CDM CAN CATALYSE SUSTAINABLE DEVELOPMENT PROCESS IN INDIA

Introduction

The Kyoto Protocol establish three flexibility mechanisms as a mean to achieving compliance with the quantified, emission, limitation, reduction commitments of the development countries. These mechanisms are : joint implementation (Article 60, CDM (Article 12) and emission trading (Article 17). Out of these three mechanisms the CDM has drawn considerable attention in the resumed COP 6 at Bonn during July 2001. Due to the fact that certified emission reduction (CERs) from CDM projects activities can be utilised during the first commitment period 2008-12 by the different stakeholders right from the first January 2000.

Purpose of the Clean Development Mechanisms (CDM) as defined in the Article 12 of the Kyoto Protocol is to assist developing countries in achieving Sustainable Development and in contributing to the ultimate objective of the Convention and to assist developing country Parties in achieving compliance with their commitment under Article 3 of the Kyoto Protocol.

The developing countries see CDM as one of the means of achieving sustainable development as well as increased Foreign Direct Investment (FDI) and transfer of Entity Sound Technologies (ESTs) to developing countries.

However, to get the maximum benefit from CDM activities developing countries like India must be in place enabling environment such as :

1. Immediate setting up of a national CDM authority.
2. A strong signal is sent to investors and Financial Institutions (FIs) from developed countries as well as Project Developers (PDs) and Financial Institutions (FIs) from India that India is ready to undertake CDM projects.
3. To take fullest advantage to Climate Change Centre at Development Alternatives to facilitate project development and organising funds for PDs for implementation.
4. To also put in place procedures for Measuring Progress Towards the Sustainable Development of the CDM project activity and to monitor, verify and certify and Sustainable Development from the CDM project activity.

Each country has to prepare a set of sustainable development priorities and criteria to guide the Project Developers and Operational Entities (OEs) to incorporate sustainable development goals in the CDM project activity and for monitoring, verification and certification by the OEs. The p resent paper describes the methodologies for measuring towards sustainable development in India CDM project activity and the procedures for incorporating sustainable development concerns in the CDM project activity in India.

Brief Definition of Sustainable Development

The concept of sustainable development was first introduced by the International Union for Conservation of Nature and Natural Resources (IUCN) in 1980. A definition of sustainable development was first given by the World Commission on Environment and Development (popularly known as Brundtland Commission) in 1987 as a development process that “meets the needs of the present without compromising the ability of the future generations to meet their own needs”. The Brundtland Commission considered population control, food security and energy supply as critical components of sustainability. Since the Rio Summit in June 1992 and the adoption of Agenda 21 by the global community, many nations have set sustainability as a key goal of their development.

Measuring progress toward sustainability

The term “sustainable development” has been used by many practitioners in almost as many ways. As a result, one person’s vision of what is sustainable is unsustainable to another. The World Resources Institute (WRI) acknowledges that sustainable development remains a difficult, confusing and even controversial concept. It is generally easier to agree on a country’s or company’s direction of movement than on whether it has achieved sustainability. Still, without some metric, the question of whether the trend is toward or away from sustainability is open to argument.

To improve clarity, several organizations have established approaches to operationalize the term. Efforts to operationalize it have followed one of two approaches. One is to set goals based on realistic possibilities and then evaluate the performance of a country or community against the goal. The other is to design methodologies to assess progress toward sustainability. Measuring sustainability is not an easy task. Therefore a concept of sustainable development indicator (SDI) has been introduced to assess, measure and monitor sustainability of a process.

For measuring sustainability of a development process, a useful way is to select and organise indicators in a pressure (cause), state (linking effects), response (policy action) framework. The UN Commission on Sustainable Development identified indicators of sustainable development using a pressure-state-response framework. The resulting indicators are intended for use at the national level. The Commission brought out a list of about 130 indicators from which countries could choose a smaller set to reflect national priorities, goals and strategies. See Table 1 for an example of the pressure-state-response framework. Indian climate change mitigation projects including CDM may adopt the similar p-s-r framework for selecting / identifying SDIs.

Table 1: Example of Pressure-State-Response Framework

Sustainability Dimension	Goal	Driving Force/Pressure Indicators	State Indicators	Response Indicators
Economic	Poverty alleviation	Inadequate means of livelihood	Poverty index	Employment generation
Social	Access to basic services	Inadequate public infrastructure	Electricity consumption per capita	Off-grid electricity services
Environmental	Reduction in health effects from indoor air pollution	Inadequate access to clean cooking fuel	Morbidity from particulate concentrations	Provision of fuel with lower emissions and efficient chullas
Technological	Capacity to improve technological base	Inefficient production technologies	Energy use per unit of output	Training and investment to adopt improved technologies

The International Union for the Conservation of Nature (IUCN) assesses sustainability through a process of diagnosis, monitoring and evaluation to inform future actions. Diagnosis explains why the action is necessary; monitoring follows the progress of action; evaluation draws conclusions about both process and outcomes. IUCN has developed a toolkit to assess progress toward sustainability includes methods for assessing systems and identifying community-based indicators.[1]

In one report, WRI grouped a set of case studies and used the groupings to compare trends among them. The exercise adopted the pressure-state-response framework.[2]

Using indicators to assess progress toward sustainability

This paper focuses on methodologies to assess progress toward sustainability using indicators. To make the term "sustainable development" more useful, practitioners and analysts have developed tools for identifying a set of measurable characteristics that can indicate a country or company's relative position with respect to sustainability at a point in time. These characteristics called "sustainable development indicators" (SDIs), can be measured at multiple points in time to track progress toward sustainability. To use SDIs, it is necessary to select appropriate indicators, parameters, time period to collect data, and procedure for measuring overall progress. An important advantage of SDIs is that they can be aggregated or otherwise combined to measure goals that are not directly measurable.

SDIs are currently being used in several ways to measure progress toward sustainability by different types of organizations: national governments, international NGOs, industry groups, individual firms, and local NGOs.[3] In most cases, the use and reporting of SDIs is voluntary.

Incorporating Sustainable Development Concerns in CDM Activities in India

While attempting to incorporate SD concerns in climate change mitigation projects, it is useful to review the linkages between the related issues.

1.1 Overview of Related Issues

a. CDM Projects Activity

CDM attempt to fulfill two broad objectives. Firstly, they reduce greenhouse gas emissions from the baseline and secondly, they contribute to sustainability. In the case of a Clean Development Mechanism (CDM) project, which is also a CDM, the requirements are more stringent and sustainability screening is mandatory. Other CDM may however apply SD criteria applicable to CDM projects, provided they do not increase transaction costs to benefit from certified emission reductions (CERs). If the Conference of Parties (COP) decides that an early CDM project would also be considered for CERs, then they must meet all the eligibility criteria of an operational CDM.

Against this backdrop, the present paper discusses various issues, mechanisms and processes mainly for CDM projects.

b. Sustainable Development and its Priorities

The concept of SD was first introduced by the World Conservation Union (IUCN) in 1980.[4] The World Commission on Environment and Development, popularly known as Brundtland Commission, defined SD in 1987 as a development

process that "meets the needs of the present without compromising the ability of the future generations to meet their own needs".[5] Others have defined SD to be an evolving process that improves the economy, the environment and society for the benefit of current and future generations.

The World Resource Institute, has outlined four pillars of SD: social, economic, environmental and technological.[6]

India's SD Priorities [Ninth Five-Year Plan (NFYP)]

- Agriculture and rural development - Sustainability in this sector lies in improving the productivity of output, by ensuring that the value received by the producer (the farmer) is in conformity with the price paid by the consumer. The NFYP observes that replacement of chemical fertilizers with bio-fertilizers is essential. To ensure SD of Indian agriculture, the food security situation also needs to be tackled.
- Accelerating the growth rate of economy
- Ensuring food and nutritional security
- Providing the basic minimum services of
- safe drinking water
- primary health care facilities
- universal primary education
- connectivity to all
- Containing the growth rate of population - Increasing population has led to a number of interlinked issues: inequalities of income levels, low level of literacy, unemployment and ultimately poverty.
- Ensuring environmental sustainability of the development process - Environment protection does not only involve prevention of pollution and degradation of natural resources, but it also involves integrating with the overall development process and the well-being of people.
- Empowering of women and socially disadvantaged groups
- Promoting and developing people's participatory institutions (like Panchayati Raj)
- Strengthening efforts to build self-reliance (capacity building) - Rapid urbanisation has progressively declined essential services and the quality of life in urban areas. Therefore, synergy between environment, health and development needs to be specially recognised, as no development process leading to better quality of life can be sustained in a deteriorating environmental condition.

Poverty alleviation, economic and social development and environmental protection are overriding SD goals and priorities of India.

c. Sustainable Development Indicators (SDIs)

Assessing sustainability of a development process is a complex task. The concept of SDIs has been introduced as a tool to assess, monitor and benchmark the process of development and also make projections for the future. The number of representative indicators should be as small as possible, but as large as essential.

A sustainable development indicator needs to :

- provide a reliable statistical measure
- measure comparison over time and space
- assess changes against a valid norm or standard (e.g. level of NOx against the national standard set by the CPCB in India)
- relates with clearly identifiable social goals e.g. female literacy is closely linked to population growth, environmental protection, health of the children and infant mortality.

SDIs may differ depending on the nature of the project and the context of its location. They may be formulated in various ways:

- top-down and for bottom-up
- at global, regional, country or local levels
- outcome and /or process-based
- with differentiation among sectors

The Pressure, State, Impact, Response (P-S-I-R) has often been used to select and organise indicators that assess the process of sustainable development.

Issue	Pressure	State	Impact	Response
Climate Change	GHG emissions	Atmospheric concentration of GHGs	sea level rise, etc.	UNFCCC/Kyoto Protocol Construction of dikes, implementing Climate Change Mitigation Projects
Ozone depletion	CFCs/HFCs emissions	Chlorine in the stratosphere UV-B	on human immune system food production, cataracts	Montreal Protocol phasing out CFCs, using CFC alternatives

1.2 Need for Sustainable Development Indicators (SDIs) in CDM

a. Kyoto Protocol provision on Sustainable Development
Assists developing countries in achieving SD - Article 12. Promoting SD in host countries will be mandatory for CDM projects.

b. Facilitates assessment, monitoring and certification
SDIs help to bring out the linkage between CDM and SD and hence monitor the project to ensure that it promotes SD in and around the project site and the host country. SDIs will also accelerate the certification of the project activity and emission reductions.

c. Ensures that CDM catalyse Sustainable Development
SDIs help to bring about the linkage between CDM and SD and thus ensure that the CDM project promotes SD in and around the project site and also the host country.

d. Enhances climate related foreign investment
Clarity on SDIs helps reduce perceived risks associated with project approval thereby improving the prospect of climate related foreign investment. This process introduced by the GoI will also encourage Indian companies to adopt sustainability principles more widely in their operations. In the long run, the extensive use of SDIs may become associated with high quality products, services and profitability.

In view of the complexity of the SD process the Government of India (GoI) has a key role to play both at the policy and project levels.

2.1 Policy Level

Especially in CDM projects and more generally for CDM, the GoI needs to -
- set criteria for SDIs
- adopt guidelines for SDIs
- identify metrics and baselines of the SDIs developed
- issue guidelines to assess sustainability of a project

Each of these are elaborated below.

2.1.1 Criteria for SDIs

Criteria 1 : Since one purpose of a CDM project is to assist host (developing) countries achieve sustainable development, the sustainable development goal of the CDM project must be in conformity with the national sustainable development goals.

Criteria 2 : A CDM project must address the four pillars of sustainable development - economic, social, environmental and technological. At least one SDI under each of the four pillars may be chosen for assessing sustainability of the CDM project.

For example, the CDM project results in:
Economic
- increased energy sufficiency reducing the burden on energy imports for the project area
- Increased per capita income in and around the project area
- Increased purchasing power of the people in and around the project area

Social
- increased local employment and more equitable distribution of resources

Environmental
- reduced global emissions of greenhouse gases (GHGs) viz., CO_2, CH_4, N_2O, PFCs, HFCs and SF_6
- reductions in local pollution from NOx, SOx, CO, VOC, SPM

Technological
- increased capacity for adaptability of the new technology
- replicability of the technology at many more sites in the country

2.1.2 Guidelines for SDIs

Project Developers (PDs) may choose SDIs depending on the technology location of the CDM project. SDIs so developed should be : Driven by host country's social, environmental, technological, and economic development priorities and strategies; user friendly; simple; robust and few in number.

PDs need to integrate the SDIs in the CDM project proposal submitted to the GoI for approval.

The GoI may adopt any of the following proven methodologies for developing SDIs in consultation with the different stakeholders, particularly the PDs both from the host and investing countries.

- A participatory process with the different stakeholders
  ["Tell me I will forget; show me and I may remember; involve me and I shall understand" - Andrew Compbell, Land Care, Australia]

A participatory process ensures that the SD goals of the people in and around the CDM project area are developed and integrated in the project. This however increases the transaction cost considerably and is therefore suitable for a large project costing above US $1 million.

- A careful scrutiny of the CDM project proposal at the two levels - PDs and GoI, bringing out the economic, social, environmental and technological benefits. Such a methodology ensures that the PDs have developed the CDM proposal after taking into consideration the CDM criteria and SD criteria carefully.
- Project Developers use a ready reckoner of SDIs endorsed by the GoI.

In a small CDM project costing less than US $1 million PDs may adopt SDIs from a ready reckoner endorsed by the GoI. This process reduces transaction costs considerably. One such ready reckoner of 40 SDIs (10 from each of the four pillars of SD) is under preparation in Development Alternatives.

2.1.3 Metrics and Baselines of the SDIs Developed

Using the Participatory Process GoI can develop appropriate SDIs for CDM projects in various sectors of the economy viz.; Conventional energy sector, Renewable energy sector (solar, wind, biomass, bagasse, mini hydro, etc.), Building sector, Transport sector, Agricultural sector, etc. for use by the Project Developers. Consequently metrics and baselines for the SDIs identified in different sectors can also be developed.

Each metric should **:**

- provide a reliable statistical measure (e.g. fuel input requirements per unit of output)
- enable comparable measurement over time and space (e.g. concentration of surface ozone at a place)
- facilitate change assessment against a valid norm or standard (e.g. level of NOx against the national standard set by the Central Pollution Control Board in India)
- enable cause-effect linkages with identifiable social goals

2.1.4 Guidelines to Assess Sustainability of a Project

A process of Monitoring and Verification (M&V) should be ultimately used for certification of sustainability of the CDM project for CERs. The GoI M&V guidelines needs to include tools and techniques for :

- Monitoring the impact against baselines of each SDI integrated to CDM project
- Graphical representation of SDIs for measuring net changes[1]

For any of the tools and techniques adopted, baseline data of the SDIs (economic, social, environmental and technological) are very crucial. However, in most host (developing) countries major barriers to M&V may be lack of baseline data on SDIs.

2.2 Project Level

At the project level, Government of India needs to:

- ensure that CDM proposals conform to Article 12 of the Kyoto Protocol
- facilitate single window clearance of CDM Projects

2.2.1 Kyoto Protocol Requirements on CDM

CDM projects may be categorised under energy, transportation, building and renewable energy (solar, wind, biomass) sectors. Not all projects that result in emission reductions are eligible to qualify as a CDM. In order to qualify, projects need to have characteristics, which are explicit or implicit in the Kyoto Protocol.

CDM Projects need to be designed such that they :

- are approved by the Governments of the participating Parties and are consistent with and supportive of national environment and development priorities/ strategies
- assist host (developing) countries to achieve SD
- are host country driven
- result in real, measurable and long-term benefits
- reduce emissions that are additional to any that would occur in the absence of the certified project activity.
- involve private and/or public entity
- have voluntary participation, approved by each party involved
- contribute to the ultimate objective of the Convention
- benefit developing countries from project activities resulting in Certified Emission Reductions

Assessment of whether CDM projects will fulfill these criteria require comparing projects against a baseline, which may be static or dynamic. In many cases, it is counter-factual to construct a baseline that may never actually happen. Assessing environmental benefits also requires establishing system boundaries appropriate to the scale and complexity of the project to assess 'leakage'. Besides, a CDM project needs to be environmentally sound, economically efficient and equitable.

Rigorous applications of these principles may raise transaction costs of the project and thus alter its financial viability.

In the design stage the concept of CO_2 equivalent reduction of the six gases viz.; carbondioxide (CO_2), nitrousoxide (N_2O), methane (CH_4), hydrofluorocarbon (HFCs), perfluorocarbon (PFCs) and sulphur hexafluoride (SF_6) should be introduced and their procedure for emission reduction measurements agreed upon.

2.2.2 Single Window Process for CDM Projects

CDM Projects necessarily involve incorporation of SD and climate change concerns, which PDs are often not conversant with. While they may engage consultants to assist with the project development, it is critical to have a single window process to facilitate approval of the project by the GoI. The single window process envisaged is outlined below while the supporting institutional mechanisms (the GoI Climate Change Cell and Climate Change Outreach and Facilitation Centres) are described in Section 3.0

a. Project Developer submits proposal to the Climate Change Cell (C3-GoI)
b. GoI refers proposal to Climate Change Outreach and Facilitation Centre (CCOFC) for screening
c. CCOFC screens proposal for:
   - technical feasibility
   - economic efficiency
   - financial viability
   - environmental soundness
   - social acceptability

It needs to be emphasised that since project developers often have the competence to formulate a proposal adequately addressing the first three aspects, the focus of the CCOFC will be to assess how well the last two aspects have been integrated into the proposal. For example, the conformity with Article 12, derivation of baselines, monitoring techniques, etc. will be rigorously scrutinised.

d. CCOFC submits appraisal report to C3-GoI
   If the proposal fails the screening requirement, the appraisal report either:
   - rejects it with reasons
   - suggests modifications based on which it can be resubmitted

   If the proposal qualifies, the appraisal report provides advice to the C3-GoI on aspects of the project that require close attention.

e. C3-GoI validates the appraisal and refers the proposal to the Inter Ministerial Task Force (IMTF)
   The IMTF ensures that the proposal conforms to all national development priorities and commitments made to international conventions and protocols. The proposal if rejected is sent back to the C3-GoI for modifications. Approved proposals are passed on to the C3-GoI for submission to the CDM Executive Board.

f. C3-GoI forwards the proposal to the CDM Executive Board for final acceptance.
   The project proponents can proceed with the implementation of the project after this approval.

It is envisaged that with a smooth mechanism set in place the whole approval process can be completed within a period of ninety days.

During implementation, independent agencies designated by the C3-GoI will undertake periodic monitoring and verification of emission reductions and sustainability concerns through SDIs.

3. SUPPORTING MECHANISMS

India clearly needs to gear itself more proactively to address issues and opportunities arising from the global attention on climate change. Currently the Ministry of Environment and Forests (MoEF) with assistance from the Ministry of External Affairs is the nodal governmental agency addressing issues. At the same time, a few NGOs, academic institutions and business associations are also contributing to the process of understanding the science, developing policies and operationalising response strategies.

As various forms of CDM are introduced the need for more focused attention becomes imperative. Especially in the case of CDM projects, more efficient pre-emptive measures are essential.

Within the next two to three years it becomes necessary to formulate two institutional support mechanisms:

a. Climate Change Cell - within the GoI (C3-GoI)
b. Climate Change Outreach and Facilitation Centres (CCOFCs) - through independent agencies.

3.1 Government of India Climate Change Cell (C3)

As already described in the previous section the GoI has to address a range of issues on climate change and CDM both at the policy and project levels. A dedicated Climate change cell in the MoEF, on the lines of the ozone cell, will enable focused and accelerated action.

At the Policy end, this cell will be responsible for co-ordinating inputs from other ministries within the government and also generates debate among the concerned stakeholders in India. Through this process a more considered Indian

position and policy can be evolved on climate change issues. Based on this the cell can also co-ordinate the advocacy and lobbying that is required to influence global policy formulation.

At the Project level, currently essential for CDM projects, guidelines, manuals, appraisal. monitoring and verification mechanisms need to be set in place. This cell can play a pre-emptive role in operating these mechanisms while most of these function need not be directly within government, the cell has to play a critical pivotal role.

3.2 Climate Change Outreach and Facilitation Centres

A bulk of the activities to address climate change and utilise opportunities need to be undertaken outside government. Here again the urgency is becoming increasingly felt in CDM.

While at the science and policy levels there is considerable awareness and debate building up among stakeholders including NGOs, academic institutions, business and media, it is the operational aspect where India is relatively weak. Most project developers are fairly conversant with formulating a normal business proposal. However, they need considerable support to incorporate SD concerns and CDM requirements.

Over the next few years the GoI needs to designate about three to five CCOFCs to support and build up a climate change policy and project activities in India.
The key functions of the CCOFC include:

1. Clearing House
   - Database on expertise
   - Database on technologies
   - Servicing information needs
   - Host country parties
   - Investing country parties

2. Brokerage
   - Identify partners and technologies
   - Provide linkages to reduce transaction costs
   - Assist in negotiations

3. Advisory Services
   - Formulate project
   - Approval process

4. Research
   - Develop methodologies
   - Analyse and estimate baselines
   - Analyse and document world-wide experience
   - Quantify indicators of sustainability for CDM projects

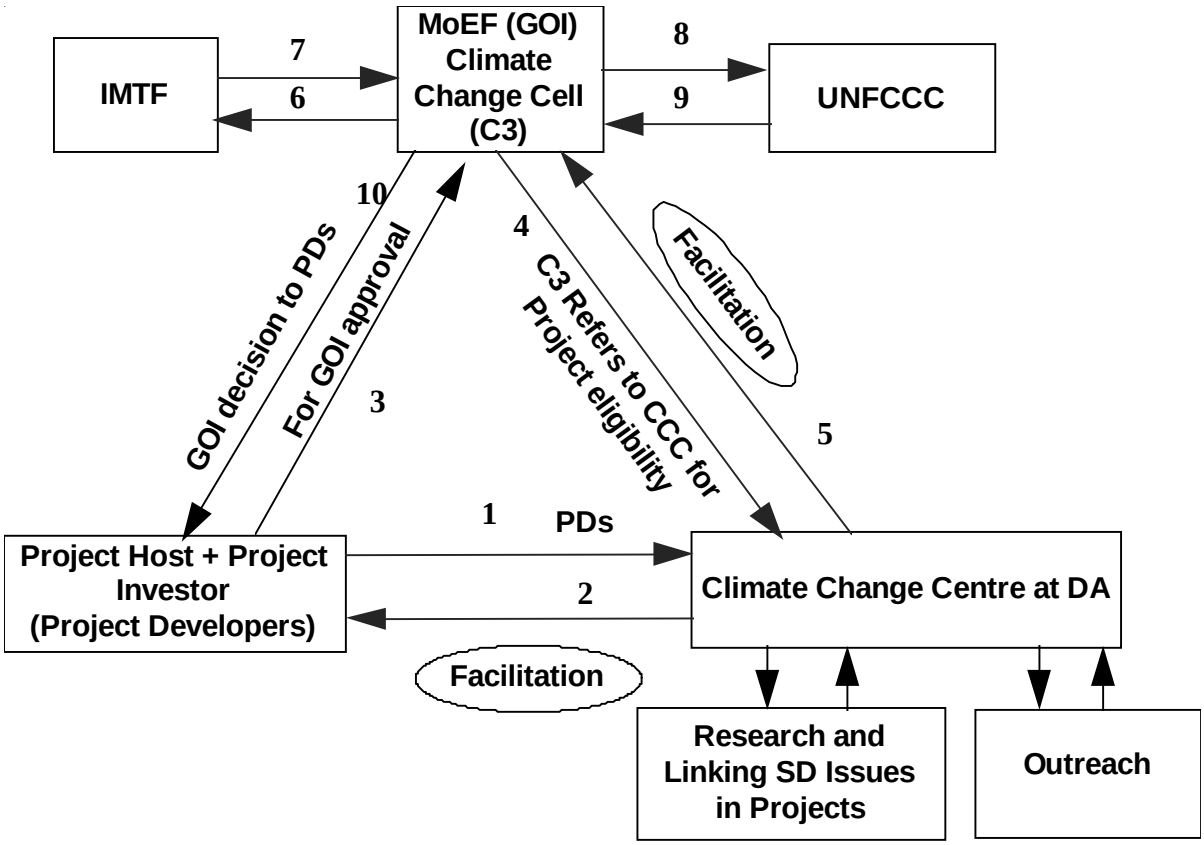
5. Capacity Building
   - Training
   - Institutional design

6. Certification

· Project criteria
· Emission reduction (CERs)

It may be noted that two centres namely, Confederation of Indian Industries (CII) and Development Alternatives (DA) have already initiated activities in this direction.

Institutional framework and mechanisms for assessment of CCM projects in sequential order



CCC : Climate Change Centre
IMTF : Inter-Ministerial Task Force

(Footnotes)

1 *An Approach to Assessing Progress Towards Sustainability : Tools and Training Series, IUCN 1997.*
2 *World Resources Institute. 1992. World Resources Report 1992-93 : Dimensions of Sustainable Development.*
3 *For a listing of such initiatives, see Janet Ranganathan, "Sustainability Rules : Measuring Corporate Environmental and Social Performance" which can be found at the following website : <http://www.igc.org/wri/meb/sei/state.html>*
4 *An Approach to Assessing Progress Toward Sustainability, May 1997*
5 *Our Common Future, 1987*
6 *World Resources Institute. 1992. World Resources Report, 1992-93. Washington, DC.*
7 *Thorne Steve, Emilio Lebre La Rovere : Criteria and indicators for the appraisal of CDM Project, Helio International (19990, Paris*