80% of all PDDs submitted for validation are not accompanied by a Letter of Approval (LoA) from all relevant DNAs. The reasons for this are that:

- the process of receiving a Letter of Approval started too late and/or the DNAs have not yet established procedures for the approval of CDM projects
- some DNAs want the validation report before they submit the LoA (e.g. Brazil, Spain, Korea, Germany) and/or
- Parties and/or project participants change during the validation process because of changing private investor or operator relations, e.g. if a company in Japan wants to become a project participant in a unilateral project in Thailand and receive CERs, this will add a new Party and a new project participant to the project (ref Pitfall 2).
- It has also been observed that names of the project participants and the title of the project activity are not consistent in the PDD, LoA and MoC.

*Good practice:* The process of receiving an LoA should be initiated at an early stage as this often takes time. Good examples of LoAs can be found on the UNFCCC website (<http://cdm.unfccc.int/Projects/registered.html>).

As stated in the CDM Guidelines, three points need to be included.

"The DNA of a Party involved in a proposed CDM project activity shall issue a statement including the following:

- The Party has ratified the Kyoto Protocol.
- The approval of voluntary participation in the proposed CDM project activity.
- In the case of Host Party(ies): statement that the proposed CDM project activity contributes to sustainable development of the host Party(ies)."
- The project title and project participant names mentioned in the LoA and MoC must completely match with those given in the PDD.

Further, all private or public entity project participants need to be authorized by one Party.

## **Pitfall 5: No written confirmation that funding will not result in a diversion of official development assistance**

Written confirmation that funding will not result in a diversion of official development assistance must ideally be obtained from the relevant Annex I country DNA. What this means is that Annex I countries shall not divert official development assistance funds that previously have been directed to other purposes (e.g. for school buildings) in the respective host country to the purchase of CERs from a CDM project. Such evidence should be given by the Annex I country. A key word in this context is therefore "diversion"<sup>7</sup>.

Such a statement is only needed when public funding from an Annex 1 Party is used by the project.

## **Pitfall 6: The modalities of communication with the Executive Board in terms of CERs issuance and allocation instructions not stated clearly, or not signed by all project participants**

The modalities of communication<sup>8</sup> with the Executive Board are sometimes not stated, or if stated, not signed by all project participants. The communication statement needs to be in place prior to submitting the request for registration as this is often a cause of delay. Good examples of communication statements can be found on the UNFCCC website (<http://cdm.unfccc.int/Projects/registered.html>).

## **Pitfall 7: Insufficient description of the technology**

Unnecessary or insufficient information is sometimes supplied on material aspects of a project, leaving ambiguity on core aspects of the project technology or implementation. Excessive and irrelevant information may obscure the important information to the validator. However, it is important to provide the detail of any advanced/novel technology used, including electricity generation technologies. The level of detail needs to be considered on a case-by-case basis, ensuring that all relevant information having impact on emission reductions and CDM eligibility is presented.

*Examples:*

*For wind projects* which normally use standard technology, the technical details and details of selected subcontractors are not required, as long as the details on this are provided in e.g. a feasibility study that is made available to the DOE. However, the type of turbine and its pos-

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<sup>7</sup> *As of the Marrakech Accords (Dec17/COP7); "Emphasizing that public funding for clean development mechanism projects from Parties in Annex I is not to result in the diversion of official development assistance and is to be separate from and not counted towards the financial obligations of Parties included in Annex I "*

<sup>8</sup> *The modalities of communication between project participants and the Executive Board are indicated at the time of registration by submitting a statement signed by all project participants. All official communication from and to project participants, after a request for registration is submitted by a DOE, shall be handled in accordance with these modalities of communication. If these modalities have to be modified, the new statement shall be signed by all project participants and submitted in accordance with the modalities that are to be replaced.*

sible type certification, load factor, total installed capacity and important factors summarised from the feasibility study, such as wind conditions, should be described. There is no need to talk extensively about grid connection, voltage etc.

*Small run-of-river hydro power projects* will also normally use standard technology. In this case, the type of turbine, capacity, load factor and river flow conditions should be described.

- *For projects that are less standard*, such as combined heat and power (CHP), fuel switching, cement and other manufacturing industry projects and large hydro projects, design/engineering details are required. For boilers, a description of the theoretical efficiency and technical characteristics are required.
- *For biofuel projects*, the mixture of the biomass burned, boiler or turbine capacity, and how much biomass needs to be transported from other sites, and by what means, must be made clear.
- *For landfill gas capture projects*, detailed components, such as flare efficiency and combustion engines should be described, but there is no need to go into detail about, for example, component material of the pipes.
- *Good Practice:* From the technology description in the PDD, the DOE needs to receive a clear picture of:
  - Whether the project design engineering reflects current good practice, as per the Marrakech Accords.
  - what technology elements are included in the project boundary in terms of GHG emissions
  - Proper sequencing and appropriate use of clear process flow sheets will improve clarity, especially in industry-specific projects. The description should be adapted to sector specifics and can be included as an Appendix to the PDD.

## **Pitfall 8: Non-compliance with the applicability conditions of the applied baseline and monitoring methodology or methodology compliance not sufficiently explained.**

Experience shows that the applicability criteria from the methodologies are sometimes not specifically addressed in the PDD. In other cases, the project may be in non-compliance with one or more of the applicability criteria. Hence, it is important that sufficient information is provided through descriptions in the PDD in order to enable the conformity of the project with the applicability criteria to be evaluated. If in doubt on the appropriateness of an existing baseline methodology, it may be wise to contact the DOE for a discussion.

As an example, a project was applying approved methodology ACM0009 on fuel switching which calls for capping of the crediting period by the remaining lifetime of the existing equip-

ment. The remaining lifetime of the equipment used in the baseline was confirmed to be more than 20 years. However, no proof was provided for the same. The plant was in operation since 1979, which is more than 46 years of operation assuming no replacement till date. In this case, a replacement would have been necessary anyway. This not only questions the applicability of ACM0009 but also project additionality.

*Good Practice:* In the above example - During discussion of the baseline in the PDD and the validation report, evidence should have been provided for the life of the equipment in question.

In general, all the applicability criteria indicated for a particular methodology should be specifically addressed and supported with verifiable source of information.

Follow the structure and the wording of the methodology and, when justifying the applicability of the methodology to the specific project, substantiate this with as much evidence as possible. Contact the DOE if you are not sure which methodology to apply for a specific project.

## Pitfall 9: Insufficient explanation of baseline scenarios

The identification of the *relevant* and realistic baseline scenarios is not always in line with the methodology.

In the analysis of possible baseline scenarios, *relevant* alternative baseline scenarios are defined as those scenarios that are either:

- business as usual
- the project scenario and/or
- other likely technology alternatives (for example, landfill gas collection, waste incineration and utilization for power generation could be a likely alternative to a project scenario of landfill gas collection and flaring only).

*Examples:*

1. Relevant and valid baseline scenarios are often not addressed. For example, in landfill gas projects, the possibility of selling off the gas to nearby industry facilities needs to be considered.
2. Too much irrelevant detail about the whole industry context is often provided in PDDs. For example, for co-generation projects using bagasse as fuel, the economic situation of the sugarcane industry is only relevant in so far as it influences the sugarcane producer's choice of saving electricity costs by investing in a biofuel boiler.

In some cases it is observed that the baseline scenario, i.e. what would have actually happened in the absence of the project, is quite different from what is selected as baseline. This might happen due to various reasons –

- i. The project proponents do not have sufficient historical data to establish the actual baseline

- ii. The baseline if established as per the options in the methodology gives more CERs
- iii. The methodology does not allow the particular baseline, i.e the methodology is not applicable.
- iv. Change in output after project implementation.

*Good practice:* Follow closely the requirements given in the approved baseline methodology. Identification of baseline scenarios can be broadly categorised into three types:

1. For many approved methodologies there is only one relevant baseline scenario besides the project and this is already identified, this is the case for example of the methodologies AM0001, and AM0018. The importance for projects applying these methodologies lies in proving that this identified baseline is the only relevant and valid business as usual (BAU) scenario.
2. In other approved methodologies, the choice of baseline scenarios is given in the methodology, e.g. ACM0006, ACM0012, AM0009 and AM0014. The importance for projects that apply these methodologies lies in identifying the plausible scenarios only. For example, for biomass projects applying ACM0006 (version 06), there are 20 possible scenarios. 19 will have to be eliminated to select only one.
3. Other methodologies either refer directly to the additionality tool<sup>9</sup> (e.g. AM0019, AM0020, AM0023), or they require the identification of relevant BAU scenarios with regard to a set of specific conditions, for example taking into account national regulations or prevailing practice. Examples of these are AM0007, AM0017, and AM0021.

## **Pitfall 10: Insufficient explanation of project additionality**

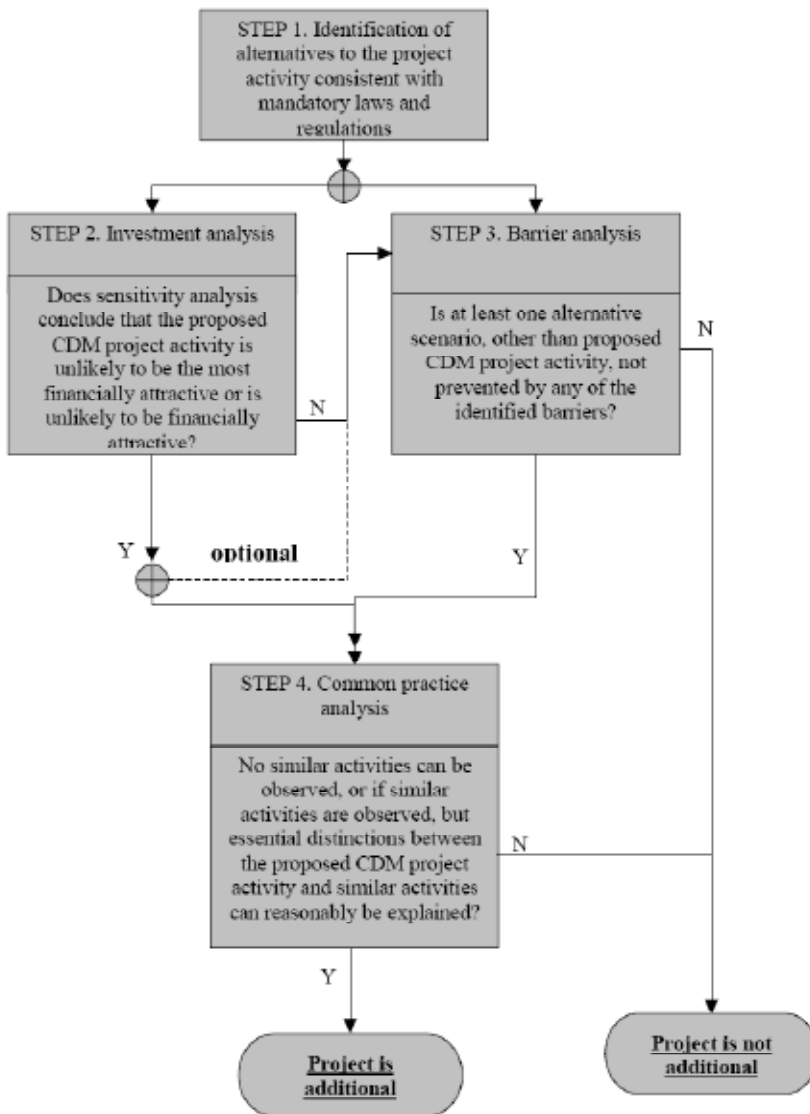
Please also refer to Pitfall Pitfall 18: Project and/or crediting start date unclear. *Lack of evidence of CDM consideration before the final decision to proceed was taken.*

The additionality of the project often needs further elaboration or needs to be made more project-specific.

Most of the large scale approved methodologies refers to the "Tool for the demonstration and assessment of additionality". The version 04 of this tool proposes the demonstration of the Additionality in four steps:

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<sup>9</sup> [http://cdm.unfccc.int/methodologies/PAMethodologies/AdditionalityTools/Additionality\\_tool.pdf](http://cdm.unfccc.int/methodologies/PAMethodologies/AdditionalityTools/Additionality_tool.pdf)



*Good practice:*

As per the CDM Modalities and Procedures, all information regarding the Additionality demonstration is considered public information. This should be taken into account when the additionality argumentation is built as all the claims used should be substantiated on evidences that will have to be made public. This includes contracts with suppliers, loan agreements with banks, etc.

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

Refer to the Pitfall 9: Insufficient explanation of baseline scenarios

## *Barriers analysis*

In many cases, project additionality is not based on convincing/actual facts. All the claims stated in the barriers analysis discussion should be substantiated on documented evidences from third parties. The concept of third independent party is important here as some questions may be raised: is a local supplier for which the project represents 60% of its annual sales an "independent party" to provide a statement to prove one of the barriers claimed?

Some of the barriers have a direct impact on the project's financial viability and thus the barrier description is not enough to prove that the barrier prevents the implementation of the project. If this is the case, the real impact of this barrier will be shown in a financial analysis of the project and thus an investment analysis complying with the step 3 of the Tool has to be provided. For example, some biomass based power generation projects claim barriers for the "high price of the biomass". If this is an actual "problem" for the project, a IRR (or other financial indicator) will show that the project is not financially attractive, but it could also happen that a high biomass price is accompanied of a good electricity price and then that barrier is inexistent. Similar is the case of the projects that claim a barrier due to the lack of skilled labour. In this case, the conclusion will be different if there is a total lack of skilled people in the country and it is not an option people from other countries to work there or the company staff is not skilled for running such a project what can be overcome with training and hiring new staff available in the country without involving any risk of technology failure. In the former case, a barrier may exist. In the later, the impact of that situation will be reflected in the investment analysis of the project and thus it cannot be claimed the existence of a barrier.

The barriers should be analyzed in the correct geographical area. Some industries are regarded as global industries and then the existence of a barrier (eg. first of its kind; technology barriers) should be analyzed in a global context and not only at the country level. In other cases, the country level or even smaller regions may be accepted to prove the existence of the barrier.

## *Investment analysis<sup>10</sup>.*

It is common to find that the investment analyses provided to the DOE are not complete, do not allow the DOE to reproduce the calculations or do not disclose the sources for all the inputs. The project proponent should provide the DOE with:

- An excel file with the detailed calculations in a reproducible format (the formulae should be included and not only the final figures)
- Justification of all sources used for the analysis for the investment, discount rate, annual costs and revenues. These sources should have been available at the time of decision making and evidences should be provided to the DOE.
- Justification that the timeframe used for the analysis, taxes applied, depreciation/amortization methods and timeframe, residual values are in line with the applicable regulations.
- Costs savings should be included in the calculations. This is the case for example of a coal fuel switch project where the coal saving should be included in the analysis; a waste

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<sup>10</sup> As per the EB 38 report, guidance is expected from the EB on investment analysis and common practice analysis. "The Board agreed to postpone the discussion on the Tool for assessment and demonstration of Additionality, allowing it to take into account ongoing work on common practice analysis and guidance on investment analysis"

gas power generation project when before the project implementation the electricity was imported from the grid; etc.

- Sensitive analysis calculation.

The appropriate analysis method should be identified for each project. In the case of a benchmark analysis, it is common to find that the selection of a company internal benchmark is problematic as the information around it is sensitive for most companies which are not willing to make it public. If a company specific benchmark is applied the company has to demonstrate that it has used this benchmark in the past for the evaluation of similar projects under similar conditions. Evidences of this should be made available to the DOE and will always have the consideration of public information as per the CDM Modalities and Procedures. As an example, an European conglomerate may establish internal procedures for investing in renewable projects in Central American. These procedures state a WACC of 17% is sought for all those investments. If this internal benchmark is part of the additionality discussion, the company will have to make public 1) the internal procedures 2) evidences of all projects evaluated in the past including location, project characteristics, investment analysis done, final decisions, etc.

The Executive Board provided guidance in the meeting 38 on how to validate investment analysis where project participants rely on values from feasibility study reports that are approved by national authorities. The project proponent shall demonstrated that

- i) the feasibility study report has been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the feasibility study report and the investment decision is sufficiently short that it is unlikely in the context of the project activity that the input values would have materially changed;
- ii) the values used in the PDD and associated annexes are fully consistent with the feasibility study report, and where the values are different, the appropriate justification is provided.

A sensitive analysis is required to be done for critical parameters to show whether the conclusion regarding the financial attractiveness is robust to reasonable variations in the critical assumptions. Several PDDs do not provide a complete sensitive analysis:

- Some of the critical parameters are not analysed. For example, for a biomass based power generation project in an installation where the power was imported from the grid before, the critical parameters should include: investment cost, running costs, operating hours, biomass prices, electricity prices (both for selling and importing, as this is a cost saving after the project implementation if the electricity is also used to cover own demand), etc.

- it is common to see PDDs where only a  $\pm x\%$  is analysed (normally  $\pm 5\%$  or  $10\%$ ). This raises the question if the range analyzed can be considered a "reasonable variation" of the parameter. It is advisable to complement such an analysis with the calculation of the variation required in the parameter for the financial indicator chosen to reach the benchmark selected. For example, a hydro power plant project applies a IRR benchmark analysis and justifies that a IRR of 10% is the appropriate benchmark. The sensitive analysis shows that the project's IRR reaches the benchmark of the electricity price increases by 16% and the investment decreases by 7%. The project proponent should then justify how unlikely is that these variations happen in the future. This should be substantiated with evidences.



## *Common practice analysis*

### *Good practice*

It is common to see PDDs where the common practice analysis is done at a regional or national level without any justification. This is not considered correct. The first decision to make when doing a common practice analysis is what region to select as a benchmark. The region should be such that all projects benefit from similar conditions and should be decided taking into account the technology/industry type. For certain technologies the relevant region for common practice assessment will be very local and for others may be global. As an example, a hydro power project in China may use the Province level to analyze similar projects if the conditions of all projects in the Province are similar (the regulations are set at the Province level including the electricity price rules, all feed the same grid, etc.). For some projects in the cement industry, a global approach should be followed.

The common practice analysis shall be based on public, official and recent data, available at the time of the final decision to proceed with the project. This should be thoroughly referenced in the PDD. The common practice analysis (step 4) needs to be seen in conjunction with the barrier analysis (Step 3). As an example, if 60% of sugar cane mills use biomass to produce power, and this is therefore defined as common practice, the project can still be additional provided that these 60% do not have to overcome the same barriers. It is important to know that other ongoing CDM project activities should not be included in the analysis of common practice (i.e. in the 60%).

## **Pitfall 11: Baseline information not sufficiently supported by evidence and/or referenced sufficiently**

Half of all PDDs submitted do not contain sufficient evidence for the determination of the baseline scenario.

Some data or information is used in the PDD or in the calculation which does not appear to be from agreeable source. Data is used in the calculations which are not actual data but are estimates or sample measurements.

Often it is also observed that there is a difference in the actual scenario at project plant vis a vis project details as presented in the PDD thus affecting the project baseline selection.

### *Good practice:*

Substantiate all claims and assumptions presented in the PDD with references to recognised information sources.

Discuss sources and assumptions in a transparent way. If the baseline calculation uses default factors, their use must be justified.

Explicitly mention the conservativeness of your sources and assumptions.

## Pitfall 12: Major risks to the baseline and project activity not identified/described.

The significant risks related to the viability of the baseline during the crediting period need to be identified.

*Examples of such risks:*

- With regard to grid electricity, more renewable electricity is added to the grid than expected at the validation stage
- Change to laws and regulations, such as new regulations to capture a certain amount of landfill gas for a landfill gas capture and flaring project. The importance of this will depend on the practical implementation of the CDM EB Decision<sup>11</sup> that "National and/or sectoral policies or regulations that give positive comparative advantages to less emissions-intensive technologies over more emissions-intensive technologies... that have been implemented since ...11 November 2001. may not be taken into account in developing a baseline scenario"
- The project becomes common practice
- The baseline technology becomes obsolete earlier than expected.

Care should be taken to ensure that the risks to the baseline and the risks to the project are not mixed.

*Examples of project risk:*

- Utilisation of the project activity is not ensured for the whole crediting period, for example operating licences are only granted on a renewable basis, poor project financing prevents the project from happening, or the operating company is bankrupt.
- The operating life-time of project technology is shorter than the crediting period, for example a boiler in a fuel switch project.
- The forecasted amount of methane from waste landfilled does not materialise.

*Good practice* is to identify and evaluate these risks transparently and completely in the PDD.

## Pitfall 13: Absence of baseline data

This problem arises mostly with projects which started operation in the past but the crediting period cannot start before the project gets registered as a CDM activity. The main reason for this is lack of clarity on accuracy of the monitoring equipment used in the baseline.

In some cases it is claimed that the baseline will be 'simulated' after the project implementation. This leads to several problems –

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11 <http://cdm.unfccc.int/EB/Meetings/016/eb16repan3.pdf>

- How to validate a simulation which involves several data variables?
- How far is a simulation acceptable?
- How logical is it to 'simulate' the baseline conditions under the project scenario? How accurately does it represent the baseline situation?
- How long should the simulation period be to represent a credible dataset for baseline determination

## Pitfall 14: Lack of logic and consistency in the PDD

Information given in one section is not consistent with information in other sections.

*Examples of such inconsistencies:*

Arguments to support the additionality of the project are inconsistent, for example with regard to trends in the energy sector of the country.

Emission factors used in the baseline emission calculations are not consistent with emission factors in the project emission calculations.

- GHG sources included in the baseline emission calculations are excluded or not consistent with GHG sources in the project emission calculations without proper justification.
- References and links do not provide the relevant information to justify assumptions given in the PDD.

*Good practice:* Ensure that the same arguments and assumptions are used within each section and between sections of the PDD. Ensure that all references made support the claims in the PDD correctly.

## Pitfall 15: Poor quality of the PDD

Very often the PDD received for validation is full of typographical mistakes, misinformation, incorrect /outdated formats used, incorrect version of the methodology adopted etc. The most common mistakes include:

- Incorrect/no version number of methodology used in PDD.
- Incorrect version of PDD template.
- Monitoring plan directly copied from the methodology and not project specific.
- Detailed worksheet of ER calculations not provided during validation.
- Use of IPCC default values when local values are available.
- Insufficient discussion on technology used, details of equipment installed as part of project not included in PDD.

- Discussion on common practice barrier too generic. No survey or study to establish common practice conducted to substantiate the claims.
- Inconsistency in data sets used in calculation and detailed in the PDD.

*Good Practice:* Ensure that the right template of the PDD is used and each section includes information as per the guidelines provided for completing the project design document form. Also the monitoring plan not only has to comply with the methodology requirements but also has to be designed according to the specific project requirements.

## **Pitfall 16: Claims in the PDD do not match with the actual situation on project site**

It has been observed during site visits part of the validation process that the claims made in the PDD regarding the implementation of the project activity, do not match with the actual situation in the field. For example

- The baseline data provided in the PDD cannot be tracked on site or the final figures are different. This is especially critical when the baseline emissions are based on the historical performance of the plant.
- The characteristics of the project site are different to the description in the PDD. As an example, a waste gas utilization project PDD claimed that it was impossible to sell the waste gas to other industries given the location of the project. When the site visit was done, it was seen that the plant was located in an industrial complex with a chemical plant and a cement plant nearby. The waste gas was not going to be used by the other industries as they had their own supply and it was not attractive in the context of the project but the reason was different to that provided in the PDD.
- Project involves something different than that mentioned in the PDD – for example, the project uses a fluidized bed boiler at the site, while the PDD describes the boiler to be traveling grate type.
- A PDD for a hydro project claimed that the monitoring of the electricity supplied to the grid was going to be done at the substation by direct checking of the producer. During the site visit, it was realized that the electricity producer had never had access to the revenue meter at the substation and it was not going to be possible for the grid company to allow them to check the revenue meter in the future.
- Meters required for monitoring are mentioned in the PDD, but there are no meters installed in the plant or the installation is such that the proposed equipment cannot be installed there.
- Quality procedures are claimed, but in practice no such procedures are followed.
- PDD talks about training procedures but in the field no training has been provided.

Such examples question the credibility of the information provided in the PDD and could also pose problems during actual verification of the CERs generated.

## Pitfall 17: The project boundaries not defined clearly

The project boundaries can sometimes be poorly described in words. Sometimes all direct and indirect, on-site or off-site emissions are not clearly identified or estimated, or some of these are excluded without proper justification.

Typical exclusions include fuel transportation emissions outside the project boundary and fugitive emissions within the project boundary. Another example of exclusions are project emissions from running LFG capture and flaring equipment as required in ACM001, and exclusion of some greenhouse gases that should be included, for example N<sub>2</sub>O from combustion activities. The omissions of non-material<sup>12</sup> sources are often not justified clearly.

*About leakage:* Leakage is defined as an indirect off-site emission not included in the project boundary. The following are examples of leakage that often occur and are not sufficiently taken into account by the project developer:

1. Biomass projects: For activities using biomass, leakage shall be considered including potential effects on biomass availability for other users. If the 'surplus biomass supply: demand ratio' is less than 2:1, the project's biomass demand may result in a temporarily or permanent shortage of biomass for other conventional users, forcing them to move to another fuel. The monitoring plan should, therefore, make provision for monitoring impacts on conventional biomass users, to ensure surplus biomass supply.

For projects that utilise biomass from sources outside the project boundary, transportation emissions from trucks, their capacity and the number of trips, need to be stated clearly.

For biomass projects that claim the avoidance of CH<sub>4</sub> emissions from biomass simply being left to decay in landfill, information on the different kinds and qualities of biomass must be provided. If there is shortage of biomass in the area, it is likely that this biomass would be used and not dumped and left to decay. In such cases, no methane avoidance from high quality biomass can be claimed.

Another example is biomass projects where the baseline is open decay of waste, and no emissions are assumed in the project scenario. In this case, the storage conditions of the biomass and duration of its storage may need to be monitored, to ensure that no methane is generated before the biomass is burned.

Negative leakage can also occur. For instance, if a project in a remote location switches from diesel use to a local renewable energy source, this would also eliminate the need to transport diesel, thereby reducing vehicle emissions.

Even if a project is small-scale, leakage still needs to be considered in the PDD, e.g. for projects using biomass.

2. Co-generation projects using bagasse as fuel: For such projects that utilise the bagasse of sugar mills as fuel, the only potential source of leakage is represented by organisations that used bagasse from the sugar mill prior to the cogeneration project's implementation. Without the bagasse supply, these organisations may have to use fossil fuels.

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<sup>12</sup> [http://cdm.unfccc.int/Reference/Documents/Guidel\\_Pdd\\_most\\_recent/English/Guidelines\\_CDM\\_PDD\\_NM.pdf](http://cdm.unfccc.int/Reference/Documents/Guidel_Pdd_most_recent/English/Guidelines_CDM_PDD_NM.pdf)

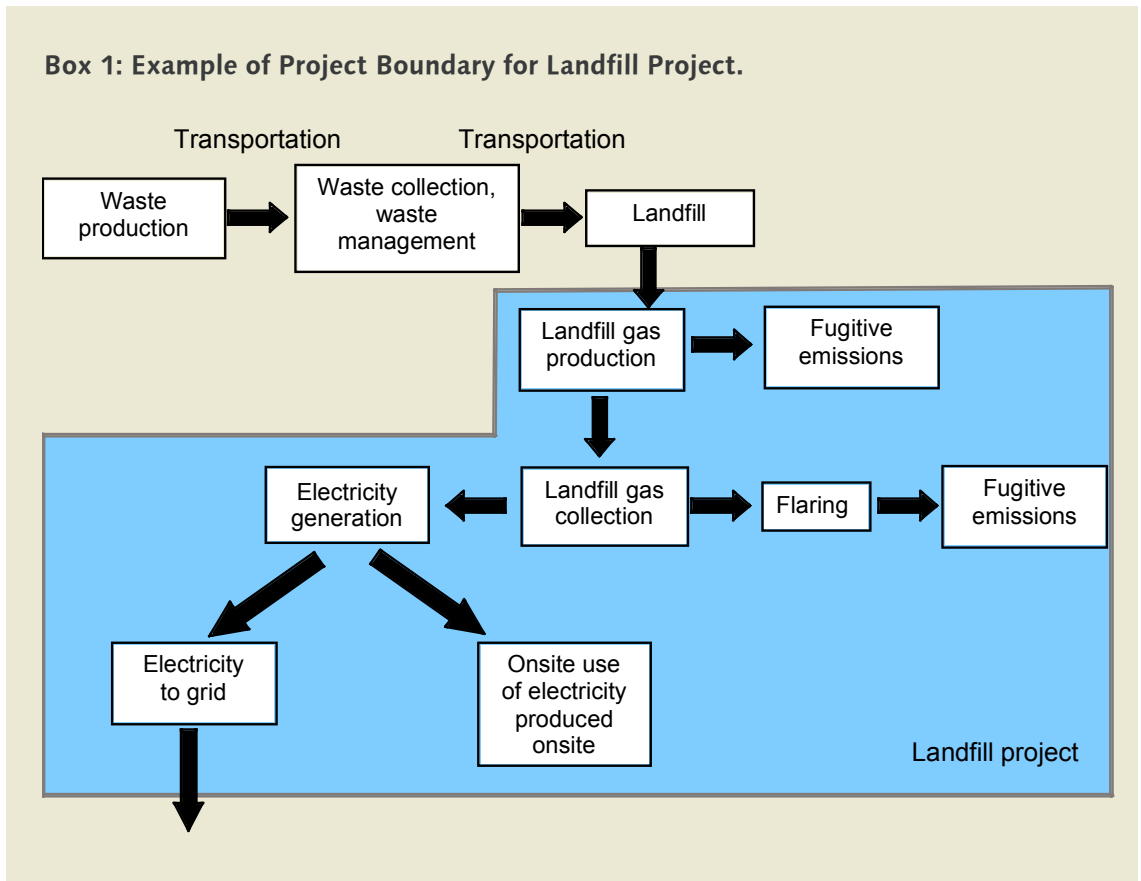
<sup>13</sup> Refer to Appendix 4 - Glossary for definition of Materiality

3. Landfill projects: Emissions due to the use of electricity from the grid to run the capture equipment, in the absence of project electricity generation, must be considered as leakage.

*Good practice* is to include in the PDD a visualisation of the physical project boundary and the system boundary, accompanied by a table defining all material GHG components.

The approved methodologies should be followed in detail to ensure that all sources of direct and indirect, on-site or off-site emissions are included as required.

For an example of project boundary, refer to Box 2.



Emissions	Project Scenario	Baseline Scenario
Direct on-site t	Emissions associated with fugitive landfill gas emissions. A capture efficiency of 50-60% of open landfills is normal	Uncontrolled release of landfill gas generated
Direct off-site	Transportation of equipment to project site – excluded Use of electricity generated from landfill gas, reducing CO <sub>2</sub> emissions in the electricity grid  Project emissions from the combustion of the residual gas.	None identified  Emissions associated with use of grid electricity – in the interests of conservatism emission reductions arising from the displacement of more carbon intensive electricity will not be included in the project's volume of CERs
Indirect on-site	Emissions from electricity use for operation of lights and fans of on-site workshop – excluded, since it is carbon neutral  Emissions from construction of the project – excluded as it would occur even if an alternative project were to be constructed	None identified
Indirect off-site	Transport of waste to the landfill site(s) – excluded	Transport of waste to the landfill site(s) – excluded

***Pitfall 18: Project and/or crediting start date unclear. Lack of evidence of CDM consideration before the final decision to proceed was taken.***

Experience shows that many projects:

- lack proof of actual starting date of the project activity or the chosen start date is not correct,
- have several parts of the project being commissioned at different dates,
- fail to demonstrate that the CDM incentives were taken into account before the final decision to proceed with the project activity was made,
- have selected an earlier crediting start date than the CDM project registration date.

### *i) Starting date of the project activity*

As per Glossary of CDM Terms<sup>13</sup> the starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins.

#### *Good practice:*

The definition<sup>14</sup> of the term "implementation" is not clear and is subject to interpretation by different parties. This term can be interpreted as the date of "no return" of the decision to go ahead with the project activity. The earliest in the decision process is the date selected, the lower the risk of questioning if that is really the date of the final decision or the investment was actually decided before that date. The selection of the starting date should be analyzed in a project specific scenario but valid examples of starting date of a project activity would be the date of obtaining the operation permit from the relevant authorities, the date of bank agreement to finance the project, etc. Following this reasoning, if the project requires construction, it is not correct to select as starting date the date of commissioning.

The definition of the correct starting date for the project activity is the special relevance as it has a direct impact in the additionality of the project:

- All evidences shown to demonstrate the additionality (either the inputs to an investment analysis and/or the evidences to demonstrate how the barriers identified impact the project) have to have been available at the time of decision making. For example, a hydro power plant secured the energy permit in November 2007 and that allowed the project to go ahead<sup>15</sup> and the company made the final decision on investing on the project. The project proponent included this project in a national CDM carbon fund portfolio in July 2007. The project owner agreed on the terms of a power purchase agreement (PPA) with the grid company in December 2007, just after the project obtained the energy permit. In this example, the electricity price agreed on the PPA cannot be used in the IRR analysis of the project to demonstrate the additionality as the final decision to go ahead with the project in November 2007 was made without that information.
- If there is a significant gap between the start date of the project activity and the commencement of validation the DOE will question how it was possible for the project participant to go ahead with the project in advance of receiving a positive validation opinion.

### *ii) Different parts of a project with different commissioning dates*

If different parts of the project become operational at different times, this should be clearly stated. This is relevant, for example, for a PDD that contains four wind power plants with different commissioning dates. In this case, all commissioning dates should be clearly defined. As for the crediting period, it can start at any time from the commissioning of the first plant until the commissioning of the last one. It is up to the project developer to evaluate the impact this has on CER generation.

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<sup>13</sup> [http://cdm.unfccc.int/Reference/Guidclarif/glos\\_CDM\\_v03.pdf](http://cdm.unfccc.int/Reference/Guidclarif/glos_CDM_v03.pdf)

<sup>14</sup> Further guidance is awaited from the EB at the time of publication, with respect to the definition of this term and thus this explanation should be considered as an interpretation before that guidance is provided.

<sup>15</sup> We would like to reiterate that the acceptance of this date as the starting date of the project has to be analyzed in a project specific basis by the DOE.



### *Good practice:*

The commissioning of the project at different times should be reflected in the emissions reduction estimation for the years of the crediting period. For example, for a PDD that contains four wind power plants with different commissioning dates, if the crediting period starts with the commissioning of the first plant, the emissions reduction estimation cannot be linear during the whole crediting period. This that may be seen as an obvious comment, it is a cause of several corrective action requests in projects under validation.

### *iii) CDM benefits in the decision process*

As per the Guidelines for Completing the Project Design Document<sup>16</sup>, section B.5, "*If the starting date of the project activity is before the date of validation, provide evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity. This evidence shall be based on (preferably official, legal and/or other corporate) documentation that was available at, or prior to, the start of the project activity*".

### *Good Practice:*

The starting date of the validation is interpreted here as the date of the PDD publication by the DOE for global stakeholders comments.

The evidence of how the project developer was aware of the existence of the CDM Mechanism and how the CDM benefits were critical to go ahead with the project activity shall be described in the PPD section B.5. and documentary evidence provided to the DOE.

Taking into account the three points above, the project proponent should include in the PDD:

- a description of how and when the decision to proceed with the project activity was taken. This date should be consistent with other available evidence (e.g. dates of construction, purchase orders for equipment) and it should be demonstrated that the person the person/body taking decision regarding the project had the authority to do so. Appropriate evidences have to be submitted to the DOE;
- a description of how the CDM was considered by this person/entity in taking such a decision. Appropriate evidences have to be submitted to the DOE.

### *Crediting period start date*

*Good practice:* As per the CDM Modalities and Procedures, the crediting period cannot start before the date of registration of a project. At the same time, the CDM project registration date is not known at the time of writing the PDD or at the start of the validation process. As a general rule of thumb, the crediting date should be a minimum of three months after the expected date of the project submission for registration for large scale projects and two months for small-scale projects.

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<sup>16</sup> Version 06.2

## Pitfall 19: Insufficient information on the measurement methods and source of data as part of data/parameter description in monitoring plan

There is a tendency to copy-paste the monitoring plan included in the approved methodology to the PDD without making it project specific. The excuse given for this is that if the project is in a very early design stage, it is not possible to specify the characteristics of the monitoring plan. Even when this can be to some extent true, it is worth it to define the specifications of the monitoring equipment and the monitoring practices in detail including QA/QC procedures complying at least with ISO 9000 practices. Not doing so, increases the risk of failure at the implementation stage of the project what can have a direct impact on the certified emissions reduction. Furthermore, the Executive Board at its 23 meeting, reinforced the need of specifying the monitoring practices at the validation stated. The EB 23 report states "the EB (...) agreed that the specific uncertainty levels, methods and associated accuracy level of measurement instruments and calibration procedures to be used for various parameters and variables should be identified in the PDD, along with detailed quality assurance and quality control procedures. In addition standards recommended shall either be national or international standards"

In most cases it is observed that the project proponent or operator is not aware of the requirements of the monitoring plan or even if aware, they are not equipped to cater to these requirements. For example – analysis of fossil fuels consumed in the plant at each procurement cycle.

At times the project proponent is aware of the future uncertainties related to external data required for the project but no specific arrangements are made to deal with the same. This poses a problem after project implementation when the CERs need to be verified. Also it has been observed that management system for the recording, archiving and review of data as required by the PDD is not in place and thus errors surface during verification.

Another related problem is where project operators install monitoring equipment which is not suitable for the purpose and then fail to make sure that it is working effectively or check that the data is reasonable. One such example is a company which had installed a thermal dispersion flow meter upstream of the gas train at a landfill site, and then found that the meter became unreliable as the moisture content was quite variable and the temperature range also changed dramatically. They did not check the data during the year, and so found that at the end of the year they had no valid data.

It is also observed that project proponents do not clearly fill up information under data/parameter pertaining to source of data, recording frequencies and measurement methods used. This invariably leads to difficulties at the time of verification.

### *Good Practice:*

- State clearly the source of data.
- State clearly the measurement methods.
- State clearly the recording frequency without ambiguity

## Pitfall 20: Deviations from monitoring methodology not justified sufficiently

All deviations from monitoring methodology must be justified fully and the DOE shall seek guidance from the EB on the acceptance of the deviation before submitting the project for registration<sup>17</sup>. A request for deviation is suitable for situations where a change in the procedures for the estimation of emissions or monitoring procedures is required due to a change in the conditions, circumstances or nature of a registered project activity. The deviation shall be project specific and shall not deviate from the methodology, such that a revision would be required.

*Good practice:*

To clearly identify the deviation in the PDD and discuss it with the DOE performing the validation at the beginning of the validation process. This will save time compared to not notifying the DOE and thus the validator having to conclude that a request for deviation/revision is required. This may lead to losing months in the validation process.

A common deviation is to omit those variables in the monitoring plan not applicable to the project without providing any justification. That is the case of the parameters  $ET_{LFG}$  and  $\epsilon_{gen,BL}$  in a landfill gas project with only a flaring component applying the methodology ACM001.

Sometimes the frequency and proportion of data that will be monitored is not specified or not in line with the approved methodology. For example the methodology ACM001 (version 08) calls for the monitoring of the “fraction of methane in the landfill gas ( $wCH_4,y$ ) with a continuous analyzer or, alternatively, with periodical measurements, at a 95% confidence level, using calibrated portable gas meters and taking a statistically valid number of samples (...)”. The PDD should indicate which of the two options is selected and, in the case of the periodical measurement is chosen, how the statistical valid number of samples is going to be estimated.

## Pitfall 21: Monitoring and project management procedures not defined

Detailed monitoring and project management procedures need to be in place and followed, at the latest, prior to the commencement of the crediting period. The reason for this is to ensure subsequent verifiability of generated emission reductions. If these procedures are not adequate for the project or not fully operational, the verifying DOE may not be able to track evidence of the emission reductions that actually have occurred. The consequences will be a reduced amount of CERs. This does not mean, though, that assessing the adequacy and completeness of these procedures is not part of the validation process. As already mentioned, the EB at its meeting 23 concluded that detailed quality assurance and quality control procedures should be included in the PDD and assessed by the DOE at the validation stage. The validation DOE will have to conclude on the ability of the project participant to implement the monitoring plan in the context of the project activity.

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<sup>17</sup> Refer to the “Clarification for project participants on when to request a revision, clarification to an approved methodology or deviation (Version 02)”. <http://cdm.unfccc.int/Reference/Guidclarif/index.html>

*Good practice:* Give detailed accounts for all of the following:

- The authority and responsibility of project management
- The authority and responsibility for registration, monitoring, measurement and reporting
- Procedures for training of monitoring personnel
- Procedures for emergency preparedness for cases where emergencies can cause unintended emissions
- Procedures for calibration of monitoring equipment
- Procedures for maintenance of monitoring equipment and installations
- Procedures for monitoring, measurements and reporting
- Procedures for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)
- Procedures for internal review of reported results/data, including a system for corrective actions as needed, in order to provide for more accurate future monitoring and reporting.

The level of detail needed for monitoring and project management is project-specific and depends on the project technology. For example, a wind farm does not need emergency preparedness procedures because there are no factors that could create unintended GHG emissions. For a biogasifier, however, this is a crucial issue. Procedures should, as far as possible, be based on existing procedures for project management and operation.

## **Pitfall 22: Deviations from selected calculations in the methodology not justified sufficiently or incorrect formulas applied**

Often the PDD contains incorrect formulas, values or units compared to the approved methodology. The PDD contains deviations from the methodology and the DOE has not been informed about that in advance.

*Examples from PDDs:*

- Animal manure projects: If projects involve animal manure, sometimes deviation from recommended default emissions factors are not justified nor assessed for conservativeness.
- Default values in general: It is not clear whether default or bespoke factors will be used. For example a value for methane content of biogas is referenced as being derived from measurements (i.e. bespoke value) while it is actually a default value from a reference source that is not given in the PDD. In cases where country-specific values are available, the justification for use of default IPCC values is sometimes not presented adequately.
- Efficiency factors: Efficiency factors used are not conservative, or not backed up by sufficient evidence such as:

- thermal efficiency of boilers in energy efficiency projects
- load factors for hydro power plants
- methane capture efficiency for landfills.

*Good practice:*

- Follow the methodology as closely as possible.
- Make sure you state the correct equation from the methodology and how this is intended to be applied to this specific project.
- Provide detailed applications of equations in an Excel sheet, including the formulae applied to enable tracking the calculations.
- Any deviation from the methodology should be informed to the DOE at the beginning of the validation process. As already pointed out in the pitfall Pitfall 20: Deviations from monitoring methodology not justified sufficiently, any deviation from the methodology must be justified fully and the DOE shall seek guidance from the EB on the acceptance of the deviation before submitting the project for registration<sup>18</sup>. A request for deviation is suitable for situations where a change in the procedures for the estimation of emissions or monitoring procedures is required due to a change in the conditions, circumstances or nature of a registered project activity. The deviation shall be project specific and shall not deviate from the methodology, such that a revision would be required.
- A thorough justification of any deviations from the requirements in the methodology should be based on:
  - conservativeness
  - availability of data/information
  - completeness of information
  - applicability in the calculations.

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<sup>18</sup> Refer to the "Clarification for project participants on when to request a revision, clarification to an approved methodology or deviation (Version 02)". <http://cdm.unfccc.int/Reference/Guidclarif/index.html>

## Box 2: How much monitoring is enough?

With regard to emissions calculations, these can broadly be divided into two categories:

Type 1: Emission calculations that will be monitored and recalculated ex-post, i.e. after the actual emission reductions have taken place and therefore will be verified during periodic verification

Type 2: Emission calculations that are determined ex-ante (i.e. before the emission reductions take place), and remain fixed during the crediting period of the project. These are therefore verified during validation.

For type 1), the PDD only contains an estimate that will not be the basis for the final CERs (as these will be recalculated ex-post). The data and assumptions used should be reasonable, conservative and realistic. A key concern here is whether relevant data is available and can be monitored ex-post (for example, is generation data for a grid available on an annual basis?).

**Example:** Baseline emissions are forecasted ex-ante in Landfill gas capture projects, e.g. through use of the IPCC or EPA First Order Decay model. It is important here to provide enough data (for example, regional climatic conditions, methane content of waste and methane generation potential, & waste composition) to allow a judgment to be made on whether the forecasted emissions are realistic and conservative. The actual methane captured and emission reductions will be monitored ex-post.

With regard to data which is determined ex-ante and which will be fixed during the crediting period (type 2), the correctness of the data sources and calculations applied is more critical as these will be the basis for final CERs and will not be updated ex-post.

For example, for the ex ante determination of a grid emission factor (which is determined based on historic data and fixed for the crediting period), the source of the data on electricity generation per power plant, fuel consumption, carbon content of fuel, etc needs to be correct. Moreover, all data has to be obtained from a recognised source (e.g. grid operator, Ministry of Energy, etc.). It is also critical to use the most recent data available (i.e. the data that was available at the time the PDD was submitted for validation). Moreover, it is critical that the grid emission factor is calculated according to the relevant baseline methodology (e.g. that the build margin reflects the *greater* in *MWh* of the most recent 20% of generation added to a grid *or five* most recent plants for type I.D, paragraph 7a.).

## Pitfall 23: Compliance with local legal requirements not covered sufficiently

It is sometimes not made clear whether environmental impacts of the project have been assessed formally and managed as required by host country law. Normally environmental impacts are not very severe for CDM project technologies. As an example, an EIA is required by law for landfill operations in most countries, but the construction and operation of the landfill gas capture and flaring equipment does not normally require an EIA. It is also required by the DNAs of some countries (eg. Philippines<sup>19</sup>) that sustainable development indicators be monitored periodically.

*Good practice:*

- State the relevant legal requirements in the host country
- State the project's compliance with these
- State the environmental impacts of the project
- State the mitigation measures to be taken for the project. The project's compliance with legal requirements needs be evidenced to the DOE through documents such as the construction and operating license, environmental license and in some cases the environmental impact assessment.
- Include the monitoring of sustainable development indicators as part of monitoring plan if this is required.

## Pitfall 24: Insufficient information on the stakeholder consultation process

It is sometimes not made clear whether the local stakeholder involvement process is in line with host country requirements and whether all relevant stakeholders have been contacted.

*Good practice:*

- State the relevant legal requirements, if any, in the host country with regard to which stakeholders to contact and by what means (e.g. through letters, newspapers, meetings)
- State how the project complies with these requirements
- Provide a list of all stakeholders contacted and justify why these are the relevant stakeholders
- Include a summary of the stakeholder comments and a summary of how these comments have been taken into account. The contact details of the stakeholders should be provided to the DOE so that a sample number can be contacted by the DOE for verification
- Have at least one or several meetings with a broad range of stakeholders and invite a DNA representative to these meetings.

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<sup>19</sup> This may change over time.

## **Pitfall 25: Long delays in the validation process**

This is a common problem encountered especially after the draft validation findings are issued and response to the findings is awaited from the project proponent. At times the PDD needs to be revised or additional documents are required in order to complete the validation. A long time is taken by the proponent to address such issues and come back with the revised documents to the validation entity.

Also at times, the project proponent believes that once a response to the findings raised is provided to the DOE, the final validation report can be issued. This is not always correct as at times, the response provided might not be satisfactory and additional information might be required. Furthermore, the CDM rules and their interpretation are always changing and thus it may happen that additional modifications are required once the initial ones have been finally addressed.

### *Good Practice:*

These unnecessary delays can be considerably reduced if all the additional documents such as the financial calculation sheets, emission reduction calculations and evidences (legal permits, stakeholder consultation documents, etc) are provided along with the PDD right at the start of the validation.

## **Pitfall 26: Insufficient information on physical location allowing unique identification of the project activity.**

Sometimes, only a map showing the physical location is depicted without providing any additional details about the location of the project activity

### *Good Practice:*

- State the exact latitude and longitude of the project location
- State the exact address of the plant location.
- State also the proximity to some important landmarks, if any.



# PART 2: VERIFICATION

# The verification process

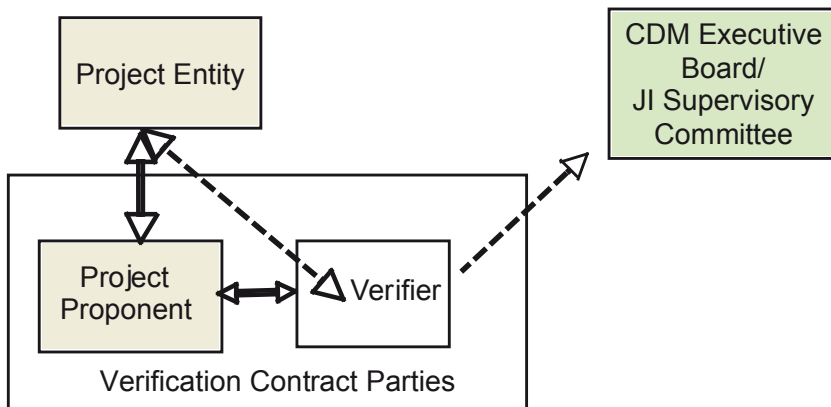
Verification by a Designated Operational Entity (DOE) is the periodic independent review and ex post determination of monitored emissions reduction that have occurred as a result of a registered CDM project activity during the verification period.

The registration of the CDM project after the validation by a DOE should not be seen as the final step of developing a CDM project. It shall be demonstrated that the estimated emissions reduction claimed in the PDD has been actually achieved after the crediting period started. If the project is not implemented as established in the PDD or the emissions aren't correctly monitored, the whole process of developing a CDM project can be wasted, the certified emissions reduction much lower than estimated or even inexistent.

This section describes the verification process and the main pitfalls project developers face after the registration of the CDM project. It aims at helping those implementing a CDM project after registered by the EB to:

- Understanding the key issues when implementing the project in line with the registered CDM project design documents.
- Identifying the information to be included in a monitoring report.
- Better understanding the verification process.

The key verification actors in a verification activity are the project proponents and/or the project entity, the verifier (the DOE) and the CDM Executive Board. The relationships between these actors can be depicted as below:



Solid lines indicate contractual relationships. Dashed lines indicate possible communication channels during validation.

Note: Other relationships are possible.

The verification activity essentially involves the review and confirmation of the project or operational performance *as described* in the monitoring plans or reporting protocols. In other words, it is the confirmation by examination and provision of objective evidence that real, measurable and long-term emission reductions *have been achieved*, in accordance with pre-determined criteria. The twin objectives therefore are:

- to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan
- to evaluate the GHG emission reduction data and Express a conclusion with a high, but not absolute, level of assurance about whether the reported GHG emission reduction data is "free" of material misstatements the reported GHG emission data is sufficiently supported by evidence, i.e. monitoring records.
- the relevance and reliability of reported emissions (and calculated reductions), related to: accuracy, completeness and consistency of the information

The project proponent should send the following documents to the DOE:

- Monitoring report.
- Registered PDD including the monitoring plan.
- Final validation report registered.
- Monitoring records (project emissions, baseline emissions and leakage, as applicable)
- Excel file with GHG emissions reduction calculation in a reproducible format (ie. Indicating the formulae applied and not only the final values) and indicating the source for every single input.

Most DOE's follow a risk based approach in their task of verification. From the inputs provided and an understanding of the project activity the key reporting risks are identified and it is assessed to which extend the project operator's control systems are adequate for mitigating these key reporting risks. Key reporting risks that are not sufficiently addressed by the project operator's control system represent residual risks areas where detailed audit testing is necessary.

## **INITIAL VERIFICATION AND PERIODICAL VERIFICATION**

The verification methodology developed by most DOE's differentiates between initial and periodic verification:

- Initial verification: The objective of an initial verification is to verify that the project is implemented as planned, to confirm that the monitoring system is in place and fully functional and to assure that the project will generate verifiable emission reductions.
- Periodic verification: The objective of subsequent periodic verifications is the review and ex post determination of the monitored emission reductions that have occurred during a specified verification period

## VERIFICATION PERIOD

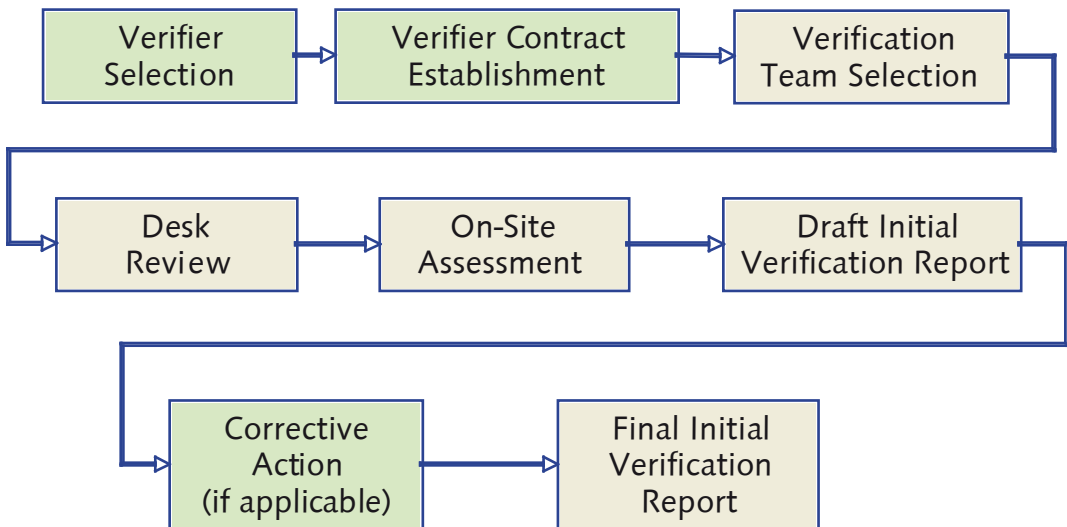
The project proponent can, based on a cost-benefit analysis, choose whether the initial verification is carried out a) as a separate activity prior to the project commencing its regular operations or b) as an integrated part of the first periodic verification. To carry out an initial verification when the implementation of the project has finalized and it is ready to start operations has as main advantage that corrections can be made before the crediting period starts and thus, avoiding emissions reduction not to be certified due to a problem in the implementation or the monitoring system.

There is no prescribed length of the verification period (periodic verification). It shall, however, not be longer than the crediting period. Normally the length of the verification period depends on the project risks, the emissions reduction claimed, the experience of the project proponent with the project's performance, the experience of the project proponent implementing similar projects and the result of previous verifications. The verification intervals range from one month to the more common period of one year with cases, for very small projects, where only one verification is done for the entire crediting period.

A shorter verification period allows to improve the monitoring practices and QA/QC procedures from one verification to another if this was the cause of material mistakes in the reported emissions which lead to less emissions reduction than expected being certified by the DOE. The longer the verification period, the higher the amount of emissions reduction lost if the DOE finds material mistakes.

## INITIAL VERIFICATION

The process is best illustrated below:



After a DOE has been finalized and a contract established between the DOE and the project proponent/project entity, it is the prerogative of the DOE to select a verification team that is competent and whose qualifications and experience will match the requirements of the project activity and the project proponent.

### **Desk Review**

The DOE will firstly familiarise themselves with the project's validation report and opinion, in order to identify areas of risks related to generation of emission reductions. Any qualifications in the validation opinion will be followed up during the initial verification to ensure that these are rectified prior to project operation commencement.

Secondly, the DOE will familiarise themselves with the baseline and monitoring methodologies applied by the project. This enables the identification of the project and baseline indicators that will be needed to follow up for both the initial verification and the subsequent periodic verification audits. In addition to this it will be pertinent to confirm that individual factors applied for emissions reduction calculations are established in a reliable manner and that if fixed factors are used, these have been validated.

The DOE will furthermore look into the monitoring plan and its provisions for complete and reliable monitoring and reporting of project and baseline indicators. This also includes familiarisation with the GHG data management, control and reporting systems, e.g. instructions, procedures, record keeping systems, data sources, assumptions, technical equations, models and other means that will be necessary to support accurate and conservative CER claims for verification. This will enable the DOE to identify the key project quality control procedures and operations practices that provide for internal verification of GHG emission reduction data. The assessment of the internal quality control system will be used to identify key reporting risks related to claimed emission reductions and as further input to the development of an initial verification protocol /checklist for use during the initial verification.

Subsequently, an audit trail will be defined to enable reliable monitoring and reporting of the project emission reductions. Emphasis will be put on the GHG information management systems and their reliability, monitoring equipment and its accuracy, and the control of data from sources that are outside of the project operator's control, e.g. data sources and factors used for baseline emissions. In addition, identification of the key areas where controls must be in place to ensure consistent reporting of emission reductions should also be prioritised.

In order to ensure transparency an initial verification checklist is also customized for the project activity by the DOE. The verification checklist is generally in line with the requirements stipulated in the Validation and Verification Manual.

### **Initial Verification Audit**

Having prepared for the initial verification through a desk review of the validation report, baseline study and monitoring plan of the project, the DOE team assigned for the project activity will follow up the identified key issues through a site visit/audit. The initial verification checklist can also be submitted to the client for review and necessary audit preparations.

The audit shall aim to seek confirmation that:

- The project has been implemented as planned,
- All necessary provisions for monitoring and reporting of project operations related to emissions reductions are fully established,

- All adjustments and amendments to the monitoring plan that may have become necessary during the detailed design and construction of the project are identified,
- Spreadsheets and workbooks for reporting are put in place, implemented and operator staff is trained to use these correctly,
- The necessary control mechanisms are put in place for management review and approval of project data,
- Necessary monitoring equipment are installed and calibrated and a sufficient calibration regime is developed, and
- All indicators and control mechanisms identified in the monitoring plan are put in place and correctly understood and implemented.

Potential findings identified during the audit will be communicated on site and project parties will be asked to acknowledge potential findings before these are included in the report.

### **Draft initial verification report and resolution of outstanding issues**

Shortly after the initial verification audit the DOE will develop a draft initial verification report including the initial verification checklist. The draft initial verification report will in particular indicate the implications of any remaining issues related to the implementation or operation that need to be further elaborated, researched or added to meet the requirements and ensure the delivery of credible emission reductions. Dependent on the nature of findings, if any, these will be presented in the form of either Corrective Action Requests (CAR) or Forward Action Requests (FAR) and will be brought to project proponents attention for consideration.

Findings established during the initial verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified. Corrective action requests (CAR) are issued, where:

- i) there is a clear deviation concerning the implementation of the project as defined by the PDD;
- ii) requirements set by the monitoring plan or qualifications in a validation opinion have not been met; or
- iii) there is a risk that the project would not be able to deliver (high quality) CERs.

Forward action requests (FAR) are issued, where:

- iv) the actual status requires a special focus on this item for the next consecutive verification, or
- v) an adjustment of the MP is recommended.

The verification team may also use the term clarification request (CL), which would generally be in the form of additional information that is needed to fully clarify an issue.

After the presentation of the draft initial verification report, the project proponent will be given sufficient time to respond to the CAR's and FAR's, so that these can be resolved as much as possible before the final initial verification report and statement is issued. Should it be necessary, another site visit can be carried out by the DOE to verify the resolution of issues that has been initiated by the project proponent.

### **Final initial verification report**

After the completed of the initial verification, an initial verification report and statement will be provided to the project proponent by the DOE. The initial verification report will give an overview of the verification approach applied to arrive at the initial verification findings and will reflect the results from the dialogue and any adjustments made to the project after the draft initial verification report was submitted. It will hence give the final conclusions regarding the projects readiness to start operation and generation of emission reductions. Before awarding a positive (unqualified) initial verification statement all findings indicated as a CAR in the draft initial verification report must be resolved. FARs will need to be addressed during the period up to the first periodic verification. Already at this stage and prior to the periodic verification, the DOE will identify the need of asking for a request for deviation to the EB or a request for revision of the monitoring plan.

## **PERIODIC VERIFICATION**

The aim of the periodic verification of emission reductions is to verify that emissions reductions quantified and reported from the project are free from material misstatement and represent an accurate and conservative number, considering associated monitoring uncertainties. Hence, the DOE will seek to verify that methods used for quantification are representing accurate and agreed methodologies and that the emissions reductions are reported in accordance with the validated monitoring plan and the applied baseline and monitoring methodologies (the verification is done against the version of the methodologies applied in the registered PDD).

During the verification, the DOE will identify, collect and verify all information that sustains the emissions reduction claim in order to ensure that the provided data is complete, accurate and verifiable. It should also be verified that data gathered for baseline emission quantification are complete, accurate and correctly applied. The verification results will be documented in a verification report.

### **Audit preparations**

The first activity by the DOE will be to make the monitoring report publicly available on the DOE's climate change website as received by the project proponent, in line with the CDM Modalities and Procedures.

The DOE will review the monitoring records and GHG emission reduction calculations submitted by the project proponent and will determine whether the provided monitoring records are in accordance with the monitoring plan. It is expected that the key records from project operations will be made available to the DOE prior to the site visit in order to prepare well for the audit. However, it is also expected that the underlying detailed information will be available on-site only.

A periodic verification checklist will once again be prepared according to the Validation and Verification Manual. This checklist will mirror a complete project audit trail and the project monitoring plan and will be used to identify the key risk areas where material misstatement of emission reductions may occur. Initially, material misstatements can be caused by at least the following key sources:

- Incorrect transfer of data between reporting forms,
- Use of monitoring equipment that is not calibrated,
- Incorrect application of emission factors used for estimation of emission reductions.

Other factors may be identified through a more detailed risk assessment carried out as part of the audit preparations.

### **On-site audit**

The DOE will conduct on-site audits to confirm the project's operational performance. The on-site audit will comprise a review of on-site performance records not submitted prior to the visit, interviews with project participants and local stakeholders, collection of measurements, observation of established practices and testing of the accuracy of monitoring equipment. This will also include a review of the monitoring results and the verification that the monitoring methodologies for the estimation of the emission reductions have been applied correctly and their documentation is complete and transparent. Any concerns related to the conformity of the actual project activity and its operation with the monitoring plan will be identified and communicated to the project proponent. It is expected that the comprehensiveness of such audits will be reduced over time due to knowledge and improvement of the project's GHG reporting system.

### **Draft verification report and resolution of outstanding issues**

A draft verification report, which will include any verification findings, will be issued to the project proponent for review. The draft verification report will also include potential issues that need to be resolved before the verification of emission reductions can be finalised. Any outstanding issues that may impact the final verification statement will hence be fully disclosed. In dialogue with the project proponent these issues will be handled according to established certification practices in order to complete the verification of emission reductions. Findings that should be resolved before the next periodic verification will also be included and elaborated in this report.

Findings established during the verification may be that:

- i) The verification has not been able to obtain sufficient evidence for the reported emission reductions or part of the reported emission reductions. In this case these emission reductions will not be verified and certified; or
- ii) The verification has identified material misstatements in the reported emission reductions. In this case emission reductions with material misstatements will be discounted based on our *ex-post* determination of the achieved emission reductions.

Before the finalization of the verification The DOE may identify the need of request for deviation<sup>20</sup> from the provisions made at the registration stage or a request for revision<sup>21</sup> of the registered monitoring plan.

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20 Procedures For Requests For Deviation To The Executive Board.  
<http://cdm.unfccc.int/Reference/Procedures>

21 Procedures For Revising Monitoring Plans <http://cdm.unfccc.int/Reference/Procedures>



### **Request for Deviation and Request for Revision**

During the verification process, the DOE may determine that project participants deviated from the provisions contained in the documentation related to the registered CDM project activity. In this case, the DOE will seek guidance from the Executive Board on the acceptability of the deviation prior to concluding on its verification/certification decision. It is the case when, for example, some technical aspects of the project are not exactly as proposed in the registered PDD as could be case of a different installed capacity, project components, project boundaries, etc. It is important to mention that some of these deviations could question the additionality argumentation presented in the registered PDD and hence, raise the question if the project as finally implemented would be considered additional at the time of decision making. A request for deviation of the monitoring plan can be proposed when a change in the procedures for the estimation of emissions or monitoring procedures is required due to a change in the conditions, circumstances or nature of a registered project activity.

In other cases, the monitoring plan as contained in the registered PDD is proposed to be revised, this is the case when:

- The monitoring plan in the registered CDM project activity document is found not to be consistent with the approved monitoring methodology applied to the registered project activity.
- The project proponent proposes a revision of the monitoring plan. Paragraph 57 of the modalities and procedures for the CDM allow project participants to revise monitoring plans in order to improve accuracy and/or completeness of information and thus, this revision will be accepted by the EB if ensures that the level of accuracy or completeness in the monitoring and verification process is not reduced as a result of the revision.

### **Final verification report and certification**

Eventually, a final verification report and verification statement will be submitted to the project proponent. The final verification report will briefly document the verification process, methodology and results, including the completed verification checklist. The verification statement will clearly specify the DOE's *ex post* determination of the monitored emission reductions that have occurred during a specified verification period and will serve as a basis for requesting the CDM Executive Board to issue an equivalent amount of CERs. After the project proponent's final approval of the verification report and statement, the verification report will be submitted to the UNFCCC for issuance of CERs in accordance with the modalities and procedures for the CDM.

In case the project proponent disagrees with a DOE's final verification findings, the procedure for handling of disputes in accordance with the modalities and procedures of the Marrakech Accords will be applied.

### **Verification Statement**

The verification statement is the final outcome of the verification activity and necessarily addressed in the final verification report. This verification statement shall include:

- the scope of the verification
- the period of the verification

- conclusions of the verification, including the verified amount of emission reductions for the given period
- liability statement with regards to the accuracy of the verification statement

The verification statement is the basis for issuing CERs and should thus represent a high level of assurance.

### **Certification Statement**

Certification is the written assurance by a designated operational entity that, during a specific period in time, a project activity achieved the emission reductions as verified. The designated operational entity shall inform the project participants, the Parties involved and the Executive Board of its certification decision in writing. The certification report shall be made publicly available. The certification report shall constitute a request for issuance to the Executive Board of CERs equal to the verified amount of emission reductions.

### **Certification and Issuance process**

In accordance with paragraph 64 of the CDM M&P, the certification report shall constitute a request for issuance to the Executive Board of CERs equal to the verified amount of reductions of anthropogenic emissions by sources of greenhouse gases. A DOE shall submit its verification report and certification report/request for issuance of CERs.

The date of receipt of a request for issuance is the date when the secretariat has determined that the request is complete. Unless there is a request for review, a request for issuance shall be considered final 15 days after its receipt. After this period, or upon conclusion of the review process, the Executive Board shall instruct the CDM Registry administrator to issue the specified amount of CERs for the specified time period.

# Verification Pitfalls

This section gives a review of some key pitfalls, in terms of commonality and frequency. These pitfalls were identified in an analysis of DNV's findings from the majority of projects verified by DNV up to April 2008. One of DNV's customers, who has been subjected to several verifications, participated in the process of identifying the main pitfalls during the implementation of the project and the verification process.

## Pitfall 27: Lack of management of change

There is not a systematic way to manage changes during the implementation of the project. These changes may or may not affect the calculations of emission reductions, but at the end they can be the reason for a clarification or corrective action request during the verification process.

As a rule of thumb, the projects have to be implemented exactly as proposed in the design stage as described in the registered PDD. In the cases where there is changes in the implementation of the project compared to the registered PDD, the DOE performing the verification shall seek guidance from the EB on how to act as per the procedures for request for deviations from provisions for a registered project activity<sup>22</sup>

*Examples:*

- There is equipment in place not shown in the drawings or the location is different from what is shown in the documents
- There is equipment in the project which was not initially considered in the project design (such as back-up equipment)
- If the project has several similar facilities there is a copy-paste practice in the documents, therefore several mistakes could be made in documents, e.g. the same name for two different facilities
- Serial number of equipments are not consistent with as-built drawings, which may indicate a change in equipments without documentation being accordingly updated

*Good practice:*

Any change during the project should be recorded and any related documentation updated, in particular if the change has an impact on the emission reduction figures. This impact should be identified and also be reflected in the calculations and the monitoring report. A request for deviation/revision may be required to be sent to the EB for acceptance.

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22 Procedures For Requests For Deviation To The Executive Board. <http://cdm.unfccc.int/Reference/Procedures>

## Pitfall 28: Inconsistencies between the registered PDD and the reality of the project.

In most instances, the monitoring plan is a direct copy of what has been stipulated in the approved methodology. Again, this is primarily reflected against the parameters that are required to be monitored, the frequency of measurement and / or the data variable being measured, calculated or estimated.

### *Examples:*

- Net calorific value of the waste gas is committed to be a measured value in the monitoring plan but in practice it is gross calorific value per the records evidenced. Alternately, against the requirement of a measured value, IPCC default values are observed to be used.
- The steam production parameter to be measured as per monitoring plan and not estimated.
- Fuel quantities committed to be recorded on a daily basis through direct flow measurement is actually demonstrated on a monthly basis, based on fuel receipts.
- Leakage needs to be monitored (as required by methodology) and the validated PDD every year till the entire crediting period; however this is not evident.
- The steam enthalpy used to calculate energy is a constant value of 0.682. As per the registered PDD, the monthly actual enthalpy based on steam parameters are to be used
- The baseline steam requirement for power generation was estimated to be 6.3 tonnes/MWh by XYZ Corporation during the validation. The project proponent is requested to use the same value while calculating the emission reductions.

### *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 company 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 project activity also ensures to iron out all such discrepancies.
- The process also requires that periodic internal audits be done by the project proponent and corrective actions effected.

The monitoring report summarizes the emission reductions due to the project. All the parameters as required by the final monitoring plan of the project needs to be presented in the final monitoring report. The monitoring report shall necessarily report parameters in the same frequency as required by the monitoring plan.

## Pitfall 29: Inconsistency of data

Sometimes data is recorded in logbooks or other kind of hard copy records and subsequently transcribed to an electronic register, such as databases or data sheets. During this process data may suffer changes and at the end of this transcription, the final numbers are not the reflecting the output of the real measurements.

*Examples:*

- Data from records filled out "in-field" are not the same as in the database/presented emission reduction calculations
- Sums in worksheets are incorrect or a data is missing
- There was a change in data because of a change or adjustments in the project, but it was not updated into the database
- A change in staff who manages the information can cause inconsistencies, because no formal training is in place.

*Good practice:*

- If a manual process is in place for input of data, or even where the records are generated automatically, a quality control-assurance process can be put in place, e.g. by always having another person to cross-check manually recorded and transferred data
- Internal audits can be a good tool in order to review the quality of the data

## Pitfall 30: Monitoring equipment not adequate, causing data to be lost for a period of time

In some cases the monitoring equipment turns out not to be suitable for the purpose of monitoring project performance. In this case, making a change of device may be necessary. Until the new equipment is put in place, data cannot be monitored, and therefore there will be no support for the claim for emission reduction for the period in question.

*Example:*

- Units or scale in the measurement device is not suitable or the equipment has not been calibrated for the entire range used.
- Equipment is not suitable under local climate or operational conditions
- Equipment can not measure all variables required by the monitoring plan

## Pitfall 31: Project equipment is different from that described at project registration

Sometimes projects are validated before or at a very early stage of implementation, and at that point in time it is not possible to obtain accurate data about monitoring and operational equipment, such as nominal capacities or nominal outputs. Hence, when the project is implemented equipment nameplates are different from the specifications established in PDD.

*Examples:*

- Turbine capacity output different against the data established in the PDD
- Measurement devices are not the same as were described in the PDD
- Measurement devices are not able to reflect monitoring requirements in the approved methodology

*Good practice:*

Verify technical and commercial specifications of equipments and measurement devices with the technology suppliers

## Pitfall 32: Vast difference in the estimates of the PDD and actual monitoring report.

Typically the following discrepancies are observed:

- Differences between the estimates in the registered PDD and the final monitoring plan
- Differences between the estimates in the initial monitoring report that is made public by the DOE and the final monitoring report submitted along with the request for issuance.

The estimates in the PDD and in the monitoring reports vary by and large only if the project activity involves an ex-post monitoring of the baseline emissions. While this is considered acceptable, a variation otherwise is not.

*Examples:*

The differences in the estimates between the PDD and the monitoring report can be further attributed to the following instances:

- Increased production levels realized beyond the rated capacities. A good example being the observation that *the gross electricity generation for the months of March 2005 and April 2005 were 10.7% and 8.7% higher than the rated installed capacity leading to higher CER estimate in the case of a hydro power project.* This is, generally speaking, not possible.
- Transportation emissions are either not being accounted OR being demonstrated to be lower than what was estimated

- The accounting periods indicated in the registered PDD and the period considered in the monitoring period could be different
- Leakage emissions considered in the monitoring report have been incorrectly estimated. Maybe the project emissions do not account for the usage of coal in the project for the monitoring period.

*Good practice:*

A critical analysis of the gap between *ex ante* estimated CER detailed in the PDD, and the actual CER claimed in the monitoring report, should be provided in the monitoring report by the project participants. In case, higher CER's 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.

A justification is also advisable, both in the monitoring report as well as the verification report, should the CER's claimed for the monitoring period be far below the estimates in the PDD.

### **Pitfall 33: Insufficient information in the monitoring report.**

As a template does not exist, almost all monitoring reports are different, depending on the features of the project, the variables to be measured according to the methodology selected and the monitoring plan. However, in some cases not all relevant information is included in the monitoring report or the support information

*Good practice:*

- As an annex to this section, an example of a monitoring report template is provided.

### **Pitfall 34: Crediting period in the monitoring report is not the crediting period of the project registered**

The crediting period of the project should correspond to that described in the registered PDD and registered at the validation stage. However, sometimes the project suffers a delay or an early starting of operation, then the initial recording of data starts after or before the dates originally planned into the PDD. This is in itself no reason to change the start date of the crediting period.

*Good practice:*

Crediting period should be the same as the project was registered, if a change is needed the procedure of annex 31 of EB 24 report should be followed. If the date differs less than one year from the one stated in the registered PDD, a request can be sent to UNFCCC Secretariat at [cdmregistration@unfccc.int](mailto:cdmregistration@unfccc.int).

## **Pitfall 35: Not efficient control of documents and records**

Taking into account the long time horizons of CDM projects, with crediting periods of 10 years if a fixed period is chosen, or 7 years in case of a renewable period (renewable up to two times to a maximum of 21 years total), a very efficient control of documents and records should be in place.

As the verification process does not have a defined frequency and only depends on the cost-benefit calculations for the project, it is possible that a verification process starts for a project one year or more after the start of the crediting period. In that case, the information of more than one year of project operation will have to be included in the monitoring reports and needs to be reviewed and confirmed by the verification. However, experience shows that sometimes these records are not readily retrievable or even not available, especially when a hard copy is the only evidence of this type of record. The same happens regarding procedures.

*Good Practice:*

Document control and records based on a quality standard such as an ISO 9001 should be followed.

## **Pitfall 36: Incorrect information presented in the monitoring report.**

It is observed that data values presented in monitoring reports by far exceed any possible value that will occur from operation of a plant with capacities as given in the registered PDD. In addition, it is observed that monitoring reports indicate that emission factors are determined ex-ante, when these in fact are to be calculated ex-post based on monitored data. These are both symptoms of poor comprehension of the monitoring requirements and the need for quality assurance and sign-off of monitoring data from the project proponents' side.

*Good practice:*

When a monitoring report is prepared, the project proponent should:

- Review this against the monitoring requirements given in the approved monitoring methodology and PDD
- Perform a quality and reasonableness check of all data and calculations presented on the monitoring report
- Ensure that there is documented evidence to back up all aggregated data given in the monitoring report
- Identify any deviations with the approved monitoring methodology and PDD, and explain the reasons for these
- Have a formal sign off to the content of the report.



### **Pitfall 37: Deviations from the monitoring plan in the registered PDD.**

The project proponent may submit a monitoring report including changes in the method of calculating the baseline emissions, the project emissions and/or the leakage after the registration of the PDD. This means that the calculations as presented in the monitoring report will deviate from the monitoring plan in the registered PDD. It is important for the project proponent to decide on any required changes as soon as possible to avoid any delays since this will require to submit a request for revision of the monitoring plan to the EB.

It should be noted that a revision must ensure that the level of accuracy or the completeness in the monitoring is not reduced. Further that the proposed revision needs to be in accordance to the approved methodology. Refer to EB 26, Annex 34.

### **Pitfall 38: Poorly installed and tagged monitoring equipment.**

During verifications it is observed that monitoring equipment is poorly installed and tagged thus making it difficult for the maintenance personnel to perform the required quality control and checks as described for the project activity and the risk of not identifying the right measurements is present. It can also be the case that monitoring equipment is installed at positions which are impossible to reach after the removal of scaffoldings, making checks of local displays difficult for the verifier.

Best practice:

Make sure the installation of monitoring equipment is well planned for easy access making quality control and checks of local displays readily available.

# Guide to Completing the PDD

In this section, the emphasis is on helping to streamline the writing of the PDD by focusing on what project participants have a tendency to forget. The approach is therefore to list "WHAT TO DO" instead of "WHAT NOT TO DO", following the PDD template. The text from the UNFCCC CDM Guidelines is printed in grey text boxes for each section, and DNV comments are added in white text boxes with a "!" in the corner.

Text from UNFCCC CDM Guidelines are included in grey textboxes like this.

!

DNV comments and examples related to "*What to do*" are included in white text boxes like this.

## CLEAN DEVELOPMENT MECHANISM

### PROJECT DESIGN DOCUMENT FORM (PDD) Version 03 - in effect as of: 28 July 2006)

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- Make sure you use the correct template for either full scale (as referred to here) or small-scale projects.
- Always download the latest template of the PDD on the UNFCCC website (<http://cdm.unfccc.int/Reference/Documents>).
- Make sure not to alter the template.
- Format, font, headers and logos must not be added or deleted or altered in any way.
- Make sure to answer under all headings and give only what the heading asks for in as concise a manner as possible. This also includes Annex 1-4. If you believe a heading is not relevant for this project, just state this in a sentence, e.g. "not applicable".
- Where it is optional to use a table, and you do not want to use it, leave the spaces blank instead of deleting it.

- Additional appendices, such as copies of permits or environmental impact assessments, may be included if appropriate. It is important that all information provided in the PDD, including any appendices, is given in the English language.
- PDDs are designed to be accessible through the internet, and it is therefore good practice to keep the size below 1 MB. Avoid unnecessary graphs and pictures, and downsize pictures where necessary.
- Avoid calculation errors, unintended omissions, language errors and typos through appropriate quality assurance before submission to the DOE.

## Contents

- A. General description of project activity
- B. Application of a baseline and monitoring methodology
- C. Duration of the project activity / crediting period
- D. Environmental impacts
- E. Stakeholders' comments

## Annexes

Annex 1: Contact information on participants in the project activity

Annex 2: Information regarding public funding

Annex 3: Baseline information

Annex 4: Monitoring plan

## SECTION A. General description of project activity

### A.1 Title of the project activity:

Please indicate:

- The title of the project activity
- The version number of the document
- The date of the document.

See Pitfall 1: Small scale selected for large scale project'

See Pitfall 15: Poor quality of the PDD

!

Version number and date should be included in section A.1 after the title of the project, and should be updated for each new revision of the PDD.

Most projects submit several revisions of the PDD to the DOE during validation and adequate document control is needed.

See Pitfall 16: Claims in the PDD do not match with the actual situation on the project site

### A.2. Description of the project activity:

Please include in the description

- the purpose of the project activity
- explain how the proposed project activity reduces greenhouse gas emissions (i.e. what type of technology is being employed, what exact measures are undertaken as part of the project activity, etc)
- the view of the project participants on the contribution of the project activity to sustainable development
- (max. one page).

See Pitfall 3: Evidence of EIA and/or required construction/operating permits/approvals not provided.

!

This section should not exceed one page. The purpose of the project activity with regard to emission reductions and the project's contribution to sustainable development should be described.

Do not give excessive information not related to the project, such as marketing profile and figures of the company, description of country economic profiles, or generic details of how the company contributes to sustainable development that are not related to this specific project.

Relevant operating permits and approvals should be referred to and made available on request for the DOE.

### A.3. Project participants:

See Pitfall 2: Project participants are not identified clearly

Please list project participants and Party(ies) involved and provide contact information in Annex 1. Information shall be in indicated using the following tabular format.		
Name of Party involved (*) ((host) indicates a host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
Name A (host)	<ul style="list-style-type: none"> <li>Private entity A</li> <li>Public entity A ...</li> </ul>	No
Name B	<ul style="list-style-type: none"> <li>None</li> </ul>	Yes
Name C	<ul style="list-style-type: none"> <li>None</li> </ul>	No
(*) In accordance with the CDM modalities and procedures, at the time of making the PDD public at the stage of validation, a Party involved may or may not have provided its approval. At the time of requesting registration, the approval by the Party(ies) involved is required.		
<b>Note:</b> When the PDD is filled in support of a proposed new methodology (forms CDM-NBM and CDM-NMM), at least the host Party(ies) and any known project participant (e.g. those proposing a new methodology) shall be identified.		

See Pitfall 6: The modalities of communication with the Executive Board in terms of CERs issuance and allocation instructions are not stated clearly, or signed by all project participants

The table in section A.3 should be completed as follows (ref. example in the box):

Name of Party involved: Here the Parties (i.e. countries) involved must be listed. This is either the countries that participate directly in a project or that participate indirectly through the authorization of a private/public entity.

Private and/or public entities project participants: Here the private and/or public entities (e.g. companies) that participate in the project (i.e. project participants) need to be listed for each country. Only entities that take decisions on the allocation of CERs shall be listed here. Consultants who only assisted in the development of the PDD and/or the baseline and monitoring plan should not be listed as project participants.

Indicate if the Party involved wishes to be considered as project participant: Here it shall be indicated with 'Yes' or 'No' whether the Parties (i.e. countries) want to be considered as DIRECT project participants (i.e. not only indirectly participating through the private and/or public entity that the country authorises to participate in the project). For most projects, the answer here will be 'No' as the countries usually do not want to be considered a project participant.

Annex 1 should be filled in after completion of the table in A.3 and the description of the project participants should be consistent (i.e. identical name).

The DNA approval process should start early as this can be time-consuming. Written approval is needed from all relevant Parties prior to submission for registration.

See Pitfall 4: Letter of approval insufficient or delayed

## A.4. Technical description of the project activity:

### A.4.1. Location of the project activity:

!

- It is important that project locations should be given so that no submitted project could potentially be confused with another.
- The level of detail required depends on whether there are existing or potential projects in the same area. But normally, geographical coordinates are required.
- When there is potential for confusion, it is important that the precise location of the project be clearly identified in the PDD, for example by using map co-ordinates. For example, when landfill gas projects are submitted, the exact coordinates of the landfill may be required.
- If a project is developed in an urban/semi-urban region, stating the municipality is rarely adequate.
- All the plants/major equipments to be used must be listed and locations made clear.

See Pitfall 26: Insufficient information on physical location allowing unique identification of the project activity

#### A.4.1.1. Host Party(ies):

#### A.4.1.2. Region/State/Province etc.:

#### A.4.1.3. City/Town/Community etc:

#### A.4.1.4. Detail of physical location, including information allowing the unique identification of this project activity (maximum one page):

- Please fill in the field and do not exceed one page.

See Pitfall 7: The description of the technology is not sufficient

#### A.4.2. Category(ies) of project activity:

Please use the list of categories of project activities and of registered CDM project activities by category available on the UNFCCC CDM website, please specify the category(ies) of project activities into which this project activity falls. If no suitable category(ies) of project activities can be identified, please suggest a new category(ies) descriptor and its definition, being guided by relevant information on the UNFCCC CDM website.

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Make sure the "category of project activity" is not mistakenly read as "title of the approved methodology". The "category of project activity" must be linked to the scope & project categories defined by UNFCCC and should be as defined for the respective methodology as in: <http://cdm.unfccc.int/DOE/scopes.html> . Categories are:

- 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 - Afforestation and reforestation
- 15- Agriculture.



### A.4.3. Technology to be employed by the project activity:

This section should include a description of how environmentally safe and sound technology and know-how to be used is transferred to the host Party(ies).

!

Information under technical description should neither be too brief nor too elaborate.

Proper sequencing and appropriate use of clear process flow sheets will bring more clarity, especially in industry -specific projects.

The description should be adapted to sector specifics.

Systems, plans and responsibilities with regard to initial training (capacity building) and maintenance efforts during the project period should be outlined in this section. This is relevant when new technology is implemented, such as a new boiler type, a new wastewater treatment system etc.

The actual capacity building activities should be carried out as soon as possible and at all events prior to start of the crediting period, to ensure effective operation of the project.

### A.4.4. Estimated amount of emission reductions over the chosen crediting period

Please indicate the chosen crediting period and provide the total estimation of emission reductions as well as annual estimates for the chosen crediting period. Information on the emission reductions shall be indicated using the following tabular format.

<b>Years</b>	<b>Annual estimation of emission reductions in tonnes of CO<sub>2</sub>e</b>
Year A (e.g. 2008)	
Year B	
Year C	
Year ...	
<b>Total estimated reductions</b> (tonnes of CO <sub>2</sub> e)	
<b>Total number of crediting years</b>	
<b>Annual average over the crediting period of estimated emission reductions</b> (tonnes of CO <sub>2</sub> e)	

!

State the estimated total reductions in tonnes of CO<sub>2</sub>e as determined in section B.6.3 and B.6.4 over the project's crediting period.

Make sure the table in A.4.4 is correctly filled in and that the estimated emission reductions in A.4.4, B.6.3 and B.6.4 are identical

The table should be filled in as follows (ref. example in Box 4 below):

Number of years from the start of the crediting period to the end of the crediting period should be included in the first column (years), with the corresponding annual estimation of emission reductions in the next column.

When this is filled in, total estimated emission reductions should be added up.

The last row, "Annual average over the crediting period of estimated reductions (tonnes of CO<sub>2</sub>e)" is then the "Total estimated reductions" divided by the "Total number of crediting years".

**Box 4: Example of table A.4 filled in (modified from a LFG project):**

Please indicate the chosen crediting period and provide the total estimation of emission reductions as well as annual estimates for the chosen crediting period. Information on the Emission reductions shall be in indicated using the following tabular format.

<b>Years</b>	<b>Annual estimation of emission reductions in tonnes of CO<sub>2</sub>e</b>
2006	53121
2007	67571
2008	80646
2009	92475
2010	103183
2011	112864
2012	121630
<b>Total estimated reductions (tonnes of CO<sub>2</sub>e)</b>	<b>631490</b>
<b>Total number of crediting years</b>	<b>7</b>
<b>Annual average over the crediting period of estimated reductions(tonnes of CO<sub>2</sub>e)</b>	<b>90212</b>

See Pitfall 5: No written confirmation that funding will not result in a diversion of official development assistance

#### A.4.5. Public funding of the project activity:

In case public funding from Parties included in Annex I is involved, please provide in Annex 2 information on sources of public funding for the project activity from Parties included in Annex I, which shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of those Parties.

Note: When the PDD is filled in support of a proposed new methodology (form CDM-NM), it is to be indicated whether public funding from Parties included in Annex I is likely to be involved indicating the Party(ies) to the extent possible.

!

This is important only if public money is used for the project.

Ideally the relevant Ministry of the Annex I country dealing with ODA needs to confirm that this is not a diversion of any official development assistance. Make sure to allocate enough time to get this confirmation.

If there is no diversion of ODA funding, this should be explicitly stated in the approval letter from the Annex I Party in question and clearly stated in this section (for example, "this project does not include a diversion of ODA funding".)

If public funding is included, details of why this is not a diversion should be included in Annex 2 of the PDD.

## SECTION B.

### Application of a baseline methodology

Where project participants wish to propose a new baseline methodology, please complete the form for "Proposed New Methodology: Baseline and Monitoring Methodologies" (CDM-NM) in accordance with procedures for submission and consideration of proposed new methodologies (see Part III of these Guidelines).

#### **B.1. Title and reference of the approved baseline and monitoring methodology applied to the project activity:**

Please refer to the UNFCCC CDM web site for the title and the details of approved baseline and monitoring methodologies<sup>23</sup>. Please indicate

- the approved methodology and the version of the methodology that is used (e.g. "Version 02 of AM0001")
- any methodologies or tools which the approved methodology draws upon and their version (e.g. "Version 02 of the tool for demonstration and assessment of additionality" or "Version 04 of ACM0002")

!

If you are not certain about which methodology to apply for your specific project, you may want to contact the DOE to discuss whether an approved methodology (or a proposed methodology that is expected to be approved in the near future) can be applied, or whether a new methodology needs to be submitted.

Reference to the latest version of the approved baseline methodology should be included, as this is important information. When a methodology is revised, you are still allowed to register projects applying the earlier version of that methodology up to eight months after the new one has entered into force. However, the applicability criteria may have been altered, and therefore it is important to state the exact version that has been used.

<sup>23</sup> If a new baseline methodology is proposed, please complete the form for "Proposed New Baseline and Monitoring Methodologies" (CDM-NM).

## B.2 Justification of the choice of the methodology and why it is applicable to the project activity:

See Pitfall 8: Incompliance with the applicability conditions of the applied baseline methodology or compliance not sufficiently explained.

Please justify the choice of methodology by showing that the proposed project activity meets the applicability conditions of the methodology. Explain documentation has been used and provide the references to the document or include the documentation in Annex 3.

!

Make sure to discuss all applicability conditions required by the methodology and how these are fulfilled for this specific project.

Especially for small scale projects, there may be some misunderstanding of how to apply methodologies of different categories for different projects.

If in doubt, contact the DOE to discuss the applicability of the methodology to the specific project.

See Pitfall 9: Insufficient explanation of baseline scenarios

### B.3. Description of the sources and gases included in the project boundary:

Describe which emission sources and gases are included in the project boundary for the purpose of calculating project emissions and baseline emissions, using the table below. In cases where the methodology allows project participants to choose whether a source or gas is to be included in the project boundary, explain and, where necessary, justify the choice.

See Pitfall 17: The project boundaries are not defined clearly

	Source	Gas	Included?	Justification/ explanation
<b>Baseline</b>	e.g. boiler fuel used	CO <sub>2</sub>		
		CH <sub>4</sub>		
		N <sub>2</sub> O		
		CO <sub>2</sub>		
		CH <sub>4</sub>		
		N <sub>2</sub> O		
		CO <sub>2</sub>		
		CH <sub>4</sub>		
		N <sub>2</sub> O		
<b>Project Activity</b>		CO <sub>2</sub>		
		CH <sub>4</sub>		
		N <sub>2</sub> O		
		CO <sub>2</sub>		
		CH <sub>4</sub>		
		N <sub>2</sub> O		

## **B.4 Description of how the baseline scenario is identified and description of the identified baseline scenario:**

Please explain how the most plausible baseline scenario is identified. Where the procedure involves several steps, describe how each step is applied and transparently document the outcome of each step. Explain and justify key assumptions and rationales. Provide relevant documentation or references. Illustrate in a transparent manner all data used to determine the baseline scenario (variables, parameters, data sources etc.), preferably in a table form. Provide a transparent and detailed description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed project activity.

See Pitfall 11: Baseline information not sufficiently supported by evidence and/or referenced sufficiently

See Pitfall 12: Major risks to the baseline and project activity are not identified/ described

See Pitfall 14: Lack of logic and consistency in the PDD

## **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):**

Explanation of how and why this project activity is additional and therefore not the baseline scenario in accordance with the selected baseline methodology. Where the procedure involves several steps, describe how each step is applied and transparently document the outcome of each step. Where the barriers are involved in demonstrating additionality, only select the (most) relevant barriers. Explain and justify key assumptions and rationales. Provide relevant documentation or references. Illustrate in a transparent manner all data used to assess the additionality of the project activity (variables, parameters, data sources etc.), preferably in a table form.

If the starting date of the project activity is before the date of validation, provide evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity. This evidence shall be based on (preferably official, legal and/or other corporate) documentation that was available at, or prior to, the start of the project activity.

See Pitfall 10: Insufficient explanation of project additionality

See Pitfall 18: Project and/or crediting start date unclear. Lack of evidence of CDM consideration before the final decision to proceed was taken.

!

Arguments to justify the additionality of the project need to be supported by evidence and/or referenced sufficiently.

Many approved baseline methodologies advocate financial analysis such as a Net Present Value (NPV) or Internal Rate of Return (IRR) analysis to demonstrate project additionality. If NPV/IRR calculations are used, these should be made available to the DOE, including the assumptions made (such as discount rate, expected revenue, maintenance costs etc). Key assumptions of the NPV and IRR analysis must be included in the PDD, such as all relevant costs (including, for example, the investment cost, the operations and maintenance costs), and revenues (excluding CER revenues, but including subsidies/fiscal incentives where applicable).

Please also refer to the "Tool for the demonstration and assessment of additionality", available on the UNFCCC-CDM website, for further guidance on this section.

The evidence of the CDM consideration before the final decision to proceed with the project shall be described here and made available to the DOE.

## **B.6. Emission reductions:**

### **B.6.1. Explanation of methodological choices:**

Explain how the procedures, in the approved methodology to calculate project emissions, baseline emissions, leakage emissions and emission reductions are applied to the proposed project activity. Clearly state which equations will be used in calculating emission reductions.

Explain and justify all relevant methodological choices, including:

- where the methodology includes different scenarios or cases, explain and justify which scenario or case applies to the project activity (e.g. which scenario in ACM0006 is applicable);
- where the methodology provides different options to choose from (e.g. which methodological approach is used to calculate the "operating margin" in ACM0002), explain and justify which option is chosen for the project activity;
- where the methodology provides for different default values, explain and justify which of the default values have been chosen for the project activity.



!

Excess information such as i) all arguments for additionality (which should be discussed in section B.5) and ii) all the detailed calculations (which are required for example under section B.6.3) should not be included here.

It is important that all variables, parameters, data sources etc are consistent with those applied in section E and that these are fully justified. Assumptions made should be stated, e.g.

- with grid connected electricity projects it should be clearly stated whether national, regional or the local/state grid data are used to determine the baseline emissions.
- for fuel switch or energy efficiency projects, the remaining lifetime of existing equipment must be discussed to demonstrate that new and more efficient equipment is unlikely to be implemented in the absence of the CDM project activity.

### **B.6.2. Data and parameters that are available at validation:**

This section shall include a compilation of information on the data and parameters that are not monitored throughout the crediting period but that are determined only once and thus remains fixed throughout the crediting period AND that are available when validation is undertaken. Data that becomes available only after validation of the project activity (e.g. measurements after the implementation of the project activity) should not need to be included here but in the table in section B.7.1.

This may include 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 provided in the methodology or default values specified in the methodology should not be included in the compilation.

Provide for each data or parameter the chosen value or, where relevant, the qualitative information, using the table provided below. Particularly:

- Provide the actual value applied. Where time series of data is used, where several measurements are undertaken or where surveys have been conducted, provide detailed information in Annex 3.
- Explain and justify the choice for the source of data. Provide clear and transparent references or additional documentation in Annex 3.

- Where values have been measured, include a description of the measurement methods and procedures (e.g. which standards have been used), indicate the responsible person / entity having undertaken the measurement, the date of measurement(s) and the measurement results. More detailed information can be provided in Annex 3.

*(Copy this table for each data and parameter)*

<b>Data / Parameter:</b>	
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:	

See Pitfall 14: Lack of logic and consistency in the PDD

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

Provide a transparent ex-ante calculation of project emissions, baseline emissions (or, where applicable, direct calculation of emission reductions) and leakage emissions expected during the crediting period, applying all relevant equations provided in the approved methodology. Use estimations for parameters that are not available when validation is undertaken or that are monitored during the crediting period.

Document how each equation is applied, in a manner that enables the reader to reproduce the calculation. Where relevant, provide additional background information and or data in Annex 3, including relevant electronic files (i.e. spreadsheets).

See Pitfall 22: Deviations from selected calculations in methodology not justified sufficiently or incorrect formula applied

!

Make sure there are no discrepancies between data used for calculations in any enclosed Excel sheet and those indicated in the PDD.

Never include a data value without referencing to the data source which should be an official and recognised source, and/or to the formula and assumptions used to come up with the specific data value. Always use the most updated source available.

Always justify assumptions by providing details with regard to project specifics.

Include the units for all variables and double check their consistency.

All details of the calculations and assumptions made should be available and be provided to the DOE together with the PDD.

Examples of common mistakes are:

- indirect or direct, on-site or off-site emission sources are omitted, (e.g. leakage is not calculated)
- calculation errors such as wrong unit or wrong conversion factor used
- deviations from calculation methodology without justifications with regards to accuracy and conservativeness
- references are missing and there is lack of transparency in calculations
- calculation assumptions are not justified
- the categories of greenhouse gases covered in the project emissions calculations differ from those included in the baseline emissions calculations
- lack of evidence that methodology has been applied conservatively
- bespoke conversion factors are applied in calculations without showing how they were produced and without referencing
- a default conversion factor has been applied without sufficient justification and referencing

Sometimes leakage is described as not applicable, even though it is applicable. For example, for activities using biomass, leakage shall be considered, including potential effects on biomass availability for other users. For the amount of biomass collected from sources outside the project boundary, the transportation emissions from trucks, their trucks' capacity and the number of trips all need to be monitored

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

Summarize the results of the ex-ante estimation of emission reductions for all years of the crediting period, using the table below.

Year	Estimation of project activity emissions (tonnes of CO <sub>2</sub> e)	Estimation of baseline emissions (tonnes of CO <sub>2</sub> e)	Estimation of leakage (tonnes of CO <sub>2</sub> e)	Estimation of overall emission reductions (tonnes of CO <sub>2</sub> e)
Year 1				
Year 2				
Year 3				
Year...				
<b>Total</b> (tonnes of CO <sub>2</sub> e)				

## B.7 Application of the monitoring methodology and description of the monitoring plan:

The following two sections (B.7.1 and B.7.2) shall provide a detailed description of the application of the monitoring methodology and a description of the monitoring plan, including an identification of the data to be monitored and the procedures that will be applied during monitoring.

Please note that 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:

This section shall include specific information on how the data and parameters that need to be monitored would actually be collected during monitoring for the project activity. 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.

Provide for each parameter the following information, using the table provided below:

- 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.
- 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.
- A description of the QA/QC procedures (if any) that should be applied.
- Where relevant: any further comment.

Provide any relevant further background documentation in Annex 4.

*(Copy this table for each data and parameter)*

<b>Data / Parameter:</b>	
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:	

!

The table above is not the same as the table included in the methodologies to describe the monitoring requirements for each parameter!!!

Make sure to follow *all* requirements of the approved methodology, including:

- all applicable data variables that are listed. In some cases, other data variables may be added or some data variables may be deleted because they are not applicable for this specific project. These choices should be made transparent.
- the units must be the same as those required by the methodology
- indicators that are required to be measured ex-post should not be calculated or estimated
- recording frequency should be identical with or higher frequency than the methodology requires

Any deviations from the methodology (e.g. lower recording frequency, another unit, calculated instead of measured), need to be thoroughly justified, and should be seen as a contribution to conservativeness. A request for deviation will have to be requested to the EB by the DOE.

The uncertainty level of data is normally defined in the approved methodology. An outline of QA/QC procedures should be described in the tables in this section.

Whether the DNA of the respective host country requires monitoring of Sustainable Development Indicators must be clarified. If this is the case, these Sustainable Development indicators must be listed in the monitoring plan.

The uncertainty level of data is normally defined in the approved methodology. An outline of QA/QC procedures should be described here.

See Pitfall 19: Insufficient information on the measurement methods and source of data as part of data/parameter description in monitoring plan

See Pitfall 20: Deviations from monitoring methodology not justified sufficiently

### B.7.2 Description of the monitoring plan:

Please provide a detailed description of the monitoring plan. Describe the operational and management structure that the project operator will implement 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. Provide any relevant further background information in Annex 4.

See Pitfall 21: Monitoring and project management procedures are not defined.

!

Regarding the operational and management structure that will be implemented to monitor project emissions and any leakage effects, the following should be outlined as applicable for the specific project:

- - The authority and responsibility for project management
- - The authority and responsibility for registration, monitoring, measurement and reporting
- - Procedures for training of monitoring personnel
- - Procedures for emergency preparedness in cases where emergencies can cause unintended emissions
- - Procedures for calibration of monitoring equipment
- - Procedures for maintenance of monitoring equipment and installations
- - Procedures for monitoring, taking measurements and reporting
- - Procedures for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)
- - Procedures for internal review of reported results/data, including a system for corrective actions as needed, in order to provide for more accurate future monitoring and reporting

The level of detail needed for monitoring and project management is project-specific and depends on the project technology. Please refer to Pitfall 21 for further details.

### **B.8 Date of completion of the application of the baseline study and monitoring methodology and the name of the responsible person(s)/entity(ies)**

Please provide date of completion of the application of the methodology to the project activity

study in DD/MM/YYYY.

Please provide contact information of the persons(s)/entity(ies) responsible for the application of the baseline and monitoring methodology to the project activity and indicate if the person/entity is also a project participant listed in Annex 1.

## SECTION C. Duration of the project activity / Crediting period

### C.1 Duration of the project activity:

See Pitfall 18: Project start date and/or crediting starting date is unclear

#### C.1.1. Starting date of the project activity:

The starting date of a CDM project activity is the date on which the implementation or construction or real action of a project activity begins.

(Project activities starting between 1 January 2000 and the date of the registration of a first CDM project, if the project activity is submitted for registration before 31 December 2005; have to provide documentation, at the time of registration, showing that the starting date fell within this period.)

!

The date should be as specific as possible, e.g. of *DD/MM/YYYY*. Proof of the actual starting date should be available to the DOE upon request. As per Glossary of CDM Terms<sup>24</sup> the starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins.

#### C.1.2. Expected operational lifetime of the project activity:

Please state the expected operational lifetime of the project activity in years and month.

!

The operational life time of the project activity should always be identical to or exceed the crediting period. Justification or evidence of the operational lifetime of the project activity should be available to the DOE upon request

24 [http://cdm.unfccc.int/Reference/Guidclarif/glos\\_CDM\\_v03.pdf](http://cdm.unfccc.int/Reference/Guidclarif/glos_CDM_v03.pdf)



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

Please state whether the project activity will use a renewable or a fixed crediting period and complete C.2.1 or C.2.2 accordingly.

Note that the crediting period may only start after the date of registration of the proposed activity as a CDM project activity. In exceptional cases, (see instructions for section C.1.1. above) the starting date of the crediting period may be prior to the date of registration of the project activity as provided for paragraphs 12 and 13 of decision 17/CP.7, paragraph 1 (c) of decision 18/CP.9 and through any guidance by the Executive Board, available on the UNFCCC CDM website.

!

- The starting date of the crediting period shall be after the registration date.
- One of the two credit-period options must be selected: i.e. fixed or renewable.
- The total anticipated crediting period (e.g. 3 x 7 years or 10 years) must not be longer than the expected lifetime of the project activity.

### C.2.1. Renewable crediting period

Each crediting period shall be at most 7 years and may be renewed at most two times, provided that, for each renewal, a designated operational entity determines and informs the Executive Board that the original project baseline is still valid or has been updated taking account of new data where applicable.

!

Only one of either section C2.1 or C2.2 should be filled in, leaving the other blank.

#### C.2.1.1. Starting date of the first crediting period:

Please state the dates in the following format: (DD/MM/YYYY).

### **C.2.1.2. Length of the first crediting period:**

Please state the length of the first crediting period in years and months.

### **C.2.2. Fixed crediting period:**

Fixed crediting period shall be at most ten (10) years.

#### **C.2.2.1. Starting date:**

Please state the dates in the following format: (DD/MM/YYYY)

#### **C.2.2.2. Length:**

Please state the length of the crediting period in years and months

## SECTION D. Environmental impacts

### D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts:

See Pitfalls 23: Compliance with local legal requirements not covered sufficiently

Please attach the documentation to the PDD.

!

If an Environmental Impact Assessment (EIA) is required by law and/or if an EIA has been carried out, details of the EIA should either be provided in a separate document as an attachment to the PDD if the language is English, or be available for the DOE to validate upon request if the documents are in the local language.

### D.2. 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:

Pitfall 3: Evidence of EIA and/or required construction/operating permits/approvals not provided.

## SECTION E. Stakeholders' comments

!

In this section, legal requirements for stakeholder involvement (if exists) should be described, including how the project is in compliance with these requirements. Key stakeholders should be listed, including contact information. Stakeholder contact information can be included as an appendix to the PDD or be provided to the DOE when requested. A summary of all comments received should be included in this section, together with an elaboration on how these comments have been, or will be, taken into account.

It is important to always keep detailed minutes of meetings and records of any local stakeholder processes to be able to justify the process at a later stage.

See Pitfalls 24: Insufficient information on the stakeholder consultation process

### E.1. Brief description how comments by local stakeholders have been invited and compiled:

Please describe the process by which comments by local stakeholders have been invited and compiled. An invitation for comments by local stakeholders shall be made in an open and transparent manner, in a way that facilitates comments to be received from local stakeholders and allows a reasonable time for comments to be submitted. In this regard, project participants shall describe a project activity in a manner which allows the local stakeholders to understand the project activity, 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.

### E.2. Summary of the comments received:

Please identify stakeholders that have made comments and provide a summary of these comments.

### E.3. Report on how due account was taken of any comments received:

Please explain how due account has been taken of comments received.

# Annex 1

## CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Please copy and paste table as needed. Please fill for each organisation listed in section A.3 the following mandatory fields: Organization, Name of contact person, Street, City, Postfix/ZIP, Country, Telephone and Fax or e-mail.

!

Make sure you include here all project participants listed in column 2 of Table A.3. and check that the information is consistent with that given in Table A.3.

Organization:	
Street/P.O.Box:	
Building:	
City:	
State/Region:	
Postfix/ZIP:	
Country:	
Telephone:	
FAX:	
E-Mail:	
URL:	
Represented by:	
Title:	
Salutation:	
Last Name:	
Middle Name:	
First Name:	
Department:	
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	

## Annex 2

### INFORMATION REGARDING PUBLIC FUNDING

Please provide information from Parties included in Annex I on sources of public funding for the project activity which shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of those Parties

!

- Please list all sources of public funding
- Give a confirmation that this is not diverted ODA from an Annex I country
- Make available contact details of relevant persons so that the DOE can further investigate the source of public funding.

## Annex 3

### BASELINE INFORMATION

Please provide any further background information used in the application of the baseline methodology. This may include tables with time series data, documentation of measurement results and data sources, etc.

!

This section tends to be either too brief or too elaborate. Examples of information that can be provided in Annex 3 are listed in the Box 7 below.

#### Box 7: Examples of information provided for electricity to grid or landfill gas capture projects

*Projects delivering electricity to the grid;*

A table of all power plants used to calculate the operating and build margin for the grid carbon emission factor should be provided.

Name of power plant	Fuel type	Generation in 2005 (MWh)	Generation in 2004 (GWh)	Generation in 2003 (GWh)	Year of commissioning

*Landfill gas capture and flaring projects:*

Assumptions for estimating emission reductions by using a First Order Decay model should be included here. Such information would be;

- assumptions for the theoretical potential methane generation rate,  $L_0$ , including information on waste composition
- assumptions for the methane generation constant,  $k$ ,
- a table including estimated amount of waste disposed per year,
- information on waste composition

# Annex 4

## MONITORING INFORMATION

Please provide any further background information used in the application of the monitoring methodology. This may include tables with time series data, additional documentation of measurement equipment, procedures, etc.

!

Examples of information to include here are a copy of worksheets that should be filled in by the operators, with an explanation of how these are filled in and used to aggregate data and calculate annual emission reductions.

An example of the annual worksheet for a landfill gas project is enclosed in Box 8 below. This worksheet is filled in based on an aggregation of monthly worksheets and calculated from the formulas given in methodology AM0011.

**Box 8: Example of Annual Worksheet for a landfill gas project**

Data	Project characteristics			Project GHG reductions		
	kWh Generated from LFG project	Methane input to generator	Methane input to flare	Ton CO <sub>2e</sub> destroyed from generator	Ton CO <sub>2e</sub> destroyed from flare	Ton CO <sub>2e</sub> destroyed from generator and flare
Month/data units	kWh	Ton CH <sub>4</sub>	Ton CH <sub>4</sub>	Ton CO <sub>2e</sub>	Ton CO <sub>2e</sub>	Ton CO <sub>2e</sub>
January						
February						
March						
Etc.						
.						
.						

**No guide is given for how to complete the monitoring report ! - this to illustrate in relation to what monitoring activities the verification pitfalls occur**



# Monitoring report content

This section highlights the key points to include in a monitoring report. The UNFCCC guidelines do not specify any specific format in which the monitoring report is to be prepared. It is left to the project proponent to formulate their own format. The following guidelines are based on the best practices, and desirable in a complete and concise monitoring report.

1. **The cover page.** It is desirable that the cover page of the monitoring report contain the following project related information.
  - a) Title of the project activity.
  - b) UNFCCC reference number.
  - c) Project proponents name and address/contact address and signature (optional) of the responsible person (preferably as stated in the modalities of communications).
  - d) The period for which the emission reductions are being claimed for (i.e. the start date of verification period and the end date).
  - e) The emission reductions being claimed.
  - f) Whether initial verification or a periodic verification, in which case the number of the periodic verification should be specified.
  - g) The version of the monitoring report and the date of its release.
  
2. **A contents page** is desirable if the monitoring report is lengthy with many sections. However it is always desirable to keep the monitoring report short but containing all the relevant details as stated below.
  
3. **Introduction:** An introduction of the project proponent, the type of project (whether large or small scale), sectoral scope, the involved host Party, details of the other project proponents from participating annex-1 Parties, and the period for which the monitoring report pertains to, sets the tone for the verification process.
  
4. **A list of the reference's** of the project activity like
  - a) the baseline methodology used and its version.
  - b) registered Project design document of version.
  - c) validation report.
  - d) monitoring methodology applied.
  - e) Date when the project was registered.
  - f) Any other references of importance in the verification process.

5. **A brief description of the project activity** with respect to
- a) What was envisaged in the registered PDD?
  - b) Has the project been implemented as envisaged and what are the deviations?
  - c) When was the project commissioned?
  - d) Whether any additions have been done on the project activity for further improvement?
  - e) Performance of the project activity during the period of verification.
  - f) Number of days of operation / downtime, and.
  - g) Legal compliance of the project during the period.
6. **Monitoring parameters:** The list of the parameters to be monitored along with the specified frequency as indicated in the registered project design. Justification is also to be provided if any of the parameters could not be monitored or the frequency could not be maintained.
7. **The step by step calculation** involved in arriving at the certified emission reductions as provided in the registered project design document. The ex-ante fixed variables should be clearly specified and the source of the constants (whether IPCC or local value) should also be provided for easy reference.
- Any deviations from the calculation due to either non availability of data or non-applicability of the formulae which could not be foreseen during the validation, or the need to apply an correction factor is also to be clearly stated.
- A comparison of the emission reduction being claimed for the period as against the estimated emission reductions (in the registered PDD) for the same period and the justification for variations on either side (plus or minus) is also to be provided.
6. **Monitoring parameters:** The list of the parameters to be monitored along with the specified frequency as indicated in the registered project design. Justification is also to be provided if any of the parameters could not be monitored or the frequency could not be maintained.
8. In case the baseline methodology specifies a **check against the baseline requirements;** this should also be clearly stated.
9. A brief on the **quality control and quality assurance procedures** being followed for data monitoring, calculations and archiving.
10. **Calibration / maintenance of measurement and analytical instruments.** A list of the instruments that require calibration as per the methodology and their compliance is to be stated.

**11. Environmental Impacts:** a brief write-up on the environmental impacts of the project activity on the immediate surroundings, the compliance of the project activity or the unit as a whole to the local regulations of air and water permits and if applicable, the monitoring results of environmental parameters stated either in the environmental impact assessment or in the approved methodology environmental impact assessment.

Any change in the monitoring report after the original version has been uploaded on the UNFCCC website is to be indicated by a change in the version number and date on the front page for easy reference and tracking.

Though not a part of the monitoring report an **excel worksheet** comprising of the following is also to be provided to the verifying DOE for conducting the verification.

- a) All parameters monitored with the frequency and all values
- b) Calculations of the emission reductions
- c) Variations from the estimated emission reductions stated in the registered project design document with reasons/justifications.

# Guidebook Appendix

## Appendix 1 - Sources for further assistance

### UNFCCC CDM website

<http://cdm.unfccc.int>

### Decision17/COP7: Marrakech Accords (full document)

[http://cdm.unfccc.int/Reference/COPMOP/decisions\\_17\\_CP.7.pdf](http://cdm.unfccc.int/Reference/COPMOP/decisions_17_CP.7.pdf)

### Decision 3/CMP.1: Modalities and procedures for a clean development mechanism

<http://cdm.unfccc.int/Reference/COPMOP/08a01.pdf#page=6>

### Decision 4/CMP.2 (Annex II): Simplified modalities and procedures for small scale clean development mechanism project activities;

<http://cdm.unfccc.int/Reference/COPMOP/08a01.pdf#page=43>

### CDM Catalogue of Decisions

<https://cdm.unfccc.int/Reference/catalogue/search>

### Most recent versions of:

- Guidelines for completing PDDs
- PDD templates
- CDM procedures
- Guidance, clarifications and tools
- Decisions from EB meetings
- Decisions from COP/MOPs

<http://cdm.unfccc.int/Reference/Documents>

### Baseline and monitoring methodologies

<http://cdm.unfccc.int/methodologies>

### Glossary of CDM terms:

[http://cdm.unfccc.int/Reference/Guidclarif/glossary\\_of\\_CDM\\_terms.pdf](http://cdm.unfccc.int/Reference/Guidclarif/glossary_of_CDM_terms.pdf)

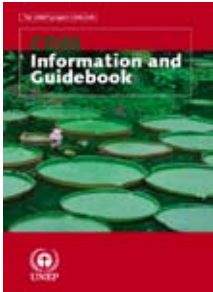
### A montly review of the CDM Pipeline is available at:

<http://cdmpipeline.org/>

## Appendix 2 – CD4CDM Project Publications

URC publication can be downloaded from [www.cd4cdm.org](http://www.cd4cdm.org)

### CDM Information and Guidebook (2nd edition)



The CDM Information and Guidebook attempts to provide a comprehensive overview of the CDM, its project cycle, and related issues such as linkage with sustainable development goals, financing and market intelligence. The appendices present frequently asked questions and answers, a short overview of existing guidelines, and a list of project categories which may be eligible for the CDM in the future.

### Legal Issues Guidebook to the Clean Development Mechanism



The Guidebook aims at providing an in-depth analysis of the various types of risks associated with the different stages of the CDM project cycle and possible legal and contractual approaches that could be adopted to minimize these risks.

### CDM Sustainable Development Impacts



This guideline presents an operational approach to sustainable development in the context of CDM projects.

## Institutional Strategy to Promote the Clean Development Mechanism in Peru



This booklet aims to show how Peru has designed an institutional strategy to promote the CDM under a "national project cycle" inspired by and complying with the international rules for the CDM.

## Clean Development Mechanism



Vietnamese version

Japanese version

Spanish version

French version

Cambodian (Khmer) version

Chinese version

Korean version

Language versions coming shortly: Arabic (hard copy available on request), Portuguese

## Appendix 3 - Abbreviations

<b>ACM</b>	Approved Consolidated Methodology
<b>AMS</b>	Approved Methodology for Small-Scale CDM project activities
<b>CAR</b>	Corrective Action Request
<b>CDM</b>	Clean Development Mechanism
<b>CEF</b>	Carbon Emission Factor
<b>CER</b>	Certified Emission Reduction
<b>CH<sub>4</sub></b>	Methane
<b>CL</b>	Clarification request
<b>CO<sub>2</sub></b>	Carbon dioxide
<b>CO<sub>2e</sub></b>	Carbon dioxide equivalent
<b>DNV</b>	Det Norske Veritas
<b>DNA</b>	Designated National Authority
<b>DOE</b>	Designated Operational Entity
<b>EB</b>	Executive Board (of the CDM)
<b>EB20 or similar</b>	The 20 <sup>th</sup> Executive Board Meeting
<b>EIA</b>	Environmental Impact Assessment
<b>GHG</b>	Greenhouse gas(es)
<b>GWP</b>	Global Warming Potential
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>IRR</b>	Internal Rate of Return
<b>LoA</b>	Letter of Approval
<b>MoC</b>	Modalities of Communication
<b>MP</b>	Monitoring Plan
<b>N<sub>2</sub>O</b>	Nitrous oxide
<b>NGO</b>	Non-governmental Organisation
<b>NPV</b>	Net Present Value
<b>ODA</b>	Official Development Assistance
<b>PDD</b>	Project Design Document
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change

This second guidebook identifies the 38 most common pitfalls encountered by Det Norske Veritas (DNV), an accredited Designated Operational Entity, in its validation and verification of CDM projects up to April 2008, which represents 42% of all validated CDM projects and 35% of all verified projects. Specific guidance is provided on how to avoid these pitfalls. Examples used to support this guidance are based on actual CDM projects. A later section of the guidebook presents step-by-step directions on how to fill the different sections of a CDM Project Design Document (PDD). By publishing this guidebook, CD4CDM project aims at assisting CDM project developers in developing countries build their skills in PDD preparation.

This guidebook is produced to support the UNEP project "Capacity Development for the Clean Development Mechanism" implemented by UNEP Risø Centre on Energy, Climate and Sustainable Development in Denmark. The overall objective of the project is to develop the institutional capability and human capacity for implementation of the CDM in developing countries.

The project is funded by the Netherlands Ministry of Foreign Affairs.

