CHAPTER 3:

Developing the Project Design Document

The project design document, or PDD, is the central component in the CDM project cycle, and its preparation is a complex task. This chapter details the information, analysis and procedures required in creating a comprehensive project design document including:

PROJECT DESCRIPTION

BASELINES METHODOLOGY AND ASSESSMENT OF ADDITIONALITY

- Choosing a baseline approach
- Adopting or creating a baseline methodology
- Defining project boundaries
- Establishing additionality within the boundaries
- Developing an emissions baseline
- Projecting emissions
- Accounting for leakage
- Calculating net emissions reductions

CREDITING PERIOD

MONITORING PLAN

ASSESSING ENVIRONMENTAL IMPACTS

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Box 3.1: Project description for the Gemina Project
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CHAPTER 3: DEVELOPING THE PROJECT DESIGN DOCUMENT

Success in steering a project through the CDM process hinges largely on developing a clear, accurate and comprehensive project design document, or PDD. This is the key document that the host country, investors, stakeholders (local, national and international) and designated operational entities will use to evaluate the project's potential and judge its merit. Indeed, no project can earn CERs without the development, validation and Executive Board acceptance of a project design document. The project design document needs to clearly demonstrate that the project will create additional greenhouse gas emissions beyond what would have occurred in its absence, and that the project will support the host country's sustainable development path.

All aspects of the project design document are important. However, the most technically challenging aspects have to do with establishing a baseline and assessing the project's additionality (see also annex 3). Because completion of the project design document is a substantial – and expensive – undertaking, project developers are recommended to stay in close touch with appropriate authorities to make sure the project supports the host country's sustainable development criteria and that the document meets their standards. Please note that simplified project documentation is required for small-scale projects, as defined in the Marrakech Accords. See chapter 4 for more details on the project design document for small-scale projects.

PROJECT DESCRIPTION

The first part of the project design document is a description of the project. While some of this information can be taken from the project idea note, the PDD requires some additional information as well. At the very minimum the following project information is required:

- 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 greenhouse gas 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 – lengthy documents generally do not receive extra attention.

Much of this required information can be taken directly from a business plan or project proposal. Information marked as proprietary or confidential does not have to be disclosed, unless this is required under the national law of the host country. The following information cannot be considered as proprietary or confidential:

- The determination of whether the emission reductions in anthropogenic emissions are additional;
- The description of the baseline methodology and its application; and
- Information supporting an environmental impact assessment requirements.

BASELINES METHODOLOGY AND ASSESSMENT OF ADDITIONALITY

According to Article 12.5c of the Kyoto Protocol, CDM activities must generate emission reductions additional to any that would have occurred in the absence of the project activity. The purpose of the baseline analysis is to provide a transparent picture of what would have happened without the proposed project. This is commonly referred to as the 'business-as-usual' scenario. The analysis also provides information on the estimated project emissions.

An estimate of greenhouse gas emissions, both in the project situation and in the absence of the project, is the

BOX 3.1: DESCRIPTION OF THE GEMINA PROJECT (PDD EXAMPLE)

Title of the project activity: Gemina Rice Husk Project in Nicaragua

List of project participants:

The Gemina Rice Husk Project is being developed by a joint company, Gemina Generator s. created by Grupo Gemina, a Nicaraguan private company, and Bronzeoak Corporation, an independent group, which develops, funds and implements commercial, energy and environmental projects. Gemina operates the Chinandega rice and flourmill complex and is the leading company in that business in Nicaragua. So far, Gemina has bought electricity from the local power distribution company.

Purpose of the project:

The maximum electrical on-site demand in 2000 was 1034 kW, which is expected to increase to 1200 kW by 2002. The supply of power is somewhat unreliable and the price is highly dependent on the world price of oil. Grupo Gemina is interested in building a biomass power plant to cover on-site electricity demand and to sell the excess electricity.

Technical description of the project:

The plant will be located in Chinandega, in the same compound as the rice mill and at less than 1 km from an ENTRESA substation. The Rice Husk Power plant will produce 100 per cent of the electrical power used at the mill and would consume 80 per cent of the expected husk stream. The proposed power plant will have a capacity of 1.432 MW. The technology proposed is based on the conventional boiler/steam turbine cycle. The husks are fed to the combustor and burned to produce heat. The steam generated is passed to a steam turbine, which drives an electrical generator. This basic technology has been in use commercially for more than 100 years. It has been employed with a wide range of biomass fuels including rice husks. The subproject's construction time is approximately 12 months and completion is expected by summer 2003. Introduction and demonstration of modern, environmentally friendly power production techniques are an explicit objective of the project. The project will demonstrate that emissions reductions from renewable energy can earn additional income and the introduction of CDM know-how is expected to raise environmental awareness and generate interest in low carbon energy technologies. The Gemina project is the first rice husk energy project introduced successfully into Nicaragua. Similar opportunities including CO_2 reductions are available in the region.

Affirmation of non-diversion of ODA:

Public resources are not used to fund this project. No affirmation required.

foundation for determining the emissions reductions that can be claimed under the CDM. The baseline represents a scenario based on certain assumptions, and is therefore a subjective estimation. To maintain the project's environmental integrity, a conservative approach should be taken. The selections, assumptions and calculations made should be presented in a clear and transparent manner and the choices justified.

The steps to developing a credible and transparent baseline for a CDM project are:

- Choosing a baseline approach;
- Adopting – or creating – a baseline methodology;
- Defining the project boundaries;
- Forecasting what emissions would occur under the 'business as usual' scenario;
- Assessing future emissions from the project;
- Assessing leakage, and
- Calculating projected emission reductions to be claimed upon future verification.

The following sections provide guidance on how to develop an emission baseline, calculate project emissions and net emission reductions – potentially claimable as CERs – that are the direct result of the project. See annex 3 for more detailed information on baseline methodologies.

Choosing a baseline approach

The most significant step in setting an emission baseline is selecting the baseline approach, which provides the basis for a baseline methodology. When presenting the baseline formula calculations, the emissions should

be transparently presented. In the Marrakech Accords three different baseline approaches have been identified for CDM projects. These include:

- Use existing, actual or historical greenhouse gas emissions, as applicable; or
- Use greenhouse gas 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 whose performance ranks among the top 20 percent of their category.

Adopting or creating a baseline methodology

A baseline methodology is an application of any of the above approaches and can be identified on a case-by-case basis. Before developing the emission baseline it is recommended to check with the CDM Executive Board to see what baseline methodologies have been accepted. This information can be taken from the UNFCCC website, www. unfccc.int/cdm , which includes a reference list of approved methodologies. A project developer is free to develop a new methodology not included in the list. However, a new methodology has to be approved by the CDM Executive Board before any project developer can use it.

Defining the project boundary

In order to determine which greenhouse gas emissions need to be estimated and calculated for establishing the emission baseline and project emissions, the project boundary has to be defined. A project boundary comprises all anthropogenic emissions by sources of greenhouse gases under the control of the project participants that are significant and reasonable attributable to the CDM project activity. The activities and greenhouse gas emissions that are included in the project boundary reflect:

- Activities that will be included in the emission baseline and baseline calculations; and
- Activities and greenhouse gas emissions that will be monitored once the project is operational.

The procedures to define the project boundary for the calculation of the baseline emissions and for the project emissions should be consistent and similar, whenever possible. However, in some cases they may differ. For example, a waste treatment facility developed to digest waste into methane and capture energy would have as its original baseline boundary the existing waste management system, while the project scenario would need to expand its boundary to include the new equipment (digester, piping and combustion systems), which have their own emission signatures. The developer should offer sufficiently robust documentation to justify the choice of alternative boundaries.

All *significant* greenhouse gas emission reductions from the proposed CDM activity that are *reasonably attributable* to the project developer/operator and to the project activity should be included in the project boundary. The project developer should only assess and describe the impacts of the project activity on greenhouse gas emissions under his or her control. *A useful proxy for estimating the 'under control' criteria is whether the project developer financially controls the activity.* For example, while a project operator will likely financially control the generation of electricity, the operator will not control transport and distribution losses or the transport of fuels to the project. Any emissions related to these activities can thus be considered outside the project developer's control, unless the project activity specifically causes a change in activity levels that affects emissions (see also annex 3).

Setting a project boundary will take into account:

- *Geographic factors* should respond to the questions as to over what activities and in which geographical area should a project be compared? For example, against all similar activities in a country, in a specific region, at one specific location, across national borders, or at another level?
- *Activity level* pertains to the activities whose emissions should be included in the baseline. For example, should emissions related to the construction of a facility be included or not, should upstream and downstream emissions be included?

To summarize, emissions from activities that are directly related to the project output and site location should be included within the project boundary. Emissions related to activities not directly related to the project can be excluded. Exceptions can be made when it can be clearly demonstrated that the impacts of a direct activity are very small, or negligible, compared to the total. These may be excluded from the project

boundary. Conversely, when emissions from indirect or off-site activities are considered significant and within control of the project developer, these emissions should be included in the project boundary. These impacts should be estimated on a case-by-case basis and the decisions must be justified.

It is recommended that the project boundaries should be drawn in the form of a flowchart that clearly shows included and excluded emission sources. The emission sources that are included should be those that are considered to be within the control of the project.

The issue of project boundaries is further illustrated in the examples presented below.

BOX 3.2: EXAMPLES OF PROJECT BOUNDARIES

Greenfield power supply project *(wind turbines)*

For this wind power project to be installed in Morocco, the system boundary has been defined as including direct emissions related to the mix of power that would have been put into service in Morocco in absence of the project. The project boundary for the emission baseline includes:

- All grid-connected facilities within Morrocco and
- All emissions related to on-site fuel combustion for electricity generation, from projects connecting to the grid.

The boundary defined for this project only includes direct on-site emissions related to the fuel consumption required to generate electricity. For a wind project these are zero. To consider a form of leakage (in this case, a very minor one), one might hypothesize about additional emissions from maintenance vehicles servicing the new site, but which are not accounted for in the baseline construct.

The project boundary excludes:

- Direct off-site emissions related to losses from transmission and distribution of electricity to the grid and end user
- Emissions related to off-site activities, such as those related to the construction of the turbines.

Off-grid power supply *(solar home systems)*

For a project installing solar home systems for lighting, only direct on-site emissions related to the use of kerosene for lighting are included in the project boundary. Indirect-off site emissions from the construction of the photovoltaic panels used in the solar systems are excluded from the baseline. Indirect on-site emissions from the continued use of kerosene lamps (in addition to the solar-powered lights) have been identified as a potential source for leakage.

Fuel switch *(Biomass Energy Portfolio)*

The project boundaries of the Biomass Energy Portfolio project in the Czech Republic include both direct and indirect on-site emissions:

- Direct on-site emissions from the combustion of fuels for heat or power generation are included in the project boundary. The net emissions from the combustion of biomass (forestry and agricultural waste) are assumed to be zero, because they are offset by the amount of emissions sequestered during the growth of the biomass.
- Direct off-site emissions related to the electricity used from the grid for driving the boilers and the combined heat and power components are not included because these are negligible (less than 0.5 per cent of the energy generated).
- The baseline takes into account off-site methane emissions that would occur in the absence of the project from the anaerobic process of waste disposal from agricultural and forestry residues. These emissions are substantial compared to the emissions related to the combustion of fossil fuels because the global warming potential of 1 ton of methane emissions is 21 times higher than the GWP of 1 ton of CO2 emissions.
- The indirect off-site emissions related to the transport of fuels are excluded from the project boundary because they are extremely small, difficult to monitor and it is assumed that the emission differential of transporting conventional fuel (as opposed to transporting biomass fuel to the combustion site) to be statistically insignificant.

Energy efficiency *(demand side management)*

The direct on-site emissions from an energy-efficiency project in India result from the reduction in electricity consumption compared to what would otherwise have occurred. The following emissions have been included in the project boundary:

- Emissions related to production of electricity that would otherwise have been used by the end-user (one step upstream).
- Direct off-site emissions related to the reduced losses in transmission and distribution of the heat and power to the grid and end-users.

Establishing additionality within the boundaries

The concept of additionality is critical to CER determination. CDM projects have to "generate emission reductions that are additional to any that would have occurred in the absence of the project activity." Additionality directly refers to whether of the project activity results in a lower volume of greenhouse gas emissions – or greater sequestration of carbon in the case of forest sinks projects – relative to the 'no-project' case. The issue of additionality is particularly important to prevent benefits from the CDM process going to projects that would have happened anyhow or have already been undertaken.

Not all projects that appear to have positive greenhouse gas impacts are additional. For example, renaming an existing hydroelectric plant as a CDM project will not result in additional greenhouse gas mitigation. Projects that are undertaken to meet legal or policy obligations also would have a difficult time demonstrating additionality. Eligibility demands that a project developer clearly demonstrate that the project's practices are 'additional' to what would otherwise have occurred (that is, compared to the 'business-as-usual' or baseline scenario). It is necessary to demonstrate that the project was initiated, at least in part, with the objective of reducing greenhouse gas emissions.

BOX 3.3: BASELINE AND ADDITIONALITY ISSUES FOR THE GEMINA PROJECT (PDD EXAMPLE)

ISSUE	EXPLANATION
EMISSIONS BASELINE	Continuing purchasing electricity from the public grid (Fossil fuel intensive).
BASELINE APPROACH	The approach of using existing, actual and historical emissions is used to calculate the emissions in the situation with and without the Grupo Gemina project.
PLAUSIBLE SCENARIOS	The same approach was selected for the husk disposal analysis. Electricity 1) 100 per cent of the system capacity in condition to operate (It includes renewable, heavy fuel oil and light fuel oil operated plants). 2) 50 per cent of the system hydro-capacity in condition to operate (It includes both heavy and light fuel-operated plants). 3) Sugar mill and hydro-capacity are unavailable.
RELEVANT BASELINE FACTORS	Rice husk disposal 1) Increase of the husk produced to 25,000 t/year. 2) 15,000 t/year of husk as the maximum consumption from the plant. Electricity: ■ Deregulated energy market conditions. ■ Access of small projects to the energy market, ■ No policy to encourage the use of renewable energy Rice husk disposal: 100 per cent of the husk has been historically disposed to open landfills.
GEOGRAPHICAL BOUNDARY	Electricity: Nicaragua electric energy system, Central America energy system. Rice husk disposal: Gemina plant and dump sites around the plant.
PROJECT BOUNDARY	Flour and rice mill. Rice husk storage and transportation.
CREDITING PERIOD	21 years – from 2003 to 2023
LEAKAGE	CO_2 emissions during the construction phase considered irrelevant.
GREENHOUSE GAS COVERAGE	CO_2, NH_4, NO_2

Developing an emissions baseline

Additionality is quantified by measuring the change in greenhouse gas emissions observed when comparing the 'business as usual' case with the emissions under the project (the 'project scenario' case). However, since the non-project emissions cannot be directly observed, the claimed differential – and the CER commodity – is strictly a mathematical algorithm that is subject to challenge and dispute about its underlying assumptions.

The emission baseline serves to;

- Confirm the project's additionality;
- Estimate the amount of greenhouse gas emissions that would occur without the project, and estimate the amount of emissions that will occur with the project.

The development of an emission baseline is based on assumptions regarding future activity and performance – and should be based on the most credible assumptions possible. Some projections can be quite robust, whereas others are more nebulous. The assumptions underpinning the baseline can often be interpreted in different ways and can result in different conclusions among different observers.

In any case, the emission baseline has to be established in a transparent manner with regard to the choice of approaches, assumptions, methodologies, parameters, data sources and other key factors. Emission baselines have to take into account relevant national and sectoral policies and circumstances such as sectoral reform initiatives, local fuel availability, power sector expansion plans and the economic situation in the project sector. All these factors should be addressed when setting the emission baseline and then translated in the calculation of the baseline emissions.

The baselines assumptions and study are validated by an operational entity to ensure that the analysis is undertaken within all the relevant guidelines of the approved methodology. Members of the international CDM community also may comment and raise concerns about the baseline to the Executive Board during the 30-day commenting period.

Projecting project emissions

In order to determine whether a CDM project will make financial sense, its projected future emissions have to be estimated at the outset. Similar to the baseline emissions, project emissions need to be estimated and calculated in a transparent manner for each year during the crediting period. For purposes of the project design document, emissions have to be projected from the project startup to the end of the crediting period.

The development of an emission baseline is based on assumptions regarding future activity and performance – and should be based on the most credible assumptions possible.

In most cases, the project boundary selected for the emission baseline will also apply to measuring greenhouse gas emissions resulting from the project. If the two boundaries are different, an explanation should be provided.

For energy supply projects, direct on-site emissions can be calculated from the estimated project output and the emission factor for the project. The direct off-site emissions are calculated in a similar way.

For demand side management projects, project emissions can be calculated by multiplying the various activity level changes (i.e. reduction in energy used, reduction in transmission and distribution losses, etc.) with the appropriate and defined emission factors for those activities.

Special attention must be given to indirect on-site emissions, which constitute the 'rebound effect'. The rebound effect occurs when lower marginal costs of energy or increased energy capacity stimulate higher energy use. Additional emissions from the rebound effect should be included in the calculation to give the total project emissions.

Accounting for leakage

Leakage refers to indirect and off-site greenhouse gas emission flows that are outside the project boundary and thus not accounted for in the baseline. It can be extremely difficult to identify and/or control leakage. If the quantity or leakage is significant, the project boundary should probably be redrawn to capture it so that the emissions become a part of the baseline calculation. In any case, the project developer should assess,

account for and calculate potential points of leakage, and the same should subsequently be a part of the monitoring plan. Note that potential sources of leakage vary by project type (see also annex 3).

Possible effects from the project activity that can be considered when assessing leakage are:

- *Activity shifting* means that emissions are not permanently avoided, but simply displaced to another area. This has been a particular concern in regards to conservation based forestry projects (currently not applicable under the CDM) that seek to slow or stop logging in a particular zone, but whose net effect may be to push logging activities into more remote areas. In energy projects, these issues are largely covered under outsourcing.
- *Outsourcing* is the purchase or contracting of services or commodities that were previously produced or provided on-site. The greenhouse gas emissions that took place within the project boundary prior to the outsourcing would be classified as leakage, and the emissions from the outsourced activities should be accounted for. For example, if a company simply outsourced its transportation needs to another concern, the emissions associated with the transportation would be considered leakage.

Leakage does not disqualify a project's validity, unless the projected values of emissions under leakage are potentially significant and cancel out a sizeable percentage of the projected greenhouse gas emission reductions from the project. In such a case, as noted above, all attempts should be made to formally incorporate the source of the leakage into the project boundaries (and therefore into the baseline and emission scenarios)

Calculating net emission reductions

The net emission reductions generated by a project is calculated by subtracting the total project emissions from the baseline emissions and adjusting for leakage. Calculations should be made for each year of the crediting period and expressed in tons of CO_2 equivalent. As with the other calculations, all numbers and assumptions must be transparent.

CREDITING PERIOD

The project design document must define the period that the project developer seeks to earn credits. The crediting period is an important determinant of emission reductions that can be generated from and claimed for a CDM project. The crediting period thus has a direct impact on the value of the project.

During the crediting period the defined emission baseline cannot be adjusted or revised. The crediting period will often differ from the project lifetime. The project lifetime is, in general, longer than the period over which carbon credits can be claimed. For the CDM, project developers have two options to determine the crediting period. They are:

- A crediting period for a maximum of seven years, which may be renewed at most two times; or;
- A maximum crediting period of ten years with no option for renewal.

An important consideration in selecting the crediting period for a CDM project is the period over which the emission baseline (against which emission reductions are measured) is fixed. A fixed emission baseline is set and agreed upon when the project is designed (ex-ante). Once validated it cannot be renewed. This issue should be reviewed during project development. Choice of crediting period is a strategic decision that involves consideration of the emissions trajectory of the sector in question.

BOX 3.4: CREDITING PERIOD FOR GEMINA PROJECT IN NICARAGUA (PDD EXAMPLE)

CREDITING PERIOD	Selected the option of seven years with the possibility to renew the defined baseline two times. The project is expected to generate CERs through the whole crediting period of 21 years.

The following box provides more detail about the issues that should be considered when selecting the desired crediting period.

BOX 3:5: EXAMPLE OF A CREDITING PERIOD: WIND PROJECT IN MOROCCO

For the Tangiers and Tarfaya AIJ wind projects in Morocco a project lifetime is estimated to be 25 years, starting in 2004. The baseline has been developed for the period 2003-2024. It is estimated in the baseline study that the project will mitigate 4.5 million tons of CO_2 emissions over twenty years. Applying the rules from the Marrakech Accords for defining the crediting period, this implies that:

- When selecting a crediting period of 10 years, the emission baseline can remain fixed until 2012 and only approximately 2 million tons of CO_2 emission reductions can be claimed as credits in this first ten-year period. The emission reductions that will be generated in the remaining period cannot be generated as CERs.
- When selecting a crediting of seven years with the option to renew it, the baseline remains fixed until 2009.

If this option is selected, the project developer has the possibility of renewing the baseline two times for another seven years each with the opportunity to claim the remaining CO_2 emission reductions. However, the the amount of emission reductions that can be claimed after baseline adjustment are ambiguous, because the baseline against which the emission reductions are calculated as well as the baseline methodology will be reconsidered after the first seven-year period.

MONITORING PLAN

A monitoring plan is a required element of the project design document. The plan outlines how data will be collected from the project once it is operational. Although the monitoring plan is supplied to the designated operational entity for validation (and must be validated as part of the project design document), the project developer is responsible for implementation of the monitoring plan and sending the results to the designated operational entity for future verifications of CER production.

Information required in the monitoring plan:

- The boundaries of what will be monitored are defined;
- 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.);
- The frequency of data collection;
- How future leakage may be assessed and estimated;
- What the control procedures are, and how quality control for the monitoring process is dealt with;
- How the data on non greenhouse gas environmental impacts will be collected and archived; and
- A justification of the choice of monitoring methodology.

Other information that can be helpful:

- Specifications of verification activities that will take place;
- Method of measurements and calibration methods;
- If applicable, explanation on how to deal with missing data;
- Duration of the measurements;
- Who is responsible for collection of the data;
- Who is responsible for archiving the monitoring data;
- Backup system for data collection; and
- Who has the ultimate responsibility for carrying out all stages of monitoring process?

The data collected as specified in the monitoring plan form the basis for verification of emission reductions as a result of the CDM project activity.

The monitoring plan should provide for the collection and archiving of all relevant data necessary for measuring project-specific greenhouse gas emissions within the defined project boundary and over the appropriate crediting period.

The monitoring plan must describe the relevant data characteristics of the project to be measured. The plan may also indicate who is responsible for the measurements, as well as protocols for the collection and reporting of the monitoring activities. The monitoring should be carried out in such a way that the indicators of project performance and emissions can be readily compared with the baseline scenario. From the perspective of keeping future expenditure under control, it is important that the monitoring plan be developed in a manner to making future verification as simple and cost-effective as possible. The verifying designated operational entity closely monitors the data collected under the monitoring plan.

BOX 3.6: MONITORING PLAN FOR GEMINA PROJECT IN NICARAGUA (PDD EXAMPLE)

ISSUE	EXPLANATION
MONITORING	The monitoring plan contains indicators that can be observed and includes monitoring and operational obligations and management responsibilities. Emissions are quantified for both components in the baseline – the electricity generation and rice husk disposal, and summed up to give the emission reductions for the project.
DATA TYPE	■ Electricity generated at the site. ■ Weighing the rice husk at the dump site. ■ Weighing the ash produced.
RECORDING FREQUENCY	Data for all three data types will be collected every year in the first quarter of the year.
ARCHIVE	All data will be kept in an archive until 10 years after the last issuance of CERs.
SUSTAINABLE DEVELOPMENT	The monitoring plan establishes a comparison of the project's actual environmental and development performance as measured by the indicators against set target values in order to determine whether the targets have been reached. A summary sheet is included in the monitoring plan to decribe how the sustainable development performance will be monitored.

A similar table will have to be filled out for activities that are potential sources of emissions but occur outside the project boundaries.

ASSESSING ENVIRONMENTAL IMPACTS

The project design document should include an assessment of the environmental impacts of the project. This includes an assessment of non-greenhouse gas related impacts. If there are significant negative environmental impacts, these can disqualify the project from participation in the CDM, particularly if local or international stakeholders raise significant objections. For example, large scale hydropower projects involving significant flooding and dislocations.

The developer should consider whether the project may have significant impact on one or more of the variables listed below.

- Biodiversity;
- Local air quality;
- Water resource availability;
- Water resource quality;
- Soil contamination;
- Soil erosion;
- Noise level;
- Use of natural resources;
- Chemical usage and disposal;
- Landscape pollution (such as wind farms); and
- Overall process efficiency and waste managements.

Any mitigation efforts to address such impacts should be clearly stated in the project design document. The developer should expect that the designated operational entity and third party observers will give close consideration to these issues.

If potential environmental impacts of the project are considered significant, or if an environmental impact assessment (EIA) or review is legally required by the host country, this has to be conducted and documented in the project design document. There are no specific indicators for determining what is considered a 'significant impact'. This will have to be assessed on a case-by-case basis. Sustainable development criteria can also provide guidance for determining the environmental impact.

The designated operational entity evaluates the justification for assessing the environmental impacts. The box below outlines the process for assessing and reviewing environmental impacts.

BOX 3.7: THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The following is a short summary of the steps involved in conducting an environmental impact assessment.

Screening: the process of determining whether or not environmental impact assessment is required for a particular project.

Scoping: the process of determining the content and extent of the matters to be covered in the environmental information. This should be done in consultation with the appropriate authority.

Impact predictions: the identification of all likely impacts associated with the project in the areas determined through the scoping, with authoritative and, if possible, quantitative predictions about their effects.

Preparation of assessment including:

- Description of the project (physical characteristics, land use requirements, production processes and an estimate – by type and quantity – of expected residues and emissions resulting from the operation of the proposed project);
- Identification of alternatives (in terms of location of the proposed project and estimates of alternatives– the main reason for the choices have to be indicated);
- Description of environmental and demographic phenomena likely to be affected (population, fauna, flora, water, air, soil, climate factors, material assets, landscape and the interrelation between the above factors);
- Description of the likely significant effects resulting from; the existence of the project, the use of natural resources, emissions of pollutants, the creation of nuisances and the elimination of waste, and the descriptions of the forecasting methods used to assess the effects on the environment;
- Description of mitigation measures to prevent, reduce and, where possible, offset any significant adverse effects on the environment;
- Non-technical summary; and
- Decision on project future on the basis of the assessment and other decision-making parameters.

BOX 3.8: DOMESTIC AND LOCAL PROJECT BENEFITS OF GEMINA PROJECT (PDD EXAMPLE)

ISSUE	EXPLANATION
LOCAL ENVIRONMENTAL BENEFITS	Reduced greenhouse gas emissions to atmosphere, over project lifetime, Reduces use of landfill for waste husk and associated methane gas releases to atmosphere. Eliminates risk of self combustion of the waste piles and associated methane and nitrous oxide releases to atmosphere. Significantly reduces fugitive dust from waste piles both on site and off site. Vehicle movements, used to transport husk, and associated noise and gaseous emissions will be reduced.
SOCIO-ECONOMIC BENEFITS	Commercially competitive with existing sources of electricity to end user. Job creation (mostly higher income skilled labor) and investment in areas which have difficulty attracting new investment.
CAPACITY BUILDING	Reduced rice production costs in Nicaragua. The project will allow local producers to increase production with associated job creation and investment. The project will reduce dependence on imported fossil fuel with replication possibilities both in Nicaragua and in Central America. Project implementation includes capacity building components to enable the local community to contribute to, and administer its involvement in, the project.
ENVIRONMENTAL IMPACT ASSESSMENT	An environmental impact statement has been carried out by the project operator in consideration of World Bank safeguard and policies as part of the detailed project design.

If an environmental impact assessment or review is required, the project developer must indicate if and when it has been, or will be, completed. Moreover, it should be noted where a copy of the assessment report can be obtained. If an environmental impact assessment has been carried out and the appropriate authority has approved it, the project design document can cite it as evidence that the project's impacts have been assessed and accounted for.

STAKEHOLDERS COMMENTS

A final requirement of the project design document phase is that local stakeholders be invited to comment on it. Stakeholders include individuals, communities, or other groups, such as NGOs, who may be affected by the project. The project design document must include a description of the process for public comments. A specific format for submitting contacts and results of the stakeholder sessions is included in the project design document template, in annex 1.

Stakeholder participation and public meetings are critical to maintaining transparency in the CDM process. Indeed, the CDM requires that project developers:

- Invite local stakeholders to comment on the project design document;
- Provide a summary of the comments received; and
- Review comments received and provide a report, demonstrating how relevant concerns were addressed. This report has to be submitted for validation by the designated operational entity.

This local stakeholders consultation process is distinct from the invitation for comments from stakeholders by the designated operational entity during the project validation phase. At that time, international stakeholders, such as NGOs, have an opportunity to provide their comments regarding the specific CDM compo-

BOX 3.9: CREATING A STAKEHOLDER CONSULTATION

In the absence of further experience and guidelines, the following process could be applied in cases where a significant group of stakeholders outside the project participants is likely to be impacted. The project developer should:

1. Identify all local stakeholders affected or likely to be affected by the CDM project activity. These should include individuals, groups and/or communities.
2. Devise a programme, which could include written and/or verbal explanation of the CDM, a description of the project and its probable impacts and an explanation of the project design document.
3. Invite the identified stakeholders for comments. This can be done by placing an advertisement in at least one local newspaper and invitation to stakeholders to provide written comments. The invitation should include the following information or state in the invitation that it is available upon request;
   - Information describing the JI/CDM mechanisms;
   - The project design document; and
   - Information on the potential impact of the CDM project on the stakeholders.
4. Record all responses. This can be accomplished either through minutes of the stakeholder meeting or in a written summary that identifies and responds to the main issues raised and includes contact information of the respondents.
5. Produce a written report on the consultation exercise for the CDM project validator. Written and verbal responses should be included in the final report. The report should present comments from the local participants including objections or support for the project and clearly indicate the agreed measures to be undertaken by the developer to alleviate the concerns of the local participants. Contacts for participants should be provided.

In many host countries, project developers may find it difficult to define the constituency for the selected projects. Developing a knowledge base at the national level for this purpose could be a valuable asset in maintaining transparency and creating a pipeline that reflects national priorities for sustainable development.

From the perspective of keeping future expenditure under control, it is important that the monitoring plan makes future verification as simple and cost-effective as possible.

nents of the activity. In contrast to local stakeholders, the international stakeholders are not actively approached. They are simply given the opportunity to review the project design document on the web. The rationale is that concerned members of the international and/or national community, especially NGOs, will take on the task of monitoring proposed CDM projects. Incorporating two rounds of stakeholder consultations is intended to promote democratization of the CDM process and allow both local and international stakeholders to express their concerns regarding the efficacy and appropriateness of the selected projects.

The Marrakech Accords refer to accredited NGOs, and clearly some NGOs will be more competent than others to provide a valuable feedback to the CDM activity in the host country.

In host countries with a clear project planning process in place, a project developer can follow that country's established guidelines for public consultation and participation. However, the project developer is advised to check with the designated national authority whether the existing rules apply to the project type and the CDM process. Project developers are also advised to verify the rules for public consultation, discuss with the relevant authorities and invite comments from civil society on the project design document. In cases where the public consultation procedures are not established, the project developer should design its own consultative exercise.