Measuring Progress Toward Sustainable Development in Indian Climate Change Mitigation Projects

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EXECUTIVE SUMMARY

The purpose of this paper is to provide the conceptual background for promoting sustainable development through climate change mitigation projects in India. The term "sustainable development" refers to a development process in which economic, environmental and social dimensions are incorporated and in which the aspirations of future generations are not compromised by development actions to benefit the present. In the Indian context, considerations of sustainability are especially important given the overwhelming importance of alleviating poverty. Since it is difficult to tell when sustainability has been achieved, practitioners have sought to assess progress toward sustainability by the use of measurable indicators.

These sustainable development indicators (SDIs) have been applied by diverse organizations in many countries including private corporations, NGOs, international development organizations, national governments, communities, trade and industry associations, and even financial rating services. The indicators themselves, their metrics, and the manner in which they are used vary widely. In most cases, however, the process involves 1) selecting a set of indicators by involving stakeholders, 2) identifying appropriate metrics, 3) tracking the performance of the indicators over some time period by collecting data on the metrics, and 4) using the results to make decisions.

Since the adoption of SDIs is typically voluntary, the benefits from adopting them must be perceived to outweigh the time and resource costs of doing so. In some cases, the information generated is used for internal management purposes; in other cases the information is targeted to external audiences such as investors, consumers, or government agencies. For example, some corporations have adopted SDIs to gain a competitive edge. By demonstrating their commitment to sustainability, they hope to attract consumers to their goods or services.

Climate change mitigation projects represent a relatively new area for the application of SDIs. The Kyoto Protocol (signed by the Conference of the Parties of the UN Framework Convention on Climate Change) calls for the creation of ***four "flexibility" mechanisms****. These mechanisms are designed to generate investment in developing countries while reducing the cost to industrialized countries in meeting their greenhouse gas reduction targets. One of these, the Clean Development Mechanism (CDM) provides for the flow of funds from industrialized countries to climate mitigation projects in developing countries that meet certain requirements in exchange for receiving certified emission reductions.*

A key requirement of the CDM is that the project promote sustainable development in the host country. Although the Kyoto Protocol does not specify how this requirement is to be met, developing countries argue that the interpretation of this provision is the sovereign decision of the host country. Because the process of implementing a CDM project includes various approvals by national and international bodies, requirements for incorporating sustainability will be integrated into those approvals where necessary. Activation of the CDM (and thus sustainability provisions) will require that at least 55 parties to the Convention, incorporating Parties included in Annex I which accounted in total for at least 55 per cent of the total carbon dioxide emissions for 1990 of the Parties included in Annex I have ratified the Kyoto Protocol.

In addition to those mechanisms sanctioned by the Kyoto Protocol, climate change mitigation projects are being promoted through other multilateral and bilateral initiatives such as the GEF, the World Bank's Prototype Carbon Fund, and the IFC's Renewable Energy and Energy Efficiency Fund. These initiatives may reference sustainability, but do not have as explicit requirements as CDM projects. Still, developers of such projects may find significant value in voluntarily adopting SDIs as long as the costs of doing so are kept at a reasonable level.

Thus, there are two levels at which to consider incorporating SDIs in climate change mitigation projects. First, there will need to be some formal process established by the Government of India for incorporating sustainable development into approval of CDM projects. Developers will then have to comply with these requirements. Second, for non-CDM climate change mitigation projects (CCMPs), a set of voluntary SDIs may be adopted primarily to serve the purposes of the developer. Such purposes might include tracking performance to reduce costs or increase returns, making investment decisions, enhancing international competitiveness, improving public image, or building overall information management capacity.

Efforts to establish these two levels of SDIs in India can take advantage of the substantial accumulated experience to date as well as existing tools. Because most CCMPs are expected to be undertaken by private firms, the experience of adopting SDIs by the private sector should be especially scrutinized for lessons that are relevant to projects in India.

This paper first reviews the ways in which SDIs have been applied to date in various contexts. Next, the relation between climate change mitigation projects and sustainable development is introduced. Third, the paper considers how SDIs might be applied to CCMPs. The paper closes with conclusions regarding the adoption of SDIs for CCMPs in India.

The key conclusions are as follows:

- *The prospect of climate-related foreign investment offers India an opportunity to make progress toward sustainable development.*

- *The diverse international experience with SDIs to date offers useful lessons for applying them to Indian climate change mitigation projects.*
- *For CDM projects, the procedure for ensuring sustainability should be integrated into the overall project approval cycle.*
- *For other CCMPs, the benefits to developers of voluntarily adopting SDIs must be perceived to outweigh the costs of doing so.*

I. What is 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.

The concept of sustainable development is quite distinct from economic growth and recognizes the limitation of economic indicators like GNP in measuring the true well-being of nations. Instead, sustainable development accepts wider perspectives like poverty alleviation, health-care and education, and more, broadly, the social, economic, environmental and technological well-being of the society.

There have been many views on how to operationalize the definition of sustainable development. Some practitioners have defined sustainable development in terms of outcomes such as:

- *alleviation of poverty*
- *stabilization of population*
- *reduction in consumption*
- *climate stabilization*

Others view it in terms of inputs, such as development that provides for basic health care facilities. Still others see it in terms of process characteristics such as participation by stakeholders. Finally others see sustainable development as a change in the inputs to production such as transformation of the technological base to one that is cleaner and more efficient, and that conserves natural resources, reduces pollution and helps in stabilizing the climate.

According to the World Resources Institute, the four dimensions of sustainable development are social, economic, environmental well being, and technological. These dimensions provide a framework in which to specify details for countries at a given stage of development.1

In India, development cannot be considered sustainable unless it reduces poverty. Out of India's almost one billion population, more than 360 million people are below even the most modestly reckoned poverty line. To tackle the challenges of eradicating poverty, India needs rapid economic growth. But the economic growth must not focus just on short-term gains. Destroying the natural resource base would jeopardise potential for the alleviation of poverty. For example, preserving land resources is necessary for future generations to grow food.

II. 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.

(Footnotes)

[1] World Resources Institute. 1992. World Resources Report, 1992-93. Washington, DC.

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 sustainabilty 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

III. 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.

Private corporations

Private corporations such as Shell, Bristol-Myers and Ontario Hydro have established SDIs to assess the performance of their business units and enterprises. In some cases, the assessment is conducted for internal managers, in other cases for external audiences such shareholders, consumers, or government. Companies have sometimes initiated individual approaches for using indicators and sometimes internationally-approved approaches. Although ISO 14000 certification is not about sustainability per se, it requires a similar internal process.

National governments

Several developing country governments, such as the Philippines, have adopted SDIs, often as part of national planning exercises. These activities have been supported by a unit of the UN through workshops and technical assistance. The United Nations Division for Sustainable Development has conducted regional and national meetings on SDIs in Bangkok and Manila, respectively. Out of these activities has emerged a sourcebook on SDIs and a working list of indicators.4 Some industrialized country governments have also implemented SDI initiatives. In the US, an interagency group has developed a list of SDIs.5

Costa Rica Experience

Costa Rica initiated climate change mitigation activities through AIJ process in 1997. Out of eight AIJ projects from Costa Rica as reported by the UNFCCC Secretariat, four projects are on renewable energy production and four on the land-use sector. These climate change partnership projects besides contributing to the mitigation of climate change

(ghg abatement) generated economic and social benefits the country. These activities generated more than US$140 million. The main reason for the success achieved was that the process is host-country driven, with a national agenda as target and strong political support. The forestry projects provided protection to biodiversity and forests. In the Private Forests Projects (PFP) will provide 5000 small and medium private land owners will provide sustainable livelihoods through forest conservation and sustainable forest manangement, besides carbon benefits. The renewable energy project bundles a group of small energy projects (hydroelectric, biomass, wind and geothermal). These energy projects will help rural and remote small enterprises to develop. Thus providing improved quality of life and income generation to the people.

All these climate change mitigation activities will catalyse sustainable development in Costa Rica.6

Industry groups
At least one cross-sectoral industry group, the World Business Council for Sustainable Development (WBCSD), has developed an eco-efficiency metrics and reporting initiative. In order to calculate eco-efficiency, the WBCSD has developed the following equation:

Eco-efficiency = product or service value per environmental influence

The equation is the basis for a flexible voluntary approach for reporting that includes agreed definitions, a recommended set of core indicators, a process for developing supplemental indicators relating to specific businesses, a means for quantifying the eco-efficiency indicators, and recommendations for how companies communicate measurements. 7

Some specific industry and professional associations (such as the European Chemical Industry Council and the American Institute of Chemical Engineers) have developed public disclosure requirements for their members on such topics as energy and emissions intensity metrics, corporate and site environmental reports, guidelines for quantitative reporting, and emissions inventories. As a developing country example, the Colombian Business Council for Sustainable Development has tracked the eco-efficiency performance of the Colombian sugar cane industry using a comprehensive set of metrics since 1990.8

A set of standard indicators may be developed for the use of Indian industry. These indicators would address the four pillars of sustainability (social, technological, economic and environmental).

Financial sector
Several organizations serving institutional or individual investors have developed quantitative measures of corporate performance along environmental and social dimensions. This information is provided to investors to help them both assess risk and assure them that the companies in which they are investing are good corporate citizens. Examples of organizations that provide such information are the Investor's Responsibility Research Center (based in Washington, DC) and the Dow Jones Sustainability Group (Switzerland). The latter states its goals as meeting the financial market's demands for 1) an index to benchmark the performance of companies and funds, and 2) an independent reliable index as a basis for derivatives and funds focused on sustainability companies.9

NGOs
National and international NGOs are using the power of information to stimulate improvement in corporate performance. By exposing information to the public, they hope to exploit companies' concern about their public image. For example, the Environmental Defense Fund issues a corporate scorecard that ranks US companies by their emissions.10 In addition, the scorecard helps citizens understand the relative health risks of living in different locations. Internationally, the Coalition for Environmentally Responsible Economies (CERES) launched in 1997 a Global Reporting Initiative (GRI) whose purpose is establish a common framework for enterprise-level sustainability reporting. Indicators, being developed through a consultative process involving a range of stakeholders, are based on quantifiable environmental, social, and economic impacts. The GRI is currently in its pilot phase. 11

Development organizations
Besides environmental NGOs, many development organizations also track progress toward sustainability at the project, program, or community level for internal purposes. Many such initiatives have been catalogued by the International Institute for Sustainable Development.12 In addition, the GEF is in the process of developing performance indicators for its climate programs. With respect to sustainability, the GEF is particularly concerned with the ability of a project to be replicated and for markets for climate-friendly technologies to grow after GEF funding expires.

IV. Lessons from experience with adopting SDIs

The experience to date in establishing and using SDIs offers some lessons that may be applied to climate change mitigation projects. First, given that the private sector generally is not required to concern itself with sustainable development, why have many companies chosen to do so? According to one report, there are several potential benefits to the private sector from incorporating sustainability into business decisions: 13

- *Attracting and retaining customers in markets for existing products and services that reward sustainability (Although these markets are primarily in industrialized countries at present, they are expected to grow elsewhere.)*
- *Reducing capital and labor cost and lowering liability by making production processes cleaner, more efficient, and community-friendly*

- *Preserving the right to operate by anticipating societal demands, such as more stringent environmental regulation*
- *Growing revenue in new markets for sustainable products and services*

Having positive incentives to be concerned with sustainability is, however, only part of the picture. The World Resources Institute has identified six factors that have been positively associated with corporate adoption of sustainability as a goal. These are depicted by the six large rectangles shown in Figure 1 (leadership, external engagement, strategic intent, shortening the value chain, and adopting an adaptive culture). The role of SDIs in this conceptual framework is shown as part of the measurement box. To implement SDIs, in turn, requires incentives, capability, and inputs.

(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 *See <<http://www.un.org/esa/sustdev/program.htm>>*
5 *"Sustainable Development in the United States". A Progress Report Prepared by the U.S. Interagency Working Group on Sustainable Development Indicators, Washington, DC, 1998*
6 *Adalberto Gorbitz (1997) : Costa Rica's 'Activities Implemented Jointly' Programme in "Activities Implemented Jointly to Mitigate Climate Change: Developing Countries Perspectives", ed Kalipada Chatterjee, p53, 1997.*
7 *Further information on the WBSCD eco-efficiency initiative can be found at <http://www.wbcsd.ch/ecoeffl.htm#top>*
8 *Markus Lehni. 1998. "WBSCD Project on Eco-Efficiency Metrics and Reporting, State of Play Report.*
9 *See <http://indexes.dowjones.com/djsgi/djsgi/bus_concept.html>*
10 *See <http://www.scorecard.org/>*
11 *See <http://www.ceres.org/reporting/globalreporting.html>*
12 *See <http://iisd.ca/measure/compendium.asp>*
13 *Matthew Arnold and Robert Day. 1998. The Next Bottom Line : Making Sustainable Development Tangible. World Reources Institute, Washington, DC.*
14 *Matthew Arnold and Robert Day. 1998. The Next Bottom Line : Making Sustainable Development Tangible. World Reources Institute, Washington, DC.*