

MVP Working Paper

This working paper is intended to provide background information on the *monitoring and verification protocol* (MVP) and its use during the CDM project cycle.

1. What is a MVP?

The project's *monitoring and verification protocol* (MVP) is one of the documents that forms part of the essential project design documentation (as outlined in Appendix B – Project design document – Decision -/CP.7 (Article 12)¹), together with the technical project design and the baseline study. These core documents are submitted to a designated independent operational entity (the validator) to allow evaluation of the project activity against the requirements of the CDM.

For small scale CDM project activities² project participants may use simplified modalities and procedures for small scale projects. Such procedures have not been developed yet.

The MVP is a manual for the project operator. It describes the key project parameters and characteristics that need to be monitored and recorded so that actual greenhouse gas emissions reductions can be calculated. The MVP also specifies how the project operator is to carry out the monitoring and presents the methodology and necessary tools to allow the recorded data to be processed into emissions reduction figures. The MVP should also determine the verification schedule for claimed emissions reductions and other relevant details necessary for the verification process.

In addition, the MVP presents the sustainable development criteria to which the project responds. The document indicates the parameters that need to be monitored to allow assessment of the project's development impact against the selected criteria.

Whereas the baseline sets the foundation against which the performance of a project can be measured, the MVP describes the practical approach to data recording and the assessment of the real project performance.

The MVP should be written in a very practical way containing:

- Instructions regarding the data to be collected, such as a list of indicators to be measured (e.g.: fuel consumption; hours of turbine running...);
- Monitoring and measurement procedures;
- Formulas and/or algorithms for GHG emission reduction calculations, presented in the text and also as operational spreadsheets to be used by the operator
- A description of the records to keep;
- Sustainable development assessment indicators;
- Timeframe for auditing and verification activities including major events that might trigger a review;
- Data sensitivity;

¹ The Marrakech Accords and the Marrakech Declaration – Work programme on mechanisms (decision 7/CP.4 and 14/CP.5) – Par 3. Modalities and procedures for a clean development mechanism as defined in Article 12 of the Kyoto Protocol – Decision -/CP.7 (Article 12).

² Small CDM activities are defined as follow:

- (i) Renewable energy project activities with a maximum output capacity equivalent of up to 15 megawatts (or an appropriate equivalent);
- (ii) Energy efficiency improvement project activities which reduce energy consumption, on the supply and/or demand side, by up to the equivalent of 15 GWh per year;
- (iii) Other project activities that both reduce anthropogenic emissions by sources and that directly emit less than 15 kilotonnes of carbon dioxide equivalent annually;

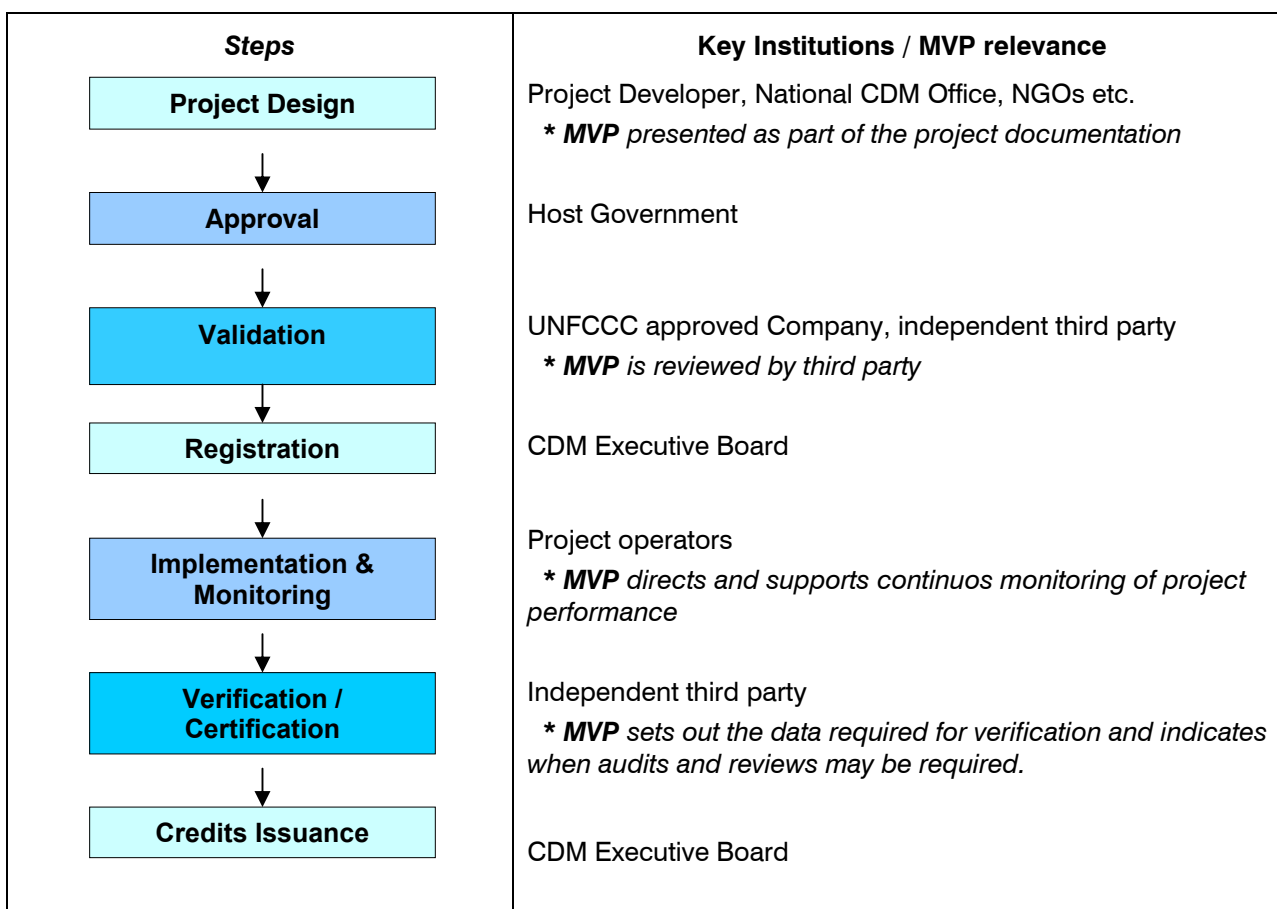
- Possible information for a management system to support monitoring activities.

2. The MVP and the project cycle

Whilst the baseline document sets the framework against which emissions reduction will be met, the MVP takes the baseline as a starting point but identifies how project performance will be compared to the baseline and how the emissions reductions will be calculated.

The MVP thus is integrally linked with the baseline and is relevant at various stages of the CDM project cycle (Figure 1). The project operator is responsible for preparing the MVP.

Figure 1: CDM Project Cycle



- At the design phase: the project operator prepares the MVP and presents it as part of the project documentation. The practical nature of the MVP requires that, as much as possible, it captures parameters that are monitored and recorded as part of the normal operation of the project. It should not place unduly onerous additional tasks on the operator.
- At the validation phase: the MVP is reviewed by an independent third party in conjunction with the other project documents. It is essential that the MVP is coherent with the project design document and ties in closely with the proposed baseline.

- During project monitoring³ phase: the instructions in the MVP regulate all the monitoring activities and procedures and set-out the information that the operator must present to the verifier.
- At verification⁴: the MVP presents occurrences that should trigger reviews or audits of the baseline.

3. Guidance notes for preparation of MVP

General

The MVP document should be prepared at the same time and as a complimentary document to the baseline document.

The MVP needs to bring together:

- 1) the requirement of ensuring the environmental and developmental integrity of the project; and
- 2) the practicalities of project operation and data collection.

In this way, preparation of the MVP requires clear understanding of the baseline document and the technicalities of project operation. It should be presented as a step-by-step manual for the operator explaining what parameters need to be monitored, recommending ways of doing the monitoring, setting out how calculations should be done and indicating how data should be handled, stored and reported.

Contents

An indicative table of contents for a MVP documents is presented in Annex B.

The first section sets out the purpose of the MVP, tells the operator how the MVP should be used, sets out a description of the MVP document and gives background to the project and an overview of the baseline.

Section two presents the assumptions and principles applying to the MVP, beginning with overarching principles (for example, service equivalence, suppressed demand) and then focusing on more of the detail applying to the calculations (e.g. efficiency of engines, kerosene use per household). It is very important to clearly define the system boundary. The MVP boundary should coincide with the system boundary presented in the baseline. The section describes how baseline emissions are estimated and how monitored data allows calculation of the baseline emissions. In addition, section 2 shows how emissions reductions are calculated.

Section three describes all the obligations that the operator is under in respect of project monitoring. This includes any need for the operator to survey consumers and to monitor activities which constitute leakage. The section also describes how the operator must record data and calculations.

Section four presents the spreadsheets (or other practical data capture and calculation tools) that are to be used by the operator. The section describes in detail how the operator should use the tools and describes how the spreadsheets (or similar) perform any calculations. The MVP document itself contains representative "snap-shots" from the spreadsheets.

Section five deals with sustainable development. CDM projects must have a demonstrable, positive development impact for the host country. This section sets out the parameters that will allow this impact will be monitored and presents the targets that it is expected the project will achieve.

³ **Monitoring** is the systematic surveillance of the project's performance by measuring and recording performance-related indicators relevant in the Kyoto Protocol context.

⁴ **Verification** is the periodic independent review and ex-post determination by the designated operational entity of the monitored reductions in anthropogenic emissions by sources of GHG gases that have occurred as a result of a registered CDM project activity during the verification period.

Section six lays out the kind of management procedures that need to be adhered to by the operator in order to ensure that data monitoring, recording and presentation conforms to standards that will satisfy the verifier of the emissions reductions. This section may call upon the operator to implement internationally recognised standards such as ISO14000.

Section seven gives details of the recommended auditing and verification procedures. This includes the period of data capture and for report submission for verification.

4. MVP costs

Areas in which transaction costs accrue in the CDM project cycle are validation and registration, monitoring, verification and certification (including for baseline and monitoring protocol preparation and verification) and the issuance of CERs. This may become a major concern especially in the case of small CDM project, where the cost per unit of certified emission reductions is higher as compared to larger scale projects.

The level of effort to be put into developing a monitoring protocol proves to be largely dependent upon the requirements of the buyer of the CER's. Average costs for baseline and MVP preparation may range from \$20,000 for a CERUPT⁵ project to \$40,000 for a PCF CDM activity⁶. As of today, the PCF has required from project operators very detailed, transparent and strict monitoring and verification protocols. Standardised and therefore less time and cost demanding methodologies are nonetheless likely to be developed as soon as the Kyoto Protocol is ratified and the rules of the game become clearer.

At this stage strategies to minimise transaction costs include the use of available existing guidelines, such as those suggested by the Government of the Netherlands. No template has been made available yet, only instructions and guidelines for specific types of projects and small project activities. These guidelines are intended to instruct the project developer on methodologies and procedures for monitoring and reporting. It is suggested that internationally recognised methods for monitoring, measurement and calibration of equipment should be applied where applicable.

5. What will the validator assess while reviewing the MVP?

Once the project documentation is completed and the local government has approved the project, the project documents will undergo the validation process. A review of the MVP by an independent validator should establish whether all relevant project aspects deemed necessary to monitor, report and verify reliable emission reductions and sustainable development contributions are properly addressed in the MVP document.

The validator will establish that:

- the scope, objectives and use of the MVP are clearly described;
- the boundaries to monitor and measure project and baseline performance are defined and complete;
- the choices of monitorable indicators and measuring methodologies are practical, reliable and complete to monitor project GHG performance over time;
- the choice of indicators are sufficient to allow effective monitoring of project performance over time (e.g.: sustainable development performance, baseline indicators, etc.);
- the project implementation with regards to management and planning is properly prepared for and that critical arrangements are addressed;

⁵ The Government of the Netherlands programme for purchasing certified emission reductions from CDM projects, first tendering period ending on 31st Jan 2002.

⁶ Prices paid to consultants to develop both documents on a fixed price based tariff.

- the MVP contains adequate provisions for the verification of emission reductions achieved.

6. References

Ministry of Housing, Spatial Planning and the Environment of the Netherlands (2001) "Operational Guidelines for Baseline Studies, Validation, Monitoring and Verification of Clean Development Mechanism Project Activities" available online at <http://www.senter.nl/asp/page.asp?alias=erupt&id=i001223>

PCF (2000) "Preliminary Validation Manual", available online at www.prototypecarbonfund.org

UNFCCC (2001) "The Marrakech Accords and the Marrakech Declaration", Advance text of COP 7 decisions. Available online at <http://www.unfccc.de/>

WB (2001) "Latvia Monitoring and Verification Protocol (MVP)", PCF available online at <http://www.prototypecarbonfund.org/router.cfm?show=DocLib.cfm&Item=5>

WB (2001) "Validation, Verification and Certification for PCF Projects" PCF Implementation Note #4 Available online at <http://www.prototypecarbonfund.org/router.cfm?show=DocLib.cfm&Item=5>

Annex A

The Marrakech Accords (decision -/CP.7) on Modalities and Procedures for a Clean Development Mechanism – Rules for Monitoring

53. Project participants shall include, as part of the project design document, a monitoring plan that provides for:

- (a) The collection and archiving of all relevant data necessary for estimating or measuring anthropogenic emissions by sources of greenhouse gases occurring within the project boundary during the crediting period;
- (b) The collection and archiving of all relevant data necessary for determining the baseline of anthropogenic emissions by sources of greenhouse gases within the project boundary during the crediting period;
- (c) The identification of all potential sources of, and the collection and archiving of data on, increased anthropogenic emissions by sources of greenhouse gases outside the project boundary that are significant and reasonably attributable to the project activity during the crediting period;
- (d) The collection and archiving of information relevant to the provisions in paragraph 37 (c) above;
- (e) Quality assurance and control procedures for the monitoring process;
- (f) Procedures for the periodic calculation of the reductions of anthropogenic emissions by sources by the proposed CDM project activity, and for leakage effects;
- (g) Documentation of all steps involved in the calculations referred to in paragraph 53 (c) and (f) above.

54. A monitoring plan for a proposed project activity shall be based on a previously approved monitoring methodology or a new methodology, in accordance with paragraphs 37 and 38 above, that:

- (a) Is determined by the designated operational entity as appropriate to the circumstances of the proposed project activity and has been successfully applied elsewhere;
- (b) Reflects good monitoring practice appropriate to the type of project activity.

55. For small-scale CDM project activities meeting the criteria specified in decision -/CP.7 (Article 12) and relevant decisions by the COP/MOP, project participants may use simplified modalities and procedures for small-scale projects.

56. Project participants shall implement the monitoring plan contained in the registered project design document.

57. Revisions, if any, to the monitoring plan to improve its accuracy and/or completeness of information shall be justified by project participants and shall be submitted for validation to a designated operational entity.

58. The implementation of the registered monitoring plan and its revisions, as applicable, shall be a condition for verification, certification and the issuance of CERs.

59. Subsequent to the monitoring and reporting of reductions in anthropogenic emissions, CERs resulting from a CDM project activity during a specified time period shall be calculated, applying the registered methodology, by subtracting the actual anthropogenic emissions by sources from baseline emissions and adjusting for leakage.

60. The project participants shall provide to the designated operational entity, contracted by the project participants to perform the verification, a monitoring report in accordance with the registered monitoring plan set out in paragraph 53 above for the purpose of verification and certification.

Annex B

Indicative Table of Content for an MVP

TABLES AND FIGURES

ACRONYMS AND ABBREVIATIONS

UNITS OF MEASURE

STANDARD CONVERSION FACTORS AND CONSTANTS

- 1 THE MONITORING AND VERIFICATION PROTOCOL**
 - 1.1 PURPOSE OF THE MVP
 - 1.2 USE OF THE MVP BY THE OPERATOR
 - 1.3 STRUCTURE OF THE MVP
 - 1.4 BASELINE AND PROJECT ELEMENTS

- 2 CONCEPTS AND PRINCIPLE ASSUMPTIONS**
 - 2.1 REPLACING FOSSIL FUELS
 - 2.2 GEOGRAPHIC AND SYSTEM BOUNDARIES FOR THE MVP
 - 2.3 TIME BOUNDARY AND BASELINE REVIEW PROTOCOL
 - 2.4 DEVELOPMENT BOUNDARY AND SERVICE EQUIVALENCE
 - 2.5 ESTIMATING BASELINE GENERATION OF ELECTRICITY
 - 2.5.1 Projections Based on Historic Data
 - 2.5.2 Estimates Based on Observed Consumption
 - 2.6 CALCULATING EMISSION REDUCTION
 - 2.7 WHY IS THE MVP CONSERVATIVE?

- 3 OPERATIONAL AND MONITORING OBLIGATIONS**
 - 3.1 OPERATIONAL OBLIGATIONS
 - 3.2 DATA REQUIREMENTS AND PROJECT DATABASE

- 4 THE PROJECT WORKBOOK**
 - 4.1 "PROJECT NAME" WORKBOOK
 - 4.2 WORKSHEET
 - 4.3.1 Dating the Workbook and General Project Information
 - 4.3.2 New project performance data
 - 4.3.3 Leakage
 - 4.3.4 Emission reductions from
 - 4.3.7 Total Monthly GHG Emissions Reductions
 - 4.4 SUMMARY – MONTHLY REDUCTIONS

- 5 SUSTAINABLE DEVELOPMENT MVP**
 - 5.1 MONITORING SUSTAINABLE DEVELOPMENT
 - 5.2 SOCIO-ECONOMIC IMPACTS AND PERFORMANCE INDICATORS
 - 5.3 ENVIRONMENTAL IMPACTS AND PERFORMANCE INDICATORS
 - 5.4 MONITORING, RECORDING AND REPORTING

- 6 MANAGEMENT AND OPERATIONAL SYSTEMS MVP**
 - 6.1 ALLOCATION OF PROJECT MANAGEMENT RESPONSIBILITIES
 - 6.2 MANAGEMENT AND OPERATIONAL SYSTEMS

- 7 AUDITING AND VERIFICATION PROCEDURES**
 - 7.1 AUDIT AND VERIFICATION OBJECTIVES
 - 7.2 THE PCF AUDIT AND VERIFICATION REGIME
 - 7.3 AUDITING CRITERIA AND NEEDS
 - 7.4 AUDIT AND VERIFICATION PROCESS
 - 7.5 ROLES AND RESPONSIBILITIES