

CDM PRE-SCREEN TOOL FOR INDUSTRY IN DEVELOPING COUNTRIES

- **Information Paper on the Clean Development Mechanism (CDM) and Pre-Screen Tool**



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CDM PRE-SCREEN TOOL FOR INDUSTRY IN DEVELOPING COUNTRIES

Introduction to the Clean Development Mechanism
(CDM) and Pre-Screen Tool as part of the
Energy Efficiency Guide for Industry in Asia

www.energyefficiencyasia.org

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The following information sources were used, among others:

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- The World Bank Carbon Finance Unit: Prototype Carbon Fund at <http://carbonfinance.org/Router.cfm?Page=PCF&ItemID=9707&FID=9707>

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1. INTRODUCTION

Many industrial companies in Asia are aware of the Clean Development Mechanism (CDM) under the Kyoto Protocol. This information paper provides an introduction to the Kyoto Protocol and CDM. The paper also explains the excel-based Pre-Screen Tool for companies in developing countries that are interested in participating in the CDM. It helps companies to:

- Determine if their project is eligible for CDM;
- Calculate an initial emission baseline and potential reduction through CDM; and
- Calculate the payback period of costs of the CDM application procedure with CER revenues.

The Kyoto Protocol and CDM at a Glance

Climate change occurs when an increase in greenhouse gas (GHG) emissions causes a rise in the Earth's temperature, thus increasing climate variability. Human activities generate GHG emissions, mostly through energy use by industry, transport and households that is generated from burning of coal, oil and gas. Climate change is with us and visible everywhere: Arctic ice, glaciers and permafrost are disappearing, lethal floods and storms are on the rise, while other areas are faced with unprecedented droughts, forest fires and fatal heat waves.

Recognizing the threat to the global economy and society, governments adopted the United Nations Framework Convention on Climate Change (UNFCCC) in 1992. The Kyoto Protocol, with legally binding emissions targets for developed countries, was adopted at the third Conference of Parties (COP) to the UNFCCC in 1997, and came into force in February 2005.

The UNFCCC refers to two country groups:

- Annex 1 Countries (listed as Annex B Parties in the Kyoto Protocol): 41 industrialized countries, the European Union, and certain countries with economies in transitions that have quantitative emission reduction obligations in the commitment period 2008-2012;
- Non-Annex 1 Countries: developing countries that do not have quantitative emission reduction obligations and can host CDM projects.

Kyoto Protocol – key points

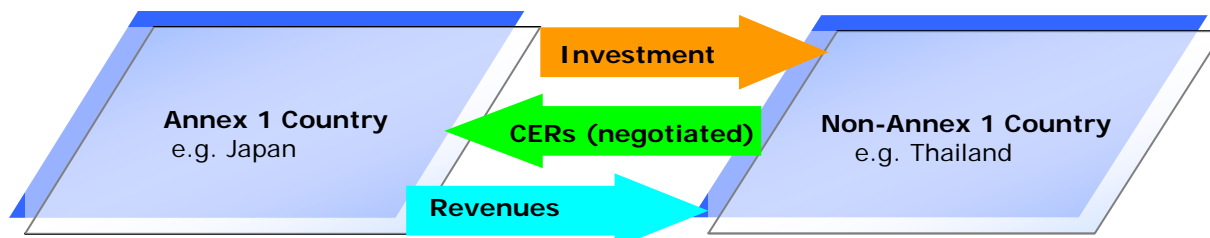
- Sets binding targets on Annex I (developed) countries to the UNFCCC to reduce overall GHG emissions by 5.2% below 1990 levels over the period 2008-2012. Emissions are subject to in-depth review.
- Non-Annex I (developing) countries to the Convention have no binding targets but must report in general terms on their actions.
- Annex I countries can achieve targets through domestic policies and three market mechanisms.
- Non-Annex I countries can participate through the Clean Development Mechanism to facilitate sustainable development.
- Rules for the implementation of the Kyoto Protocol are worked out at annual Conference of Parties (COP) meetings.

Market mechanisms under the Kyoto Protocol

- Emissions Trading (ET): GHG emission reduction permits are bought, sold or exchanged by agreement between Annex I nations.
- Joint Implementation (JI): Annex I investors receive GHG emission credits by investing in a project in another Annex I nation which reduces GHG emissions.
- Clean Development Mechanism (CDM): Annex I investors receive GHG emission credits by investing in a project in a non-Annex I nation which reduces GHG emissions.

How the CDM Works

The CDM, Article 12 of the Protocol, aims to direct private-sector investment into GHG emissions reduction projects in developing countries while promoting sustainable development in these countries. In return, the industrialized countries receive credits in the form of certified emissions reductions (CERs) against their Kyoto targets. Developing countries receive revenues from the CERs.



CDM Participants

Every CDM project involves a standard set of participants, each with a specific role.

Project developer / operator

The following types of organizations can develop and operate CDM projects: governmental bodies/departments, municipalities, foundations, financial institutions, private sector companies, and NGOs.

CDM investors / CER purchasers

An investor is an entity that purchases Certified Emission Reductions (CERs) from a CDM project. The investor is usually from an Annex I country and can be a corporation, a government body or non-governmental organization.

Host government and Designated National Authority (DNA)

In order to participate in the CDM, a country needs to be a Party (signed and ratified) to the Kyoto Protocol. CDM host countries also have to specify a domestic institutional body - a 'designated national authority' or DNA - for approving CDM projects and ensuring that projects conform to national sustainable development criteria.

Designated Operational Entities (DOE)

DOEs are domestic or international legal entities that have been accredited by the CDM Executive Board (www.unfccc.int/cdm). Their responsibilities include:

- Validating CDM activities at the outset of the project;
- Making CDM project design documents (PDDs) publicly available;
- Receiving public comments on the CDM documents and incorporating comments;
- Verifying and certifying CERs during the operation of the project.

The same DOE may carry out both the validation (at project outset) and verification (during project operation) only if a specific request is made to the CDM Executive Board.

The CDM Executive Board (CDM-EB)

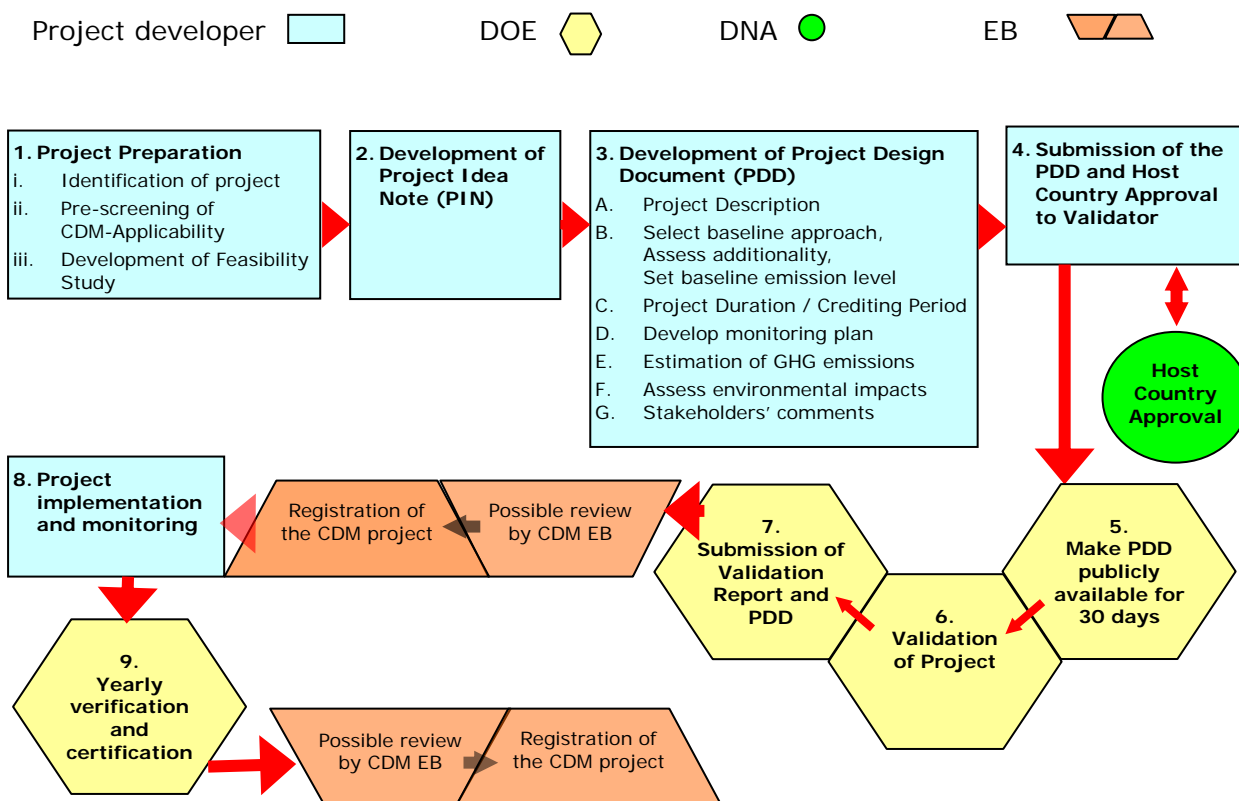
The CDM Executive Board supervises the CDM and reports directly to the Conference of Parties to the UNFCCC / the Meeting of Parties to the Kyoto Protocol (COP/MOP). The Executive Board was elected at COP-7 and has ten members representing both industrialized and developing countries. The CDM EB is responsible, among others, for reviewing project validation and verification reports and issuing verified CERs.

Other stakeholders

The CDM process cycle calls for two rounds of stakeholder comments. Developers must invite local stakeholders who will be affected by a project to comment on the PDD before it is submitted for host country approval. Following project approval, the PDD must be posted for 30 days to allow interested parties at the local, national or international level to comment on it.

2. CDM PROJECT CYCLE

The CDM project cycle consists of nine steps, which are described below. The CDM Pre-Screen Tool described in the next section covers steps 1-ii and 1-iii.



Step 1. Project Preparation

i. Identification of project

As the first step, a project developer identifies a project as a potential CDM project, usually by comparing potential projects against the list of already approved methodologies in the table on the next page.

ii. Pre-screening of CDM-applicability

The developer makes an initial assessment as to whether the project is eligible for the CDM by assessing it against a number of criteria. The CDM Pre-screen Tool can be used to complete this step.

iii. Development of feasibility study

The developer is advised to carry out a technical and economic feasibility study of the project. This is not a requirement for the CDM project application, but it helps to prove the additionality of the project and gives clear information of Return on Investment with and without CDM. Depending on what the feasibility study covers, it can also facilitate the preparation of the Project Idea Note and the Project Design Document.

Step 2. Development of Project Idea Note (PIN)

If the results of the pre-screen and feasibility study are positive, the developer and/or their advisors should develop a Project Idea Note, or PIN. Although a PIN is not required for CDM application, it helps to inform the DNA of the host country about the project and obtain feedback about the country's specific sustainability requirements. The PIN also can be used to get feedback from potential carbon credit buyers in the marketplace about their level of interest, prior to going through the entire CDM process. The PIN will subsequently be

screened by the recipient entities against the CDM rules and their investment criteria.

A PIN consists of approximately five pages providing indicative information on:

- Type and size of the project;
- Location of the project;
- Anticipated total amount of GHG reduction compared to the 'business-as-usual' scenario (which will be explored further in the Project Design Document);
- Suggested crediting life time;
- Suggested CER price in US\$/tCO₂ equivalent reduced;
- Financial structuring (indicating which parties are expected to provide the project's financing); and
- Project's other socio-economic or environmental effects/ benefits.

While complete and extensive information is desirable, information on each item listed in standard PIN-templates may not be available for every project.

Approved Baselines & Monitoring Methodologies as per June 2006

From: Jørgen Fenhann, UNEP Risø Centre 20-06-06

Methodology Category	Title of methodology <i>Please refer on original titles under www.unfccc.com</i>	Number of projects applied
Zero emission renewables	Grid-connected electricity generation for renewable sources (no biomass, no reservoir extension) ACM2 (ver 6)	116
Biomass (not applicable for non-renewable biomass)	Grid-connected electricity from biomass residues ACM6 (ver 3)	41
Waste	Landfill gas project activities ACM1 (ver 3)	51
Animal waste	Change of animal waste management systems AM16 (ver 3)	40
Cement	Increasing the blend in cement production ACM5 (ver 3)	22
Energy efficiency, Industry	Waste gas and/or heat for power generation ACM4 (ver 2)	35
Small-scale CDM project type	Small-scale CDM project activity categories	
Type I: Renewable energy projects <15 MW	C. Thermal energy for the user	44
	D. Renewable electricity generation for a grid	252
Type II: Energy efficiency improvement projects <15 GWh savings	D. Energy efficiency and fuel switching measures for industrial facilities	30
Type III: Other project activities; always <15 ktCO₂ EB24: <25ktCO₂ reduction	D. Methane recovery	55
	E. Avoidance of methane production from biomass decay through controlled combustion	36

Step 3. Development of Project Design Document (PDD)

The project design document, or PDD, is the key documentation in the CDM cycle, and completing it is a complex process. The PDD is mandatory and is submitted to a DOE for validation, and subsequently to the CDM Executive Board for registration before CERs are issued. The PDD can also be a sales tool for potential investors. The PDD consists of seven parts A to G, plus four appendices described below.

A. General description of the project

The first part of the PDD is a description of the project. At the very minimum the following project information is required (some information can be taken from the PIN):

- Title of the project activity;
- Purpose of the project;
- List of project participants;
- Technical description of the project, including location, category, technical performance information, description of opportunities for technology transfer, and explanation of how the reduction in GHG emissions is to be achieved; and
- Justification that public funding, if used, is not being diverted from other uses.

Additional recommended information:

- Project background;
- Problems and barriers being addressed by the project;
- Project planning (timetable);
- Description of the key issues and stages in project development (milestones); and
- Any other information deemed relevant within reason.

B. Setting the baseline

The emission baseline serves to estimate the current amount of GHG emissions and future emissions that would occur with and without the project. It should be based on credibly and conservative assumptions regarding future activity and performance.

The most significant step in establishing an emission baseline is selecting the baseline approach. The following three baseline approaches exist for CDM projects:

- Existing, GHG emissions, actual or historical as applicable; or
- GHG emissions from a technology that represents an economically attractive course of action, taking into account the investment barriers; or
- The average emissions of similar activities undertaken in the previous five years, in similar social, economic, environmental and technological circumstances, and with a performance that ranks within the top 20 percent of their category.

The selected baseline approach is used to develop a baseline methodology for the specific project. It is recommended to use the list of approved baseline and monitoring methodologies as a starting point (www.unfccc.int/cdm). If the developer decides to develop a new methodology that is not included in the list, it must be submitted for approval to the CDM Executive Board.

The project boundary has to be defined in order to determine which GHG emissions need to be estimated and calculated for establishing the emission baseline and project emissions. The project boundary should include GHG emissions that are significant, detectable and controllable, and accountable external used energy sources.

A CDM project is considered eligible if the measures to achieve the GHG reduction are 'additional' to what the company would do under normal or 'business-as-usual' circumstances. Additionality of emission reduction is proven if the emissions under the CDM 'project scenario' are lower than under the 'baseline scenario' without the CDM project.

What is 'business-as-usual'?

- Application of technologies required to comply with the regulations of the host country for pollution emissions, efficiency, etc.
- The project follows the host country's policies
- The technology corresponds to state-of-the-art technology in the host country
- The project is economical

Financial additionality. The PDD needs to confirm if the CDM project received or will receive funding through official development assistance (ODA), for example, the Global Environmental Facility (GEF) and/or through financial means from Annex 1 countries dedicated to UNFCCC obligations. Projects that receive such financing may not be approved for the CDM.

C. Duration of the project / Crediting period

Under CDM two different crediting periods exist:

- 7 years with the possibility of two extensions (baseline must be renewed each time) to a maximum of 21 years; or
- One time 10 years without possibility of extension.

The crediting period should be chosen based on the life cycle of the project and/or the stability of emission reductions in time.

D. Setting of the monitoring plan

A monitoring plan outlines how data will be collected once the project is operational and has to be submitted to the DOE for validation. The project developer is responsible for implementing the monitoring plan and sending the results to the DOE for future verification of CERs.

Information required in the monitoring plan:

- Definition of the boundaries of what will be monitored;
- The means by which relevant data will be collected and archived (monitored data should be kept for two years after the end of the last issuance of CERs);
- Frequency/duration of measurement and data collection;
- How future leakage may be assessed and estimated;
- Procedures to ensure quality control of the monitoring process;
- How data on non-GHG environmental impacts will be collected and archived; and
- A justification of the choice of monitoring methodology.

Additional recommended information:

- Specification of verification activities;
- Method of measurements and calibration methods;
- Explanation on how to deal with missing data;
- Backup system for data collection;
- Who is responsible for data collection;
- Who is responsible for data archiving;
- Who is ultimately responsible for the overall monitoring process.

E. Estimation of greenhouse gas reductions

Core of the CDM project is the estimation of effectively reduced emissions compared to the baseline scenario. The net emission reduction will need to be certified.

F. Environmental impacts (and sustainable development)

Environmental impact assessment (EIA)

The PDD should include an assessment of the environmental impacts of the project or refer on elaborated EIA, if required by the host country. This includes an assessment of non-GHG related impacts. Significant negative environmental impacts can disqualify the project from participating in the CDM, particularly if local or international stakeholders raise serious objections. An example is a large scale hydropower project with significant flooding and dislocations. Any mitigation efforts on impacts should be clearly stated in the PDD for consideration by the DOE and third party observers.

The areas to be covered include:

- Biodiversity;
- Local air and water quality;
- Water resource availability;
- Soil contamination and erosion;
- Noise level;
- Use of natural resources;
- Chemical usage and disposal;
- Landscape pollution; and
- Overall process efficiency and waste management.

Sustainable development

The CDM has been developed specifically to support the sustainable development in the host countries, covering three areas: economy, ecology and social. Host countries that ratified the Kyoto Protocol developed criteria to assure sustainable development through CDM projects. The following list can be used as a reference for self-assessments, although a comprehensive assessment against specific indicators of the host country is also required.

Criteria	Example of indicators
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Economy	<ul style="list-style-type: none"> • Generation of income in disadvantaged regions • Higher return on capital • Creation of employment • Application of innovative, locally adapted technology
Ecology	<ul style="list-style-type: none"> • Reduction of fossil fuel consumption • Reduction of air pollution • Improvement of local potable water quality/quantity • Contribution to the sustainable use national natural resources (considering soil, land use, waste, erosion, biodiversity, excessive use of biomass)
Social	<ul style="list-style-type: none"> • Public participation and stakeholder consultation • Improved availability of essential (public) services • Increased proportion of disadvantaged people on financial returns of the project

G. Stakeholder comments

A final requirement of the PDD is inviting local stakeholders to comment on it, and is different from the request for comments from international stakeholders by the DOE during the project validation phase. Local stakeholders include individuals, communities, or other groups, such as NGOs, who may be affected by the project. Local stakeholder participation is critical to the transparency of the CDM process.

Project developers must:

- Describe the process for obtaining comments from local stakeholders, for example through public meetings;
- Provide a summary of the comments received; and
- Prepare a report, demonstrating how relevant concerns were addressed. This report has to be submitted for validation by the DOE.

A standard template for submitting contacts and results of the stakeholder sessions is included in the PDD template - Annex 1.

Annexes

- Annex 1: Contact information on participants in the project
- Annex 2: Information regarding Public Funding
- Annex 2: Baseline information
- Annex 3: Monitoring plan

Step 4. Submission of PDD and Host Country Approval to Validator (Validation-DOE)

The completed PDD along with the required reports has to be submitted to the DNA in the host country for approval. Host country approval of CDM projects is essential to ensure that governments retain sovereignty over their natural resources and their ability to mitigate emissions. The DNA's responsibility is to review and approve the proposed project under CDM and to confirm whether the project meets the host country's sustainable development criteria. The PDD and host country approval documents are submitted to an accredited DOE for review and validation.

Steps 5 – 7. Public comments, validation, review and registration of the CDM project

Tasks of Validation DOE

The DOE first carries out a consultation process, which includes:

- Making the PDD publicly available for comments by parties, stakeholders and UNFCCC accredited observers;
- Allowing 30 days, from the date from which the PDD is made publicly available, for receipt of comments;
- Preparing a report with verbal and written comments and that explains how the comments received have been accounted for.

Subsequently, the DOE undertakes a validation process of the CDM project. This involves evaluating the PDD and associated documents against the requirements for CDM to confirm that all the information and assumptions made are accurate and reasonable. Validation occurs at the outset of a project and is distinct from verification, which occurs during the operation of the project.

Finally, the DOE submits the PDD, host country approval, and validation report to the CDM EB for registration of the project. It is recommended that the project developer requests the DOE for a copy or confirmation of the request for registration.

Tasks of CDM Executive Board (CDM EB)

Registration of the project with the CDM Executive Board is the act of formal acceptance of the validated project. The registration of the project with the Executive Board will be final after a maximum of eight weeks after submission, unless the CDM EB decides to request for a review.

Step 8. Project Implementation and Monitoring

Once the project has been registered, it can be implemented. However, since CERs can accrue from the point of validation, certain projects are implemented prior to registration. As soon as the project is implemented, the project developer needs to monitor the project's performance according to the procedures laid out in the validated monitoring plan of the PDD. Monitoring continues for the entire duration of the selected crediting period (7 or 10 years). At the very minimum, technical project performance has to be monitored, including the project output and the related GHG emissions, environmental impacts and leakage effects. The project developer prepares a monitoring report for submission to the DOE for verification and certification.

Leakages are indirect emissions increases or reductions, outside the defined project boundaries, such as changed consumer behavior or reduced transport.

Step 9. Yearly Verification and certification (Verification DOE)

Tasks of Verification DOE

The project developer is responsible for contracting an accredited DOE to carry out the verification process on an annual basis. Verification is the periodic review and ex-post determination of the monitored GHG emission reductions that have occurred as a result of the CDM project. The DOE verifies that the data collected by the developer are accurate and complete and have been collected in accordance with the monitoring plan.

Verified GHG emission reductions from the CDM project form the basis for CERs. CERs are based on actual reductions during the specific time period for which the monitoring results are provided, which is usually one year. CERs can only be issued after verification of the monitored data.

Following verification, the DOE:

- Prepares a verification report;
- Prepares a certification request to the CDM EB to issue the amount of emission reductions that have been verified by the DOE as CERs;
- Submits the monitoring report, verification report and certification request to the CDM EB; and
- Makes both the monitoring report and the verification report publicly available.

Tasks of CDM Executive Board (CDM EB)

The CDM EB approves the issuance of CERs on an annual basis. Subsequently, the CDM registry administrator of the EB forwards the CERs into the appropriate accounts. This includes, if applicable:

- The account for the share of proceeds, for administrative expenses and forwarding the remaining CERs to the project developer; and
- The adaptation fund, where two per cent of the CERs proceeds are deposited.

3. CDM PRE-SCREEN TOOL

A simple excel-based tool was developed to assist companies in determining whether they can and should participate in the CDM. The tool can be applied during step 1 of the CDM cycle: project preparation. However, the findings will also support the development of a PIN and the development of the PDD. The tool consists of three parts:

- Part I - CDM Eligibility: eleven questions assist a company to determine if a project is in principle eligible for CDM;
- Part II - GHG Calculation: allows a company to calculate an initial emission baseline and potential reductions through CDM to determine the potential number of certified emission reductions (CERs); and
- Part III – Financial Feasibility: calculates if the project is feasible as a CDM project by providing a quick calculation of the payback period of transaction and additional costs associated with the CDM application procedure.

Part I: CDM Eligibility

In order to evaluate the potential for applying for CDM, every project plan should be assessed against certain rules or criteria under the CDM. These criteria can be summarized in the eleven questions below.

1. Has the host country ratified the Kyoto Protocol?

Ratification of the Kyoto Protocol by the host country is the only binding condition of entry. Whether a host country has ratified the Kyoto Protocol can be checked at:

http://unfccc.int/parties_and_observers/parties/non_annex_i/items/2833.php

2. Has the host country assigned a Designated National Authority (DNA)?

A DNA is needed to receive the national approval for CDM projects. Addresses and contact persons of the DNAs worldwide can be found under <http://cdm.unfccc.int/DNA>.

3. Will the project reduce one or more of the following emission types?

Only specified greenhouse gases with a certain Global Warming Potential (GWP expressed in CO₂-equivalents) can be considered for CDM project:

- Carbon dioxide (CO₂)
- Methane (CH₄)
- Nitrous oxide (N₂O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulphur hexafluoride (SF₆)

4. Does the project meet sustainable development requirements of the host country?

Each host country has a set of sustainable development criteria, covering economy, ecology and social. The DNA reviews if CDM projects meet these criteria prior to approval.

5. Will the emission reduction of the project be additional?

Emission reductions from the CDM project must be additional to what would have happened under normal or 'business-as-usual' conditions. Additionality is proven if the emissions under the CDM 'project scenario' are lower than under the 'baseline scenario' without the CDM project.

6. Is the project not financed through official development assistance (ODA)?

Money for CDM projects must not divert ODA. If the project will be financed by sources of public funding, it must be confirmed that the sources of public funding are not counted towards the official development assistance and GEF financial obligations of the Annex I countries. Examples include funding through the Asia Development Bank or World Bank.

7. Does the project fall into one of the following categories?

The following are the general categories under which CDM project applications are allowed:

Project Type	Examples
End-use energy efficiency	High efficiency lighting, vehicle efficiency
Supply-side energy efficiency	Improving electricity transmission and distribution systems or updating district heating networks
Renewable energy Fuel switching	Wind, solar, biomass/biogas, small hydropower, other renewables e.g. gas conversion; biofuels replacing fossil fuels
Methane reduction	Landfill gas capture, biogas capture in agro-industrial wastewater treatment
Industrial processes	Many possibilities, such as reducing CO ₂ from cement production, reduction of HFCs, PFCs, SF ₆
Agriculture	Reduction of methane (CH ₄) and N ₂ O
Sequestration and sinks	Only afforestation and reforestation allowed

8. Small-scale project eligibility: Does my project fall into any of the Type 1 to 3 of small-scale projects?

Certain projects may be eligible for CDM as 'small-scale projects' based on rules stipulated by the CDM EB. These rules relate to the technology, capacity, and emission reduction and/or GHG absorption. There exist three small-scale project types:

Small-Scale Project Types	Project limits
Type I	Renewable Energy Projects with a capacity of up to 15 MW to be interpreted as a maximum capacity of 15 MW _{el} based on the specification of the manufacturer
Type II	Energy Efficiency Projects which reduce the energy consumption on the demand and supply side by up to 15 GWh/year (54 TJ) in comparison to the 'business-as-usual' scenario
Type III	Other projects which reduce emissions and are emitting less than 15 kt CO ₂ /year

These project types are treated exclusively, which means that if a project is a renewable energy project type as well as an energy efficiency project type, the project must be below the limits of both project types.

9. Does the potential technology meet the following conditions?

- A proven technology, although not necessarily applied in the host country;
- An established and commercially feasible technology, although not necessarily in the host country; and
- A replicable technology and/or one that can effectively be transferred to the host country.

10. Does the project result in significant negative impacts on the environment?

As a general rule, an environmental impact assessment (EIA) is required for projects that potentially have significant negative impacts on the environment, even if the host country's regulations are not requiring an EIA. Unless significant impacts are mitigated the project is unlikely to get approval under the CDM. If an EIA is required then this also has implications for the financial investment a company must make.

11. Does the project have an acceptable payback period?

The project's financial feasibility is determined by the costs (transaction costs, additional costs, project implementation costs) and revenues (CERs and other savings). Part III of the tool assists in determining the payback period.

Part II: GHG Calculation

The GHG calculation tool can be used to calculate an indicative emission baseline and expected emission reductions through the CDM project. If there are multiple potential CDM projects, then emission reductions must be calculated for each project separately.

The baseline and emission reductions are calculated for four emission sources:

1. CO₂ emission and reduction through fuel combustion (for production and onsite electricity generation, but excluding fuel as feed for e.g. ammonia production);
2. CO₂ emission and reduction through fuel for transport;
3. CO₂ emission and reduction through electricity consumption;
4. Process related reduction of GHGs that are covered by the Kyoto Protocol and thus eligible for CDM.

Emission reductions are calculated on an annual basis and for the total crediting period (one times 10 years or three times 7 years). These form the basis for estimating revenues through Certified Emission Reductions, which are calculated in Part III of the tool.

Part III: Financial Feasibility

The results of the preliminary financial feasibility analysis (step 1-iii of the CDM project cycle) are of major influence on the company's decision whether to proceed with the CDM application process or not. While CERs from a CDM project may result in significant revenues, companies should not underestimate the required investments, some of which need to be made before CERs are issued.

Financial feasibility analysis

A feasibility analysis should identify the following:

Transaction costs under the CDM relate to the:

- Project preparation and review, establishing baseline and monitoring plan (step 1-3);
- Validation process (step 4-7);
- Initial verification and start-up and periodic verification and certification (step 8-9).

Additional costs under the CDM, which may include:

- Internal personal costs for assisting with and supervising the work of consulting companies;
- Operation and maintenance (O&M) costs of the monitoring system
- Purchase of monitoring equipment and system.

CER revenue, which depends on:

- The (assumed) price per CER, e.g. US\$ 5;
- The crediting period: one time 10 years or up to three times 7 years, the latter with approval for each sub-period.

Project costs and revenues:

- Investment costs to implement the project;
- Ongoing operational costs;
- Revenue from the project, e.g. through reduced electricity costs.

Part III of the tool provides a simple way to assess if participating in the CDM is financially feasible by determining the payback period of costs under the CDM as follows:

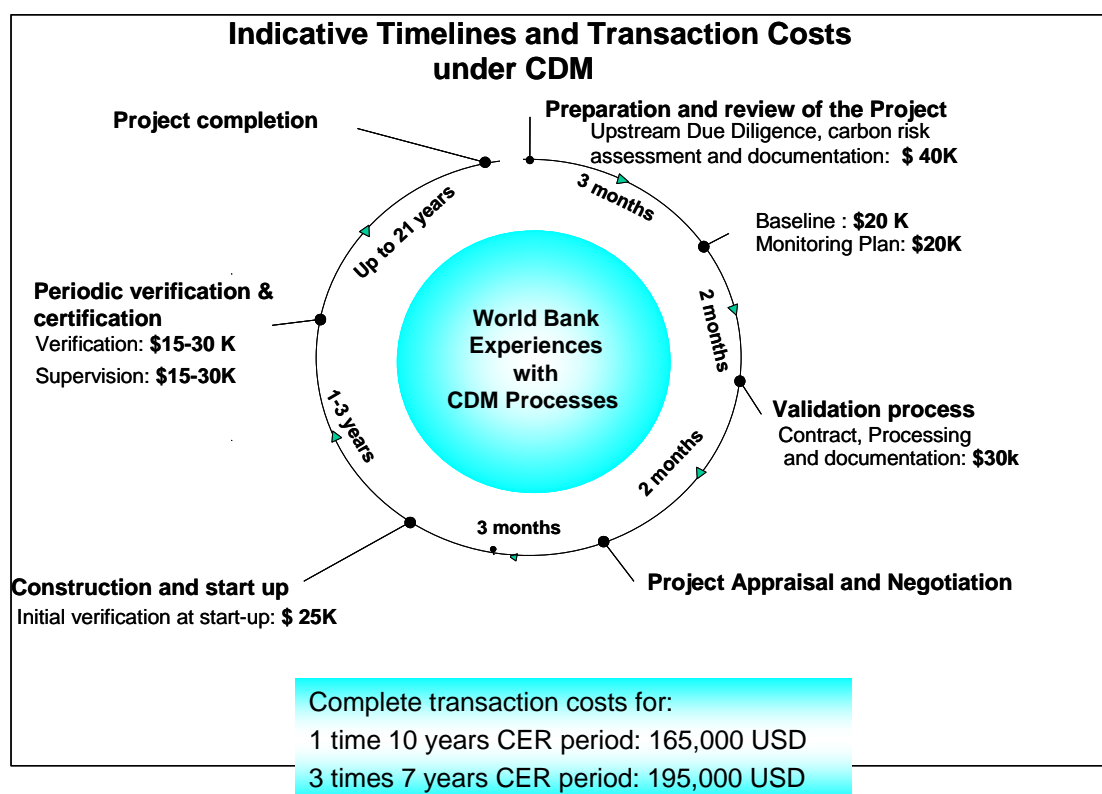
$$\text{Payback period} = \frac{\text{Transaction costs} + \text{Additional costs}}{\text{Assumed CER price} \times \text{Tons CO}_2\text{-equivalent reduced per year}}$$

Indicative transaction costs and timeline

The following graph indicates the ideal timeline and estimated transaction costs of large-scale CDM projects (i.e. not valid for small-scale projects). The table on the next page provides minimum, average and maximum transaction costs under CDM. These figures are based on experience and may differ according to project type, country and project participants. The type of transaction costs may also vary. Transaction costs will be different for the two different crediting periods.

Indicative Transaction Costs for CDM Projects (US\$)

Transaction cost item	Minimum	Average	Maximum
Project preparation and review	36,000	40,000	54,000
Baseline	18,000	20,000	28,000
Monitoring plan	16,000	20,000	24,000
Validation process	12,000	30,000	35,000
Initial verification at start-up	11,000	25,000	32,000
Periodic verification and certification	30,000	45,000	60,000
Total	123,000	183,000	233,000



Costs and benefits example

The following example is based on a real implemented project in South East Asia. It depicts a comprehensive overview of the potential costs and benefits of a CDM project. However, costs and benefits differ widely depending on local cost levels and the type of project.

It is recommended to consider all possible costs as part of the preliminary feasibility analysis of the project and use conservative estimates to avoid unexpected financial obligations in future. For example, the value of CERs per tCO_{2eq} was ranging from 6 – 10 US\$ during 2006. However, the project has been calculated on the more likely average of 7 US\$ per tCO_{2eq}.

It is furthermore recommended to seek help from experienced technical specialists and consultants in the project preparation phase if the company is unable to obtain a good overview of costs and benefits. This reduces the risk that the company invests in the CDM application process but the project will not be approved. In addition, not the initial costs, but the quality of the overall project implementation and its documents are decisive for the success of the project and its revenues.

Cost/Revenue Overview of an Example CDM Project (South East Asia)

Item No.	Cost position	External cost (US \$)	Internal cost (US \$)
1	Development of project idea and pre-screening	5,000	2,500
2	Estimate of environmental and social impacts (part of feasibility study)	Incl. in item 1	-
3	Elaboration of the Project Idea Note (PIN)	2,500	1,000
4	Negotiations and settlement of contract with partner company/CER broker/CER buyer		2,000
5	Elaboration of technical and economical feasibility study	25,000	8,000
6	Environmental and Social Impact Assessment (if required)	-	-
7	Elaboration of the Project Design Document	35,000	10,000
8	Detail design of the planned technology (considering consultant fee for bidding procedure, contracting with EPC contractor, design review and construction supervision – if applicable)	150,000	
9	Comprehensive Monitoring Plan	Incl. in item 7	1,000
10	Stakeholder consultation process	3,500	700
11	Validation Process	30,000	500
12	Fees for document processing DNA host country and DNA Annex 1 country	600	
13	Processing fee at UNFCCC		
14	Detailed design of monitoring system	2,000	
15	Purchase and construction of the planned technology (including support through consultancy services – see item 8)	890,000	
16	Operation and Maintenance		130,000
17	Operation personnel		104,000
18	Purchase and installation of monitoring system	120,000	5,000
19	Initial verification	20,000	1,000
20	Improvement of monitoring operation and management	5,000	500
21	Regular internal monitoring		60,000
22	Periodic verification and certification	45,000	2,500
23	Investment cost (interests @ 8 %/a)	50,000	
24	Total cost	1,383,600	328,700
25	Annual revenue from project (savings, sales of electricity and byproducts)		190,000
26	Annual revenue from CER sales (@ 7 US \$ / tCO _{2eq})		210,000
27	Simplified Payback Period (with CDM)		4.28 years
28	Simplified Payback Period (without CDM)		9.01 years