Applying Sustainable Development Criteria to CDM Projects: PCF Experience

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About the author

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1 – Preliminary Validation Manual
2 – Could carbon financing appreciably accelerate the diffusion of Solar Home Systems?
3 – Regulating the CDM using a Commodity Market Model
4 – Review and Analysis of the Emerging Greenhouse Gas Market
5 – Regulatory Drivers of the Carbon Market – Market Intelligence Issue #1
6 – Regulatory Drivers of the Carbon Market – Market Intelligence Issue #2
7 – Joint Implementation in the context of EU accession – the case of the Czech Republic
8 – Regulatory Drivers of the Carbon Market – Market Intelligence Issue #3
9 – Regulatory Drivers of the Carbon Market – Global Executive Summary

Executive Summary

The Clean Development Mechanism (CDM) was created at the third Conference of Parties (COP3) of the UN Framework Convention on Climate Change (UNFCCC) in Kyoto in 1997 as part of the Kyoto Protocol (KP). The CDM is one of three so-called "flexibility mechanisms" aimed at allowing Parties to acquire greenhouse gas (GHG) emission reductions units beyond their borders. The CDM aims at "assisting [Developing countries] in achieving sustainable development and in contributing to the ultimate objective of the [Climate] Convention, and at assisting [OECD countries and Economies in Transition] in achieving compliance with their quantified emission limitation and reduction commitments" (KP, Article 12). Although the KP has yet to enter into force there have been a number of CDM type activities in various developing countries over the last few years. There have also been a number of capacity building assessments as well as training activities on CDM and KP which have yielded some interesting lessons particularly with regard to methodology for approval of projects and in the application of sustainable development criteria for CDM projects. This paper reviews some of the activities carried out so far on CDM projects and capacity building programs, and how the issue of sustainable development has been treated. It also reviews the experience of the Prototype Carbon Fund (PCF) which has carried out a portfolio of Joint Implementation (JI) and CDM projects and its use of sustainable development indicators. Finally it proposes some guidelines for host countries as well as portfolio fund managers on how to apply sustainable development criteria for CDM projects in future.

We use the traditional definition of sustainable development from the Brundtland Commission Report: development is sustainable when it "*meets the needs of the present generation without compromising the ability of future generations to meet their own needs"* (WCED, 1987). However since the UN Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil in June 1992 there have been numerous attempts to find more operationally useful definitions and indicators of sustainable development. These fall mostly into three areas: (i) economic, (ii) environmental and (iii) social.

The PCF's operational objective is to mitigate climate change by (i) promoting the World Bank's tenet of sustainable development, (ii) demonstrate the possibilities of public-private partnerships and to (iii) offer a "learning-by-doing" opportunities to its stakeholders. The PCF has used a number of environmental and social indicators in its CDM and JI projects. These have been treated as co-benefits from the project in addition to the emission reductions and financial return of the projects. The experience with PCF projects have shown that sustainable development objectives and criteria have been incorporated in a project-by-project basis and not in a systematic manner. It is therefore recommended that at the individual project level there also needs to be an assessment of the sustainable development benefits (mainly in terms of environmental and social criteria) which can be easily applied across projects and countries. One way to do so would be to apply a uniform checklist which would put different parameters on a common scale.

Based on these main conclusions the following **recommendations** are made to different target audiences: (i) *UNFCCC/CDM executive board* (once it is set up) needs to carry out a thorough analysis of experiences gained on CDM type projects around the world to inform the design of robust criteria for assessing sustainable development benefits, (ii) *International Fund Managers* investing in CDM type projects need to maintain a diverse portfolio of projects which take into account their relative sustainable development benefits. These benefits may also make CDM projects attractive to some of the new social and environment funds (iii) *Developing countries* wishing to host CDM projects need to put in place the necessary institutional mechanisms for approving CDM projects and ensuring their compatibility with national sustainable development goals and strategies, (iv) *Multi-lateral and bilateral development agencies* should support capacity building activities to enable developing countries (specially the LDCs) to be able to attract CDM projects but should not be used to purchase CERs directly from projects.

Acronyms and abbreviations

AIJ:	Activities Implemented Jointly
BCAS:	Bangladesh Center for Advanced Studies
BAU:	Business as usual
CDM:	Clean Development Mechanism
CER:	Certified Emission Reduction
CMU:	Country Management Unit
COP:	Conference of Parties
DFID:	Department for International Development
EIA:	Environmental Impact Assessment
EIT:	Economies in transition
ENB:	Earth Negotiations Bulletin
ERPA:	Emission Reduction Purchase Agreement
FMC:	Fund Management Committee
FMU:	Fund Management Unit
GEF:	Global Environment Facility
GHG:	Greenhouse gas
IFC:	International Finance Corporation
IIED:	International Institute for Environment and Development
IPCC:	Intergovernmental Panel on Climate Change
JI:	Joint Implementation
LDC:	Least Developed Country
MVP:	Monitoring and Verification Protocol
NGO:	Non-governmental Organization
NSSD:	National Strategy for Sustainable Development
KP:	Kyoto Protocol
ODA:	Official Development Assistance
OECD:	Organization for Economic Cooperation and Development
PC:	Participants Committee
PCF:	Prototype Carbon Fund
PCN:	Project Concept Note
PD:	Project Document
PIN:	Project Idea Note
SHS:	Solar Home Systems
SIA:	Social Impact Assessment
SSN:	South*South*North project
TERI:	Tata Energy Research Institute
UNCED:	United Nations Conference on Environment and Development
UNDP:	United Nations Development Program
UNEP:	United Nations Environment Program
UNFCCC:	United Nations Framework Convention on Climate Change
UNITAR:	United Nations Institute for Training and Research
WB:	World Bank
WCED:	World Commission on Environment and Development
WRI:	World Resources Institute
WSSD:	World Summit on Sustainable Development

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1. Introduction

The Clean Development Mechanism (CDM) was created at the third Conference of Parties (COP3) of the UN Framework Convention on Climate Change (UNFCCC) in Kyoto in 1997 as part of the Kyoto Protocol. It isne of three flexible mechanisms, along with emission allowance trading (Article 17) and the so-called Joint Implementation (Article 6). CDM is supposed to have two main objectives, namely:

- Reduce greenhouse gas emissions in developing countries and
- Contribute to sustainable development

These objectives are described in Article 12 of the Kyoto Protocol, which reads as follows:

> *2. The purpose of the clean development mechanism shall be to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention , and to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments under Article 3.*
>
> *3. Under the clean development mechanism:*
>
> > *(a) Parties not included in Annex I will benefit from project activities resulting in certified emission reductions; and*
> >
> > *(b) Parties included in Annex I may use the certified emission reductions accruing from such project activities to contribute to compliance with part of their quantified emission limitation and reduction commitments under Article 3, as determined by the Conference of parties serving as the meeting of the Parties to this Protocol (UNFCCC).*

[1] The views expressed in this document are those of the author. They do not necessarily represent the views of PCF Fund Management Unit staff or PCF Participants and should in no way be taken to represent the official view of any institution with which the author is associated.

Although the Kyoto Protocol has yet to enter into force there have been a number of project activities as well as funds set up to promote CDM type activities in various developing countries over the last few years. There have also been a number of capacity building assessments (UNITAR, 2001) as well as training activities on CDM and KP (NSS, 2000) which have yielded some interesting lessons particularly with regard to methodology for approval of projects and in the application of sustainable development criteria for CDM projects. This paper reviews some of the activities carried out so far on CDM projects and capacity building programs and how the issue of sustainable development has been treated. It also reviews the experience of the Prototype Carbon Fund (PCF) of the World Bank which has carried out a portfolio of Joint Implementation (JI) and CDM projects and its use of sustainable development indicators. Finally it proposes some guidelines for host countries as well as portfolio fund managers on how to apply the sustainable development criteria for CDM projects in future.

1.1. Bonn Agreement

Under the Buenos Aires "Plan of Action" adopted at COP4, the rules and mechanisms governing the CDM were planned to be agreed upon at the sixth Conference of Parties (COP6) in the Hague in November 2000. However, since Parties were unable to reach agreement on all the outstanding issues, COP6 meeting was reconvened in Bonn, Germany in July 2001 (COP6 *bis*) where a political agreement was finally reached (with the exception of the United States of America which abstained). The "Bonn Agreement", which includes guidelines for the CDM, opens the way for ratification of the Kyoto Protocol. It is expected that the Kyoto Protocol could be ratified by a sufficient number of countries to trigger entry into force by the time of the World Summit on Sustainable Development (WSSD) to be held in Johannesburg, South Africa in August 2002. The main elements of the Bonn Agreement with regard to the CDM are as follows (ENB, 2001):

(i) Establishment and composition of a supervisory committee for verification of CERs.
(ii) Composition of the CDM executive board.
(iii) Use of CERs by Annex I Parties conditional on being party to the compliance agreement.
(iv) Sinks to be allowed (but only afforestation and reforestation).
(v) No eligibility for nuclear power.
(vi) Host country prerogative to develop sustainable development criteria.
(vii) CDM funding to be additional to Official Development Assistance (ODA).
(viii) Small scale projects to have simplified procedures.

The specific text adopted for the sustainable development criteria is as follows:

> *The COP agrees that it is the host Party's prerogative to confirm whether JI/CDM project activities assist in achieving sustainable development* (ENB,2001)

The executive board of the CDM is to be set up at COP7 to be held in Morocco on October 2001 while the specific operational issues will be resolved by COP8 in 2002 and COP9 in 2003.

1.2. Potential market for the CDM

The potential market for greenhouse gas reductions (even without the US) has been estimated between 5 and 200 billion US Dollars (Zhang, Z.X., 1999). A recent estimate by Natsource identified 55 million tons of carbon dioxide equivalent (CO2e) trades in April 2001 worth $100 million (Natsource, 2001 and Faroohar, R., 2001). The potential for developing country participation in this market through CDM projects is also considerable (Zhang, Z.X., 2000), although without the US participating this should be less than expected. However there is a distinct possibility that left to market forces alone the vast bulk of the CDM project flow will go to a few of the larger developing countries such as China, India, Brazil, South Africa and few Latin American countries, as was the case with foreign direct investments in the past (Kete, N. *et al*, 2001). During the phase of Activities Implemented Jointly (AIJ) for example out of nearly fifty AIJ projects only four were located in Africa (Sokona,Y., et al ,1998). It is therefore legitimate to ask the question: How much sustainable development can be expected from CDM projects? (Austen, *et al*, 1999).

Below are some of the key questions to be addressed in order to ensure that sustainable development is correctly incorporated in the CDM market:

- How can host countries prepare sustainable development criteria and ensure CDM projects meet them?
- Which specific sustainable development criteria can be applied at project level?
- How can CDM projects be spread across the whole spectrum of developing countries to ensure equitable geographic distribution?
- What has been the experience gained so far in carrying out CDM type (and JI type) projects with regard to applying sustainable development criteria?

These are addressed in the following sections based on the experiences gathered so far by the Prototype Carbon Fund (as well as other activities).

2. Sustainable Development Criteria

We use the traditional definition of sustainable development from the Brundtland Commission report which states that development is sustainable when it *"meets the needs of the present generation without compromising the ability of future generations to meet their own needs"* (WCED, 1987).

2.1. Dimensions and levels of sustainable development

Since the UN Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil in June 1992 there have been numerous attempts to find more operationally useful definitions and indicators of sustainable development. These have been broadly be categorized into three areas, namely: (i) economic, (ii) environmental and (iii) social.

The issue of sustainable development indicators has also been examined from different perspectives depending on the needs of the assessment (Qizilbash, M., 2001). These have been broadly along the following three levels, namely: (i) Global level(to allow inter-country comparisons),(ii) National level and (iii) Project (or local) level.

There has also been considerable work on the notion of *sustainability* which has been used in developing future scenarios of (mostly global but also some national level) analysis. This work has usually focused on the environmental aspects of long term sustainability pathways, but it has also incorporated economic and social dimensions (Raskin, *et al*.,1998).

The United Nations have been carrying out a major program for developing indicators of sustainable development. These have been mostly at the national level to enable inter-country comparisons (UNDESA, 2000). The UNDP's Human Development Index (HDI) is a well recognized attempt to consider both economic and social indicators (it has not been less successful at incorporating environmental indicators).

The OECD has also been developing sustainable development criteria from the perspective of informing foreign direct investment in developing countries (OECD, 2000 and OECD, 2001) while the World Business Council for Sustainable Development (WBCSD), a business group based in Switzerland has also been developing similar criteria to inform multi-national companies and guide their investments in developing countries (WBCSD, 2000).

The results of some of these efforts are briefly reviewed below:

(i) Economic

This has been the most commonly used indicator of *development* in the past, with criteria such as

- GDP,
- GDP/capita,

- Improved balance of payments
- Increased investment in a priority sector of the economy,
- Transfer of clean and cost-effective technologies,
- Generation of local employment opportunities, Positive effects on trade balance,
- Improved local economy

(ii) Environmental

This has also been used for the notion of sustainability in the sustainable development paradigm. Some indicators that have been used or suggested include the following:

- Reduced air pollution
- Reduced water pollution
- Conservation of biodiversity
- Reduced soil erosion from deforestation
- Improved sustainability of natural resources

(iii) Social

This dimension is the newest and has been amongst the more difficult to incorporate in the sustainable development paradigm. Some of the indicators which have been used or suggested include the following:

- Local employment
- Greater community participation
- Improved health
- Reduction of wealth disparities
- Poverty reduction
- Capacity building
- Improved access to power
- Helping backward communities
- Security of energy supply

2.2. CDM and sustainable development

The notion of the sustainable development within the CDM can also be seen from different perspectives and the indicators will necessarily have to relate to the perspective taken (Goldemberg,1998). The following are some possible perspectives which can be taken for regarding sustainable development in the CDM:

(i) From the global investment perspective

This would include the perspective from both the UNFCCC as well as global investment funders'. Their objective would be to maximize both the climate change reduction potential and the sustainable development of a portfolio of CDM investments across the

globe (Mathy, S., *et al*, 2001). It would therefore encompass elements which enable some geographic distribution across the developing countries (to ensure some level of equitable distribution of projects) as well as across technologies and sectors. Experience so far has shown that it is likely that a small number of developing countries (e.g. China, India, South Africa, Brazil and few Latin American countries) could effectively account for almost all CDM projects if there is no concerted effort to enable other (smaller and poorer) developing countries to access the CDM market (Clausen, E., and L. McNeilly, 1998). This is explicitly recognized in the UNFCCC negotiating text for the Kyoto Protocol where it recommends an equitable geographical distribution of CDM projects. The Bonn Agreement has also made special mention of the needs of the least develop countries (LDCs), especially with respect to capacity building (for more information on LDCs see www.unctad.org).

The CDM being a market based activity, it is likely to follow the dynamics of foreign direct investment (FDI) and be governed (and constrained) by the forces which apply to FDI in general (Werksman, J, *et al*., 2001). However as the CDM has an explicit goal of promoting sustainable development (unlike general FDI) there may be some innovative investments driven by the sustainable development goals as well as the greenhouse gas reduction goals. CDM projects may in particular become attractive vehicles for social and environmental portfolio funds in a number of OECD countries (DFID, 2000).

(ii) From the host country's perspective

The Bonn Agreement has specified that the host country is responsible for determining the sustainable development criteria of CDM projects (ENB, 2001). However, few developing countries have actually done anything concrete in terms of either putting in place the institutional mechanisms or developing sustainable development criteria for CDM projects. One of the few countries to have done so is Costa Rica which has developed the following criteria (developed for the AIJ phase):

> *Projects should be compatible with and supportive of Costa Rica national environment and development priorities and strategies, including biodiversity conservation, reforestation and forest preservation, sustainable land use, watershed protection, air and water pollution reduction, reduction of fossil fuel consumption, increased utilization of renewable resources and enhanced energy efficiency.*
>
> *Projects should enhance the income opportunities and quality of life for rural people, transfer technological know-how and capacity building, and minimize adverse consequences* (Kelly, C. and N. Helme, 2000)

(iii) From the individual project's perspective

Each potential CDM project needs to be assessed on its own merits with respect to sustainable development indicators which will need to apply in a very specific and local context. This includes carrying out appropriate Environmental Impact Assessments

(EIAs) and Social Impacts Assessments (SIAs) as required by the national laws of each host country (or by the international funding agencies). One important consideration is the need for transparency and openness in making decision including the involvement of stakeholders and communities in decision making (Baumert, et al, 2000 and Baumert, K. and E. Petkova, 2000).

For specific CDM projects, countries (and project developers) have approached the issue of defining sustainable development criteria in different ways. In a number of cases attempts have also been made to develop specific sustainability criteria and indicators for CDM projects by different groups (see Annex 1 for an example). Examples of assessing sustainable development benefits of potential CDM projects have been made for India (TERI, 2001), China (Zhihong, W., 2000), Zimbabwe (NSS, 2000) Columbia (NSS, 2000), Kenya, Nepal, Sri Lanka (Begg, *et al*, 2000), Bangladesh (TERI, 2001) and Indonesia (TERI, 2001). These studies have shown that CDM projects indeed can have substantial potential for enhancing sustainable development locally as well as nationally if they are designed with the sustainable development goals as part of their criteria.

(iv) From a development agency's perspective

One of the criteria agreed regarding the CDM is that it should be for projects which represent additional resources to those provided by OECD countries under their Official Development Assistance (ODA). The question has therefore been raised as to whether development aid should be used to finance CDM projects (Kete, N., *et al*, 2001). This is a difficult question to answer definitively. However, as one of the objectives of the CDM is to promote sustainable development in developing countries it may be possible for development agencies to fund certain activities related to CDM (Sugiyama,T. and A. Michaelova, 2001). These could include capacity building (specially for the LDCs) who may not be able to attract projects from the private sector market on their own, also for identifying potential CDM projects in the LDCs (DFID, 2000). The World Bank's "CDM Assist" project in Africa is a good example of such development support (CDM Assist, 2000). In addition it is possible that a part of the CDM market (albeit only a niche) may put a higher value on the sustainable development elements of certain projects then only on their CERs and price of CERs. Thus it is conceivable that in some cases the sustainable development goals of projects may be the *primary* goal for the investor and the CERs the *secondary* goal. There is evidence already from the experience of the World Bank's Prototype Carbon Fund that investors value projects with clear sustainable development benefits higher than others (PCF, 2001).

Some studies have also been made to examine the different technologies available including renewable energy technologies(GEF,2001). One study (Lee, R. *et al*, 2001) showed that even at low carbon prices, carbon finance can play a substantial role in making solar home systems (SHS) affordable (they are currently too expensive for most households in developing countries).

(v) Some possible dimensions of sustainable development criteria

Taking into account the previous experience in using sustainable development indicators and criteria at different levels and applying them to the case of potential CDM projects the following may be a useful (albeit still crude) matrix to follow:

Dimension	**Global**	**National**	**Local(Project)**
Economic	GDP GDP/capita	Trade Taxes	Employment
Environmental	GHG emissions Biodiversity	Biodiversity Air quality Water quality	Local air quality Local water quality
Social	HDI	Employment Poverty reduction	Health Community participation Capacity building

Table 1: Some sustainable development indicators at different levels (incomplete)

3. Review of PCF Projects

The Prototype Carbon Fund (PCF) is a trust fund of the World Bank, launched in January 2000 to provide financing for projects reducing emissions of greenhouse gases. The PCF is an innovative funding mechanism of $145 million. The contributors to the Fund (the participants) are six public sector entities (five governments and one state-owned development bank) and seventeen private sector entities (see Annex II for list of participants). Practically the PCF finances projects which generate emission reductions in developing countries (CDM projects) and Economies in Transition (EIT) countries (JI projects). In return for the finance that it provides, the PCF acquires the exclusive right to part of those reductions, which helps the participants meet their respective national and international emission abatement targets (for more information visit http://www.protoypecarbonfund.org). Countries hosting PCF projects are sign a Host-Country agreement with the PCF and become part of the PCF Host Country Committee (see Annex III for list).

3.1. Objectives of PCF

The PCF's operational objective is to mitigate climate change by (i) promoting the World Bank's tenet of sustainable development, (ii) demonstrate the possibilities of public-private partnerships and to (iii) offer a "learning-by-doing" opportunities to its stakeholders. These are to be fulfilled in the following manner:

(i) High-quality emission reductions

The PCF funds projects that produce high quality greenhouse gas emission reductions which could be registered with the United Nations Framework Convention on Climate Change (UNFCCC) for the purposes of the Kyoto Protocol. To increase the likelihood that the reductions will be recognized by the Parties to the UNFCCC, independent experts provide baseline validation and verification/certification procedures for emissions reductions that respond to UNFCCC rules as they develop.

(ii) Knowledge

By transacting the business of reducing greenhouse gas emissions, the PCF is developing a knowledge base of business processes and practice to facilitate climate-friendly investment and inform the ongoing UNFCCC negotiations. PCF is pioneering approaches to achieving environmentally credible emissions reductions beginning with defining baselines for more climate-friendly activities to verification, certification, and transfer of emissions reductions achieved. The analyses, independent opinions, and contracts which underpin this process will be made public, along with lessons learned.

(iii) Public–Private Partnership

PCF resources are provided by both the public and private sectors. The PCF demonstrates how insights and experience from both sectors can be pooled to mobilize additional

resources for sustainable development and address global environmental concerns. The active participation of both sectors ensures that the PCF operates efficiently and in accordance with the Kyoto Protocol while serving the interests of World Bank client countries.

3.2. The PCF Project Cycle

Each of the PCF projects goes through the following project cycle:

(i) Submission of a Project Idea Note (PIN) by project proponent

The PIN template (available on the PCF website) is completed by the project proponent and submitted to the PCF Fund management unit(FMU) via the website.

(ii) Pre-screening of PIN by PCF

Project idea is screened for basic eligibility by the PCF Knowledge Manager, categorized and logged into the electronic database with an initial response to proponent.

Project idea is either dropped or if it meets the basic eligibility criteria assigned to a PCF technical support specialist for follow up. The TS asks the project proponent for further information, if necessary.

(iii) Review of PIN by FMU

FMU reviews and clears PIN for further development and finalization.

(iv) Early notification of project proposal to Host Country Government

To gain assurance from the host country government of its intention to eventually sign the "Letter of Endorsement", the Fund manager or the responsible project manager informs the host country's focal point for UNFCCC and other World bank counterparts of the host country government. The Country Management Unit or IFC Investment Department are notified to gain comment on project's consistency with the CAS for that country.

(v) Review of PIN by GEF secretariat

- FMU requests GEF Coordination unit at the World Bank to submit the project proposal to GEF Secretariat for clearance
- The GEF Secretariat has 10 days to issue its "no objection", or to indicate GEF interest in the project proposal
- If "no objection", the FMU asks project proponent to prepare Project Concept Note (PCN)
- If GEF expresses interest, project is dropped from PCF pipeline.

(vi) Host Country Endorsement

FMU asks Country Management Unit (CMU) to secure Letter of Endorsement of the project from the host country.

(vii) Project Organizational Workshop

FMU meets with relevant World Bank regional operations staff to confirm the project task team, including the Task manager and FMU staff member on the task team.

(viii) Preparation of Project Concept note (PCN)

FMU authorizes funds for preparation of the PCN, which would include the development of the baseline concept, expected emission reductions, application of Bank operational policies and initial review of project risks. Process of environmental and social assessment and review begins.

(ix) Independent Risk Assessment

A risk assessment of the project is commissioned by FMU and carried out by an independent entity, based on the PCN.

(x) Review of PCN by Fund Management Committee

FMU submits PCN to the Fund Management Committee (FMC) for review to determine if project meets selection and portfolio criteria. Upon FMC clearance, the PCN is submitted to the participants committee (PC) for review , along with the LOE.

(xi) Review of PCN by Participants Committee

Participants Committee (PC) reviews PCN and approves project unless objections in writing by at least two members of the committee are conveyed to the PC chairman within 30 calendar days of distribution of the PCN. PC chairman sends written notice to the Fund manager on the outcome of the PC review process.

(xii) Preparation of PCF project document (PD)

This involves the following:

- Feasibility study, including the formal baseline study is carried out for the underlying project as well as the PCF component
- The Monitoring and Verification Protocol (MVP) is developed.

The Baseline study and MVP are submitted as attachments to the PCF PD. Process of environmental and social assessment and review continues.

(xiii) Baseline verification process

Once the PCF PD is cleared the FMU:

- Carries out re-assessment of the project risk
- Coordinates procurement of independent validator
- Makes a formal decision to submit the project documents (including baseline study and MVP) for independent validation.

(xiv) Drafting of Informal Term Sheet for Purchase Agreement

The FMU prepares a term sheet for informal review with the project sponsor and/or the Host government at the pre-negotiations workshop.

(xv) Pre-negotiations Workshop/consultation

A consultation (which normally takes the form of a workshop) is held before the Appraisal Mission to prepare for negotiations of the Emission Reduction Purchase Agreement (ERPA) with the host country, and to informally review specific terms of the agreement.

(xvi) Post Validation Review of PCF PD by FMU

The FMU reviews the PCF PD in light of the validation report. At this stage the draft legal documents are also in place.

(xvii) Appraisal Mission to the host country

During the Appraisal Mission to the host country, all PCF documents, including the baseline study, MVP, Emission Reduction Purchase Agreement, and financing agreement are discussed with the project sponsor and/or host country government.

(xviii) FMC review of draft Term Sheet and completion of Due Diligence

Fund Management Committee reviews PCF PD and draft Term Sheet before negotiation of project/ERPA.

(xix) Negotiations of final PCF Contract

The PCF Financial Specialist conducts negotiations with the host country on the PCF ERPA. All legal documents are finalized at this stage.

(xx) Post-negotiation workshop (Optional)

Subject to agreement by the project sponsor and/or host country, a post- negotiations workshop is held to share the experience and lessons learned in the PCF component.

3.3. Sustainable Development indicators used in PCF Projects

The PCF has used a number of environmental and social indicators in its CDM and JI projects. These have been treated as co-benefits from the project in addition to the emission reductions and financial return of the project. An assessment of the different environmental and social co-benefits that have been identified and used in different projects is shown in Annex IV[2]. The first indication of such co-benefits are described in the Project idea note (PIN) under environmental and socio-economic benefits of the project. These are generally very rudimentary and only indicative. At the Project Concept Note (PCN) stage these co-benefits are further elaborated and where necessary additional EIA and SIAs are started. Finally in the Baseline study and Monitoring and Verification Protocol (MVP) the sustainable development benefits are further elaborated specifically and indicators for monitoring are included in the MVP. In addition if the EIA and SIA identify further actions needed then those also need to be included in the Project Document (PD) which is finally approved by the PCF (e.g. in the case of the Chennai project in India the EIA/SIA identified possible loss of employment of poor people who depend on sifting through garbage to earn a living, the project was modified to use more labour intensive methods of sifting the garbage ,thus providing employment for the people whose livelihoods would have been adversely affected by the project).

The analysis of PCF projects with respect to their sustainable development (or environmental and social co-benefits) shows that most of the projects have some environmental co-benefits in terms of local water or air (or in some cases noise) pollution abatement. However on the social benefits side they are relatively weak , with the employment benefits from the project being the main social benefit considered.

There does not seem to have been any explicit assessment of project compatibility with national level sustainable development goals; also, in many cases clearly applicable national sustainable development objectives have not been defined. However, in each case the host country was responsible for making such assessments and had approved the projects. In addition, all PCF project have to comply with World Bank safeguard policies[3].

At the portfolio level PCF has some stated strategies for promoting a geographical balance of projects between regions, as well as between technologies (with primary emphasis on renewable energy and also on energy efficiency as well as some on forestry

[2] The information in Annex IV is based on information available in August, 2001. With the exception of already negotiated Latvia project, all data and indicators are subject to change as projects negotiations are finalized. Not all the projects in the table will in the end receive PCF funding.

[3] World Bank safeguard policies include Environmental Assessment (OP 4.01, BP 4.01, GP 4.01), Natural Habitats (OP 4.04, BP 4.04, GP 4.04), Forestry (OP 4.36, GP 4.36), Pest Management (OP 4.09), Cultural Property (OPN 11.03), Indigenous Peoples (OD 4.20), Involuntary Resettlement (OP/BP 4.12), Safety of Dams (OP 4.37, BP 4.37), Projects in International Waters (OP 7.50, BP 7.50, GP 7.50), Projects in Disputed Areas (OP 7.60, BP 7.60, GP 7.60).

projects). It also specifically targets small countries as well as smaller projects through bundling such projects through financial intermediaries (PCF, 2000).

3.4. PCF*Plus*

In November 2000 the PCF created the PCF*Plus* program to support outreach, training and research activities related to CDM, JI and PCF projects. The research program identified three priority areas:

- "Nuts and Bolts" project issues, including baselines, contracts, monitoring and verification
- Potential market for emission reductions under JI and CDM
- The CDM and sustainable development

The third research area is specifically aimed at looking at sustainable development issues related to the CDM. The PCF*Plus* program also includes capacity building activities for host country participants through fellowships and targeted training workshops (PCF, 2001).

3.5. A possible sustainable development assessment criteria for PCF projects

It is important for future CDM projects supported by the PCF (as well as other funders) to develop some means of assessing and comparing the relative sustainable development benefits of projects. The procedure needs to be both simple and relatively easily applied as well as relevant for the host country. At the level of assessing the sustainable development compatibility of projects at the national level this is clearly the responsibility of the host country. However PCF may provide host countries (if requested to do so) with some guidance on how to establish such criteria and ensure that projects are compatible with national priorities. Some possible ways in which host countries may do are described in the following section.

At the individual project level there also needs to be an assessment of the sustainable development benefits (mainly in terms of environmental and social criteria) which can be easily applied across projects and countries. One way to do so would be to apply a uniform checklist which would put different parameters on a common scale. An example of such an approach using a five point scale would be as follows:

Scale	Sign	Indicator
-1	Negative	Project has negative sustainable development impacts in terms of undermining other environmental and social development (ESD) policies and/or causing environmental/social impacts from the CDM project baseline
0	Neutral	Sound CDM project but no difference from baseline in any discernable way in environmental/social or policy terms
1	Positive	One additional significant benefit, e.g. One of social, local environmental, health, poverty, community participation or economic/welfare gains
2	Positive	Two or more additional benefits in two categories
3	Positive	Significant benefits in three or more categories, i.e. all of social, local environmental, health, community participation and welfare/employment

Table 2: A proposed scale for assessing the relative sustainable development benefits of CDM projects

4. Host country requirements to ensure sustainable development benefits from CDM projects

The responsibility for ensuring the sustainable development objectives of CDM projects rests with the host country. However very few developing countries have as yet been able to establish procedures for screening CDM projects against their own sustainable development criteria. Some pilot activities as well as capacity building programs such as the World Bank's National Strategies study (NSS,2000) have enabled some developing countries to look at possible institutional means to promote and screen CDM projects in future. However despite these efforts most developing countries have very little understanding or institutional capacity to do justice to a national level assessment and screening of CDM projects for their sustainable development potential. A recent needs assessment carried out by UNITAR of 40 developing countries identified CDM (and sustainable development criteria for judging CDM projects) as a priority area for capacity building (UNITAR, 2001).

Some of the lessons learned from these activities are summarized below and may be considered by individual countries in preparing their CDM regimes.

(i) Institutional mechanisms

Potential host countries for CDM projects need to put in place the requisite institutional mechanisms for examining and approving CDM projects. This requires considerable institutional capacity strengthening and training of the main participants as the CDM is a new type of investment instrument dealing in a new and unfamiliar commodity (CERs). Experience with PCF projects has shown that it often needs to involve a number of ministries (including Environment, Finance and Law) as well as other stakeholders (the pre-negotiations workshops have been particularly useful in bringing the stakeholders together).

(ii) Compatibility with national sustainable development goals and strategies

After UNCED in 1992 many countries prepared national Agenda 21s or other national strategies for sustainable development (NSSDs). This is also one of the international development targets for countries to prepare for the World Summit on Sustainable Development (WSSD) to be held in Johannesburg, South Africa in 2002 (OECD, 2001). This is therefore an opportune time for countries to develop criteria for compatibility of CDM projects with their NSSDs.

(iii) Compatibility with other national laws and policies

Most countries already have in place environmental regulations requiring investment projects to carry out Environmental Impact Assessments (EIAs) and some also have requirements to carry out Social Impact Assessments (SIAs). CDM projects would need to abide by such national legislation and carry out the necessary EIAs and SIAs where required to do so by national laws or policies.

(iv) Additional criteria

Countries may wish to consider additional criteria for CDM projects such as a negative or positive list of project types or technologies.

(v) Monitoring and reporting mechanisms

Countries need to also ensure adequate monitoring and reporting of each individual project with respect to its sustainable development indicators and be able to approve and certify compliance with those indicators.

5. Conclusions and recommendations

Based on the experience gained so far in assessing sustainable development benefits from CDM projects the following are some conclusions that can be drawn based on different perspectives :

(i) From a global perspective

Projects need to be equitably spread across the developing countries, otherwise only a handful of developing countries will be able to participate effectively in this market. A crude distribution of types of projects, geographical distribution and project size with respect to their relative sustainable development potential is shown below.

	High	**Medium**	**Low**
Geographical distribution	LDCs	Medium sized countries	Larger countries
Project size	Small	Medium	Large
Project types/ Technologies	Community forestry SHS	Plantation forestry Landfill	Power sector

Table 3: Relative sustainable development impacts of different CDM projects

(ii) From a host country perspective

Developing countries wishing to participate in the CDM project market need to put in place institutional mechanisms to enable them to approve CDM projects as well as assess their relative contribution to national priorities for sustainable development.

(iii) CDM Project proponents

Potential CDM project proponents need to pay special attention to assessing the sustainable development benefits of their individual projects in order to qualify them for CDM eligibility.

Based on these main conclusions the following **recommendations** are made to different target audiences:

- *UNFCCC/ CDM executive board* (once it is set up) needs to carry out a thorough analysis of experiences gained on CDM type projects around the world to enable robust criteria for assessing sustainable development benefits to be made.

- *International Fund Managers* investing in CDM type projects need to maintain a diverse portfolio of projects which take into account their relative sustainable development benefits. These may also make CDM projects attractive to some of the new social and environment funds.

- *Developing countries* wishing to host CDM projects need to put in place the necessary institutional mechanisms for approving CDM projects and ensuring their compatibility with national sustainable development goals and strategies.

- *Multi-lateral and bilateral development agencies* should support capacity building activities to enable developing countries (specially the LDCs) to be able to attract CDM projects but should NOT be used to purchase CERs directly from projects.

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Annex I: Sustainability Indicators used in the South*South*North Project

Indicator 1 – Contribution to the mitigation of Global Climate Change

Global environmental benefits will be measured by the net reduction of GHG emissions measured in CO_2 equivalent according to the IPCC GWP for a one hundred-year horizon.

Vector: *0 = No change in GHG emission level compared with the baseline.*
3+ = Total avoidance of the GHG emissions predicted.

The main difficulty with quantifying this indicator is estimating the leakage (see below). Complete leakage accounting is required within the host country and sometimes abroad, for example, in those projects that aim to conserve indigenous forests.

Indicator 2 – Contribution to local environmental sustainability

Local environmental impacts will be assessed by the percentage change in the emissions of the most significant local pollutant (oxides of sulphur, nitrogen, carbon and other atmospheric wastes; radioactive waste, VOC, TSP or any solid or liquid waste). A weighted average percentage change may be used when more than one pollutant is considered to be relevant.

Vector: *0 = No change in emission level of the selected pollutant.*
3+ = Total avoidance of emissions of the local pollutant.
3- = Emissions of the local pollutant are doubled.

Subjectivity is an unavoidable weakness of this indicator, given the necessary selection of sample pollutants for monitoring.

Indicator 3 – Contribution to net employment generation

Net employment generation will be taken as an indicator of social sustainability, measured by the number of additional jobs created by the CDM project in comparison with the baseline.

Vector: *0 = No change in employment level compared with baseline.*
+3 = Doubled number of jobs.
-3 = Elimination of all jobs predicted in the baseline.

This indicator is problematic in that it doesn't register a qualitative value for employment, such as whether the resultant jobs are highly or poorly qualified, temporary or permanent, secure or 'flexible'. Figures are also subject to inflation depending on whether direct and indirect jobs are counted.

Indicator 4 – Contribution to the sustainability of the balance of payments

Net foreign currency savings may result through a reduction of, for example, fossil fuel imports as a result of CDM projects. Any impact this has on the balance of payments of the recipient country may be compared with the baseline.

Vector: *0 = No change in foreign currency expenditure compared with baseline.*
+3 = Total avoidance of foreign currency expenditures.
-3 = Doubled net foreign currency expenditures.

A major difficulty here is that estimates of future prices of imported goods and services replaced by the project can be quite uncertain (e.g. international oil prices).

Indicator 5 – Contribution to macroeconomic sustainability

The alleviation of the burden on public savings will be measured by the reduction of direct government (national, provincial and local) investments (including budgets of state enterprises)

made possible by the foreign private investment in the CDM project in comparison with the baseline.

Vector: *0 = No change in public investments compared to the baseline.*
+3 = Total avoidance of public investments.
-3 = Doubled public investments compared to baseline.

The challenge here is to calculate the saving of public financial resources net of subsidies and to ascertain the additionality of the foreign private investment.

Indicator 6 – Cost Effectiveness

Cost reductions implied by the CDM project in comparison with the baseline will measure the contribution to increased microeconomic sustainability. The value of this indicator will only be positive in the case of "win-win" ("no-regrets") projects.
sensitivity of the results to these key assumptions.

Vector: *0 = No change in costs compared to the baseline.*
+3 = Total avoidance of costs compared to the baseline.
-3 = Doubled costs compared to baseline.

Indicator 7 – Contribution to technological self-reliance

As the amount of expenditure on technology changes between the host and foreign investors, a decrease of foreign currency investment may indicate an increase of technological sustainability. When CDM projects lead to a reduction of foreign expenditure via a greater contribution of domestically produced equipment, royalty payments and license fees, imported technical assistance should decrease in comparison with the baseline.

Vector: *0 = No change in foreign currency expenditures with technology compared to the baseline.*
+3 = Total avoidance of foreign currency expenditures.
-3 = Doubled foreign currency expenditures with technology.

Data collection on full technology costs can be difficult in some cases.

Indicator 8 – Contribution to the sustainable use of natural resources

CDM projects should lead to a reduction in the depletion of non-renewable natural resources either through the adoption of technologies with higher energy efficiency or through an increased deployment of renewable resources, such as the replacement of fossil fuels with solar or wind energy.
In both cases, CDM projects will contribute to a more sustainable use of natural resources.

Vector: *0 = No change in non-renewable natural resource use.*
+3 = Avoidance of all non-renewable natural resources.
-3 = Doubled use of non-renewable natural resources.

Uncertainty regarding the performance of technological innovations must be accounted for. Again, two well-contrasted project performances can be used to provide a sensitivity analysis.

Source: www.southsouthnorth.org.

Annex II: Members of PCF Host Country Committee (August 2001)

Membership
Host Country Committee

Joined	Reviewing
1. Latvia *	1. Russia
2. Costa Rica *	2. Slovak Republic
3. Mexico	3. Indonesia
4. Guatemala	4. Slovenia
5. Argentina	
6. El Salvador	
7. Brazil *	
8. Nicaragua	
9. Togo	
10. Senegal	
11. Zimbabwe	
12. Burkina Faso	
13. Uganda *	
14. Czech Republic*	
15. Honduras	
16. Colombia	
17. Morocco	
18. Peru	
19. Guyana *	
20. Uruguay	
21. India	
22. Belarus	
23. Chile *	
24. Romania	
25. Swaziland	
26. Ghana	
27. Bulgaria	

Members of PCF Host Country Committee as of August 2001.
Source: www.prototypecarbonfund.org.

* For these countries, participation is based on project endorsement. For the rest, it is initiated by a memorandum of understanding.

Annex III: Participants in the PCF

Private Sector

Company	Sector	Country
British petroleum-Amoco	Oil	UK
Chubu Electric power Co	Electricity	Japan
Chugoku Electric Power Co	Electricity	Japan
Deutsche bank	Financial	Germany
Electrabel	Energy	Belgium
Fortum	Energy	Finland
Gaz de France	Energy	France
Kyushu Electric Power Co	Electricity	Japan
Mitsubishi Corp	Trade	Japan
Mitsui	Trade	Japan
Norsk Hydro	Oil, Electricity	Norway
RaboBank	Financial	Netherlands
RWE	Electricity	Germany
Shikoku Power Co	Electricity	Japan
Statoil	Oil	Norway
Tohoku Electric power Co	Electricity	Japan
Tokyo Electric power Co	Electricity	Japan

Governments
Canada
Finland
Japan Bank for International Cooperation
Netherlands
Norway
Sweden

Source: www.prototypecarbonfund.org.

Annex IV: Sustainable development benefits of PCF Projects

(IMPORTANT NOTE: Table below is based on information available in August, 2001. With the exception of already negotiated Latvia project. the data and indicators are subject to change as projects negotiations are finalized. Not all projects in the table will in the end receive PCF funding)

Project	Local environmental benefits		Socio-economic benefits		Source
	Benefits	Indicators	Benefits	Indicators	
Latvia: Landfill Gas Capture and Power Generation	Reduction in groundwater pollution	BOD	Public sector subsidies for solid waste management	$/yr	MVP: pp.33-34
	Reduction in noise levels	Decibels	User fees	$/ton collected/month	
	Reduction in odor levels	--			
	Development of recyclables	Tons/yr			
Costa Rica: Renewables (Hydro/Wind) displacing diesel and coal	Reduction in groundwater pollution	BOD	Public sector subsidies for renewable energy projects, leading to lower tariffs	$/month	MVP: pp.36-38
	Reduction in air pollution	Ppm	User fees	$/household (other user)	
	Reduction in noise levels	Decibels			
	Reduction in soil pollution	Complete soil analysis			

Project	Local environmental benefits		Socio-economic benefits		Source
	Benefits	Indicators	Benefits	Indicators	
Uganda: Small hydro rural power displacing diesel oil	Improved soil and air pollution	Phased out engines and gen-sets	Improved power consumption	More households, institutions and businesses connected	MVP: p. 34-36
		Safe disposal of oils and lubricants	Improved service quality	Less down time and load shedding	
	Water systems improved	Complaints by users		Shorter waiting time for new connections	
Guyana: Bagasse co-generation for public power supply	Reduction of adverse costs of bagasse disposal	--	More and better paying jobs in sugar industry	--	PCN: para.1.34
	Reduction in air pollution	--	Savings of hard currency on FF imports	--	
	Reduction in water pollution	--	Lower cost of power from bagasse co-generation	--	
	(Increase in fertilizer run-off?)	--	Tempering of fluctuations of international FF prices	--	
			More competitive sugar industry	--	
Czech Republic: Energy Efficiency	"Local environmental improvements"	--	Energy efficiency without need for permanent public assistance	--	PIN: p.4
Jamaica Wind Power	SO_2 emissions reductions	--	--	--	PCN: p.11
	Reduce encroachment on agricultural land or wildlife habitat	--	--	--	

Project	Local environmental benefits		Socio-economic benefits		Source
	Benefits	Indicators	Benefits	Indicators	
Morocco: Wind Power displacing gas-fired power generation	SO_2 emissions reductions	57,354 tons by 2024	--	--	PCN: pp.11, 13 BTO 10/13/00: no attempt to quantify these benefits as C trading benefits alone outweigh costs.
	NO_x emissions reductions	14,129 tons by 2024			
	Particulates emissions reductions	476 tons by 2024			
India: Energy from Municipal Solid waste in Delhi	Mitigate the negative environmental impacts of waste disposal	--	Employment creation in high-tech field Local consumption of electricity	--	PIN: pp.3-4
	Reduction in leachate production	--			
	Reduction in landfill gas migration	--			
	Improvement in odor levels	--			
	Vermin control	--			
	Rubbish blowing control	--			
	Bird control	--			
India: FaL-G brick making	Conservation of top soil	3500 tons/ million bricks substituted	Reduce housing shortage	--	PIN: p.6
	Conservation of coal	200 tons/ million bricks substituted	Offer cost-effective housing	Up to 25% cost reduction?	

Project	Local environmental benefits		Socio-economic benefits		Source
	Benefits	Indicators	Benefits	Indicators	
	Conservation of land	--			
	Byproduct utilization	1000 tons of fly ash/ million bricks			
Brazil: Bagasse co-generation at Vale do Rosario	"Promote renewable energy generation"	--	"Diversify the products of sugar/alcohol industries"	--	PIN: p.4
			"Demonstrate the viability of electricity generation as a source of revenue for the sugar industry"	--	
Philippines: 12.5MW Mini-hydro on Mindoro	"Increase the use of renewables"	--	--	--	PIN: p.3
	"Reduction of local pollution"	--			
Philippines: 10.2 MW Windfarm on Oriental Mindoro	"Increase the use of renewables"	--	--	--	PIN: p.3
	"Reduction of local pollution"	--			
Mongolia heating system retrofit	"Significant and sustainable improvement of quality of air"	--	"Significant and sustainable improvement of quality of life"	--	PIN: p.6
			"Training of the people and development of the Mongolian industry will lead to added value."	--	
	"Protection of forests by using coal instead of wood for domestic heating"	--	"Efficient use of coal generates basis for future modernization processes."	--	
Philippines bagasse co-generation	"Combustion and air pollution control systems will be installed, so local environmental conditions will be improved"	--	Foster economic activity through additional tree plantations	--	PIN: p.5
	"Accelerate the establishment of additional tree plantations"	--			

Project	Local environmental benefits		Socio-economic benefits		Source
	Benefits	Indicators	Benefits	Indicators	
Indonesia 13.4 MW Palm Oil Residue Co-generation	Reduction of incomplete combustion (lower emissions of particulate matter and partially oxidised derivatives)	--	Job creation	150 construction jobs; 62 permanent direct jobs; 155 indirect jobs	PIN: p.5
	Reduction in methane emissions from dumped wastes	--			
Indonesia 10.5 MW Palm Oil Residue Power Generation	Reduction of incomplete combustion (lower emissions of particulate matter and partially oxidized derivatives)	--	Job creation	150 construction jobs; 102 permanent direct and indirect jobs	PIN: p.5
	Reduction in methane emissions from dumped wastes	--			
Guatemala: Pico Hydro	Reduction in CO2 emissions	Tons CO2	Improved watershed management	---	PIN:p.4
			Improved access to modern energy service		
			Reduction of health related diseases		
Chile: Hydro	Reduction of CO2	Tons CO2	Transition to cleaner fuels	---	PIN: p.4
Guatemala: geothermal	Reduction of CO2	Tons CO2	Job creation	---	PIN: p.4
			Technology transfer		
			Reduced pollution		
Nicaragua: Peanut shell fuel	Reduction of CO2	Tons CO2	Eliminate landfill	----	PIN: p.6, 7
	Reduction of methane from land filling of dumped shells	Tons Methane	Eliminate self combustion of waste husk		
	Elimination of methane and nitrous oxides from self combustion of husk piles		Reduction of fugitive dust		
			Job creation		
			Capacity building		

Project	Local environmental benefits		Socio-economic benefits		Source
	Benefits	Indicators	Benefits	Indicators	
Honduras: Wind energy	Reduction of CO2	Tons CO2	Develop local economy	---	PIN: p. 4
			Attract foreign investment		
			Deploy new technology		
			Diversify electricity sector		
Nicaragua: Rice Husk fuel	Reduction of CO2	Tons CO2	Elimination of landfill	---	PIN: p. 6
	Reduction of methane from landfill	Tons Methane	Elimination of self combustion		
	Elimination methane and nitrous oxides from self combustion of husk piles		Reduction of fugitive dust		
El Salvador: Biomass energy	Reduction of CO2	Tons CO2	Develop renewable energy	---	PIN: p. 4
			Develop local economy		
			Improved health		

Source: www.prototypecarbonfund.org.