THE CLEAN DEVELOPMENT MECHANISM (CDM) AN INTERNATIONAL PERSPECTIVE AND IMPLICATIONS FOR THE LAC REGION

PROJECT: CLIMATE CHANGE

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Preface

The majority of countries within the Latin American and Caribbean (LAC) region have already established CDM national offices, institutional components and procedures. In addition, most LAC countries are in contact with the CDM Executive Board and are involved in a variety of projects under different stages of development. Therefore, the focus of the OLADE Climate Change Initiative is to "strengthen the existing capacity of the countries, especially in regulatory framework issues, their technical capacity and their potential for projects".

The OLADE Climate Change Initiative has four general activities:

a. An analysis of international CDM experiences and their potential contribution to the LAC region. The analysis will consider recent advances in CDM policy, CDM funds, their characteristics and current state, new initiatives of LAC interest (environmental additionality, baseline studies, small-scale projects), as well as international CDM experiences (from North America, Europe and other countries). This analysis will be used as a reference for case studies since it will contain updated information for the countries.

b. Diagnosis of the current status of CDM in the LAC Region, identifying the institutional and regulatory framework level, CDM knowledge level, identified projects and those which are currently under progress, and the current barriers for the development of CDM in the countries.

c. Case studies and training aimed at strengthening LAC countries' institutional and technical capacity related to CDM. The case studies will include a detailed analysis of the barriers and opportunities for optimum CDM implementation in four LAC countries. Plans and strategies to overcome the barriers will be proposed and exchange of opinions in the national context will be encouraged through a national workshop. In addition, training aimed at addressing barriers and strengthening capacity will be organized at the national level.

d. Policy guideline recommendations focusing on energy-related CDM activities developed based on the results of the LAC and international assessments in addition to the four national case studies. Through a regional workshop, policy makers and other key stakeholders provide feedback and input into the final guidelines, and benefit from training and discussions during the course of the workshop.

This paper addresses activity a) an analysis of international CDM experiences and its potential contribution to the LAC region. The Paper begins with a section describing the basic principles of the CDM and reviews the lessons learned from the first two years of the CDM operation. This is followed by a more detailed review in Section 2 of the on-going baseline and monitoring methodology approval process. In Section 3, the development value of the CDM is explored. Section 4 describes the current CDM markets, while Section 5 reviews the response of host countries to the CDM outside the LAC region. Section 6 describes the various capacity building programs established by Annex 1 countries to support the CDM.

In each of the first 6 sections, implications for the LAC region are identified. Section 7 brings these conclusions together into a concise summary.

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1. The Current Status of the CDM

This section briefly describes the CDM and the rules governing its use. This is followed by an up-to-date description of the activities of the CDM Executive Board, Methodologies Panel and Operational Entities, including interpretation of the Marrakech Accords, baseline review/approval process, project approval and rejection process, registration process, treatment of additionality etc.

The Kyoto Protocol

The UN Framework Convention on Climate Change (UNFCCC), adopted in 1992 and ratified in 1994, established an international legal framework to address global climate change. Parties to the Convention agreed to stabilize greenhouse gas (GHG) concentrations in the Earth's atmosphere by returning to 1990 GHG emissions levels.

At the 3rd Conference of the Parties (COP 3), held in Kyoto, Japan, in 1997, the parties adopted the Kyoto Protocol, which commits industrialized countries (defined as Annex I countries in the Protocol) to attaining legally binding GHG reduction targets during the period between 2008 and 2012. These commitments are an average of 5% below 1990 GHG emissions levels. In November 2001, at COP 7 in Marrakech, Morocco, the parties reached an agreement on the legal text needed to implement the Protocol. The Protocol will enter into force when it has been ratified by sufficient countries that 55% of world emissions are covered by the agreement. Until either the United States or Russia ratify the Protocol, this criteria will not be met. However, many of the mechanisms agreed to at COP 7 are already under way, including the Clean Development Mechanism, and it is widely agreed that these mechanisms would continue in some form or another even if the Protocol does not come into effect.

In most Annex 1 countries, GHG emissions are produced by private companies and individuals. Each country will, therefore, have to either regulate or encourage large GHG emitters to reduce these emissions. However, the Kyoto Protocol provides for a variety of measures to achieve GHG reductions through three special "Flexibility Mechanisms" — the Clean Development Mechanism, Joint Implementation[1], and International Emissions Trading[2].

[1] Joint Implementation (JI) provides a means for countries or companies to invest in GHG reduction measures and sequestration projects in other industrialized countries, and gain certified credits

[2] When it is set up, International Emissions Trading will provide a means for emitters to purchase emissions reduction credits through a special market that will be set up for this purpose.

CDM Basics

The Clean Development Mechanism (CDM) provides a means for countries or companies to financially contribute towards GHG reduction measures — and a limited number of sequestration projects — in developing countries, provided that these projects also result in sustainable development, as defined by the host country, and are implemented in an environmentally benign manner. In return, the investing company receives a "certified emissions reduction" (CER).

The CDM Executive Board

It was agreed at COP 9 that the CDM implementation process would be started before the Protocol came into force. A CDM Executive Board has been set up under the auspices of the UNFCCC to oversee the approval of projects and their assignment to the Annex I country where the CDM carbon financing originated. The Board has set up a Methodologies (Meth) Panel to assist it with evaluation of baseline and monitoring methodologies and has begun the accreditation of "Designated Operational Entities" – third party organizations that verify that the proposed project meets CDM rules and validates emissions reduction measurements.

In practice, project proponents have been submitting their projects to the CDM Executive Board for approval of the project's baseline and monitoring methodologies before seeking to register the project. Over 50 projects have now been submitted for approval of their methodologies to date – mostly from international carbon funds. More information on this process is provided in section 2.

Real and Measurable GHG Emissions Reductions

Projects seeking approval from the CDM Executive Board must lead to real, identifiable, and measurable reductions in greenhouse gas emissions, or lead to the measurable absorption (or "sequestration") of GHGs in a developing country. GHG emissions from a CDM project activity must therefore be reduced below those that would have occurred in the absence of the project, i.e. be "additional" to those that would have occurred without the project. The "project boundary" defines the area within which emissions reductions or sequestration occurs. Emissions reductions must occur on the project site or "upstream" from the project. For example, in projects that reduce electricity use through efficiency or fuel substitution in a region where power is produced from fossil fuels, the emissions reductions occur upstream at the power plant.

The rules governing the CDM process and the requirements for GHG emissions reductions projects were agreed to as part of the "Marrakech Accords"[3] in 2001 at COP 7. Simplified rules for small-scale CDM projects were agreed to at COP 8 in 2002[4], and rules for sequestration CDM projects agreed to at COP 9 in 2003[5].

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[3] CDM Modalities and Procedures (Extract of Decision 17/CP.7). *http://cdm.unfccc.int/Reference/Documents*

[4] Simplified modalities and procedures for small-scale CDM project activities (Annex II to Decision 21/CP.8). *http://cdm.unfccc.int/Reference/Documents*

[5] Decision -/CP.9: Modalities and procedures for afforestation and reforestation project activities under the clean development mechanism in the first commitment period of the Kyoto Protocol. *http://unfccc.int/cop9/index.html*

Eligibility to Participate in the CDM

CDM credits will only be granted to national governments and companies in Annex 1 countries, such as Canada, that have ratified the Kyoto Protocol and agreed to meet their obligations under the Protocol regarding compliance and reporting of emissions. There is no legal limit or ceiling on the number of CDM credits that an Annex I country can use to meet its Kyoto reduction target; however, individual countries may enforce internal limits or targets. For example, Canada has stated that its goal is to achieve "a majority" of its GHG reduction through domestic measures.

There are several ways that a company wanting to purchase credits can participate in the CDM. It can invest directly in a project and receive a return in the form of CERs. Depending on the financial structure of the deal, it may also receive a financial return. Alternatively, a company can simply agree to purchase CERs as they are produced. This reduces the risk to the buyer of CERs, but will come with a higher price tag.

Official Development Assistance (ODA) cannot be diverted to acquire CER under the CDM. Projects must show that no public ODA funds have been used to finance the project being submitted, or the value of the public funding must be subtracted from the value of the CERs.

Sustainable Development

All CDM projects must also contribute towards sustainable development in the host country and must also be implemented without any negative environmental impacts. To ensure that these conditions are met, host countries determine whether the CDM project activity meets the sustainable development objectives in their country, and also decide whether an environmental assessment of the project is required. Nuclear power projects are not eligible for the CDM. Hydro electricity projects are eligible, but there are differing views as to whether large hydro projects with water storage should be excluded, or at least be subject to a set of international criteria such as those developed by the World Commission on Dams[6].

Carbon Sequestration Projects (Sinks)

Although mitigation of global climate change can normally be achieved most effectively through the reduction of GHG emissions into the atmosphere, CO_2 is also assimilated, or absorbed, by plants and soils in biological processes. As such, the promotion of biological and terrestrial absorption of CO_2, or carbon "sinks," is also a valid approach to meeting GHG emissions reduction targets. As noted above, international agreement on how to measure credits arising from land use, land-use change, and forestry (LULUCF) was reached at COP 9 in 2003. These rules correctly treat stored carbon as "temporary" carbon credits or tCERs that will have to be exchanged for CERs at a later date when the sink releases its carbon. The Executive Board will be operationalizing these rules in 2004.

The Kyoto Protocol has placed a limit on the types and quantities of LULUCF credits allowed for credit in CDM projects. Only afforestation and reforestation projects are permitted (versus, for example, forest management), and the total quantity of Removal Units may not exceed 1% of the base year (1990) emissions of an industrialized country for each of the years 2008 through 2012. For example Canada, whose 1990 emissions totalled 607 Mt, is not allowed more than

[6] www.dams.org

approximately 30 Mt [7] in total RMUs from sequestration activities – domestically or through flexibility mechanisms.

Carbon sinks are therefore unlikely to play a major role in the CDM. Most investors will be looking for permanent credits, and the expected lower value of RMUs or tCERs will mean that it will be less worthwhile for afforestation and reforestation project developers to use carbon financing.

Credit Period for CDM Projects

Any project activity starting after January 1, 2000, will be eligible for registration and will earn CERs if it meets the criteria, rules, and modalities for CDM projects, provided that they are registered by December 31, 2005. However, it is unlikely any project that is implemented before it is submitted for approval will be eligible under the CDM because of additionality requirements – a project must show that it is the CDM that makes it go ahead instead of the baseline alternative (see below).

Emissions reductions in CDM projects may only be claimed for a maximum of 10 years without reappraisal of the project baseline, or for a period of seven years with two extensions of seven years each, provided that the project baseline is reviewed at the time of each renewal.

Trading of CDM Credits

CERs earned from CDM projects are a marketable commodity that may be exchanged with other corporations or national governments. A company that has earned CERs may also choose to bank them so they can be traded in future commitment periods after 2012. This is a useful strategy if the company does not require the credits in the current period and anticipates an increase in their market value. It is important to note that RMUs earned from reforestation and afforestation activities cannot be banked.

CDM Project Cycle

CDM Project Participants

The following participants will be involved the CDM development, approval and implementation process.

Project Proponent: An entity, such as a company or local NGO, that develops and implements a CDM project.

CER Purchaser: A company that invests in the project or purchases CERs generated by the project. In some cases, the CER purchaser may also invest conventional financing into the project and play an active role in the development of the project with the proponent, and receive financial returns in addition to receiving the CERs. In others, the company may simply purchase the CERs.

Host Country Government: The developing country in which the CDM project takes place. The host country is responsible for ensuring the project meets sustainable development criteria and

[7] Calculated as follows: 6 Mt/yr times 5 years = 30 Mt.

any other criteria they may impose, the project does not have a negative environmental impact, and local stakeholders have been consulted.

CDM Executive Board: The supervisory body of the CDM, accountable to the Conference of the Parties. The Executive Board oversees the implementation of the CDM until the Kyoto Protocol is ratified. The Executive Board was elected at COP 7 and comprises 10 members of the Parties of the Protocol, representing various economic blocs.[8] Interim procedures for implementing CDM project activities and the role of the Executive Board were also agreed to at COP 7 (the Marrakech Accords), so that CDM project development could begin in 2002. The Board has appointed a Methodologies Panel and a roster of international experts to assist it in approving CDM project methodologies and fine tuning the Marrakech rules.

Designated Operational Entity: An independent legal entity designated to verify that a project is eligible for the CDM, and to validate emissions reductions from the CDM activities. The Designated Operational Entity is accredited by and accountable to the Executive Board. Project Proponents may designate the Designated Operational Entity of their choice from a list maintained by the Executive Board.

Steps in the Project Cycle

The following outlines the official steps that must be undertaken to obtain CERs, once a project proponent decides to submit it to the CDM.

1) Host Country Approval: The project proponent submits the project to the Designated National Authority in the host country for approval and confirmation that the project contributes to sustainable development, environmental assessment has been carried out, and that stakeholders have been consulted. See section 5: Host Country Response for different host country approaches.

2) Validation: The project design, submitted through a Project Design Document, must be evaluated by a Designated Operational Entity against the requirements of the CDM. Validation also includes assurance that the host country agrees that the project contributes to sustainable development, that any required environmental assessment has been carried out, and that there has been adequate opportunity for public comment on the project.

   In practice, project proponents have been submitting their projects to the CDM Executive Board for approval of the project's baseline and monitoring methodologies before securing an Operational Entity and sometimes before obtaining host country approval. In this way, only projects that have had their methodologies "pre-approved" are submitted for validation. See Section 2 for the current status of the methodology approval process.

3) Registration: The validated project must be formally accepted by the Executive Board, based on the recommendations from the Designated Operational Entity. A registered project must have Annex 1 country buyer of the CERs specified so that the project can be registered against that countries Kyoto commitments.

4) Verification: Once the CDM project is underway, the monitored reductions that occur as a result of the project must be reviewed periodically by the Designated Operational Entity.

[8] For more information on the Executive Board, visit the UNFCCC CDM Web site at www.cdm.unfccc.int.

5) Certification: A written assurance must be provided by the Designated Operational Entity, and confirmed by the Executive Board, that the CDM project achieved verified emissions reductions. The CERs are then assigned to the Annex 1 country in which the CER purchaser is located.

Annex I country approval of a CDM project is only required if the host country requests it. Most Annex I countries have notification requirements. For example, a Canadian company purchasing CERs through the CDM must register the project activity with the proper Canadian authority: the CDM/JI Office operated by the Department of Foreign Affairs and International Trade (DFAIT).

Small- and medium-scale renewable energy, energy efficiency, and fuel substitution projects are given special treatment under the CDM to reduce the cost and time needed for approval. Special simplified procedures, including use of standard baseline and monitoring methodologies, and a shorter Project Design Document, have been developed to make approval and implementation of the following types of small-scale CDM projects easier.

- Renewable energy project activities with a maximum output capacity less than or equal to 15 megawatts.
- Energy efficiency improvement project activities that reduce energy consumption on the supply and/or demand side by up to the equivalent of 15 GWh/yr.
- Other project activities that reduce the anthropogenic emissions by sources that directly emit less than 15 kilotonnes of carbon dioxide equivalent annually.

These simplified procedures make it easier and cheaper for community based renewable energy projects and small enterprise projects to use the CDM, thus enhancing the CDM's sustainable development potential. See section 3: The CDM and Development.

CDM-related Fees

Adaptation Fee

The impacts of climate change will be globally widespread and yet regionally uneven. Due to weaker economic situations and the inability to adapt, developing countries are more vulnerable than developed countries to the adverse effects of climate change. To help meet the costs of adaptation, the Protocol requires that 2% of CERs from CDM project activities be deposited into a designated CDM registry (account), which is administered by the Executive Board. Revenues generated through the sale of CERs in the registry will be forwarded to the countries in which CDM projects took place, and where there is a need to address the impacts of climate change.

Fees for Administrative Expenses

In addition to the provision to fund adaptation, the following CDM project registration fees will also be charged to cover the administrative costs of the Executive Board's certification process.

Average tonnes of CO_2e reductions/yr	US$
≤15,000	5,000
>15,000 and ≤ 50,000	10,000
>50,000 and ≤ 100,000	15,000

>100,000 and ≤200,000	20,000
>200,000	30,000

Host countries also have the prerogative to establish their own rules for retaining financial returns or credits from CDM project activities implemented in their country. This retention of funds may be utilized, for example, to build the capacity of local companies working to further CDM-related activities. Host countries may also set minimum prices for CERs from a CDM project. It is the responsibility of the project developer, and the company purchasing CERs, to check the host country's policies.

The First Two Years of the CDM

CDM Executive Board

The Executive Board has now met 14 times. Minutes of meetings and documents produced by the Board are available on the UNFCCC CDM Web Site www.cdm.unfccc.int.

During its first two years in operation, the Board has been concerned mainly with the following:

- Approval of baseline and monitoring methodologies for emissions reductions projects planning to apply for registration as CDM projects (see Section 2).
- Clarifying rules for CDM emissions reductions projects, particularly with respect to baseline methodologies and additionality
- Accreditation of Designated Operational Entities

The majority of organizations bringing potential CDM projects to the Board have been international carbon funds such as the World Bank Prototype Carbon Fund and the Dutch CERUPT program. See section 4: CDM Markets for more information on these programs.

A variety of project types have been submitted for baseline methodology review, including land fill gas, energy efficiency, hydro, and wind electricity. As of July 2004, four projects have been submitted under the simplified rules for small-scale projects[9]. The procedure used by the Board to approve methodologies involves several steps, including review by two independent experts, public comment, and recommendations by the Meth Panel for modifications. This means that baseline approval or rejection can take several months. There are concerns that once the Kyoto Protocol comes into effect, the large number of different methodologies, and long approval process will create a backlog in the process.

However, there are signs that methodologies for most of the expected CDM project types have now been considered. This fact, plus the clarification of additionality issues, should mean that only projects that use an already approved methodology and are clearly additional would be submitted to the CDM.

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[9] http://cdm.unfccc.int/Validation/publicPDD
Accessed July 15, 2004
The regional distribution and project types of the four small-scale CDM projects seeking validation are as follows: three are from LAC (Honduras) and one from Asia (India). The three LAC projects are small hydro-electric generation for a grid.

There are still some issues that have not been addressed by the Board that could cause some delays or conflict during the next phase of the CDM:

- Projects may be submitted to the Board for approval as CDM projects that are seen to have negative environmental or social impacts, do not take local stakeholder views into account, or do not appear to have any sustainable development value according to international norms. Under the Marrakech Accords the Board does not have the role of judging these features – it is the role of the host country.
- Small-scale projects are given some special treatment under CDM rules, e.g. use of standard methodologies and a simpler PDD. However, registration fees, Operational Entity fees, and other transaction costs for small projects are still high compared the value of CERs. Without further concessions and financial assistance for capacity building and project development, the opportunity for the CDM to help finance community scale rural energy and other valuable development projects will be lost.

More discussion on these issues is provided later in this report in Section 3: The CDM and Development.

The international community has carefully scrutinized the first two years of the CDM to ensure that its implementation is equitable and it meets the spirit of its original objectives – to produce emissions reductions equivalent to those that would have occurred in Annex 1 countries and contribute to sustainable development in developing countries.

The Board reports to the UNFCCC at every COP meeting and publicizes all of its work on a dedicated web site (see above). Board operation is also scrutinized by non-government agencies such as CDM Watch[10], and regional chapters of the Climate Action Network [11]. These organizations have been particularly influential in gaining a clearer definition of additionality and a wider discussion of projects with negative environmental or social impacts.

Designated Operational Entities (DOEs)

A Designated Operational Entity under the CDM is either a private legal entity or an international organization accredited and designated by the CDM Executive Board. A DOE has two key functions:

- It validates and subsequently requests registration of a proposed CDM project activity.
- It verifies emission reduction of a registered CDM project activity, certifies as appropriate, and requests the Board to issue Certified Emission Reductions accordingly.

The Board accredits DOEs to provide these services in one or more of the following areas:

1. Energy industries (renewable - / non-renewable sources)
2. Energy distribution
3. Energy demand
4. Manufacturing industries
5. Chemical industry

[10] www.cdmwatch.org
[11] www.climatenetwork.org

6. Construction
7. Transport
8. Mining/Mineral production
9. Metal production
10. Fugitive emissions from fuels (solid, oil and gas)
11. Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride
12. Solvents use
13. Waste handling and disposal
14. Afforestation and reforestation
15. Agriculture

As of July 2004, the Board has accredited four DOEs to provide services in 11 out of the 15 areas[12], and is considering applications from 24 others. These applications come from 21 Annex I countries (evenly distributed between Asia and Pacific Region and Western Europe), and 3 Non Annex I countries in the Asia and Pacific region. Since July there has been one DOE applicant from a LAC country.

Additionality

GHG emissions from a CDM project activity must be reduced below those that would have occurred in the absence of the project, i.e. the project cannot be a "business as usual" project that would have happened anyway. Many observers say that a CDM project must also show that it would not have been implemented without carbon financing from the CDM. Without this explicit requirement, there is no guarantee that CDM projects will create incremental GHG emissions reductions equivalent to those that would have been made in Annex I countries, and thus play a role in the ultimate objective of stabilizing atmospheric GHG concentrations.

Since being established in 2002, the CDM Executive Board has sought to clarify "additionality"[13]. Examples of tools that may be used to demonstrate that a project activity is additional and therefore not the baseline scenario include, among others:

- A flow-chart or series of questions that lead to a narrowing of potential baseline options;
- A qualitative or quantitative assessment of different potential options and an indication of why the non-project option is more likely;
- A qualitative or quantitative assessment of one or more barriers facing the proposed project activity (such as those laid out for small-scale CDM projects);
- An indication that the project type is not common practice (e.g. occurs in less than [<x%] a designated percentage of similar cases) in the proposed area of implementation, and not required by a Party's legislation/regulations.

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[12] www.cdm.unfccc.int/DOE/list
Accessed on July 12, 2004. The areas that are not covered by the four DOEs are 8, 9, 14 and 15.

[13] Report of 10th meeting of the CDM Executive Board Annex 1: FURTHER CLARIFICATIONS ON METHODOLOGICAL ISSUES. A. Clarifications on how, through the methodology, it may be demonstrated that a project is additional and therefore not the baseline scenario. July 26-28, 2003. *http://cdm.unfccc.int/EB/Meetings*

All CDM projects, therefore, require the estimation or measurement of the actual emissions that occur after a project has been implemented as well as the "baseline" emissions — those that would have occurred without the project. For example, a wind power generation project might displace emissions from an existing fossil fuel power plant in a region or delay the construction of a new plant. The emissions reductions from improved fuel efficiency in an industrial process would be measured against existing plant emissions.

Additionality is normally evaluated by the Executive Board as part of the baseline methodology approval process, although the Designated Operational Entity is expected to make recommendations on the additionality of a project when it is submitted for registration. The Meth Panel has therefore been able to provide the Board with feed back on the additionality of actual projects, and it is becoming much easier for potential project developers to determine whether their projects are additional before submitting them.

The main message that has come from the Executive Board and Meth Panel is that only those methodologies will be approved where it can be clearly demonstrated that a project will not go ahead without the CDM, or conversely the baseline alternative would be used without the CDM.

Senter International, the implementing agency for the Dutch CEPRUT/ERUPT program[14], has carried out an analysis of the decisions made to date by the Executive Board on the approval or disapproval of projects submitted, and in general a project is considered additional if:

- An alternative exists for the project that is more economically attractive.
- Without the sales of carbon credits the project is not economically viable.
- Several significant barriers exist to the implementation of the project.

These criteria have been operationalized by the Dutch CEPRUT/ERUPT program, one of the first international buyers of carbon credits, to ensure that projects it invests in will be approved as JI and CDM projects. This additionality test is shown in Appendix 1 and it is recommended that it be used by all CDM project developers.

Although there have been criticisms that is too strict a definition of additionality, this interpretation is a positive sign for the CDM in that it is consistent with its original purpose, which is to provide credits for greenhouse gas emission reduction projects in developing countries that would not have occurred otherwise. This makes emissions reductions from a CDM project truly equivalent to emissions reductions in Annex 1 countries that the CDM project is designed to offset. In the long run this should also be beneficial for host countries as it will help ensure that the CDM actually promotes new investment and new projects in their countries, rather than giving credits for projects that would have occurred anyway.

For more detail on the methodology assessment see section 2: Methodologies Approval.

Sustainable Development

It is important to note that the second objective of CDM projects, which is to *contribute to the sustainable development of the host country,* is not currently being assessed under the baseline methodology review or Executive Board project approval process. Under the strict interpretation of the Marrakech Accords, this is seen to be the role of host countries, in setting sustainability

[14] www.evd.nl/over_de_evd/EVD_engels.asp

criteria and indicating that projects meet these criteria when they approve the project. Designated Operational Entities also do not assess the sustainable development value of a project – they just validate that the host country has done so. This is also the case for environmental impact assessment and stakeholder comments (see below).

Some host countries have begun to publicize their sustainable development criteria ahead of time so that they can be used by project developers to screen CDM projects. For more details on CDM approval criteria established by host countries see Section 5: Host Country Response.

A problem arises, however, if these criteria are significantly lower than international norms, or a host country introduces a project-by-project assessment of sustainable development value. It is a concern that this could lead to projects being brought forward for CDM project registration where the baseline methodology might be approved, but the project is seen by the international community as having little development value or even causes unacceptable environmental or social impacts.

One such project is the Plantar project being considered for carbon financing and submission to the CDM by the World Bank Prototype Carbon Fund. This project in Brazil involves plantations of Eucalyptus trees that would be used as a source of charcoal for pig iron manufacturing. Carbon credits would be sought for both sequestration of carbon and the reduction of emissions from using charcoal instead of coal. Local stakeholders and international observers indicate that the project will cause significant hardship for the local population and environmental damage, that the use of the coal baseline is not appropriate, and that the carbon sequestration claims will only be temporary[15]. Further information on this controversy, including a response from the World Bank, may be found on the CDM Watch web site[16].

To meet the need for an international standard on sustainable development, a Gold Standard[17] has been set up by the World Wildlife Foundation (WWF) as a best practice benchmark for CDM and JI projects in an attempt to identify the development and environmental quality of a CDM project. It provides project developers with a tool that helps ensure that their project meets the highest standards of development, is unquestionably additional, and has real environmental benefits and, in so doing, brings confidence to host countries and the public that these projects represent new and additional investments in sustainable energy services. For more on the Gold Standard see Section 4: CDM Markets.

Use of Official Development Assistance (ODA) for the CDM

The Marrakech Accords state that there should be no possibility of using ODA to purchase CERs. The question arises, however, on how a project that includes some net ODA financing should be treated under the CDM. The Organization for Economic Cooperation and Development (OECD) has developed principles that could be used to reduce the value of the CERs of a CDM project by the net amount of the ODA financing. “We agree that the value of any CERs received in connection with an ODA-financed CDM project should lead to a deduction of the equivalent value from ODA, irrespective of whether the CERs are sold or retained by the donor. We also rule out the possibility of counting as ODA funds used to purchase CERs.”[18].

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[15] The recently agreed rules for CDM sequestration projects addresses this concern by designating any credits claimed for carbon storage as temporary CERs.
[16] www.cdmwatch.org/controversy.php
[17] See “The Gold Standard” available on the WWF’s website www.panda.org
[18] ODA ELIGIBILITY ISSUES FOR EXPENDITURES UNDER THE CLEAN DEVELOPMENT

Public Input

The host country approval process is also required to include consultation with project stakeholders, whose comments must be considered before the CDM project is submitted for approval. Most stakeholders will be concerned about the sustainable development value of the project and its environmental impact. There is also a period before a CDM project is registered during which details of the project are made public for international input and comment through the UFCCC CDM web site. Annex I country approval of a CDM project is only required if the host country requests it.

As with sustainable development value, the Designated Operational Entity does not assess whether the stakeholders are satisfied, just that they have been consulted. This can also lead to a situation where local (or international) stakeholders are not satisfied with a CDM project, but there is no international process to hear their views, other than public comment during the registration stage. The Plantar project described above is an example of a project where local and international concerns have been expressed, but there is no indication that they have been taken into account.

Because the CDM approval process has mostly been concerned with the assessment of methodologies and no projects have yet been brought forward for registration, there has been little analysis of the stakeholder consultation aspects of the CDM. Project developers are advised to make sure that CDM projects do not have any impacts that would be of concern to any local or international stakeholders, and to make sure all are consulted with their views included in the Project Design Document.

Environmental Impact Assessment (EIA)

The objective of any CDM project should be to provide environmental and social benefits, as well as to reduce GHG emissions. A host country, upon review of a preliminary project proposal, may require an environmental impact assessment (EIA), which will have to be completed before the project can proceed. The need for this EIA may also be raised during public consultations. If an EIA is required by the host country, or if stakeholder input shows that there are local environmental or social concerns about the initiative, the CDM project should be evaluated using the highest international environmental and social assessment procedures and standards, such as the criteria for hydroelectric facilities prepared by the World Commission on Dams.

The host country may also define the types of environmental impacts that would require a full EIA, but, to reduce the risk of delay and negative input from stakeholders, it is recommended that only CDM projects that can meet internationally agreed upon environmental and social standards be considered by project developers and users.

As with sustainable development value, the Designated Operational Entity does not assess whether an EIA is required or judge its results, just that it has been considered. This can also lead to a situation where a CDM project can have a significant environmental impact and would not meet international EIA standards, but is still approved by the host country. The Plantar project

described above is an example of a project where local and international concerns have been expressed environmental impact.

Because the CDM approval process has mostly been concerned with the assessment of methodologies and no projects have yet been brought forward for registration, there has been little analysis of the environmental impacts of CDM projects. Project developers are advised to make sure that CDM projects do not have any impacts that would be of concern to any local or international stakeholders, and to make sure all are consulted with their views included in the Project Design Document.

Markets

Few Annex 1 countries have yet completed their national allocation process among GHG emitters to meet their Kyoto Protocol commitments, or decided on the number of CERs that they will purchase directly. The current CDM market therefore consists mostly of carbon funds, and most of the participants in these funds are Annex 1 countries. For more information please see Section 4: CDM Markets.

Transfer of Technology and Know-how

The transfer of environmentally safe and sound technology to developing countries through CDM projects is both crucial and required, as it furthers the objective of sustainable development. Local knowledge and circumstances should be key factors in determining the chosen technology. Use of the CDM to increase the adoption of new technologies is seen as one of the most important aspects of the CDM, and several countries have included this in their CDM project approval criteria.

Developing countries are also setting up an infrastructure and Designated National Authority to manage and coordinate their participation in the CDM.

For more details on technology transfer criteria and CDM infrastructure, see Section 5: Host Country Response.

Capacity Building

Several Annex 1 countries and multilateral carbon funds have set up assistance funds to build CDM capacity in developing countries. For more information, see Section 6: CDM Capacity Building.

2. The CDM Methodology Approval Process – the First Two Years

This section provides a more detailed review of the CDM baseline and project approval process to date, including the types of project methodologies that have been approved and rejected, and the implications of the approval record for the LAC region. Particular attention is paid to the approval record of the Board with respect to additionality, and the rationale behind these decisions.

The CDM Baseline and Monitoring Methodology Approval Process

As noted in Section 1, one the key roles of the CDM Executive Board during its first two years of operation has been to evaluate and approve baseline and monitoring methodologies of GHG reduction projects that are applying for registration as CDM projects. The Board has separated approval of methodologies from CDM registration in order to quickly develop a portfolio of accepted methodologies for different types of projects so that they can be referenced by similar projects. It also allows project proponents to have their methodologies pre-approved before obtaining host country approval, validation by a Operational Entity, and securing a buyer for CERs (all pre-requisites for project registration).

To have a methodology approved, a project developer must present a Project Design Document (PDD) that defines the baseline technology, shows how emissions reductions will result from the project, and how these reductions will be measured. The PDD must also address any potential environmental impacts from the project and stakeholder views on the project, although these aspects of the project need not be addressed until brought forward for CDM registration.

The methodology approval process consists of a desk review by a roster of experts, UNFCCC web site posting for public input, and a recommendation back to the Executive Board from its Methodology (Meth) Panel. The methodology is assessed against the basic requirements for a CDM project in the Marrakech Accords, focusing particularly on baseline definition, additionality, and monitoring protocol. Each baseline methodology must use one of three approaches:

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

Methodologies Approved to Date

As noted in Section 1, the Executive Board and Meth Panel are approving only those methodologies where it can be clearly demonstrated that:

- An alternative exists for the project that is more economically attractive.
- Without the sales of carbon credits the project is not economically viable.
- Several significant barriers exist to the implementation of the project.

As of July 2004, the Executive Board has approved thirteen (13) CDM project methodologies[19]. Of these, seven are from the LAC region (four from Brazil, two from Chile, and one from Mexico). Five of the approved methodologies are for landfill gas projects, one for the destruction of HFC23, two for fuel switching, one for gas recovery from oil wells and one for gas recovery from manure management. One methodology has been approved for a hydroelectric project and two for biomass generation. Note that the Meth Panel is currently looking at the possibility of combining the approved methodologies for landfill gas projects to make it simpler for most project developers to select the most appropriate one for a particular project. The thirteen projects are summarized in Table 2.1.

The approved methodologies for the most part are affiliated with project types where it is relatively simple to demonstrate additionality. In other words they are for activities such as recovering landfill gas, destroying HFC23, or fuel-switching from coal to gas, that are not "normal" business practices in the host countries, activities that are not carried out either for economic reasons nor because they are required by local laws.

The baseline methodologies submitted for these projects in most cases describe a fairly rigorous procedure for demonstrating that the project would not be the baseline scenario. Many of the methodologies use one or a combination of the tools recommended by the EB, i.e.

a. A series of questions leading to a narrowing of potential baseline options;
b. A qualitative or quantitative assessment of potential options;
c. A barrier approach showing the hurdles facing the project;
d. An indication of unlikelihood of the project taking place.

The assessment of potential project options in baseline methodologies have included economic or investment analysis, comparison of the internal rate of return (IRR), least cost comparisons (power projects), scenario analysis, barrier analysis and comparison based on investment risks.

The Executive Board is currently considering 39 new methodologies, 25 of which are from Asia and the Pacific region, 13 from LAC, and 1 from Africa[20]. Project types from LAC include three energy efficiency, four hydro-electric, two grid-connected wind generation, two methane recovery, one fuel-switching, and one grid-connected biomass generation. For a complete list of methodologies under review see Appendix 2.

Further discussion on individual approved and rejected baseline and monitoring methodologies for several CDM project types is provided in Appendix 2.

[19] Two of these methodologies (Peralillo and TA Sugars) were approved at their June 14-16 meeting. http://cdm.unfccc.int/EB/Meetings/014/eb14rep.pdf
http://cdm.unfccc.int/methodologies/approved
Accessed July 14, 2004.
[20] http://cdm.unfccc.int/methodologies/process
Accessed July 15, 2004.

Table 2.1: Approved Methodologies (July 2004)

Number [21]	Project Name	Project Type	Host Country	Region	Baseline Methodology/Tools Used	Applicability
AM001 (11)	Ulsan	HFC23 Destruction	Korea	Asia & Pacific	Economic Analysis. Existing emissions.	HFC23 emissions not regulated.
AM002 (13)	Salvador do Bahia	Landfill Gas	Brazil	LAC	Technology specified in current contractual agreement.	-No electric generation - Contractual agreement exists
AM003 (13)	Nova Gerar	Landfill Gas	Brazil	LAC	Financial Analysis. Effectiveness Adjustment Factor.	- No credits for electric generation - Only 2 possible scenarios- baseline scenario or project
AM004 (1)	Pichit Rice Husk Power Plant	Biomass	Thailand	Asia & Pacific	Barrier Analysis, Average Grid Operating Margin	-Supply of biomass is too dispersed - Project has negligible impact on planned capacity additions
AM005 (1)	El Gallo	Hydro- electric	Mexico	LAC	Barrier analysis. Average of operating and build margins.	-Grid not dominated by low-cost sources - <60 MW - Sufficient documentation of barriers
AM006 (13&15)	Peralillo	Manure Management	Chile	LAC	Uses 4 step process: manure management options, scenario analysis (regulations, historical practices, and technology availability), IRR / NPV, and barriers.	- Cattle, buffalo and / or swine managed under confined conditions. -No discharge into natural water systems. -No significant increases in electricity use.
AM007 (4)	TA Sugars	Fuel-Switch	India	Asia & Pacific	Emissions factor using least-cost fuel options during off-season. Electricity production during off-season using biomass.	-Access to biomass not currently used as energy source. -Plant uses fossil fuels during off-season. -Project is seasonal.
AM008 (4)	Graneros	Fuel-Switch	Chile	LAC	Economic Analysis. Emissions factors, fuel consumption.	-Coal/oil is cheaper than natural gas - Capacity is not increased - No efficiency improvements
AM009 (10)	Rang Dong Oil Field	Gas Recovery	Vietnam	Asia & Pacific	Assumes all gas is flared in baseline. Emission factors, volume of gas, carbon content. Regulations, IRR.	-Fuel used for transportation and processing is recovered fuel. -Displaced fuel is of equal or greater carbon content. -Unlikely to increase fuel consumption.

[21] Numbers that begin with AM denote Approved Methodology. Those that are referred to by a number beginning with NM (New Methodology) have not yet been formatted as an Approved Methodology. Numbers in parentheses correspond to the sectoral areas listed on page 8.

Number [21]	Project Name	Project Type	Host Country	Region	Baseline Methodology/Tools Used	Applicability
AM0010 (13)	Durban	Landfill Gas	South Africa	Africa	Local legislation and common practice. Average emission factor for grid. Marginal Cost Analysis.	-Base load more intensive than peak load
AM0011 (13)	Tremembé	Landfill Gas	Brazil	LAC	Assumes no methane recovery in baseline. Uses 3 step process: regulations, IRR, barriers.	- No credits for electric generation - No methane recovery in baseline
NM0001 (1)	Vale do Rosario	Biomass	Brazil	LAC	Series of questions to show would not have been implemented without CDM. Average of grid margin/operating margin	Bagasse generation connected to hydro grid (80%)
NM0032 (1&13)	Lucknow	Waste Management	India	Asia & Pacific	Existing emissions from unmanaged solid waste disposal sites. Barrier Analysis.	-Low compliance with India-specific MSW rules (up to 50%). -Too little data for more accurate models of methane emissions. -Additionality includes revenue from electricity generation and organic fertilizer

Reasons for Non-Approval of Methodologies

The primary reason for not approving methodologies has been that the methodology does not clearly demonstrate that the project is not the baseline scenario. For many of the project methodologies submitted, the Meth Panel and EB were not convinced that the projects they were affiliated with would not have gone ahead without the benefit of the CERs, or without being registered as a CDM project. In some cases there was barely any attempt to show that the project was not the baseline scenario; in other cases the methodology was not sufficient, the data was not up-to-date or appropriate, or the assumptions used were not adequately justified. In other cases the methodology failed to identify all project emissions or failed to adequately address leakage.

The following are some of the comments made by the Meth Panel regarding methodologies that were not approved:

- The methodology does not clearly demonstrate that the project is not the baseline.
- The methodology does not fully calculate baseline emissions, or report emission factors, but leaves this up to project monitoring.
- The methodology is not transparent and key assumptions are not justified.
- Formulas used for cost analysis or emissions calculations are not explicitly given.
- It should be explained why leakage is not important.
- The methodology does not include the evaluation of all emissions sources that lie within the project boundary.
- The lack of attractiveness for investors (of the project activity) is not sufficiently documented

Project Types and Methodologies Not Yet Considered by the Executive Board

Although the Board's Meth Panel has considered a wide range of methodologies and project types, there are still sectoral areas where no project has yet been submitted for review. It is therefore less clear how baselines and monitoring methodologies will be treated for these types of project.

For example, because the rules for CDM sequestration projects were only agreed to at COP 9 in December 2003, none of these projects have yet been submitted to the Board or considered by the Meth Panel.

Simplified Baseline and Monitoring Methodologies for Selected Small-scale CDM Projects

To promote the early implementation of small-scale CDM project activities the Executive Board has issued a set of simplified baseline and monitoring methodologies for three types of small-scale project activities: renewable energy, energy efficiency improvements, and other project activities (e.g., agriculture, fuel-switch, methane avoidance or recovery). The simplified procedures include recommendations on determining the project boundary, leakage, baseline, and monitoring protocols for 13 selected project categories. A 14th project category has recently been added[22].

Table 2.2 provides a summary of the simplified baseline procedures for the 14 small-scale CDM project categories. In 2003, the Pembina Institute undertook an analysis of these simplified procedures as part of a CDM development project in India. The results of this analysis are given in Section 3. Even with the issuance of standardized methodologies for the selected small-scale project types several issues remain ambiguous in these procedures. Examples include the definition of "renewable biomass" where biomass is used to displace fossil fuels, and the treatment of kerosene replacement with solar lighting.

[22] The Executive Board issued these simplified methodologies in January 2003 and issued an amendment on June 30, 2004. The methodologies are an appendix (Appendix B) to the simplified modalities and procedures for small-scale CDM project activities contained in annex II to decision 21/CP.8. To access the selected methodologies see: http://cdm.unfccc.int/pac/howto/SmallScalePA/ssclistmeth.pdf

Table 2.2 Simplified Baseline Methodologies for Small-scale CDM Project Activities (January 2003 – amended June 2004)

Project Type / Category	Technology / measure	Baseline
Type I - Renewable Energy		
I.A: Electricity generation by the user	-Solar power, hydropower, wind power, and other technologies used on-site (e.g., solar home systems, wind battery chargers). -Generation units are new or replace fossil fueled generation. -Capacity <15MW	Energy baseline is fuel consumption of technology in use or what would have been used without project.
I.B: Mechanical energy for the user	-Hydropower, wind power, and other technologies for on-site use of mechanical energy (e.g., wind or solar powered pumps). -Capacity <15MW, where specified, otherwise the estimated diesel-based electricity generating capacity to provide equal service is <15MW.	Estimated emissions from serving same load with diesel generator.
I.C: Thermal energy for the user	-Renewable energy technologies that displace fossil fuels or non-renewable biomass. -Includes biomass cogeneration systems for on-site use. -Capacity <15MW, where specified by manufacturer. -For cogeneration systems energy output not to exceed 45MW $_{thermal}$.	-Fossil fuel consumption or non-renewable sources of biomass consumption of technologies that would have been used without the project times the appropriate emissions coefficient. -Electricity consumption displaced times the relevant emissions factor calculated.
I.D: Renewable energy generation for a grid	-Renewables that supply electricity to a grid that is or would have been supplied by fossil fuels or non-renewable biomass. -In the case of renewable/fossil-fueled unit (e.g., wind/diesel) 15 MW eligibility limit only applies to renewable portion. -In the case of biomass/fossil-fueled unit total capacity not to exceed 15MW. -For biomass-based cogeneration systems, energy output not to exceed 45MW $_{thermal}$.	-For fossil-fueled systems baseline is annual kWh generated by renewable unit times emission coefficient for modern diesel unit of relevant capacity and load. -For the rest, baseline is kWh produced by renewable unit times a calculated emission coefficient (average of operating and build margin or weighted average of current generation mix).
Type II - Energy Efficiency Improvements		
II.A: Supply-side energy efficiency improvements - transmission and distribution	-Improvements to electricity or district heating T&D system up to equivalent of 15 GWh / year. -Applied to existing T&D systems or expansion projects.	-Energy baseline for retrofits is calculated technical losses within project boundary. For new facilities energy baseline is calculated technical losses within project boundary based on performance standard for equipment that would have been installed. -Emissions baseline is energy baseline times a relevant emission coefficient.

Project Type / Category	Technology / measure	Baseline
II.B: Supply-side energy efficiency improvements - generation	-Improvements to electricity or thermal system by reducing energy or fuel consumption up to equivalent of 15 GWh / year. -Applied to existing stations or a new facility.	-Energy baseline for retrofits is calculated as monitored performance of existing unit. For new facilities, energy baseline is calculated technical losses within project boundary based on performance standard for equipment that would have been installed. -Emissions baseline is energy baseline time emission coefficient for fuel used by generating unit.
II.C: Demand-side energy efficiency programmes for specific technologies	-Programmes to encourage adoption of energy-efficient products at many sites. -Applies to replacements or new installation. -Aggregate energy savings not to exceed equivalent of 15 GWh/year.	-Where energy displaced if fossil fuel, the energy baseline is fossil fuel consumption in absence of the project. The emissions baseline is the energy baseline times an emissions coefficient for the displaced fossil fuel. -Where energy displaced is electricity, the energy baseline is calculated by aggregating the electricity consumption of products replaced, accounting for technical losses. The emissions baseline is the energy baseline times an emission coefficient for the displaced electricity.
II.D: Energy efficiency and fuel switching measures for industrial facilities	-Measure implemented at single industrial facility, energy efficiency is main component. -Includes replacement of existing equipment or new installations. -Aggregate energy savings not to exceed equivalent of 15 GWh/year.	-Energy baseline is energy use of existing equipment or of the facility that would otherwise be built, taking into account technical losses from T&D of grid electricity to project site. -Emission baseline is energy baseline of each energy form time relevant emission coefficient.
II.E: Energy efficiency and fuel switching measures for buildings	-Measure implemented at single building or similar group of buildings, energy efficiency is main component. -Includes replacement of existing equipment or new installations. -Aggregate energy savings not to exceed equivalent of 15 GWh/year.	-Energy baseline is energy use of existing equipment or of the facility that would otherwise be built, taking into account technical losses from T&D of grid electricity to project site. -Emission baseline is energy baseline of each energy form time relevant emission coefficient.
Type III - Other Project Activities		
III.A: Agriculture	More work is needed in this category (CDM EB)	
III.B: Switching fossil fuels	-Fossil fuel switching in existing industrial, residential, commercial, institutional or electricity generation application. Energy efficiency is secondary component. -Reduces anthropogenic emissions by sources and emit < 15 kT of CO_2E / year.	Emission baseline is current emissions per unit of output. Emission coefficients are needed for fuel used before and after switch.
III.C: Emission reductions by low-greenhouse gas emitting vehicles	-Adoption of low greenhouse gas emitting vehicles that reduces anthropogenic emissions by sources and directly emits < 15 kT of CO_2E/year.	Energy use/unit of service * average annual units of service/car* # of cars affected * emission coefficient for fuel in without-project scenario

Project Type / Category	Technology / measure	Baseline
III.D: Methane recovery	-Methane recovery from coal mines, agro-industries, landfills, wastewater treatment facilities, and other sources. -Reduces anthropogenic emissions by sources and emits < 15 kT of CO2E / year.	-Emission baseline is methane that would be emitted during the crediting period under a without-project scenario. -Covers only capture and flaring that would not have happened in absence of project. -If project uses recovered methane for electricity or heat generation project is eligible under other categories, only one PDD is needed.
III.E: Methane avoidance	-Avoids methane emissions resulting from decay of organic matter. -Project does not capture or combust methane. -Reduces anthropogenic emissions by sources and emit < 15 kT of CO2E / year.	Baseline emissions are amount of methane from decay of organic matter within project boundary.

Implications for CDM Project Development in the LAC Region

Approved methodologies have been posted on the UNFCCC's website. Along with a description of the baseline and monitoring methodologies is a list of criteria for determining in which cases the methodologies will apply to a project. In some cases the criteria are fairly specific and the methodologies will not be transferable to many other projects. Because the majority of the approved methodologies are based on projects in Latin America, there may be a higher chance that they will be relevant to other project opportunities in Latin American countries where there may be similarities in regulations, fuel usage, emissions factors, etc.

Further implications and recommendations are provided in section 7.

3. The CDM and Development

This section reviews the prospective role of the CDM in meeting developing goals and the contribution of the simplified procedures for small-scale CDM projects.

Potential Benefits of the CDM to Development Goals

Development projects that incorporate renewable energy into their design can reduce GHG emissions while simultaneously providing other community benefits. More than two billion people in the world today do not have access to sufficient energy to meet their basic needs; many others do not have access to adequate energy services. Energy is central to all human economic activity. Access to basic, clean energy services from sustainable use of biomass resources, solar, micro hydro and wind energy is essential for development and poverty alleviation, and provides major benefits in the areas of health, literacy and equity.

For example, renewable energy technologies can:

- provide an alternative to fossil fuels
- provide a source of income
- provide amenities such as light, heat, motive power, fertilizers
- reduce vulnerability to climate change and other disasters
- decrease the outflow of financial resources to pay for fuels and electricity
- improve health, and air and water quality
- provide opportunities for new businesses, especially for women

The UN's Plan of Implementation from the 2002 World Summit on Sustainable Development in Johannesburg specifically refers to sustainable energy.

- Launch an action program to improve access to affordable and sustainable energy services sufficient to facilitate the Millennium Goal of halving the proportion of people in poverty by 2015 (Para. 8)
- Develop a program to accelerate the shift towards sustainable consumption and production to promote social and economic development (Para. 14)
- Increase the global share of renewable energy to at least 5% of total primary energy supply by 2010, requiring each country to adopt and implement specific national goals (Para. 19e)

The CDM could provide an additional source of project financing from the sale of CERs, helping many rural energy projects get off the ground. If it can be demonstrated that the additional carbon financing from the CDM will assist in the development of a project, and that the project will serve to reduce GHG emissions (or absorb carbon), then application can be made to take advantage of the CDM.

As a buyer of credits, an Annex I country emitter can participate in the CDM by investing directly in a project and receiving a return in the form of CERs. Depending on the financial structure of the deal, the emitter may also receive a financial return. The benefit of this approach is that it puts funds into the hands of the project developer as a seller of credits upfront and enables the

developer to move forward with project development based on shared risk between buyer and seller.

Local stakeholder involvement and consultation is required in the CDM process. This can strengthen a community project, fostering a participatory process and promoting the development of CDM projects that truly support sustainable development goals.

Simplified Procedures for Small Scale CDM Projects

As noted in Section 1, the CDM Executive Board has approved a set of simplified procedures for small-scale renewable energy, energy efficiency and other projects that reduce emissions and provide obvious local development value. The procedures allow the use of a series of standard baseline methodologies, a simple statistical operational check in place of measurement of emissions reductions, a set of barrier based additionality criteria, and a simplified Project Design Document (PDD).

The simplified procedures provide some "leveling of the playing field" between large industrial scale projects and smaller community scale projects that might have more sustainable development value.

The Pembina Institute recently completed a yearlong project in India to assist with the development of eight small community-based rural energy projects. The purpose of the project was to determine whether the UNFCCC simplified procedures provided enough incentive for small-scale projects to use the CDM. The projects included micro-hydro, solar lighting (3), solar water heating, biomass gasification, brick kiln efficiency, and irrigation treadle pumps. Financial assistance was provided to each project developer through a CDM Small Projects Facility, and workshops were provided on the development of business plans, emissions analysis, financial analysis with and without carbon financing, the CDM simplified procedures, and production a project design document that could be used to gain CDM approval.

From a development perspective, the project developers were able to assess whether the CDM was a potential source of project financing for them, and the price per tonne that would make the project viable with the CDM. The project also enabled NGOs to share information on the CDM with others and to expand the application of these technologies.

Table 3.1 below provides a summary of the eight small community-based CDM projects developed in India. The table includes descriptions of the projects, the type of technology used in each project and the category of simplified small-scale methodology applied, as well as an identification of the source of the emissions reduction.

It is important to note that each of these projects is based in the local community. Their implementation will provide benefits including improved lighting for local households, access to clean water, and reduced environmental impacts.

The Small Projects Facility provided an opportunity to test the UNFCCC simplified procedures for small-scale CDM projects in a real situation.

Table 3.1: CDM Small Projects Facility: Details of Projects Developed in India

Project Proponent	Technology/Small-Scale Category	Description/Benefits	Source of GHG Emissions Reduction	Estimated Emissions Reductions (CO_2 eq)
International Development Enterprises (IDE) Delhi	20,000 Treadle Pumps. Category I.B: Mechanical Energy by User	A major marketing expansion of IDE's innovative treadle pumps among small and marginal farmers as the most cost-effective means of irrigation for small holders.	The pumps will replace the use of diesel pumps that use up to 1 litre of diesel fuel per hour.	95,600 tonnes over 10 years
Market Dynamics, Calcutta	38,000 Solar Home Systems. Category I.A: Electricity by User	Expansion of the PV lighting market in West Bengal with systems ranging from 17 to 72 Wp. The main beneficiaries of the project include remote area households, marginal farmers, and small and marginal micro-enterprises	The lighting systems will replace kerosene and biomass for lighting, and diesel generator sets.	42,000 tonnes over 10 years
Tara Nirman Kendra, Delhi	70 Vertical Shaft Brick Kilns. Category II.C: Specific Efficient Technologies	Improved energy efficient brick kilns and concrete building material technology. This will lower the amount of coal that is burned in brick production and thus pollution levels surrounding the kilns.	The new kilns will reduce the use of coal.	234,000 tonnes over 10 years
Sahyadri Energy Systems, Bangalore	300 micro hydro power units at 5 & 25 kW capacity. Category I.A: Electricity by User	Beneficiaries include individual farmers who would benefit from an uninterrupted supply of power for food processing and pumping in remote areas	The hydro schemes will replace existing or planned diesel generators	8,360 tonnes over 7 years
India Rural Energy Network (IRENet). Coordinated by IRENet Secretariat, Delhi	24,572 Solar Lanterns. Category I.A: Electricity by User	An India-wide Solar Lantern project involving 20 NGO Members of IRENet. Expansion of the availability of solar lighting to village communities. Project beneficiaries include households, farmers, market stall holders, local suppliers and maintenance shops.	The lanterns will displace the use of kerosene, batteries, and temporary grid connections.	20,600 tonnes CO_2 over 10 years
Sungrace Energy Solutions, Bangalore	159,374 Solar Lanterns. Category I.A: Electricity by User	Manufacturing and distribution of PV lighting products to the rural poor throughout India. The solar lanterns and home systems will provide both a source of energy-efficient lighting as well as income generation through rural cooperatives.	The lanterns will displace the use of kerosene, batteries, and temporary grid connections.	92,180 tonnes over 10 years
NAMSI Solar, Bangalore	4695 Domestic Solar Water Heating. Category I.C: Thermal Energy by User	This will help end users in Karnataka consume less grid power, saving considerably on their monthly electricity bills, and reducing environmental impacts from coal power generation.	The systems will replace electrical boilers/geysers that use grid electricity.	40,860 tonnes over 10 years
Vijay Engineering, Bangalore	126 Biomass Gasifiers. Category I.C: Thermal Energy by User	Market expansion of small waste wood biomass gasifiers for thermal applications — primarily in small industries like textiles, food and metal processing, and hotels	The gasifiers will replace diesel-fuelled boilers used for small industrial thermal applications.	46,400 over 10 years

Pembina's experience in India showed that the simplified UNFCCC procedures can reduce the time and cost of preparing a project for CDM financing but that the procedures are not as streamlined as they could be. It was also found that several technologies used in community energy systems, such as solar lighting replacing kerosene lamps, were not represented in the standard methodologies. It is unlikely that small-scale development projects will be able to use the CDM without:

- Some capacity building and project development assistance
- Further reductions in the fees charged to small scale projects for CDM registration and validation/verification
- Higher prices paid for CERs from small scale projects
- Special mutual funds set up by Annex 1 countries to purchase CERs from small-scale projects
- Innovative ways to bundle or aggregate several small scale projects of different types

To date there has been interest from potential investors in only one of these projects. There has been no take-up of these projects among Canadian investors to whom the project was originally targeted.

The lack of sufficient incentives for small-scale CDM projects is further illustrated by the fact that to date only four methodologies have been brought before the CDM Executive Board for review.[23]

Pressures to Reduce the Development Value of the CDM

Regardless of the financing method, from the point-of-view of the large Annex 1 GHG emitters, the CDM will provide opportunities for large GHG reductions at low prices. This has unfortunately encouraged a weaker interpretation of the Marrakech Accords to ensure that low prices continue.

The majority of projects submitted to the Executive Board to date for review of baseline methodologies and registration as CDM projects have been large-scale energy or industrial projects.[24] This is because many of these projects originated as investments by the World Bank PCF and the Dutch CERUPT programs that do not have explicit sustainable development requirements. This has lead to some controversy in the CDM approval process as described in Section 1.

As the experience of the Pembina Institute has demonstrated to date, there is a clear trade-off between low-cost carbon abatement and the achievement of sustainable development benefits. The CDM Small Projects Facility in India resulted in 8 small to micro level renewable energy projects that, while they qualify for the CDM, are much more valuable in terms of the sustainable development benefits they can provide to the rural communities once implemented. However, the relatively low estimated carbon emissions reductions over time has limited interest among carbon investors who are more anxious to trade in kilotonnes rather than tonnes during the first commitment period and are not prepared to pay the higher prices necessitated by these projects in order to make them viable.

[23] http://cdm.unfccc.int/Validation/publicPDD

[24] CDM Watch, "Status Note March 2004", www.cdmwatch.org/files/2004%20status%20note.pdf

Many Annex I country emitters are also suggesting that they would simply agree to purchase CERs as they are produced, and not invest in the project upfront in return for future CERs. This reduces the financial risk to the buyer, but increases the risk to the project developer because s/he is forced to assume upfront costs for project development. There is also pressure on host countries to water down the CDM's sustainable development, environmental impact and stakeholder involvement requirements in order to attract investment. The Gold Standard for CDM JI projects described in Section 4: CDM Markets, has been established to encourage both CDM project developers and buyers of CER to ensure that high levels of sustainable development are demanded by host governments

In developing small-scale development projects for the CDM, the results of the Pembina Institute project in India described above confirmed literature reports that certain renewable energy technologies do not lend themselves to carbon financing at current carbon prices. The required carbon prices at which small-scale renewables technologies could benefit from the CDM were often above those offered by the World Bank Prototype Carbon Fund and the Dutch CERUPT program (US$3–5). These prices do not reflect the true value of emissions reductions and do not pay enough for emissions reductions to make smaller projects worthwhile. There are also differences in carbon prices on the EU market and the prices paid to developing countries. These differences seriously erode the role of the CDM in development.[25]

The CDM Small Project Facility piloted by the Pembina Institute in India showed that a small amount of financial and technical support for community scale project developers can have a significant impact, and result in investment-ready business plans and project design documents. The Pembina Institute is currently establishing a CDM Small Projects Facility in Kenya, and other agencies are developing similar support facilities in Asia. However, without this type of support being available in all developing countries, it is unlikely that good development projects will be able to have access to carbon financing through the CDM.

The CDM and Community Development in the LAC Region

There are many community scale rural energy projects in LAC region that could benefit from carbon financing. However, the current UNFCCC simplified procedures for small scale CDM projects, coupled with the low price for carbon and the lack of a measure of project development value, will not be sufficient to encourage small scale projects to apply to the CDM.

Recommendations are provided in Section 7.

[25] CDM Watch and WWF. 2003. *Fair Trade? Who is benefiting from the CDM?* Available online at www.cdmwatch.org.

4. Current CDM Markets

This section provides an assessment of the current market for CDM projects, including active and prospective buyers, the types of project they are interested in (large, small, renewable energy, etc.) and the implications for the LAC region.

What are CDM Markets

Under the Marrakech Accords, investment in CDM projects to acquire CERs may be made by Annex I countries themselves or by private sector industries within Annex 1 countries that have national commitments to reduce GHG emissions. These commitments will be legally set by national governments in order to achieve the GHG reductions agreed to under the Protocol. Investors will therefore be:

- Companies from Annex 1 countries that cannot meet their national GHG reduction commitments at home
- Annex 1 countries that choose to purchase CERs directly as part of their GHG reduction requirements under the Kyoto Protocol
- Carbon funds set up by international or national public or private agencies to invest in emissions reduction or sequestration projects or purchase "carbon credits" on behalf of private sector companies or Annex 1 countries. These funds may have their own project criteria, but to qualify as a Kyoto compliant CER, the project must still go through the CDM Executive Board approval process.

Few countries have yet completed their national allocation process among GHG emitters, or decided on the number of CERs that they will purchase directly. The current CDM market therefore consists mostly of carbon funds, and most of the participants in these funds are Annex 1 countries. A few companies have invested some trial amounts in carbon funds, and others are considering investing directly in CDM projects or purchasing carbon credits from potential Kyoto compliant projects[26]. These are in the minority, however.

Carbon finance brokers are beginning to play a role in CDM markets – finding projects that are potentially Kyoto/CDM compliant on behalf of the few companies that are interested in CERs. These companies include those that are looking for CDM projects that have high development value and low environmental impact and are willing to pay more for these projects per tonne. The Brokers are also positioning themselves to work with carbon funds – aggregating and bundling groups of projects, or offering portfolios of potential CDM projects.

The above situation may change once more Annex 1 country companies receive concrete commitments from their governments to reduce GHG emissions, and the future of the Kyoto Protocol is clearer. Even then, however, most companies will prefer to use a carbon fund or broker to purchase CERs to reduce risk and the eliminate need to get into international investing. In this case, all project development and other transaction costs are borne by the fund and CDM project developer, and the company will not need to become involved until the CDM project is registered by the Executive Board – a requirement under the Protocol so that the CER can be

[26] Projects that have prepared CDM PDDs but have not yet obtained CDM Executive Board approval and are registered as a CDM project.

registered against an Annex 1 country account. As shown in Section 3 above, however, this can reduce the development value of the CDM.

CDM Market Standards - The Gold Standard

The Marrakech Accords explicitly state that it is the host country's responsibility to ensure that a CDM project results in sustainable development, does not have a negative environmental impact, and ensures stakeholders have had a chance to comment on the project. The Executive Board decides whether the project is additional. Many stakeholders are concerned that this situation may result in CDM projects that do not meet international standards of environment, human rights, etc. To reduce the chance of this happening, some CER buyers will specify their own standards or investment criteria for CDM projects they will invest in, or look to some international standard that they can reference when evaluating projects.

To meet this need for an international standard, the Gold Standard[27] has been set up by the World Wildlife Foundation (WWF) as a best practice benchmark for CDM and JI projects in an attempt to identify the development and environmental quality of a CDM project. It provides project developers with a tool that helps ensure their project meets the highest standards of development, is unquestionably additional, and has real environmental benefits and, in so doing, brings confidence to host countries and the public that these projects represent new and additional investments in sustainable energy services**.**

More details are provided on the Gold Standard in Appendix 3.

International Carbon Funds

These funds have been set up by multilateral financial institutions and other agencies to invest in GHG reduction or sequestration projects that will be eligible under the CDM, and will therefore earn CERs for fund members/investors when (and if) the projects are approved and registered by the CDM Executive Board. The funds act as mutual funds with the CERs shared among members in proportion to the size of a member's investment. There is some risk that projects in which the funds invest may not be approved by the Executive Board because they do not meet additionality or other CDM requirements – this has already been the case with a few projects (see Section 2). There is also a risk that projects in which the funds invest may not find conventional financing and not go ahead.

World Bank

The World Bank was the first international institution to invest in carbon projects and has been the primary investor as of this date in CDM projects. It began with the Prototype Carbon Fund (PCF), and recently has branched out with two new funds: the Community Development Carbon Fund (CDCF), aimed at smaller scale projects with more benefits to the community; and the BioCarbon Fund, that invests in LULUCF projects. While these funds are administered by the World Bank, public and private sector investors are invited to invest in them, in exchange for their respective share in the credits that are generated from the projects as well as a say in how the funds operate.

[27] See "The Gold Standard" available on the WWF's website www.panda.org/about_wwf/what_we_do/climate_change/what_we_do/business_industry/gold_standard.cfm

Prototype Carbon Fund

One of the largest investors in carbon projects to date, the PCF has led the way in the development of PDDs and baseline and monitoring methodologies. Principal investors in the PCF include the governments of Canada, Japan, Norway, Sweden, Finland and the Netherlands, plus a number of private firms such as BP Amaco, Deutsch Bank, Gaz de France, RWE, Mitsubishi and several Japanese Electric Utilities. PCF pays a maximum price of $5/tonne CO_2, and a maximum of $3.6 million per project (2% of the funds total assets). However, they prefer that the cost of emissions reductions be less than US$10 per tonne of carbon (tC), or about US$3 per tonne of CO_2 (tCO_2). PCF has typically paid $3-5 per tCO_2 with a $0.5 per tCO_2 premium for projects with development benefits (www.prototypecarbonfund.com).

In terms of its additionality requirements the PCF has not explicitly gone beyond the basic UNFCCC requirements. Specifically PCF asks that:

- *Baseline or reference scenario should represent the most likely Business-as-Usual scenario in the country (e.g. with regards to fuels mix, planned expansion of electricity grid, etc.).*

In practice PCF has generally advised that project additionality is demonstrated through a least cost analysis or through barrier tests. The Executive Board has fine-tuned the interpretation of additionality over the past year, and some PCF projects may not meet these more precise additionality requirements.

Regarding project types, PCF has the following criteria:

- Project should be replicable and/or facilitate technology transfer for the country;
- Technology to be applied must be an established and commercially feasible one in somewhere other than the country in consideration; and
- Project proposal should contain sample cases of the technology applied in the past in order to show its commercial feasibility.

Although the PCF aims for a regionally balanced portfolio, in reality the majority of its CDM projects are in Latin America (Guatemala, Brazil, Chile, Colombia, and Costa Rica). The majority of PCF projects have been in renewable energy development, though they have also invested in biomass and landfill gas projects. The following is a list of PCF funded projects that have been submitted to the EB for methodology approval:

- El Gallo, Hydro Project, Mexico, *Approved*
- Durban Landfill Gas to Electricity Project, South Africa, *Approved*
- Nova Gerar Landfill Gas to Energy Project, Brazil, *Approved*
- Jepirachi Windpower Project, Colombia
- El Canada Hydro Project, Guatemala, *Turned Down - Not approved*
- TA Sugars Co-generation and Fuel Switch Project, India, *Approved*
- Municipal Solid Waste Treatment Project, India
- Indocement's Sustainable Cement Production Project, Indonesia
- Andijan District Heating Project, Uzbekistan

Community Development Carbon Fund (CDCF)

In 2003 the World Bank began a new fund, the CDCF, with the intention of purchasing CERs from small-scale CDM projects that have "measurable sustainable development benefits". The fund is expected to pay 5-7 US/tCO_2$, with a total expected budget of 100 million $US.

According to the CDCF Project Criteria, CDCF projects submissions will be judged by their achievement of national and local environmental benefits. No limit on the size of projects has been specified. Projects submitted to the CDCF will need to complete a Community *Benefits Questionnaire*, along with the Project Idea Note (PIN), in order to provide the details of benefits the project will bring to the community.

The types of projects the CDCF is likely to buy emission reductions (ERs) from include wind, small hydro, landfill gas, refuse driven fuel, gas flare reduction, geothermal, electric/hybrid vehicles, and biomass fuels including crop-residue fuels such as bagasse, rice and coffee husks, and wood fuels. In some community-level projects, a portion of the carbon payments may go to provide funding for clean water, schools, clinics, and other services (www.carbonfinance.org).

The initial contributors to this fund include the governments of Canada, Italy, and the Netherlands, Japanese companies such as Daiwa Securities SMBC, Idemitsu Kosan, Nippon Oil, Okinawa Electric, BASF of Germany, and ENDESA of Spain.

BioCarbon Fund

Another new fund to be administered by the World Bank has been created to invest in demonstration projects that sequester or conserve carbon in forest and agro-ecosystems. The target size of the Fund is US$100 million. According to the Biocarbon Fund website a typical project will be expected to deliver between 400,000 and 800,000 tonnes of Carbon Dioxide equivalent (CO_2e) over a period of 10 to 15 years. The BioCarbon Fund will pay on delivery of the carbon credits at a negotiated price usually within the range of US$3-4 per tonne CO_2e. This means that a typical project will receive about US$2 million in payments. As the Fund is intended to promote biodiversity conservation and poverty alleviation the project criteria include:

- Brings about real gains in carbon sequestration or net greenhouse gas emission reductions (considering all greenhouse gases);
- Clearly meets sustainability criteria and contributes to the goals of major environmental conventions such as The Convention on Biological Diversity (CBD), The Convention to Combat Desertification (CCD) and the Ramsar Convention on wetlands;
- Improves the livelihoods of a significant number of *local/low-income* people;
- Is cost effective;
- Offers learning opportunities, e.g. in the areas of design, finance, institutional arrangements, implementation, monitoring, leakage and permanence;
- Adequate enabling environment is in place;
- Is replicable.

Projects do not necessarily need to conform to the CDM rules on LULUCF projects. The Biocarbon fund will have a CDM window and non-CDM window in order to promote learning for all types of carbon sequestration projects. More details are available on the fund's website (www.carbonfinance/biocarbon). The governments of Canada, France, and Italy have invested in the Biocarbon Fund along with a number of companies, including Suncor Energy, Swiss Re, Fuji

Film, several Japanese Electric Power Companies (Tokyo, Chugoku, Hokkaido, Okinawa, Shikoku), and a number of forestry funds.

IFC-Netherlands Carbon Facility (INCaF)

The Carbon Facility is an arrangement under which the International Financial Corporation (IFC) (World Bank), will purchase CERs for the benefit of the Government of the Netherlands, with an allocated budget of € 44 million (about US$ 47 million.). The Facility is open to most project types eligible under the CDM, but will give preference to renewable energy and energy efficiency projects. The Facility prefers to work with projects in which IFC is already an investor but will also consider non-IFC financed projects, in cases where there are well-established sponsors with access to confirmed sources of conventional financing.

INCaF has a pipeline of emission reduction projects including biomass, small hydro, wind and methane recovery project, including projects in Brazil, Argentina and Mexico. Projects must comply with IFC's Environmental and Social Policies and Guidelines and any project with large-scale adverse environmental or social impacts will not be considered. No mention is made of the price the Facility will pay for CERs or the size of projects they are looking for. More information and a PIN template are given on their website (http://ifcln1.ifc.org/ifcext/enviro.nsf/Content/INCAF).

2ECarbon Access

EcoSecurities, a broker that deals in carbon credits, has recently set up a new facility for small-scale CDM projects that is focused primarily on Latin America called 2E Carbon Access. This facility is financed through grants from E+Co, the UN Foundation and private capital from investors arranged by EcoSecurities. Through this facility EcoSecurities will help source and facilitate small-scale projects, developing all the paperwork required for registration of the project (PDD) and arranging for validation, all on behalf of private sector investors. Emission reduction purchase agreements can be negotiated either by the private investor or by the facility. Through this facility project developers do not need to worry about project registration – the process and costs are all handled by the 2E Carbon Access.

Currently, 2E Carbon Access is developing 3 PDDs for small-scale hydro projects, ranging in size from 3.5-12 MW in Guatemala, Honduras and Brazil, and is in the process of signing another four projects (biomass and small-scale hydro) in Honduras and Nicaragua. 2E Carbon Access foresees another 20 projects in Latin America in the near future. Though they do not have a specific policy regarding project types, they are primarily looking at renewables and energy efficiency projects. However, landfill gas and biomass are also being considered. Project developers may contact Annika Lundgren at EcoSecurities <annika@ecosecurities.com>.

Climate Investment Partnership

The Climate Investment Partnership (CIP) is a non-profit association that intends to provide upfront financing and technical resources for projects that promote renewable energy and reduce greenhouse gas (GHG) emissions. The CIP provides both the conventional financing needed for the project as well as the carbon financing. The returns are therefore in the form of conventional financial returns as well as CERs. The CIP was announced at COP9 as an "investment clearinghouse" for GHG emission reduction projects, and is in the early stages of implementation. Several European financial institutions are expected to provide the conventional financing. The

objective of the CIP is to reduce the likelihood of a GHG reduction project not going ahead because of a lack of conventional financing.

The Project Selection Criteria, according to the CIP website, www.climateinvestors.com, are:

- Commercially attractive projects;
- Substantial GHG reduction potential;
- High likelihood for projects to qualify under a major GHG regulatory regime (e.g. Kyoto, or European Union Emissions Trading System;
- Partially funded projects (30% minimum);
- Technology focus: renewable energy (biomass, hydro, wind, geothermal, solar, etc.); methane capture; fuel-switching; and energy efficiency;
- Substantial non-GHG benefits.

Annex I Country Funds

These funds are set up by individual Annex 1 countries to acquire CERs that will contribute to their national Kyoto Protocol commitments. The acquisition may be made by contracting out this acquisition to a third party (as in the Netherlands CERUPT) program, or by purchasing CERs directly. The number of CERs will vary according to the emissions reductions that can be achieved within each country, and the allocation of Kyoto commitments between national emitters and government.

European Union

Though carbon trading has been relatively slow because of the uncertainties of Kyoto ratification, *European Directive* of October 2003 of the European Parliament and of the Council of 13 October 2003 establishes a scheme for greenhouse gas emission allowance trading within the Community. Under the Directive, EU countries and companies will have to meet emission reduction commitments even if Kyoto does not enter into force. The EU has also proposed that as early as 2005, CERs will be convertible into EU allowances at 100% as long as the conversion is approved by a national government. An EU linking directive allowing EU countries to use CERs to meet up to 50% of their national allocations was approved by the European Parliament on April 20, 2004. This will mean that there will likely be a CER market even without Kyoto ratification.

EU countries are now finalizing their National Allocation Plans[28] which will allocate emissions reductions across sectors and industries. The extent to which private sector companies will be looking for CDM investments depends to some degree on these allocations, i.e. how much they will have to reduce. It remains to be seen whether the bulk of CER purchases will be primarily government players that buy them in order to cover emissions gaps in, for example, the transportation or household sectors, or if there will sufficient incentive for private companies to get involved. To date, the European Commission has assessed the National Allocation Plans for Austria, Denmark, Germany, Ireland, the Netherlands, Slovenia, Sweden and the UK. The Comission has not assessed final allocation plans for Finland, Luxembourg, Lithuania, Slovak

[28] They were to be submitted to the EU by March 31, 2004; however some countries such as Greece experienced delays.

Republic, Estonia, Latvia, Portugal, Belgium, France and Spain. Italy, Czech Republic and Hungary have submitted their draft allocation plans[29].

Carbon trading in Europe has been relatively slow over the past few months, as many companies are waiting until the National Allocation Plans are finalized before they start planning their emissions reduction strategies. The primary players who have been involved so far are the large power utilities who are more aware of their pending obligations under Kyoto and the EU Directive. Smaller companies have not yet started to get into the market.

Many European governments however, have already begun their own programs to acquire credits from CDM and JI projects. The details of these are given below:

Netherlands

The Netherlands is the only country so far to make a serious investment to acquire carbon credits that would eligible under CDM and JI rules. In 2001, under its "CERUPT" program, the Dutch government commissioned a consultant to issue a tender for GHG reductions, asking for projects that reduce emissions by at least 100,000 tCO_2e and would qualify as CDM projects under the UNFCCC rules. By March 2003, 18 climate projects in developing countries had been approved under CERUPT, of which 7 are in Latin America (Brazil, Costa Rica and Panama), with an expected total reduction of 16 million tCO_2e, at a price of 3.3 – 5.5 euros per tCO_2e. The Latin American projects are for the most part hydroelectric plants or landfill gas projects.

The following CDM projects have been contracted through CERUPT:

- High efficient power generation, Bolivia
- Tremembé Landfill gas project, Brazil, Baseline Methodology Approved
- Wind Farm Inner-Mongolia, China
- INCSA expansion project, Costa Rica
- Landfill gas project, Costa Rica
- 15 MW Wind Project, India
- Biomass project Maharashtra, India
- Biomass project Rajasthan, India
- Bayano hydroelectric project, Panama
- Hydroelectric Power Generation Fortuna, Panama
- Esti hydroelectric power plant, Panama

Many of these are business-as-usual projects, as CERUPT did not specify a strict definition of additionality. This has meant that several CERUPT projects may not be approved by the Executive Board as CDM projects and will not count towards the Netherlands Kyoto commitments (see also section 2). The Dutch government is now buying CERs through the IFC's CDM facility (see above). However, CERUPT has been a useful test of the CER acquisition process that will provide guidelines for other countries, and has resulted in a much clearer definition of additionality that will be used later in 2004 to purchase carbon credits eligible for Joint Implementation (JI) through CERUPT's partner program "ERUPT". More details are provided in Appendix 1.

[29] http://europa.eu.int/comm/environment/climat/emission_plans.htm
Accessed July 17, 2004.

Information on the ERUPT program, which focuses on carbon credits from emissions reductions resulting from Joint Implementation (JI) projects is available in Appendix 1.

Denmark

The Danish government has recently initiated a carbon fund of DKK200M (€27M) per year for the next three years (2004-2007), to be equally distributed between credits from CDM and JI projects. At present, Denmark has CDM agreements with Malaysia, Thailand and South Africa and has identified project opportunities in those countries. Apparently, Denmark has chosen to begin with these host countries for the following reasons: 1) Denmark has established relations in these countries through Danish environmental development aid; 2) sustainable energy projects are viable in these countries; and 3) they can offer considerable volumes of potential emission reductions[30]. So far Denmark has not shown interest in Latin America, but that could change in the future. They have indicated a purchase price of 5 Euros per CER.

Italy

In January 2004, the Italian Carbon Fund was made operational. This Fund will be a public-private partnership, facilitated by the World Bank that aims to purchase 40 MtCO_2e from CDM and JI projects for use in helping Italy to meet their emission reductions in the first commitment period. The Fund is currently endowed with $US15 million from the Italian government and has a target size of $80 million. Private partners are being sought to provide a minimum of $1.5million. The Fund already has identified some fifteen projects, mainly CDM projects, and all are at a very early phase. Latin America is among the target regions for host countries. See carbonfinance.org for more details and a brochure.

Belgium

Belgium has also announced that it plans to purchase 12.3 Mt CO_2e from CDM and JI projects through a project tender expected to be launched towards the end of 2004 with a €10 million budget. Belgium's federal government will establish a technical committee to determine selection criteria for projects that will be accepted through the tender. Belgium has also recently signed a Memorandum of Understanding (MOU) with Chile on CDM projects[31].

Finland

The government of Finland launched the Finnish CDM/JI Pilot Program in 1999 with the aim of building administrative capacity, preparing guidelines for the selection and implementation of projects, and acquiring emission reduction credits. The program has identified over 40 potential CDM projects, 7 of which are ongoing, at various stages of the project cycle.

According to the Finnish government they give priority to "Projects that reduce poverty, promote environmentally sustainable development, and enhance social equality, democracy, human rights and good governance…Projects must not have negative social, economic or environmental impacts and must support the Finnish Policy on cooperation with developing countries. We do also emphasize cost effectiveness."

[30] Carbon Market Europe, or CDM monitor (date)
[31] PointCarbon, March 25, 2004

Earlier this year, the focus of the Finnish program moved to small-scale CDM projects. A call for projects closed on March 31, 2003, resulting in 23 potential small-scale projects proposals. Contract negotiations have begun for four of these projects. The projects include: a package of five hydro projects in Honduras, biogas recovery and utilization in Costa Rica, 9 biomass gasified power plants and a mini hydro scheme in India. The Finnish government hopes to acquire 1.5 - 1.8 Mt CO_2e. from the Pilot Program at an estimated price between 2.5 and 6 Euros per tonne CO_2e.[32]

Germany

KfW, a German Bank for small and medium-sized enterprises is starting a carbon fund in collaboration with the German government. The fund is expected to have a volume of 50 million Euros and will invest in JI and CDM projects on behalf of its investors. The fund aims to build a diversified portfolio in order to minimize risks, and allows for companies to invest small amounts in the fund. More information can be obtained at www.kfw.de or from <klimaschutzfonds@kfw.de>.[33]

Spain

Spain has recently finalized their National Allocation Plan. The Plan indicates that 100MT of their emissions reductions between 2008 and 2012 will depend on GHG mitigation projects[34]. Thus, both the government and private companies will soon be in the market for credits. In fact, the Spanish Association for Standards and Certification (AENOR) is currently seeking accreditation from the CDM Executive Board.

A number of Spanish utilities are starting to investigate potential CDM projects, and for the most part they are looking to Latin America for project opportunities.

Austria

The Austrian CDM/JI Program launched a CDM tender in December 2003 that will be open until September 2004. The program has a total of €72M for purchasing CERs between now and 2006. The project types they are specifically looking for include renewable energy, landfill gas recovery, waste management and energy efficiency projects. However, other projects will also be considered. More information and templates are available at http://www.klimaschutzprojekte.at/en/downloads.php . Austria has primarily looked to JI countries in Eastern Europe for projects, but is also showing interest in CDM countries, particularly in Asia.

Canada

The Canadian government does not invest directly in CDM projects or purchase CERs at the present time. However, Canada's Climate Change Plan 2002 has a commitment to purchase 10 Mt by some means during the Kyoto first commitment period. Canada has also signed agreements with large emitters that it would acquire credits on their behalf if the cost of domestic GHG

[32] Carbon Market Europe
[33] Carbon Market Europe,
[34] http://www.mma.es/oecc/doc/docs_espana/PNA20040706.pdf
Accessed July 17, 2004.

reductions that these emitters undertook or international offsets were greater than CAD$15. Canada would presumably need to acquire some of these credits through CDM or JI. Finally, Canada has invested in the World Bank's PCF and CDCF described above.

Canada's CDM/JI office helps facilitate private sector CDM projects. They have been fairly active in Latin America and have signed MOUs on the CDM with Ecuador, Cuba, Colombia, Nicaragua, Costa Rica and Chile, and are negotiating MOUs with Argentina, Uruguay, Bolivia, Dominican Republic and Peru. The CDM and JI office has funded feasibility or baseline studies for potential projects in Argentina, Chile, Cuba, Brazil, Costa Rica, and Honduras. Through CIDA's Climate Change Development Fund, the Canadian government has also funded CDM capacity-building projects in Argentina, Chile and the Caribbean.

Of the Canadian companies actively looking for CDM investments, large utilities such as TransAlta Utilities and Ontario Power Generation have been at the forefront for a number of years and have put out project tenders in the past. Canadian agricultural consulting company AgCert is developing swine manure projects in Brazil and Mexico, and potentially other Latin American countries.

Japan

Japan's MOE (Ministry of Environment) has also set up a Kyoto Mechanism Support Centre that will gather information on promising CDM and JI projects and disseminate it to potential investors. A number of Japanese companies are actively involved in developing CDM projects, with four CDM projects already approved by the Japanese government. One of these is a Fuel Switch project in Brazil submitted by the Toyota Tsusho Corporation. In addition, the Japanese utility J-Power is buying CERs from the following projects in Latin America: Graneros Fuel Switching, Metrogas Package Cogeneration, Metrogas Methane Recovery from Pipeline Rehabilitation (Chile); La Vuelta and La Herradura Hydro-electric (Colombia); Candelaria Hydro-electric (Guatemala) and Aquarius Hydro-electric project (Brazil).[35]

Implications for LAC Region

The LAC Region is well represented with emissions reduction projects in which the World Bank PCF and Dutch CERUPT program has invested, although some have been turned down by the CDM Executive Board as not meeting the baseline and additionality requirements of the CDM. Others like the Plantar project in Brazil have sparked local and international controversy.

Meanwhile, the European Union has developed its own GHG reduction regime that allows EU member countries to meet up to 50% of their emissions reduction targets through CERs or emission reductions that meet CDM standards. This means that there will be a market for carbon emission reductions even if the Kyoto Protocol does not come into force. In the short term it is unlikely that countries outside the EU like Canada and Japan will be a strong market for CERs until either the United States or Russia ratify the Protocol. In the longer term Canada and Japan might link their emissions reduction regimes with the EU as an alternative to Kyoto.

Recommendations for LAC countries are provided in Section 7.

[35] GTZ News, September, 2003
http://www.teriin.org/events/docs/nss-cdm/sn.pdf
Accessed July 17, 2004.

5. Host Country Response to the CDM

As outlined in Section 1, there are five fundamental stages to the development of a CDM project according to the procedures and schedules outlined in the Marrakech Accords. The first stage in CDM approval process is **Host Country Approval**. Host countries can assume either a passive or proactive role for supporting CDM project development in their own country. Governments can establish minimal requirements for government approval or become active in helping to develop good CDM projects through a comprehensive promotional and capacity building program.

The purpose of this section is to undertake a review of the institutional arrangements and infrastructure for the CDM in a cross-section of countries as well as an examination of their sustainable development criteria, and provisions for stakeholder participation. Examples are provided on how host country governments outside OLADE have developed CDM project criteria, established approval mechanisms and infrastructure, supported project development (including training, marketing, etc.), and successfully managed stakeholder participation in the CDM, ensuring that rural communities benefit from the CDM and women and indigenous people participate in CDM project development and implementation strategies.

Development of a National Approval Process

The importance of the CDM as a financing mechanism for host countries cannot be underestimated given that in 2003, 9 out of 10 tonnes of carbon emission reductions were from developing countries or countries in transition according to the World Bank's State of the Carbon Market Report 2003.[36]

The key role of host countries is to approve prospective projects that will be submitted for CDM registration. The first step that must be performed by host countries is the designation of a **National Authority** for the evaluation and approval of CDM projects. The ease with which a host country is able to establish its National Authority is dependant upon a favourable political environment and existing technical expertise.[37]

Once the Designated National Authority (DNA) has been set up, an evaluation and approval process needs to be developed. Roles and responsibilities are assigned to specific agencies and project approval criteria specified. In so doing, the DNA must ensure that the process is consistent with international criteria as outlined in Article 12 of the Kyoto Protocol.[38]

Article 12 of the Protocol provides that projects must assist non-Annex 1 countries "in achieving sustainable development and contributing to the ultimate objective of the Convention", result in "real, measurable and long-term benefits related to the mitigation of climate change", and result in "reductions in emissions that are additional to any that would occur in the absence of the certified project activity".

[36] World Bank, "State of the Carbon Market 2003", December 2003, http://carbonfinance.org/pcf/router.cfm?Page=Home, p.5.
[37] Figueres, Christine, Ed. "Establishing National Authorities for the CDM", Winnipeg, Manitoba, 2002. IISD and CSDA, p.53-4.
[38] Ibid, p.64-70.

The national project approval criteria enable the host country to determine whether the proposed CDM projects support its national policies as well as meet its development priorities. As there is no internationally agreed upon sustainable development criteria, host countries are responsible for defining criteria that reflect their national development priorities. Projects should not be permitted if there are no sustainable benefits or there are negative benefits arising from the project.

The actual project evaluation process can be divided into preliminary and secondary screenings. During the first screening, the project developer submits a summary of the project so that upon initial review, it will be possible to determine whether there is sufficient information to assess the project in detail in the secondary screening. A project identification note (PIN) or project concept note (PCN) are formats which have been developed by some CDM participants as a guide to packaging the required project information but the drafting of these notes is not mandatory under the Accord. The secondary screening is a technical evaluation of whether the proposed project meets both the national and international criteria. Following a successful evaluation, the host country signs its letter of approval.

A host country's assessment role through its Designated National Authority is vital as it can increase the probability of validation and certification of approved projects, encourage development of CDM projects in specific sectors, and minimize investor risk associated with non-validation/certification. [39]

Some countries have already identified their Designated National Authority and, as illustrated by the examples in this report, have moved forward in developing their institutional frameworks and infrastructure.

Sustainable Development Criteria

The CDM was established as a mechanism by which greenhouse gas emission reductions could be achieved in a cost-effective way in exchange for investment in sustainable energy technologies in developing countries. While host countries retain responsibility for assessing the sustainable benefits derived from CDM projects and countries have identified such evaluative criteria, the Marrakech Accords provide little direction when ensuring that benefits are achieved. "Host governments do have a chance to ensure some local benefits at the Host Approval stage of the project, but in practice they do not necessarily have the resources, expertise or priority on these issues."[40]

Host countries will take different approaches to setting sustainable development criteria for CDM projects. However, it is useful to define a basic set of principals of sustainability. In general, a project can contribute to three types of sustainability:[41]

Ecological Sustainability:

- Maintain productive capacity and renewability of species and of biologically productive land and water surfaces

[39] Ibid, p.64-70.
[40] Begg, K. et al. "Encouraging CDM Energy Projects to Aid Poverty Alleviation", DfiD KARR Programme, June 2003. www.iesd.dmu.ac.uk/contract_research/projects/cdm.htm (Report and 5 annexes), p.14, main report.
[41] Figueres, p.63-4

- Maintain Earth's life support systems, including living ecological processes and functions, and global physical systems
- Preserve biological diversity

Economic Sustainability:

- Provide all with meaningful employment and a place to make a contribution
- Create sufficient wealth to allow all to meet their needs, and attain a high quality of life
- Drive innovation and technology improvement, meeting human needs with less resources and less ecological damage
- Maintain physical and social infrastructure, and knowledge assets for future generations

Social Justice and Equity:

- Maintain cultural identity and respect
- Empower and support the participation of individuals while protecting the strength and viability of community
- Equitably share natural resources and the benefits of development
- Provide equal access to nutrition, health, education, self confidence and opportunity
- Foster peace and security

As noted in section 4, the WWF has established the Gold Standard for the CDM and JI projects to provide a minimum definition of sustainable development.

It is important therefore that host countries are explicit in describing their sustainable development criteria, that these criteria meet international standards, and they are transparently applied during the CDM project approval process in each host country.

Environmental Impact

If, during the project approval process, either the project developer(s) or the host country believes that negative environmental or social impacts from the project activity will be significant, then an environmental impact assessment (EIA) must be carried out. The assessment should include impacts from both within and outside the project boundary area and follow the host country's procedures. The results of the environmental assessment must be attached to the final Project Design Document. The host country's sustainable development criteria can serve as a basis for the EIA.

Stakeholder participation

Local stakeholders have two opportunities to provide comment on the proposed CDM project activity. The project developer must consult with stakeholders to garner input and support for their project. A summary of this consultation process, as well as the comments received and how the comments were taken into consideration must be included in the final Project Design Document. The second opportunity for input occurs when the Designated Operational Entity (DOE) makes the Project Design Document public. In this stage, stakeholders have 30 days to provide comments. The DOE then evaluates the comments and determines whether the project should go forward.

A paper released by the Climate Action Network (CAN) post COP-7 identifies continued gaps in stakeholder's access to information and opportunities to comment during the CDM project development process. While it was noted that the public comment period on technical reports has been lengthened to 8 weeks and the CDM Executive Board is now tasked with developing a

process for stakeholder initiated review of CER registration, there still remains little concrete information available in a timely way to the public. For example, distribution of crucial information via the Internet does not meet the needs of many local stakeholders who are most likely impacted by these projects; information is often marked "confidential" and thus not available to stakeholders, and stakeholders are often only invited to comment in the initial development stages of a project. [42]

In the final analysis, CDM projects through their contribution to the achievement of sustainable development benefits could contribute to the equitable distribution of wealth and thus bridge the gap between rich and poor. Furthermore, this would also empower women in various sectors of the economies of host countries, as women are key players in the use of natural resources. This is especially true in rural areas of many developing countries. The recognition of women's role is important to promoting gender equity and ensuring that women have voice at all levels of project decision-making.[43]

Individual Country Responses

This section illustrates the host country role in CDM project approval based on the experience of three sample countries: China, India and Kenya. Details of the institutional arrangements for national CDM approval, sustainable development criteria, and stakeholder participation of each country are outlined in Appendix 4, along with brief snap-shots of approaches taken in a few other countries.

National Process

In the application of CDM national infrastructure, India is probably at the forefront of testing its effectiveness, and has identified a number of constraints in the process. There is a need to resolve uncertainties regarding the rules and procedures for the CDM and to identify the issues pertaining to both industry and government. The CDM will be unlikely to generate expected opportunities unless issues of uncertainty are clarified, including additionality, bundling of small projects, the definition of sustainable development and high transaction costs for project developers. Because of a lack of policy clarity at the national level, more work needs to be done to establish priorities, maintain continuity in government offices to retain capacity, engage state governments and clear up taxation and legal issues.[44]

China has shown that many of the requirements in a CDM approval system can be handled by either existing approval processes and/or environmental impact assessment requirements currently used for projects in which there will be foreign investment.

Sustainable development criteria

Both India and China have set out explicit sustainable development criteria that cover economic and social development issues. China's criteria, however, consists of a list of eligible project

[42] Eddy, N., "Public Participation in the CDM-Report from COP7", February 2002. "Public Participation in the CDM and JI", July 21, 2000. Climate Action Network (CAN). www.climatenetwork.org/
[43] Beggs, K. et al., p.69 attach2
[44] Ramachandran, G., "Clean Development Mechanism (CDM): The Indian Scenario", Hyderbad, undated slide presentation, Environment Protection Training and Research Institute (ERTI), www.ecosecurities.com/cdmindia/ProjectDocumentation/Indian%20Context%20Ms%20Gayathri%20Ramachandran.pdf

types. Most projects would meet at least one of these criteria. India's on the other hand require all projects to meet four basic criteria concerned with social, economic, environmental, and technological well-being. While these are more general it does set out a set of minimum standards that must be met by the project.

The India criteria illustrate the importance that host countries place on technology transfer under the CDM. One of the main reasons host countries should support tighter definitions of additionality in the CDM is to maximize the support for the newest clean technologies that can provide true sustainable development.

Stakeholder participation

The country examples in this report show there are few provisions being made by host countries for stakeholder input. China has provisions for input from local residents with respect to an EIA, but none have specific mention of meaningful involvement at the grassroots level. It has been recommended that in Kenya, information on the CDM be incorporated into environmental seminars, conferences and workshops.[45]

[45] Beggs, K. et al., p.69 attach2.

6. CDM Capacity Building Programs

This section reviews current capacity building programs offered by bilateral and multilateral agencies and ways in which LAC countries could benefit from these programs.

The Need for Capacity Building

The CDM is a complex means of accessing carbon financing and while countries are anxious to harness the benefits of the CDM in the development of new projects and investments, it is difficult to fully understand the project cycle and all that it entails. Increased knowledge of the CDM is made more challenging by the fact that the CDM rules are being constantly interpreted and re-interpreted at the policy level.

Without local capacity and expertise, developing countries find they are limited in their ability to participate in carbon financing. For example, about 48 of a total of 70 developing countries that have ratified the Kyoto Protocol have a Designated National Authority and but only a limited number have developed their project approval procedures.[46]

Given these realities, capacity building involving increased training and awareness is a necessity at all levels, from host country government to community project developers, if developing countries are to effectively utilize the CDM to attract carbon financing. Expertise of government, NGOs, small and medium scale enterprises, etc, as well as a national CDM approval system are the "single most critical factor determining the attractiveness of a CDM investment" according to a recent survey by PointCarbon.[47]

"Capacity building is required in host countries despite the increasing number of initiatives because of the complexity of the task and the lack of in-country resources…. It is clear that financing the capacity building actions is a priority if the CDM is to be implemented successfully on a reasonable scale. Host governments do not have the capacity or funding to do this entirely on their own."[48]

A framework for capacity building in developing countries was adopted at COP 7. Shortly thereafter, a comprehensive review of the framework was begun to assess its effectiveness. At COP 9, an interim report (FCCC/SBI/2003/14) entitled the "Analysis of the implementation of the framework for capacity building in developing countries" identified some of the existing gaps in capacity building programs and some of the additional requirements needed to complete the review process before COP 10. Three key areas were identified: [49]

- Institutional strengthening: additional support to the national focal points including preparation of national communications, coordination of climate change projects as well as capacity building activities, ability to respond to requests from subsidiary bodies.

[46] World Bank, "CDCFPlus brochure", www.carbonfinance.org
http://www.cdm.unfccc.int/DNA
Accessed July 17, 2004.
[47] Ibid.
[48] Beggs, K. et al. "Encouraging CDM energy projects to aid poverty alleviation", Executive Summary p.19
[49] UNFCCC, "Analysis of the Implementation of the Framework for Capacity-building in Developing Countries", FCCC/SBI/2003/14, p.12-13.

- Technical training: further training due to new guidelines, staff turnover and extension of training to include national, sub-regional, regional government personnel.
- Access to information systems: provision of computer hardware and software for host countries to enable them to develop data collection and management systems, improve information exchange between stakeholders and improve public access.

Once capacity building programs have been established, their integration into national planning and sustainable development strategies increases the sustainability of programmes. Ninety-six percent of UNDP projects, 100% of UNEP and 86% of World Bank projects have capacity building components.[50]

Examples of CDM Capacity Building Programs

Funding for the capacity building programs is often provided by bilateral donors and multilateral agencies. Appendix 5 provides details of the following 9 programs and outlines their application criteria.

- Prototype Carbon Fund *plus*
- CDCF *plus*
- BioCarbon Fund *plus*
- CD4CDM
- Global Environment Facility
- Government of Finland
- CDM/JI Office, DFAIT, Canada
- Netherlands Clean Development Facility
- Italian Carbon Fund

The common purpose of these programs is to support the development of CDM projects in developing countries that will result in emission reduction credits for the Annex I countries providing the support. However, the means by which this will be accomplished differs among the programmes.

Multi-lateral programs such as those offered by the World Bank and CD4CDM have direct interaction with host countries, accessing funds from a trust to support capacity building, training and outreach to both host countries and project developers. Through increased knowledge and awareness about the CDM, barriers to implementation will be overcome, and organizations will move forward in the development of their projects in line for investment support through funds such as the Prototype Carbon Fund (PCF) and the Community Development Carbon Fund (CDCF).

Annex 1 country programs such as that offered by Finland, Canada, Netherlands and Italy have been developed to support both capacity building and project identification. In return, when CERs are purchased from these projects, emission reduction credits will be registered against the Kyoto commitments of these countries.

Some capacity building programs require an Annex 1 country partner. For example, host countries interested in accessing funds from the Canadian program requires that the host country/project developer have a Canadian partner through which to submit an application.

[50] UNFCCC, "Analysis of the Implementation of the Framework for Capacity-building in Developing Countries", FCCC/SBI/2003/14, p.5-6

7. Implications of the Current CDM Environment for the LAC Region

The assessments provided in each of the preceding sections will hopefully give LAC stakeholders a more comprehensive understanding of the CDM process and highlight how the CDM may be used to support sustainable development in the LAC Region. This section provides some recommendations for LAC countries based on the lessons learned during the first two years of the CDM.

General Recommendations

Based on the first two years of operation of the CDM, LAC project developers wishing to participate in the CDM should try to bring projects forward to the CDM that:

1. Are clearly additional and meet the additionality guidelines appearing in Appendix 1
2. Meet the Gold Standard for CDM or have obvious and unquestionable sustainable development value.

LAC governments should prepare CDM approval guidelines that include:

- Sustainable development and environmental impact criteria that meet international norms.
- Clearly defined additionality criteria similar to those in Appendix 1.
- Technology transfer criteria that ensure that the CDM brings new innovative solutions to meet development needs.
- Allows for local stakeholder views on CDM projects to be taken into account in approving the project.

It would also be useful if LAC governments encouraged organizations and companies from the LAC region to apply for accreditation as Designated Operational Entities. Using a LAC regional entity to validate potential CDM projects would improve the quality of evaluation and reduce the cost to project developers.

Finally, LAC governments should try to reduce the financial barriers that prevent small-scale CDM projects from benefiting from the CDM.

Baseline and Monitoring Methodologies

Project developers of new CDM projects in the LAC Region should review the list of methodologies approved by the CDM Executive Board to determine if one has already been approved that applies to their project. At this point in time approved methodologies for the four categories of projects where a developer has the greatest chance of being able to use an approved methodology are in Landfill Gas Projects, HFC23 destruction, fuel switching, and hydroelectric power. If an approved methodology exists for a project, and the necessary data is available, the easiest route to validating and registering it is to apply the approved baseline and monitoring methodologies to this project and use them in the PDD. Note that baseline and monitoring methodologies are approved together, such that if a project developer decides to use a specific baseline methodology they will also need to use the corresponding monitoring methodology.

The PDDs for projects whose methodologies have been approved are also available on the UNFCCC website. Even if these projects have not yet been validated and registered, they may

serve as a useful model in writing your own PDD. In most cases, project developers will also need to use regional and project-specific data such as emission factors, economic data, etc.

In cases where no approved methodologies are yet available, project developers have a number of options:

- wait until an appropriate methodology is approved (especially in cases where relevant methodologies are currently under consideration – see UNFCCC website for a list methodologies under consideration),
- develop a new methodology for your project, using an approved methodology as a model,
- revise a methodology that was rejected such that it meets the requirements a of the Meth Panel and EB, or
- develop an entirely new methodology appropriate to your project following the guidelines and comments of the EB and Meth Panel.

In any of these cases, during development of a new methodology the project developer should ensure that the methodology:

- clearly demonstrates that the project is not the baseline scenario, preferably using one or more of the tools recommended by the EB,
- clearly identifies the project boundary and adequately addresses all emissions within this boundary as well as leakage (emissions related to the project that lie outside of the boundary),
- adequately justifies all assumptions,
- uses appropriate and up-to-date data,
- provides a strong link between baseline and monitoring methodologies as they will be assessed as a single package, and
- uses ex-ante emission factors unless the use of ex-post emission factors can be sufficiently justified; and the baseline emission rates are also calculated and reported beforehand in the PDD.

It is recommended that the additionality test (shown in Appendix 1) be followed by all CDM project developers in LAC.

The CDM and Development

If community scale rural energy projects in LAC region are to benefit from carbon financing through the CDM, it will important for LAC countries to:

- Provide capacity building and project development assistance to community scale project developers from a fund such as the Canadian CDM Small Projects Facility or the 2ECarbon Access (see Section 4).
- Seek further reductions from the CDM Executive Board in the fees charged to small scale projects for CDM registration and validation/verification.
- Encourage higher prices to be paid for CERs from small scale projects (e.g. those that meet the Gold Standard – see section 4).
- Encourage Annex 1 countries to set up special mutual funds to purchase CERs from small-scale projects.
- Provide innovative ways to bundle or aggregate different types of small scale projects.
- Encourage carbon financiers to provide more up-front financing in return for later delivery of CERs.

LAC countries can also provide more incentive to small-scale projects by endorsing the Gold Standard for CDM and JI projects and including the sustainability criteria from the Gold Standard in their national CDM project approval criteria.

Setting these high standards for sustainable development and stakeholder input will also reduce the number of controversial projects being submitted to the CDM. This is turn will help to make the CDM approval process faster.

CDM Markets

LAC countries should look to the emerging EU country markets for the highest growth in the demand for CERs. The standards set for these CERs will likely be better defined than the Marrakech Accords as is illustrated by the new Dutch additionality criteria given in Appendix 1. The EU will also be less tolerant of controversial projects than the World Bank PCF has been.

LAC countries should also encourage investment from specialized international funds such as the World Bank Community Development Carbon Fund and funds that offer to pay higher prices for CERs that meet the Gold Standard. This will ensure that carbon investment provides financing at the community level as well as for larger projects.

Host Country Response

Based on experience in other countries, it is recommended that host countries in the LAC region should try to use existing structures for project EIA, stakeholder input, etc. and where possible to handle the CDM approval process. Host countries should use the Designated National Authority for coordination; this will minimize both the additional institutional structures that have to be put in place and the capacity building that has to be carried out. This approach has been used in China.

Host countries in LAC would also be advised to follow India's lead and set well specified high-level sustainable development criteria in four main areas: social, economic, environmental, and technological (clean technology) well being:

- Social well-being: The CDM project activity should lead to alleviation of poverty by generating additional employment, to the removal of social disparities and should contribute to provision of basic amenities to people leading to improvement in their quality of life.
- Economic well being: The CDM project activity should bring in additional investment consistent with the needs of the people.
- Environmental well-being: This should include a discussion of: the impact of the project activity on resource sustainability and resource degradation, if any, due to the proposed activity; biodiversity-friendliness; impact on human health; reduction of levels of pollution in general.
- Technological well-being: The CDM project activity should lead to transfer of environmentally safe and sound technologies with a priority to the renewables sector or energy efficiency projects that are comparable to best practices in order to assist in upgrading the technological base.

Finally host countries should encourage and embed stakeholder participation in approval process, particularly where existing project approval processes do not include local input.

Capacity Building

A strategic approach will be needed by host countries seeking to build CDM capacity to ensure that the external support programs are targeted at their specific needs and are not merely donor-driven exercises, implemented on an ad hoc basis that are unsustainable in the long term.[51]

Not only should programs include provision for knowledge transfer, but there should also be provisions for sustainability and stakeholder participation. Greater public access to information as well as dialogue with new and old stakeholders will foster new alliances and strengthen support for climate change as a priority for achieving sustainable development.[52] Such a focus will improve a country's attractiveness for investment but also mitigate the risks involved in project development based on the development of a solid foundation.

In the past, the LAC Region has benefited from capacity building programs provided by OLADE and GTZ in the form of workshops, seminars and training sessions.[53] New programs such as those outlined in Appendix 4 have recently been developed in the last two years and it is suggested that first steps in terms of accessing financial and technical assistance would be for the host countries to contact the appropriate representatives of these funds in order to request a needs assessment to identify current barriers and shortfalls that could be addressed through a capacity building program.

Additional Information Sources

In addition to the sources referenced in this paper, the following two CDM User Guides will provide the reader with more complete details of the CDM Project Cycle.

PROYECTO PLANER-MDL - GUIA DEL USUARIO PARA MDL
"Planeamiento y Estrategias para la Implementación del Mecanismo de Desarrollo Limpio del Protocolo de Kyoto en América Latina" December 2002
www.escansa.com/PLANER/Guia%20del%20Usuario%20MDL.pdf

A Users Guide to the Clean Development Mechanism (Second Edition). February 2003
Pembina Institute for Appropriate Development
www.pembina.org/publications_item.asp?id=148

[51] Joint Implementation Quarterly, "Management Systems for Capacity Building", JIN October 2003, p. 8-9. www.jiqweb.org
[52] Bucher, E.H. et al., "Country Capacity Development Needs and Priorities, Regional Report for Latin America and the Caribbean", UNDP-GEF Capacity Development Initiative, September 2000. p. x-xi.
[53] Bucher, E.H. et al., "Country Capacity Development Needs and Priorities, Regional Report for Latin America and the Caribbean", UNDP-GEF Capacity Development Initiative, September 2000. p. 64.

Appendix 1: The ERUPT 4 Additionality Test

The Dutch Government's initiative for procuring carbon credits eligible for the Kyoto Protocol's Joint Implementation (JI) mechanism is called "ERUPT" program. Senter, an arm of the Dutch Government implements the ERUPT program by order of the Ministry of Economic Affairs of the Netherlands. Through ERUPT, Senter buys carbon credits from investments in renewable energy, energy efficiency, fuel switch, afforestation/reforestation and waste management projects. The program is implemented on a tender basis.

The following are the additionality criteria for the next ERUPT tender issued in The Hague, 19 March 2004

What is additionality?
Article 43: A (CDM) project activity is additional if anthropogenic emissions of GHG gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.
Key idea: prove that project is not Business-As-Usual (BAU).

Additionality in the CDM
Generally, there are three types of additionality tests in the CDM:

- A more economically attractive course of action exists
- The project is not viable without the carbon credits component
- The project must overcome several barriers

The project developer must use one or more of these tests.
In general, the test must be transparent and replicable.
Validator will check, public can comment.

Test 1: A more economically attractive course of action exists
Use economic arguments that your project is not the most attractive course of action

- Internal Rate of Return
- Net Present Value

Step 1: Determine several plausible alternatives for the project in the country.
Step 2: Calculate the IRR or NPV of these alternatives

- Calculation must include expected cash inflow and outflow that are affected by the decision

Step 3: Calculate the IRR or NPV of your project without carbon credits.
Step 4: Determine whether your project has a lower IRR or NPV than the IRR/NPV of the alternative. If yes, project is additional
In general:

- Use data that is publicly available and that can be verified
- Be conservative in your assumptions
- Justify discount rate and time period of calculations
- Show projections in spreadsheet where possible
- Project must have lower emissions than 'most attractive course of action'

Test 1: Example: wind energy project
Step 1: Possible alternatives in the country include coal plant, gas-fired combined cycle, and hydro.
Step 2: Coal: 12% IRR, CC: 14 % IRR, Hydro: 10% IRR.
Step 3: Your project: 8% IRR.
Step 4: Project has lower IRR than most economically attractive course of action (CC) – project is additional.
Alternative to comparing the project IRR with IRRs of alternative investments, the CDM EB allows the use of:

- Government bond rates or other appropriate estimates of cost-of-capital (e.g. commercial lending rates)
- Other hurdle rates that can be applied to country or sector

Test 2: Project is not viable without carbon credits
Use economic arguments that your project is not viable without income from carbon credits

- Internal Rate of Return
- Net Present Value

Step 1: Determine whether a law would require the project to be carried out.
Step 2: Calculate the IRR or NPV of project with and without the carbon credits

- If no activity at all would take place without carbon credits, show only IRR or NPV with carbon credits.

Step 3: Determine whether the IRR or NPV is significantly higher with the sale of carbon credits than without the sale. If yes, project is additional.
In general:

- Use data that is publicly available and that can be verified
- Be conservative in your assumptions
- Justify discount rate and time period of calculations
- Show projections in spreadsheet where possible

Test 2: Example 1: LFG Project
Step 1: No law exists to cover landfill and flare methane

- E.g. EU LFG Directive implemented with transition period

Step 2: IRR with the carbon credits and sale of electricity is 12%. IRR without carbon credits (but including sale of electricity) is 6%.
Step 3: Difference in IRR is significant – project is additional.

Test 2: Example 2: HFC 23 Project
Step 1: No law exists to destroy HFC 23.
Step 2: No secondary products: cannot compare IRR or NPV. Project entails significant capital and operating costs.
Step 3. No other reason to incur these costs but for the creation of emission reductions – project is additional.

Test 3: Project faces serious barriers
The project may not materialize due to the presence of barriers.
The CDM EB has identified four different barriers. Investment Barriers:

- Examples: Real and/or perceived risk associated with the technology or process is too high to attract investment; funding is not available for these kinds of projects

Technological Barriers

- Examples: The project represents one of the first applications of the technology in the country

Barriers due to prevailing practice

- Examples: Corporate culture prohibits these kinds of projects, because of lack of will or perceived risk

Other barriers

- Examples: Management lacks experience; low priority by management; or the community may fail to see the environmental benefits of the projects

In general:

- Provide transparent information, including documentary evidence
- Be conservative in your assumptions

Test 3: Example: Biomass in Thailand

The project is designed to use rice husks for electricity generation that would otherwise be burned in the open or decay.
Rice Husk Ash (RHA) can be used as a substitute for clinker in manufacturing cement.
Project aims to purchase rice husks from a large number of suppliers.
Boiler technology was adopted due to their ability to produce high quality ash product.
Investment Barriers:

- Higher costs because of RHA – lower Return on Investment
- High risk perceived by investors because the Project sources its rice husks from many different suppliers
- Carbon credits increases Return on Equity by 7%

Technological Barriers

- Technology is new to Thailand
- Lack of engineers and operating staff

Other barriers

- Low status of the Project
- No experience in CDM in Thailand

Appendix 2: Approved Methodologies for Specific CDM Project Types

Landfill Gas Projects

Four different methodologies have been approved for landfill gas projects and three of these have been in Latin America (all in Brazil). The Meth Panel has been asked to consolidate the four methodologies so that it is easier for a project developer to decide which one is most suitable for their project.

AM0002 - Salvador do Bahia – *Greenhouse Gas Emission Reductions through Landfill Gas Capture and Flaring where the Baseline is Established by a Public Concession Contract"*

The Salvador do Bahia methodology was the first to be approved by the EB and can be used for projects where no generation of electricity using landfill gas occurs or is planned and when there exists a contract (awarded through a competitive process) between the municipality and the landfill operator that specifies the rate of landfill gas to be collected. The **baseline methodology** is simple yet effective in that amount of landfill gas to be captured and flared as specified in the contract determines the emissions baseline, and any amount flared beyond the contractual obligation is additional and is used to determine the emissions reduction. The **monitoring methodology** requires direct continuous measurement of the amount of LFG captured and flared at the flaring platform. The methane emission reduction from the project activity will be calculated as the difference between the measured quantity of methane that is capture and contractual amount.

This methodology is applicable to LFG capture and flaring projects in which the following conditions exist:

- no generation of electricity using captured LFG occurs or is planned
- there exists a contractual agreement that makes the operator responsible for all aspects of the landfill design construction, operation, maintenance and monitoring,
- this contract was awarded through a competitive bidding process,
- the contract stipulates the amount of LFG to be flared annually,
- this amount reflects performance among the top 20% in the previous five years of landfills operating under similar social, economic, environmental and technological circumstances,

Unfortunately not all landfill contracts today stipulate the amount of LFG to be flared. However, in cases where the above conditions apply, this methodology allows a fairly straightforward and elegant means to calculate the baseline and the project emissions.

AM0003 – Nova Gerar - Simplified *Financial Analysis for Landfill Gas Capture Projects*

The second landfill gas methodology to have been approved was submitted with the NovaGerar Landfill Gas to Energy Project in Nova Iguaçú, Rio de Janeiro, Brazil.

This methodology is applicable to landfill gas capture project activities where:

- the captured gas is flared; or
- the captured gas is used to generate electricity, but no emission reductions are claimed for displacing or avoiding electricity generation.

- there are only two plausible scenarios - the baseline (business-as-usual) scenario or the project scenario

This **baseline methodology** assumes that in the baseline scenario a certain quantity or percentage of the methane generated at a landfill site will be recovered and flared in order to comply with regulations or contractual requirements, or to address safety and odour concerns. This percentage, labeled as the Effectiveness Adjustment Factor, (EAF) is based on the effectiveness of gas collection systems that would be implemented through regulatory or contractual requirements or as common industry practice at the time of inception of the project. It also takes into account potential changes (e.g. regulatory) that may occur during the crediting period. The default value for the EAF is 0.20, but it could be larger, and project proponents using this methodology need to demonstrate that there are no regulatory, contractual or other requirements that would require a larger fraction of the methane to be destroyed in the absence of the project. The EAF is to be revised at the beginning of each new crediting period.

The methodology also defines a step-by-step process to be used in order to determine if the project is additional, including an investment analysis and the demonstration that the only other scenario is the business as usual scenario.

The **monitoring methodology** is based on direct measurement of the amount of landfill gas captured and destroyed at the flare platform and the electricity generating unit (essentially the same as that used in AM0002). The monitoring plan provides for continuous measurement of the quantity and quality of LFG flared and electricity generated. The electricity used by the pumping equipment is treated as leakage and needs to be metered. Electricity sold to the grid is deducted from purchased electricity prior to calculating leakage but no credits are calculated for displaced electricity.

AM0011 Tremembé - ***Baseline Methodology for Landfill Gas Recovery with Electricity Generation and No Capture or Destruction of Methane in the Baseline Scenario***

The third landfill gas methodology to be approved was affiliated with a CERUPT project in Trerembe, Brazil. This methodology applies to landfill gas projects where:

- the baseline is full atmospheric release of methane
- electricity may or may not be generated but emission reduction credits from electricity generation are not considered.

The **baseline methodology** establishes project additionality by using a three-step process, (as developed by CERUPT) that:

1) assesses regulatory requirements to demonstrate that LFG flaring is not legally required in the region,

2) assesses economically attractive options to show that the baseline (venting to the atmosphere) is the most economic course of action, and

3) assesses common practices and barriers.

The **monitoring methodology** is similar to the previous two.

This methodology will most likely be consolidated with AM003 (Nova Gerar) before being finalized as an approved methodology.

AM0010 Durban - *Methane recovery from landfill gas used for electricity generation*

The fourth landfill gas methodology to be approved is based on the Durban, South Africa, and is landfill gas to electricity generation project. The methodology is applicable to project activities that recover methane from landfill, additional to that required in national legislations in baseline, and uses it for electricity generation. It is only applicable in cases where the base load is more emission intensive than the peak load.

The **baseline methodology** for this project has two parts, the first for methane recovery and the second for electricity generations.

1. The baseline to be used for methane recovery is based on local legislation, unless current practices or the contractual agreement goes beyond the local regulations, in which case the latter will be used as the basis for the setting the baseline.

2. The baseline to be used for the electricity generation credits is based on the average grid emission factor. This is only relevant if the base load is more emission intensive than peak load.

Additionality is demonstrated by assessing the Long Run Marginal Costs of the project (including methane recovery) and showing that they are higher than the Long Run Marginal Costs of the local grid. The methodology also needs to show that without this project buyer would have bought electricity at a lower cost.

The monitoring methodology calculates the grid emission factor ex-ante and also used ex-post monitoring.

HFC Projects

AM0001 Ulsan HFC-23 Project – *Incineration of HFC 23 Waste Streams*

HFC-23 is a by-product of the production of HCFC-22. Presently there is no restriction on the consumption and the production of HCFC 22 for most developing countries, though they are to be frozen to 2015 levels by 2016, and 100% phase out is to be achieved by 2040 (the rate of phase out between 2016 and 2040 is not specified yet). Presently the HFCs resulting from the production process are allowed to be emitted to atmosphere. However, as HFC 23 has a very high GWP (12,000) its capture and destruction can represent a very attractive GHG emission reduction opportunity.

Since there is no economic benefit to the destruction of HFC 23 and in general Annex 1 countries are not required by any legislation to reduce HFC23, it is fairly straightforward to show the additionality of this type of project.

The project activity in this case captures and decomposes HFC 23 emissions that would otherwise be released to the atmosphere. The baseline methodology includes an economic analysis to demonstrate additionality and uses existing and historical emissions to calculate the baseline emissions.

This approved methodology originally also included leakage and other emission sources (i.e. emissions associated with steam consumption) that were not included in the original version.

This methodology is applicable to HFC 23 (CHF3) waste streams derived from a facility that produces HCFC in any country where regulations do not restrict HFC 23 emissions. This project category may shortly top the list of the most attractive CDM projects due to the high GWP of HFC-23, the lack of additionality problems, low technology costs and the existence of an approved methodology

Hydro-Electric Projects

The Executive Board has approved one methodology (El Gallo, described below) for hydro projects, however this will only be applicable for grids that are not dominated by low-cost sources, and projects under 60MW. Other hydropower methodologies (for ***Guatemala's El Canadá*** project NM0006 and Penas Blancas project in Costa Rica NM0008) have been refused approval. In the former case, the primary reason for rejection being that the methodology does not explicitly demonstrate that the project is not the baseline scenario, or would not have gone ahead without the CDM. Other comments on this methodology were that it did not calculate baseline emission factors (these were only to be calculated ex poste through monitoring), and thus does not fully specify the baseline, and that it did not provide formulas used for least cost analysis. (Note that the El Canadá project itself is fairly advanced in its development and therefore would need a very rigorous baseline methodology to convincingly demonstrate that it would not have gone ahead without registration as a CDM project.

The Penas Blancas project (34.5 MW), which was developed for the CERUPT program uses a Dispatch Analysis for determining the baseline. The Meth Panel could not reach consensus on whether the Penas Blancas project should be classified as approved subject to changes or not approved. If the Executive Board decided to go with the first option, the Meth Panel would require the project proponents to modify the baseline and monitoring methodologies. The reasons for not approving the Penas Blancas project methodology include the following: the methodology does not demonstrate additionality for a project of this type, that greater transparency is necessary when presenting models in baseline methodologies, that the methodology does not address all sources of emissions, and that the ex-ante monitoring methodology used by the project would only apply to relatively small project activities that do not displace capacity investments over the crediting period. It is suggested that the methodology be improved by letting the scenario analysis run with the project activity and let an economic model test whether or not the project activity is the baseline scenario.

There are also four recently submitted hydropower methodologies currently under consideration: Bayano project in Panama (NM0043), Simimbe project in Ecuador (NM0054), PCH Passo do Meio project in Brazil (NM0051), and La Vuelta and La Herradura project in Colombia (NM0020).

The ***Bayano project*** methodology has received many public comments regarding 1) appropriateness of calculation of the baseline 2) adequacy of additionality-testing, however many of these comments relate specifically to the project (which has raised significant concerns among the NGO community as an example of a project that would have gone ahead without the CDM, and not necessarily to the methodology.

The ***Simimbe project*** has received a few comments about 1) the strength of the additionality-testing in general (since the project construction is almost complete, the project has full financing and has a power purchase agreement with the government); 2) the lack of specificity in the

investment barrier analysis with respect to the technology of the project; 3) the need to adequately document model results and assumptions in determining the baseline and emissions reductions; 4) the clarity of the project boundary and sources / gases that are included; and 5) the lack of integration between leakage assumptions and model outputs.

Comments directed at the ***PCH Passo do Meio*** project mainly relate to two issues. The first is their selection of using a combined margin approach to describe the baseline. This approach is seen as inappropriate for projects with a renewable crediting period – that is the combined margin would work for the first crediting period and the build margin for subsequent periods. The second issue related to their determination of baseline emissions, in which they should: use dynamic efficiency factors, reconsider using the threshold approach to calculate the build margin and adequately address the potential displacement of large power plants; and adequately account for leakage (methane emissions from reservoir and emissions from construction activities).

The ***La Vuelta and La Herradura*** project is currently undergoing a second round of public comments, after having incorporated the Meth Panel's recommendations to their original baseline and monitoring methodology. Main criticisms to the first version are similar to those presented above.

NM 0023 El Gallo Hydroelectric Project, Mexico (Approved)

This is the first methodology to be approved for a hydroelectric project. (Note, it is not clear if this methodology will be applicable to any type of electric generation, or just hydroelectric projects) It uses the average of the operating and build margin of the regional grid as is suggested in the recommendations for small scale projects and also defines exactly when hydro plants will become part of the operating margin according to the national load curve. It will likely be a useful model for other hydro and renewable energy projects, but the methodology itself will only be applicable in a specialized cases, in particular for relatively small projects where there are demonstrable barriers to renewable energy development (as is the case in Mexico), and where the grid is not dominated by low-operating cost sources.

The title of approved methodology is: *Barrier analysis, baseline scenario development, and baseline emission rate calculation for a proposed grid connected project that displaces power from the operation and expansion of the electricity sector,* and it is applicable under the following conditions:

- information is available to document prohibitive barriers to the project activity
- information is available to document that the project activity is not common practice
- the project activity displaces grid electricity, both operational and expansion, and the grid is clearly identifiable
- the grid is not dominated by zero or low operating cost generating sources, and this fuel mix is expected to persist for the duration of the crediting period.
- electricity exports are included in the electricity generation data that is used for calculating and monitoring the baseline emission rate (to avoid potential leakage)
- only for small electricity capacity additions, i.e. less than or equal to 60 MW

Additionality for this project is established additionality is done in three steps as follows:

1) identifying the barriers to the proposed project activity
2) explaining how only the approval and registration of the project activity under the CDM would overcome these barriers, thus confirming that the barriers are prohibitive

3) analyzing other activities similar to the project activity; (i.e. other hydro projects) to show that this is not conventional practice and to demonstrate that the barriers are legitimate

The **baseline scenario** approximates the emissions from the existing and planned capacity of the grid by using a 50/50 average of the operating and build margins. It provides an *ex ante* estimate of the baseline emissions rate, and the **monitoring plan** provides a means of refining the emissions baseline using *ex poste* measurements.

In the case of the **El Gallo project** for which this methodology was submitted, the PDD carefully goes through all the barriers facing the project, and looks at similar cases of hydro projects that have surmounted barriers and those that have not, to show that this is indeed not business-as-usual. In Mexico the main barrier to renewable electricity is that wholesale power purchasers are required by law to buy electricity from the lowest cost supplier.

The operating margin is calculated based on Mexico's entire generation mix excluding hydro, wind, nuclear and geothermal. The build margin is approximated by the 5 most recently built plants or the most recent 20% of the generating capacity, whichever is smaller in capacity. The monitoring plan also provides a means of refining the emissions baseline by ex poste measurements. The PDD for the El Gallo project presents a brief analysis of the environmental Impacts of the project. However it appears that these are not yet being looked at yet at least in the methodology approval process.

Note, this methodology was submitted after the EB clarifications on additionality were made, and thus it clearly addresses additionality using 1) barrier analysis and 2) through demonstrating that the project is not conventional practice. In the El Gallo project the primary barrier has been in securing financing.

There is some concern the barrier method of demonstrating additionality could serve as a perverse incentive for countries who wish to improve policies for renewable energy; in other words that they will intentionally maintain some of the barriers to renewable energy development in order to attract CDM investment. The Meth Panel is expected to attempt to address this issue but it remains to be seen if it can be successful.

Wind Energy Projects

As of this date no methodologies have been approved for wind energy projects, although three have been submitted. The *Wigton Windfarm Project (Jamaica)* has just been resubmitted for a second round of evaluations after being revised according to comments made by the Meth Panel and EB. The baseline methodology is a "build margin" methodology, using a generation-weighted average of emissions rates of recent capacity additions to estimate the emissions from future power plants that might be delayed or avoided. The build margin calculation excludes recently added renewable energy facilities from consideration, which the Executive Board did not agree with.

If the required changes are made correctly it is likely that it will be approved, this will be applicable to projects. Requested changes included, adding recently-built renewable energy plants to the build margin, clearly justifying why the build margin on its own is appropriate, and why the plant will not affect the operating margin, a removal of project-specific information in the methodology, and a clear procedure for the determination of additionality that can indicate whether or not the project represents the baseline scenario. It appears that they have made most

of the required changes, thus it is likely that it will be approved, but not clear to which projects the methodology will be applicable. However, it will give a further methodology and PDD to be used as a reference for renewable energy projects in Latin America.

Another wind energy methodology has been submitted, for *the Zafarana Wind Power Plant Project in Egypt (NM0036).* This methodology uses the average of the build and operating margins as given is recommended for small-scale projects, it also carries out a barrier analysis, but does not really demonstrate why the project would not go ahead without the CDM. The methodology has received comments related to the adequacy of its additionality test and the transparency of the calculations used as well as the applicability of this methodology to other regions.

The third wind energy baseline methodology under consideration is for the 20 MW*Jepirachi Windpower Project in Colombia* (NM0024-rev). The proponents submitted a revised methodology based on recommendations from the Meth Panel regarding: the need to explicitly include additionality-testing questions in order to improve the methodology's replication, the better integration of results from various baseline assessment tools, and the need to be explicit about the procedure for determining the merit order of generating plants. If approved, this methodology will apply to other renewable energy project activities involving the addition of electricity generation with small (equal or less than 30MW) and uncertain availability, which are implemented within clearly defined geographic and system boundaries, where enough electricity-system data are available, and where the expansion system is centrally planned, uses least cost planning tools, or requires market competition among IPPs.

Fuel Switch Projects

Two methodologies have been approved for a fuel switch projects in Graneros Chile (AM0008) and TA Sugars in India (AM0007), and another, for a project in Brazil, has been rejected.

AM0008 Graneros - *Fuel Switching at Electric Plant*

The methodology approved for the Graneros project is applicable to projects involving industrial fuel switching from coal and petroleum fuels to natural gas, in cases where it can be shown that the fossil fuel currently used is less expensive than the new fuel per unit of energy for the particular country and sector. It is only applicable for existing facilities where the project activity does not increase the capacity or lifetime of the plant.

Additionality testing in this methodology includes an economic analysis comparing the project with the baseline (the business-as-usual scenario which continues to use coal or petroleum fuels). The **baseline methodology** uses fuel consumption measurements and emissions factors (both IPCC and from national inventory) to calculate baseline emissions. Baseline and project emissions are updated annually through project **monitoring** over the crediting life of the project. The methodology addresses upstream emissions associated with the project, including fugitive emissions from coal mining, gas field exploration and fuel transportation these are included as leakage as they are not under the control of the participants. All emissions sources are calculated in a spreadsheet, which means monitoring and calculations will be fairly straightforward.

Stakeholder comments for this project were gathered through a survey that was given to local and regional politicians and government representatives, as well as a consulting engineer and a university professor. It appears that no NGO's were consulted.

This methodology and PDD should useful as a model in other fuel-switch projects, but only where the lower-emission fuel is more expensive than the current fuel.

AM0007 TA Sugars – ***Analysis of the Least-Cost Fuel Option for Seasonally-Operating Biomass Cogeneration Plant***

This methodology can apply to the refurbishment and fuel-switch of biomass cogeneration projects connected to the grid provided: the project has access to biomass that is not currently used for energy purposes; the plant uses fossil fuels during the off-season (when biomass by-product of plant activity is not being produced); the project is seasonal; it is applied to each separate plant location.

Additionality testing involves a five-step process to determine the least cost fuel options for the plant during the off-season. 1) Identify all fuel options for baseline scenario. 2) Select plausible fuel options based on the plant's commercial operations and national regulations. 3) Estimate profit margin from electricity sales using each plausible fuel option assuming single implementation of fuel switch (unit margin) and gradual implementation (unit NPV). 4) Compare results for proposed CDM project with those from other fuel options. If unit margin / unit NPV of project is equal to or higher than that of other fuel options conclude that the project is part of baseline scenario – otherwise the project is additional. 5) Complement economic analysis with analysis of other similar activities already underway in the same country or using the same technology. The **baseline methodology** uses the emissions factor of the least cost fuel times total electricity produced during off-season using biomass.

The **monitoring methodology** involves tracking project emissions to determine the extent of substitution of fossil fuels and collecting data to substantiate baseline emissions (electricity generated from off-season biomass and amount of off-season biomass fed into boilers) over the crediting period. The main source of leakage identified includes the diversion of biomass from other uses, which is determined through macro or micro-level analysis. A specific list of stakeholders was invited to comment on the project. Identified stakeholders included the local government, regional and national government representatives (in energy, environment, and groundwater), local NGOs, equipment manufacturers and the project consultants. Their presentation of comments received is not comprehensive nor do they specify how the comments were incorporated into the PDD.

The ***V&M Fuel-Switch (Brazil) project*** was rejected because of some of the following reasons: - data out of date (1988), the selected approach was not appropriate, methodology allowed for two baselines (one for coke and one for charcoal), economic data and assumptions are not sufficiently-justified, the systems boundary, project emissions and leakage are not adequately addressed, the start date is not justified, there needs to be greater differentiation between this project and the methodology. Note that some of the comments also relate more to the project than to the methodology.

Biomass Projects

AM0004 Pichit Rice Husk Project, Thailand *Grid-connected Biomass Power Generation that avoids Uncontrolled Burning of Biomass*

This methodology was submitted for a project activity that generates electricity from biomass (rice husks in the project case) that would otherwise be left to decay or be burned in an

uncontrolled fashion. The **baseline methodology** uses a barriers analysis based on the same list of barriers as is given for small-scale projects in order to show that the biomass collection system is not the business as usual scenario. Then the **baseline methodology** calculates emissions as the sum of (a) avoided emissions from the grid, based on the grid average operating margin and (b) the computed methane emissions caused by uncontrolled burning of the rice husk to be used (conservative assumption : 100% is burnt, instead of being left to decay which would have produced methane emissions), using IPCC values for methane emission from wood/wood waste combustion as the default value and then direct measure of the boiler's methane emissions if more conservative. In addition, the methodology demonstrates that the surplus of biomass is large enough to prevent leakage brought about by causing current biomass use to be diverted to fossil fuel, by showing that the supply:demand ratio is greater than 2:1.

The methodology is applicable only to biomass-fired power generation project activities displacing grid electricity that meet the following conditions:

- Face an abundant supply of biomass that is un-utilized and is too dispersed to be used for grid electricity generation under business as usual (BAU);
- Use biomass that would otherwise be dumped/burned uncontrollably;
- Have a negligible impact on plans for construction of new power plants;
- Have a negligible impact on the average grid emissions factor;
- Where the grid average carbon emission factor (CEF) is lower than the CEF of the most likely operating margin candidate.

NM0001 Vale do Rosario Bagasse Cogeneration (VBRC)

This methodology is applicable to bagasse cogeneration projects connected to a grid with a hydro share of more than 80%, i.e. Brazil, where the bagasse being fed into the plant all comes from the facility where the project is being implemented.

Additionality is demonstrated through as series of four questions related to whether the project would have been implemented in the absence of the CDM by the same developer, the private sector, and the public sector or due to the incentives provided by renewable energy policies. In using these questions a project proponent must give adequate justification and supporting documentation.

The **baseline methodology** uses a combination of the build margin and operating margin for all crediting periods, which partially includes hydro plants in the operating margin. The methodology also considers leakage that may occur if the bagasse that used to be sold for energy generation is substituted by fossil fuel. .

Waste Management Projects

AM0006 Peralillo (Chile) – *GHG Emissions Reductions from Manure Management Systems*

This methodology applies to manure management systems for farms functioning in a competitive market and where the management system is introduced in accordance with the regulatory framework. The methodology only applies to cattle, buffalo and / or swine managed under confined conditions. The management system must not include discharges into natural water systems nor shall the project result in significant increases in electricity use.

Additionality and the baseline scenario are determined using a four-step process designed to show that the project is less economically attractive than the baseline. The steps are: listing all possible baseline scenarios for manure management; identifying plausible scenarios by assessing the regulatory framework, historical practices and the availability of waste treatment technologies; comparing IRR/NPVs of all plausible scenarios; and assessing barriers. Additionally, the methodology requires assessing the likelihood of a static baseline. The methodology only includes the **leakage** effects resulting from methane emissions from the disposal of treated manure (for example, where sludge is used as a fertilizer).

The **monitoring methodology** requires collecting data to determine the quantity of nitrogen and volatile solids supplied to the manure management system. The values obtained feed into the calculation for both baseline and project emissions. Other parameters require monitoring, such as the biochemical oxygen demand and flow rate of treated manure (for leakage calculations).

They indirectly elicited local stakeholder comments by posting the project description on the project proponent's webpage and did not receive any.

NM0032 Lucknow (India) -- *Biomethanation of Municipal Solid Waste Using Compliance with MSW Rules*

The official formatted document is unavailable. The following summary reflects recommendations from the Meth Panel.

This methodology is specific to municipal waste management in India. It applies to other CDM projects implemented where there is low compliance (up to 50%) with municipal solid waste (MSW) rules, where too little data exist to generate more accurate models of methane emissions. Additionality calculations include revenue from electricity generation and organic fertilizer.

The **baseline scenario** is the existing emissions from unmanaged solid waste disposal sites with gradual changes over time reflective of acceptable technical options. The **baseline** uses an IPCC-based theoretical gas yield to calculate the total methane emissions from landfill.

Additionality is demonstrated through analyzing the barriers facing biomethanation: investment, technological, "common practices".

The **project boundary** includes carbon dioxide and methane from waste management; the state urban waste management system is used to determine the percentage of compliance with MSW rules.

The **monitoring methodology** requires collecting data on compliance (from reports) and waste characteristics (from operator). (Note: Will likely need to monitor parameters pertinent to project-related electricity generation and production of organic fertilizer.)

Methodologies under consideration by the Executive Board

The table below is a list of the methodologies the Executive Board is currently considering, as of July 2004. For updates see: http://cdm.unfccc.int/methodologies/process

Number	Project Title	Project Type	Host Country	Region
NM0064	Optimization and Co-Generation of Energy from Steel Making Process	Energy Efficiency	Brazil	LAC
NM0063	Organic Green Waste Composting	Waste Management	Bangladesh	Asia & Pacific
NM0062	APCL Electricity Generation Project With Cleaner Fuel	Natural gas Generation	India	Asia & Pacific
NM0061	N_2O Emission Reduction in Onsan, South Korea	N_2O Reduction	Korea	Asia & Pacific
NM0060	Dan Chang Bio-Energy Cogeneration project (DCBC)	Biomass Generation	Thailand	Asia & Pacific
NM0059	Optimization and Co-Generation of Energy from Steel Making Process	Energy Efficiency	Brazil	LAC
NM0058	Energy Efficiency Improvements-Hou Ma District Heating, Shanxi Province, China	Energy Efficiency	China	Asia & Pacific
NM0057	PFC Emission Reductions through Installation of Point Break Feeders (PBF) in Horizontal Stud Soderberg (HSS) Cells in Aluminum Plants	PFC Reduction	India	Asia & Pacific
NM0040	Replacement of Fossil Fuel by Palm Kernel Shell Biomass in the Production of Portland Cement	Fuel Switch	Malaysia	Asia & Pacific
NM0034-rev2	Granja Becker Greenhouse Gas (GHG) Mitigation Project	Manure Management	Brazil	LAC
NM0017-rev	Steam System Efficiency Improvements in Refineries in Fushun, China	Energy Efficiency	China	Asia & Pacific
NM0056	Vinasse Anaerobic Treatment Project - Compañia Licorera de Nicaragua	Wastewater Management	Nicaragua	LAC
NM0055	Darajat Unit III Geothermal Project	Geothermal Generation	Indonesia	Asia & Pacific
NM0054	Sibimbe Hydroelectric Project	Hydro-electric	Ecuador	LAC
NM0053	Lihir Geothermal Power Project	Geothermal Generation	Papua New Guinea	Asia & Pacific
NM0052	Urban Mass Transportation System (TransMilenio), Bogota, Colombia	Transport	Colombia	LAC
NM0051	PCH Passo do Meio	Hydro-electric	Brazil	LAC
NM0050	Ratchasima Small Power Producer (SPP) Expansion Project	Biomass generation	Thailand	Asia & Pacific
NM0049	Waste heat recovery from BOF Gas at Jindal Vijayanagar Steel Limited and Power Generation and Supply to Karnataka Grid and Jindal Vijayanagar Steel Limited ("JVSL") in Karnataka, India	Energy Efficiency and Generation	India	Asia & Pacific
NM0048	Indocement's Sustainable Cement Production Project - Alternative Fuel Component	Fuel Switch	Indonesia	Asia & Pacific
NM0047	Indocement's Sustainable Cement Production Project - Blended Cement Component	CO_2 Reduction from Industrial Processes	Indonesia	Asia & Pacific
NM0046	Andijan District Heating Project	Energy Efficiency	Uzbekistan	Asia & Pacific
NM0020-rev	La Vuelta and La Herradura Hydroelectric Project	Hydro-electric	Colombia	LAC
NM0018-rev	Metrogas Package Cogeneration Project	Demand Side Energy Efficiency	Chile	LAC

Number	Project Title	Project Type	Host Country	Region
NM0045	Optimal Utilization of Clinker and Conversion Factor Improvement - Birla Corporation Limited	Energy Efficiency and CO_2 Reduction from Industrial Processes	India	Asia & Pacific
NM0044	Energy Efficiency Improvements in Municipal Water Utilities in Karnataka, India	Energy Efficiency	India	Asia & Pacific
NM0043	Bayano Hydroelectric Expansion and Upgrade Project in Panama	Hydro-electric	Panama	LAC
NM0041	Khorat Waste to Energy Project	Methane Avoidance & Capture, Fuel Switch and Generation	Thailand	Asia & Pacific
NM0039	Bumibiopower Methane Extraction and Power Generation Project	Methane Avoidance with Generation	Malaysia	Asia & Pacific
NM0038	Methane Gas Capture and Electricity Production at Chisinau Wastewater Treatment Plant, Moldova	Wastewater Management and Generation	Moldova	Europe
NM0037	Energy Efficiency Project by Modification of CO_2 Removal System of Ammonia Plant to Reduce Steam Consumption	Energy Efficiency	India	Asia & Pacific
NM0036	Zafarana Wind Power Plant Project in the Arab Republic of Egypt	Windpower Generation	Egypt	Africa
NM0031-rev	OSIL Baseline Methodology for Electricity Generation Projects from Utilization of Waste Heat from Waste Gases	Energy Efficiency	India	Asia & Pacific
NM0030-rev	BCML Methodology for Grid Connected Bagasse / Biomass Based Power Projects	Biomass	India	Asia & Pacific
NM0024-rev	20 MW Jepirachi Windpower Project	Windpower Generation	Colombia	LAC
NM0012-rev	Wigton Wind Farm Project	Windpower Generation	Jamaica	LAC
NM0033	Holcim Costa Rica's Cartago Plant Expansion Project - Cement Kiln Replacement	Energy Efficiency	Costa Rica	LAC
NM0029	V&M do Brasil Avoided Fuel Switch Project	Fuel Switch	Brazil	LAC
NM0027	Alternative Investment Analysis: Catanduva Sugarcane Mill - Grid Connected Electricity Generation	Biomass	Brazil	LAC

Appendix 3: The CDM Gold Standard

What is the Gold Standard?

The Gold Standard is the only independent quality standard for carbon offset projects under the Kyoto Protocol's JI and CDM. Developed by the World Wildlife Foundation (WWF) in consultation with a wide range of NGOs, businesses and governments, and supported by NGOs around the world, the Gold Standard aims to drive carbon market investment towards truly sustainable projects and technologies.

The Gold Standard is designed as a stand-alone entity, independent from the Partners that designed it.

The objective of the Gold Standard is to provide host countries, investors, and the public with assurance that carbon credits are sourced from projects that contribute to sustainable development and are unquestionably additional. The Gold Standard provides a framework for designing projects, assessing the potential and actual contribution of projects to countries' sustainable development, and helping to ensure projects meet with approval and realize their intended results.

The Gold Standard approach is important to ensure the environmental integrity of the CDM, especially in host countries that lack environmental best practice and sustainable development legislation. The Gold Standard does not interfere with host governments' sovereign right to define sustainability criteria and accept or reject projects on this basis, but rather helps to ensure these standards are met and projects contribute to sustainable energy services and development.

Gold Standard CDM projects aim to:

- reduce emissions through the use of renewable energy or energy efficiency,
- meet a set of environmental impact best practices, and
- meet a set of sustainable development criteria.

Gold Standard CDM projects are those that would not have gone ahead without the CDM.

Current Status

As of July 2004, the WWF is currently setting up the infrastructure to administer the Gold Standard, and is in the process of hiring a Director. This position is to be funded by the UK REEEF Programme. The Director will work with WWF staff to finalize the institutional development of the Gold Standard and to market the product within the rapidly growing global carbon market.

This position will provide the resources to effectively market the Gold Standard, to innovatively link projects with buyers, and also to ensure that a transparent and effective governance structure is set up, particularly for those NGOs – who are almost all from host countries - that have agreed to become Supporters.

Reasons for Going Beyond Current CDM Requirements

Applying additional sustainable development criteria is likely to substantially improve the environmental impacts and development benefits of CDM projects for host countries and affected communities. Additional criteria, however, also tend to increase the cost of CERs – leading to a

perceived trade-off between a project's CER abatement costs and its contribution to sustainable development. Countries seeking to compete in the low-cost CERs market may be pressured to set low approval requirements for sustainable development criteria, effectively resulting in a "race to the bottom" in terms of the sustainable development contributions host countries gain through the CDM[54]. There is, however, an increasing interest and emerging market in verifiably high-quality CDM projects that have strong sustainable development impacts.

CDM projects that meet high sustainability standards such as the Gold Standard have a greater possibility of attracting investors who are willing to invest in higher cost CERs[55]. The Austrian CDM/JI Programme, for example, offers a premium for CDM projects that demonstrate additional ecological or sustainable development benefits. Moreover, such projects are attractive to investors who abide by a corporate social responsibility (CSR) code of conduct or are interested in maintaining positive public relations by establishing their reputation as responsible investors[56].

Operational entities and project developers have recognized the Gold Standard as being an effective tool for highlighting distinguishing features that allow Gold Standard projects to be marketed at higher-than-average-rates for CERs.[57] Identifying and verifying projects' sustainability benefits are key elements to marketing high-quality CDM projects, as without a clear indication of the additional benefits, projects are likely to be assessed solely on a financial basis.

Gold Standard Projects

A project developer intending to validate and verify a project according to the Gold Standard follows standard CDM procedures, but instructs the Operational Entity responsible for validating and verifying the project to base their assessments on the Gold Standard Project Design Document (GS-PDD) and technical appendices. The GS-PDD and technical appendices include three project screens that set out additional criteria and guidance to that provided by the CDM Executive Board in the standard Project Design Document. The Operational Entity's certification that the project meets the Gold Standard is sufficient to demonstrate compliance.

[54] Christoph Sutter. 2004. "How to ensure the development claim of CDM projects [Factor Consulting and Management AG, Zurich]. Paper read at Climate Protection as Development Opportunity Conference, June 7-8, 2004, at Hamburg Institute of International Economics.

[55] (Andreas Drack, 2004. "The Austrian JI/CDM Programme [Austrian JI/CDM-Commission]". Paper read at Climate Protection as Development Opportunity Conference, June 7-8, 2004, at Hamburg Institute of International Economics)

[56] Osamu Kimura, 2004. "Demand for CDM from Business Side: Current status of CDM in Japan [Central Research Institute of Electric Power Industry (CRIEPI)]"; Lambert Schneider. 2004. "Climate Protection as Development Opportunity: Which RE Technologies can benefit from the GS? [Öko-Institut]', Papers read at Climate Protection as Development Opportunity Conference, June 7-8, 2004, at Hamburg Institute of International Economics

[57] Rumberg, Michael. 2004. Factors for success for the Gold Standard - from a certification perspective [TÜV Industrie Service GmbH, TÜV SÜD Group]; Liptow, Holger. 2004. "CDM Rules: A GTZ Perspective [Climate Protection Programme (CaPP), GTZ]. Papers read at Climate Protection as Development Opportunity Conference, June 7-8, 2004, at Hamburg Institute of International Economics.

Gold Standard Project Screening Criteria

The three screens that define the Gold Standard are: 1) Project Type Screen, 2) Additionality and Baseline Screen, and 3) Sustainable Development Screen. If the Operational Entity verifies that a project meets the criteria set out in the three screens, it can be classified as a Gold Standard project.

***Project Type Screen*:** Projects eligible for the Gold Standard include the renewable energy and demand-side energy efficiency projects listed below. The Gold Standard limits eligible energy technologies to those that have "inherent additionality and sustainability attributes" in order to support the transformation towards sustainable energy systems and long-term climate protection.

The project types included in the Gold Standard include the following:

End-use energy efficiency improvements in the following sectors:

- Industrial
- Residential
- Public
- Agricultural
- Commercial
- Transport

Renewable energy, including:

- Photovoltaic (solar) power generation
- Solar thermal
- Ecologically sound biomass:
    - energy crops;
    - forest and agricultural waste;
    - agro-processing residues
- Wind
- Geothermal
- Small, low-impact hydro
- Ecologically sound biogas

Additionality and Baseline Screen: To ensure carbon credits represent bona fide emissions reductions, the Gold Standard tests projects against two criteria. First, additionality is indicated by demonstrating the project would not have occurred in the absence of the CDM, by showing how the use of CDM has enabled the project to overcome at least one barrier, and that it has not been previously announced that it would go ahead without the CDM. Secondly, the construction of the baseline must show that the project will result in lower greenhouse gas emissions than would have occurred in the absence of the project.[58] The baseline must also be constructed with conservative assumptions and data in order not to artificially inflate the emissions reductions. In

[58] Note that the fact that this interpretation of additionality does not differ substantially from that of the Meth Panel and EB indicates that the Gold Standard may already have had some influence on the UNFCCC CDM approval process and on project design (see section 1). Whether or not it has an impact on the sustainable development contribution of CDM projects remains to be seen.

addition the validator must verify that ODA was not used in any phase of project implementation[59], including monitoring and validation**.**

***Sustainable Development Screen*:** The Gold Standard seeks to ensure that the sustainable development aspects of CDM project activities are maximized in accordance with the objectives of the CDM and with the involvement of local stakeholders. The Gold Standard attempts to set a more clearly defined process for assessing sustainability than the ambiguous process defined in the standard CDM-PDD The Sustainable Development Screen is comprised of three elements: the use of a sustainability matrix, Environmental Impact Assessment (EIA) procedures, and criteria for stakeholder consultations.

The **sustainability matrix** provides a simple and participatory means of assessing a project's contribution to sustainable development. Potential contributions/impacts in three areas – environmental sustainability; social sustainability and development; economic and technological development - are assessed on the basis of existing data, **stakeholder consultation** and, where necessary, on-site measurement. In addition to when host country regulations demand one or when the project participants deem one necessary, an **EIA** is required under the Gold Standard when initial stakeholder consultations or an environmental pre-screen show that there are likely to be significant impacts.

The Gold Standard should be considered a tool to facilitate host countries and project developers in pursuing sustainable development. The Gold Standard provides a guide for addressing environmental issues such as air, water and soil quality; social issues such as how projects may support poverty alleviation, create new livelihood and employment opportunities, and contribute to addressing the needs of disadvantaged sectors, as well as; economic and technological issues such as supporting the transfer of appropriate technologies, improving the replicability of projects, and contributing to technological self-reliance with the aim of improving host countries balance of payments.

A "Blue Chip" Standard for Land Management Projects

In addition to the Gold Standard, a quality standard for land management projects is under development. As of August 2004, the *Climate, Community, and Biodiversity Alliance* (CCBA)[60] has developed a preliminary quality standard aimed at identifying "blue chip" land management projects designed to achieve tangible climate, biodiversity and community benefits. The *CCBA Standards* are an effort to promote "integrated solutions to land management" through land-based carbon projects.

CCBA Standards for Project Design and Project Implementation have been developed to date. The Project Design Standards assist in evaluating projects in the planning stage, while the Project Implementation Standards are designed as a periodic evaluation tool to monitor the success of the planned activities. The CCBA Standards are still under review, and have yet to be tested.

[59] ODA is permitted to support capacity building, project feasibility study and CDM component identification, as well as CDM project component preparation (including baseline and Monitoring Plan).

[60] Climate, Community, and Biodiversity Alliance (CCBA) is a partnership of research institutions, corporations & environmental groups. See http://www.climate-standards.org for more information.

Appendix 4: Individual Host Country Responses to the CDM

China

National CDM Approval Process

An estimated 52% all CDM projects worldwide are located in China to meet the country's growing energy needs.[61] China is illustrative of a country that has developed very detailed institutional arrangements. In guiding the development of CDM project activities, the country has outlined four general requirements:

- consistency with China's sustainable development strategy and policies,
- funds for CDM project activities be additional to what is currently received in ODA,
- transfer of environmentally-friendly technology, and
- that priority areas are energy efficiency improvement as well as new and renewable energy.[62]

The National Development and Reforming Commission (NDRC) will be designated as the Chinese CDM National Authority. The NDRC is responsible for managing the institutional arrangements for CDM project approval. There is a three-tier institutional structure that supports the Commission:

1. National Coordination Committee for Climate Change is a senior inter-ministerial committee. The committee is composed of 15 member government agencies with representation from a cross-section of government including resource ministries, finance, communication, foreign affairs, and trade who, collectively, are responsible for the coordination of CDM activities at the national level as well as setting national policy and criteria.

2. National CDM Project Board functions as the liaison between the National CDM Project Management Centre and the National Coordination Committee and directs the work of the Centre.

3. National CDM Project Management Centre oversees the development and implementation of CDM project activities, and provides capacity building support.

CDM project developers follow detailed administrative procedures in the application, approval, implementation and approval of their activities. The project developer must be a China-owned enterprise or China-controlling enterprise located in China.

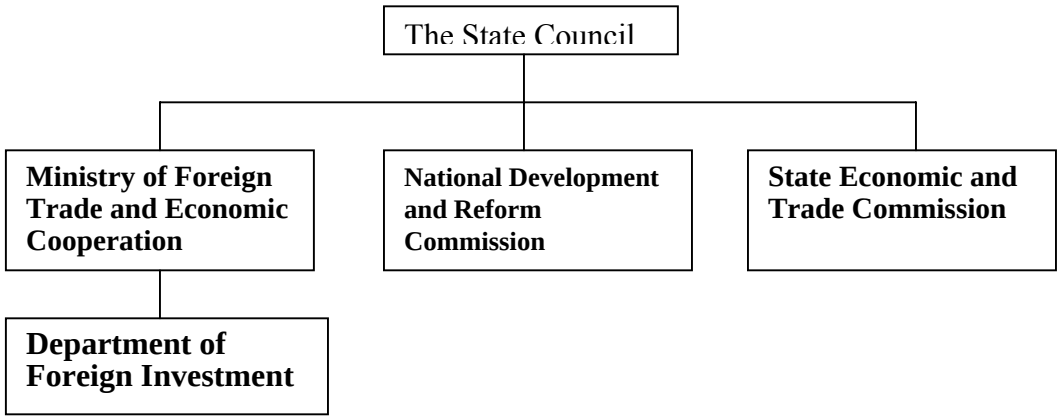
China proposes to use the approval process and environmental assessment procedures currently applied to any foreign investment to the CDM. A detailed management structure shown in the diagram below clearly defines the roles for state and local government in foreign investment approval. For more detailed information about China's policies and regulations regarding foreign investment, please refer to following two websites: www.fdi.gov.cn and www.fdi.org.cn.

[61] Joint Implementation Network, "Joint Implementation Quarterly", The Netherlands, March 2004, www.northsea.nl/jiq/1-2004.pdf, p.4

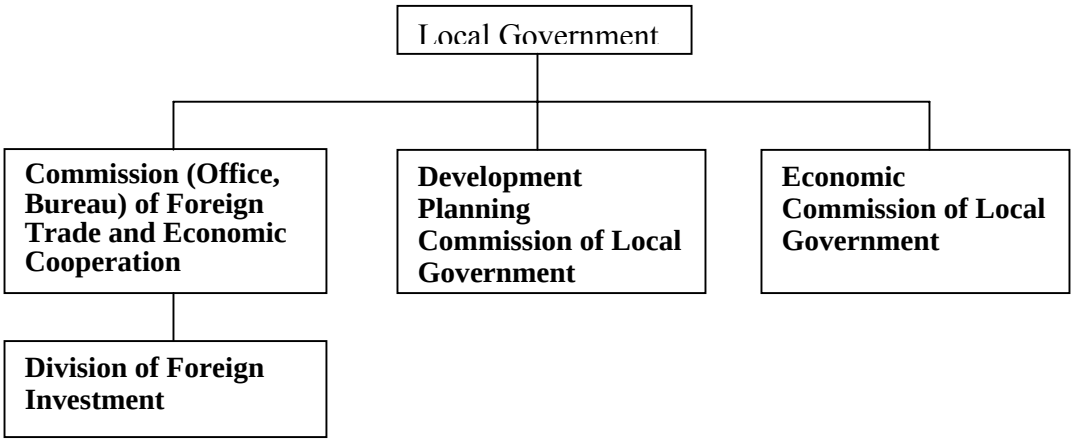
[62] Details from CDM Guidance Document prepared by Resources Futures International (RFI) Canada for Canada-China Climate Change Project (C5) project funded by Canadian International Development Agency (CIDA), August 2003 also Appendices 5 and 6.

Description of Chinese Management Structure for Foreign Investment Approval

Central government institutions



Local government institutions



Sustainable Development Criteria

CDM project activities in China must meet the following general sustainable development criteria:

- support the goals and actions of the local and national Chinese Governments;
- support industrial development programs and those industrial sectors with foreign participation.

Detailed sustainable development objectives have been established along with the identification of specific actions to ensure achievement of these objectives:

1. Regional development and poverty alleviation
2. Minimizing the impacts of environmental pollution on people's health
3. Improvement of human settlement functions
4. Energy conservation and enhancement of energy efficiency in human settlements

5. Reduce waster discharge per unit economic output; increase the utilization efficiency of energy and resources; prevention of environmental pollution
6. Improve energy efficiency and energy conservation
7. Disseminate less polluting coal mining and clean coal technologies
8. Reinforce the development and utilization of new and renewable energy resources.
9. Adjust the structure of energy resources and raise the ratio of clean energy resources.
10. Accelerate afforestation, improve forest quality; maintain, manage and utilize forest resources in a sustainable manner.
11. Conservation of biodiversity
12. Prevention and control of atmospheric pollution and acid rain
13. Environmentally sound management of municipal solid wastes

Stakeholder Participation

While China has no specific law, rule or regulation governing the consultation of stakeholders regarding proposed project activities, some laws or regulations contain general references to public participation.

Where an environmental impact assessment report is necessary, the developer shall seek comments on the possible environmental impact from local residents. In the case of an environmental impact assessment report sheet or environmental impact sheet, the project developer shall request comments from local residents during the assessment stage. Environmental protection authorities play a role either in directing the project developer to gather stakeholder input, or itself gathering comments. There is specific reference to construction projects that states that public participation involves completion of a questionnaire, and incorporation of stakeholder comments into project design.[63]

India

National CDM Approval Process

India has significant potential for CDM-related project activities in the areas of energy, coal, industry, renewables, transport, and municipal solid waste. As the world's sixth largest emitter of CO_2, India's needs include energy efficient technologies to reduce GHG emissions, and to overcome the financial constraints associated with the adoption of cleaner technologies.[64]

The Government of India created the CDM National Authority (CDMNA) with the authority to provide host country approvals mirroring the structure of the Foreign Investment Promotion Board (FIPB). While the designated National Authority is led by the Ministry of Energy and Forests, the Planning Commission retains the responsibility for capacity building and the operationalization of the CDM. The Commission established a Task Force with broad representation including industry associations, research institutions, consultants, and representatives from the steel industry and financial institutions to work collectively in the preparation of a national action plan.

[63] RFI Canada, Canada-China Cooperation on Climate Change (C5) Project: Draft CDM Guidance Documents, August 2003.

[64] Ramachandran, G., "Clean Development Mechanism (CDM): The Indian Scenario", Hyderbad, undated slide presentation, Environment Protection Training and Research Institute (ERTI), www.ecosecurities.com/cdmindia/ProjectDocumentation/Indian%20Context%20Ms%20Gayathri%20Ramachandran.pdf

A nodal agency of the Ministry of Non-Conventional Energy Sources (MNES) has responsibility for project approval based on an assessment of the technical feasibility of the proposal, availability of the resource e.g. biomass or water for mini hydro projects to meet the needs of projects as well as resourcefulness of the project developers. It also undertakes analysis of the sustainable development benefits of the project. It is only with the approval of the nodal agency that project developers can move forward.

Sustainable development criteria

It is the prerogative of the host country to confirm whether a CDM project activity supports sustainable development including improvements in the quality of life of the very poor. The following criteria should be reflected in the project design:

- Social well-being: The CDM project activity should lead to alleviation of poverty by generating additional employment, removal of social disparities and contributing to provision of basic amenities to people leading to improvement in their quality of life.
- Economic well-being: The CDM project activity should bring in additional investment consistent with the needs of the people.
- Environmental well-being: This should include a discussion of the impact of the project activity on resource sustainability and resource degradation, if any, due to the proposed activity; biodiversity-friendliness; impact on human health; reduction of levels of pollution in general;
- Technological well-being: The CDM project activity should lead to transfer of environmentally safe and sound technologies with a priority to the renewables sector or energy efficiency projects that are comparable to best practices in order to assist in upgrading the technological base.[65]

Other details are available on the website at www.envfor.nic.in/cc/cdm/criteria.htm

Kenya

National CDM Approval Process

In 1993, Kenya established a National Climate Change Activities Coordinating Committee (NCCACC) to co-ordinate all climate change activities in the country and to advise the government on all issues related to the UNFCCC. The Committee is multi-disciplinary, with membership drawn from government, university, research institutions, private sector and NGOs, and is itself a sub-committee of the Inter-Ministerial Committee on Environment.[66]

Kenya has identified the following general requirements for CDM projects:

- Contribute to sustainable development and generate economic, social and environmental benefits;
- Meet national development priorities with funds additional to existing ODA;

[65] Government of India, Ministry of Environment and Forests, Climate Change Division, CDM webpage, "Government of India interim approval criteria", www.envfor.nic.in/cc/cdm/criteria.htm.

[66] Begg, K. et al. "Encouraging CDM Energy Projects to Aid Poverty Alleviation", DfiD KARR Programme, June 2003. www.iesd.dmu.ac.uk/contract_research/projects/cdm.htm (Report and 5 annexes), p.49 Attachment 2

- Transfer technologies that are locally appropriate, environmentally friendly, and energy efficient;
- Provide institutional and human capacity building;
- Address community needs and priorities through effective public participation;
- Contribute to the global effort to stabilize GHG reductions;
- Consistency with international environmental conventions.

With respect to infrastructure, Kenya has appointed two representative bodies to define national policy and oversee project development. The National Climate Change Focal Point (NCCFP) is responsible for defining national CDM policy, project approval and liaison with the UNFCCC Secretariat. The CDM National Clearing House (NCH), with representation from the public and private sectors, NGOs and CSOs as well as academia, is responsible for:

- establishing project criteria,
- reviewing CDM project proposals,
- overseeing the monitoring and approval processes,
- coordinating CDM activities, and
- developing a national database.

Sustainable Development Criteria

Kenya has identified the following indicators to evaluate the social, environmental and economic benefits of proposed CDM projects: [67]

Social and Infrastructural Development Indicators

- Poverty Alleviation
- Improved access to power
- Gender Equity

Environmental Development Indicators

- Global Environment
- Local Environment

Economic Development Indicators

- Macro-Economic Indicators
- Micro-Economic Indicators
- Energy related indicators
- Technology Transfer

Stakeholder participation

Knowledge about the CDM and involvement in activities related to the implementation of CDM in Kenya is limited to related government departments, some non-governmental organizations (NGOs) and academic institutions with little participation at the grassroots level.[68]

[67] Begg, K. et al. "Encouraging CDM Energy Projects to Aid Poverty Alleviation", DfiD KARR Programme, June 2003. www.iesd.dmu.ac.uk/contract_research/projects/cdm.htm (Report and 5 annexes), p.52-4, attach2.

[68] Begg, K. et al., "Encouraging CDM", p.65, attach2.

Other Countries

Indonesia

The Ministry of Environment declared its intention to establish its DNA prior to COP9. The Ministry endorsed a set of sustainable development criteria, and a structure for the DNA that would include representatives of six key ministries, and one each from the private, research and NGO sectors. Local government and sectoral business associations would participate on a rotating basis. A technical committee of sectoral ministry officials would be responsible for evaluation proposed projects and make recommendations to the DNA.[69]

Malaysia

In this country, the CDM is fully operational, a National CDM Committee chaired by Ministry of Science and Technology is responsible for receiving proposals that will be evaluated by Energy Secretariat or Forestry Secretariat. Priority will be given to energy projects with a significant high technology transfer component. Concurrently, an approval letter for the project will be issued by the National Steering Committee on Climate Change.[70]

Morocco

The country is promoting itself as a key CDM location. General development principles are contained in the country's National Development Plan (1999-2003) (www.mdpmaroc.com). With a large potential for renewable energy, it is the first African country to establish its DNA and has been at the forefront of CDM activities, participating in a UNDP capacity building project as early as 1994.[71] Its CDM strategy and approval procedures were released in July 2003 and its sustainability criteria followed shortly after in November 2003. Also, during 2003, the country participated in three workshops on PDD development, established national CDM expert network and training of DNA officials.[72]

Thailand

The country is in the process of decision making on its best CDM strategy following the completion of its CDM National Strategy Study. Project approval will require cabinet decision. The Thai government has set a minimum acceptable carbon price at $5US t/CO2 as well as requiring "appropriate" technology to be transferred under the CDM. There has been some criticism by NGOs of a proposed 23MW rubber wood fuelled power plant. The developer has said the project will move forward regardless of whether it becomes a CDM project or not, making it non-additional under CDM rules.[73]

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[69] GTZ Climate Change Monthly Newsletter, "CDM Highlights", www.gtz.de/climate/english/newsletter.html, September 2003.
[70] Ibid, September 2003.
[71] GTZ Division 44 Environmental Management, Water, Energy and Transport, Climate Protection Programme (CaPP) "CDM in the field of Renewable Energies in Morocco" Study Report, October 2001, www.gtz.de/climate/publications/projects/CDM-Marocco-Kurz-engl.pdf, p.7.
[72] GTZ Climate Change Monthly Newsletter, "CDM Highlights", www.gtz.de/climate/english/newsletter.html, February 2004.
[73] Ibid, July 2003.

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Deodhar, V. et al., "Financing Structures for CDM Projects in India and Capacity Building Options for EU Collaboration", Discussion Paper 247, September 2003, Hamburg Institute of International Economics, www.hwwa.de/Publikationen/Discussion_Paper/2003/247.pdf

Edinburgh Centre for Carbon Management Ltd. (ECCM) et al., www.cdmcapacity.org/how_prepare_CDM/government_agencies.html
CDM information website.

GTZ Division 44 Environmental Management, Water, Energy and Transport, Climate Protection Programme (CaPP) "CDM in the field of Renewable Energies in Morocco" Study Report, October 2001, www.gtz.de/climate/publications/projects/CDM-Marocco-Kurz-engl.pdf

Government of Indonesia, "The Indonesia National CDM Strategy Study", State Ministry of Environment, Jakarta, Indonesia, September 2001, www.worldbank.org/ssnprogram/

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TERI India, "Clean Development Mechanism", February 2001, www.teriin.org/

TERI India, "CDM achieving global sustainability", www.teriin.org/

UNFCCC, "Capacity Building – Analysis of the implementation of the framework for capacity-building in developing countries", COP9, Milan, December 2003. www.unfccc.org

Appendix 5: Capacity-building in Developing Countries

Programs offered by Bilateral Donors and Multilateral Agencies

Program	Funding	Purpose	Application Guidelines	Experience of the Fund
Multilateral Support				
Prototype Carbon Fund *plus* www.carbonfinance.org/pcf	Funded separately from PCF, drawing on trust fund managed by the World Bank and supported by the Governments of Canada, Sweden and Finland.	"To build capacity of host countries and PCF participants, to enhance the operations and activities of the PCF and its partners, and to promote the market for and quality of GHG projects and CERs by reducing risk and transaction costs"	Work program in the areas of outreach and capacity building, research and training	
CDCF *plus* www.carbonfinance.org/cdcf	Multi-donor technical assistance trust fund supported by CDCF participants	To provide support to small-scale projects to defray some of the project preparation costs and to strengthen the capacity of project intermediaries in countries that would otherwise be bypassed by the carbon market	Financial and technical assistance including training programs, carbon finance fellowships, staff exchanges, and CDCFPlus internship program, to determine project activities, location, technologies and duration	
BioCarbon Fund *plus*		To provide support to small-scale projects to defray some of the project preparation costs and to strengthen the capacity of project intermediaries	Specific support to carbon sequestration projects in developing countries and countries in transition	
CD4CDM www.cd4cdm.org		To help to establish GHG emission reduction projects that are consistent with national sustainable development goals, particularly projects in the energy sector. It will develop national capabilities so that persons in the countries are the project's conclusion capable of analyzing the technical and financial merits of projects.	Aims to generate a broad understanding of the opportunities offered by CDM, developing a necessary institutional and human capacity that allows them to formulate and implement projects under the CDM.	Bolivia, Ecuador, Guatemala Regional awareness and information programs in Africa and in Asia with the Asia Development Bank

Global Environment Facility[74] www.gefweb.org	US$1.46 Billion as of June 2002		Available through regular GEF projects for renewable energy, energy efficiency, vulnerability and adaptation assessments, research and systematic observation, public awareness, training, and database and information systems	Support to GHG mitigation projects for training, information dissemination, institution-building etc. at national, regional and global levels. Resources also provided in other areas such as biodiversity that provided cross-cutting climate change benefits for human resource and institutional development (Small Grants Program at www.sgp.undp.org)
Annex 1 Country Programs				
Government of Finland[75] www.global.finland.fi/english/projects/cdm	Euro $10 Million	To build the administrative capacity of the government, prepare project selection guidelines, participation in implementation and acquire CERs to meet Finland's Kyoto target.	"Projects that reduce poverty, promote environmentally sustainable development, and enhance social equality, democracy, human rights and good governance will, however, be given priority. Projects must not have negative social, economic or environmental impacts and must support the Finnish policy on cooperation with developing countries. We do also emphasize cost-effectiveness."	The focus of the programme is on small-scale projects. While a call for projects resulted in 23 potential projects including Honduras, Costa Rica and India, the current pilot program is preparing for the implementation of 7 CDM projects and 5 JI projects with CDM projects located in Costa Rica, El Salvador, Honduras, India, Vietnam and Zambia.

[74] UNFCCC, "Analysis of the Implementation of the Framework for Capacity-building in Developing Countries", FCCC/SBI/2003/14, p.5-6.
[75] Joint Implementation Quarterly, "Finnish CDM/JI program", December 03, p.5. www.jiqweb.org

CDM/JI Office, DFAIT, Canada www.dfait-maeci.gc.ca/cdm-ji/program_desc-en.asp	CAN $25.5 Million	In part, "To encourage and facilitate Canadian participation in the Kyoto Mechanisms by building awareness, promoting cost-effective opportunities and lowering transaction costs, while also engaging developing countries and countries-in-transition in such activities"	Focus on technical and financial assistance to Canadian entities to secure CERs for Canada. Criteria for proposal assessment includes: - Technical and economic viability - Time frame - Host country-related factors - Replication potential of CDM/JI activities - Cost-sharing principals - Potential to leverage other resources - Development of new methodologies - Opportunity for increased Canadian business internationally - Increased Canadian visibility in global efforts to address climate change - Fosters an understanding or advancement of sustainable development criteria	Projects in Africa and the Middle East, Asia, Central/Eastern Europe as well as Latin/South America. Projects are supported in Argentina, Brazil, Barbados, Chile, Costa Rica, Cuba and Honduras.
Netherlands Clean Development Facility www.carbonfinance.org/router.cfm?Page=NLClean		To purchase GHG emission reduction credits in exchange for project support in developing countries to assist Netherlands in meeting its Kyoto commitment	Project selection criteria include: • Consistency with UNFCCC, Kyoto Protocol, Relevant National Criteria, and General Guidance by VROM (State of Netherlands) • Projects located in non-Annex 1 countries which have ratified/intend to ratify the Protocol • No nuclear energy • LULUCF projects	

			according to COP/MOP criteria • No large adverse environmental/social impacts • Complementary with GEF and PCF • Cost effective and sustainable	
Italian Carbon Fund www.carbonfinance.org/router.cfm?page=html/icf.htm	Initial endowment of US $15 Million with additional expected funds from participants such as Italian private and public entities	Fund is means for Italy to obtain emission reductions from renewable energy, energy efficiency and other projects in developing countries and countries in transition in order to meet its Kyoto target.	Funds used for project identification and preparation activities including capacity building, outreach and research. Project portfolio criteria include: • Energy services-medium size hydro electric • Electricity from agricultural waste • Urban landfill gas • Coal bed methane capture • Gas flaring	Provide support to range of technologies including carbon sequestration, not limited to one region but including China, Mediterranean, Latin and Central America, Balkans and Middle East