

Realizing the Development Dividend: Making the CDM Work for Developing Countries

Phase 1 Report – Prepublication Version

By

Aaron Cosbey

Jo-Ellen Parry

Jodi Browne

Yuvaraj Dinesh Babu

Preety Bhandari

John Drexhage

Deborah Murphy

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International Institute for Sustainable Development

161 Portage Avenue East, 6th Floor

Winnipeg, Manitoba

Canada R3B 0Y4

Tel: +1 (204) 958-7700

Fax: +1 (204) 958-7710

E-mail: info@iisd.ca

Web site: <http://www.iisd.org/>

This report can be downloaded from IISD's Web site at
<http://www.iisd.org/climate/global/dividend.asp>

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ACRONYMS

AAU	Assigned Amount Unit
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CDCF	Community Development Carbon Fund
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
COP	Conference of the Parties
DNA	Designated National Authorities
DOE	Designated Operating Entity
EB	Executive Board
EIT	Economy in Transition
ERU	Emission Removal Unit
ETS	Emissions Trading System
EU	European Union
F-gas	Fluorinated gas
FDI	Foreign direct investment
FI	Financing Institution
GHG	Greenhouse gas
GIS	Green Investment Scheme
HFC	Hydrofluorocarbons
IET	International Emissions Trading
IETA	International Emissions Trading Association
IFI	International Financial Institution
IISD	International Institute for Sustainable Development
JI	Joint Implementation
LULUCF	Land use, land use change and forestry
MDGs	Millennium Development Goals
MP	Methodology Panel
Mt	Megatonne (million metric tonnes)
N ₂ O	Nitrous oxide
NGO	Non-Governmental Organization
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
PDD	Project Design Document
PFC	Perfluorocarbons
SME	Small- and medium-sized enterprises
SSN	SouthSouthNorth
TERI	The Energy and Resources Institute
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WWF	World Wide Fund for Nature

Executive Summary

On February 16, 2005, the Kyoto Protocol entered into force, nearly seven years after protracted negotiations brought it to conclusion. A key achievement of the Kyoto Protocol is the establishment of three market mechanisms designed to help industrialized countries achieve their Kyoto commitments. One of those, the Clean Development Mechanism (CDM), was created as a way of assisting governments and private sector entities to reach their GHG reduction targets in a cost effective manner, while contributing to the sustainable development priorities of developing countries.

This paper sets out to assess the extent to which the CDM is fully exploiting its potential to make that vitally important contribution—to deliver benefits to developing countries beyond those strictly related to climate change, in the areas of economic growth through investment; technological evolution; poverty alleviation; environmental and human health improvements. Without adequate delivery of this promised package of benefits—the “development dividend”—the CDM will fail on its own terms, with negative consequences for the success of the Kyoto Protocol and for the future development of the international climate regime.

The analysis begins by asking three questions:

1. Is the emerging roster of CDM projects weaker than it should be at delivering a development dividend?
2. Will the overall number of projects and resulting credits be adequate relative to the development needs (and to the market demand)?
3. Is CDM investment being skewed toward a small sub-set of developing countries, side-stepping those least-developed countries that need it most?

Fifty key stakeholders world wide were surveyed to get a broad view of the perspectives on these questions, and on perceived strengths and weaknesses in the current regime. They were drawn from developing and developed countries, from governments, NGOs, the private sector, the donor community and the multilateral institutions. Their perspectives were rounded out by online surveys, and an extensive literature review.

Setting the context

Relative to other flows to developing countries, the CDM, at an estimated US\$1 billion per year, is not expected to be particularly significant. By way of comparison, official development assistance in 2004 is estimated at \$47.4 billion. The previous year, flows of foreign direct investment to developing countries reached \$172 billion. Nonetheless, there are a number of reasons to consider the CDM an important engine of sustainable development:

- CDM flows are focussed on sustainable development as an outcome, and as such, focus on areas that clearly demonstrate that environment and development can be mutually supportive.
- The CDM can direct investment to new, environmentally preferable technologies, helping to bring them closer to the mainstream.

- CDM investment has the potential to create tangible and important side benefits that will increase quality of life in developing countries, for example through improved air quality, provision of energy and so on.
- CDM has the potential to funnel funds into small, community-based initiatives that may be unattractive to traditional investors, but which may have significant beneficial impacts.
- CDM is a way to involve the private sector as well as developing countries in achieving the goals of the United Nations Framework Convention on Climate Change (UNFCCC). The energies and support of both groups are critical to the long-term success of the Convention.

Demand for the credits generated by the CDM—certified emissions reductions (CERs)—is expected to outstrip supply, though any predictions at this point are difficult. Recent estimates put the shortfall of mitigation from Annex I domestic actions at between 869 megatonnes (Mt) of carbon dioxide equivalent (CO₂e) and 1,098 Mt CO₂e. The key question is what percentage of total demand will be satisfied by CERs, since domestic shortfalls can be filled by CERs, emission removal units (ERUs, from Joint Implementation) or assigned amount units (AAUs) —the unused portion of emissions allowances from countries such as Russia and Ukraine. The latter are expected to out-compete CERs on price, but there are political sensitivities around the purchase of so-called “hot air,” and it will make sense for sellers of AAUs to limit supply in any case, to raise prices. The resulting market for CERs has been estimated at between 217 and 640 Mt CO₂e per year by 2010.

On the supply side, as of April 6 2005, there were 88 CDM projects in the process of validation, and another four had succeeded in being registered. Taken together these projects aim to abate some 131.6 Mt CO₂e by 2012, or 26.3 Mt CO₂e per year averaged over five years. Ninety-six more projects were in the process of seeking approval for their methodologies.

The current pipeline of projects, while an imperfect predictor, can give us an idea of the broad shape of the emerging market, and help answer the three questions posed above.

First, is the current roster shaping up to deliver a large development dividend? Answering the question is difficult; since all projects in the CDM are defined by their hosts as delivering sustainable development, there is no agreed definition, nor any agreed criterion by which to judge. A wide variety of analysts, however, have come up with similar results when attempting to do so, grouping indicators around environmental, social and economic objectives.

By these criteria, a large and growing element of the CDM roster is under-performing: projects using end-of-pipe fixes in industrial processes to capture/decompose gases with high global warming potential. The magnitude of the issue is shown by the two HFC23 decomposition projects that have been approved from the current roster, where they account for fully 30 per cent of expected CERs. Landfill gas and HFCs together account for almost three quarters of the CERs in the pipeline. Analysts predict many more such projects, both in HFCs where the estimated market potential is significantly above 100 Mt CO₂e per year, and in N₂O which may offer similar potential.

This is fine from the perspective of Annex B purchasers, who want cheap, plentiful carbon. But from the development dividend perspective, the fear is precisely that such an enormous supply (relative to supply from other CDM projects) will drive down CER prices such that projects with higher sustainable development benefits will be infeasible. Already there is concern about the lack of

CERs from sectors such as energy efficiency and small-scale renewables—sectors that seem to have high sustainable development potential.

The second question posed above was: is the current configuration of the CDM capable of providing enough CERs? This may sound out of place, given the predictions that HFC, N₂O and landfill gas capture projects would somehow flood the market. From the perspective of ensuring the provision of a development dividend, though, the concern is still valid. Since CDM projects can deliver sustainable development benefits we need to worry that, even when the quality issues are addressed, the scale of operations may be below what is needed.

The current roster of projects is rather disappointing in this context, projecting to deliver just an average of 26.3 Mt CO₂e per year over the five-year first commitment period. That compares to estimates of demand for CERs ranging from 217 to 640 Mt CO₂e per year by 2010. Of course there are many more projects under development than are currently in the roster, though assuming a three- to four-year start-up time from approval and an uncertain post-2012 scenario, any project aiming to get even five years of credits would have to be on the drawing boards by now. In the end, it does look as though there will be unfulfilled market potential for CDM-generated CERs.

It may be that the current configuration of the regime keeps the market small by deterring potential investment. Investors have consistently voiced concerns about lengthy and complex approval processes, including the thorny issue of defining additionality. These may only get worse over time; the current system is straining at the seams dealing with just 92 validations. If we take the current roster of projects as indicative of the typical project size and assume a demand for CERs of 217–640 Mt CO₂e per year, the EB would have to approve between 750 and 2,200 projects in the first commitment period to meet the annual global demand for CERs. The majority of those approvals would have to take place over the next two years—an impossible scenario under the current arrangements.

The third question was whether CDM investment is being directed primarily to only a handful of developing countries. In the current roster it seems to be so; Brazil, India and Chile alone account for 70 per cent of the expected CERs. Of the 49 least-developed countries as defined by the UNFCCC, only two (Bhutan and Bangladesh) have projects in the pipeline, and they have only one project each.

There are a number of ongoing attempts to deal with the challenges identified here. The World Bank's Community Development Carbon Fund, for example, provides carbon finance for CDM-eligible projects in least-developed countries, focussing on high levels of side benefits for the local community. There are special rules to facilitate the CDM process for small-scale projects. As well, there has been much work by development agencies to build capacity for CDM in least developed countries. In the course of surveying those efforts, interviewing stakeholders and reviewing the literature, a number of policy options were identified. The most promising are presented below.

Policy Options

There are three broad types of policy options that might be employed to help realize a greater development dividend from the CDM. First, there are those that can be achieved outside of

negotiations. These are mostly voluntary measures and modest reforms that can be pursued in the first commitment period. Second, there are those measures that must be negotiated by the Parties, but which can be achieved within the first commitment period. The Parties are due to consider reforming the CDM at COP/MOP-2, in late 2006. Finally, there are measures that might be useful for considering the shape of the climate regime post-2012. Official discussions on that subject are due to begin at COP/MOP-1 in late 2005.

This paper recommends policy options in the following areas:

- Reforming the EB/The CDM project cycle;
- Changing the rules of the CDM;
- Engaging development assistance/international finance;
- Post-2012 options; and
- Defining sustainable development.

Reforming the EB/The CDM project cycle: The approval and monitoring processes for CDM projects has born some of the blame for two of the key concerns treated above: that the transactions costs of the CDM are too high, and that the volume of CDM projects on the books is too low.

High transaction costs may disproportionately penalize projects with high sustainable development benefits, since these tend to be small, and to have lower paybacks. A low volume of CDM projects may also be due in part to high transactions costs, at least relative to the expected price for CERs.

Recommendations:

1. The EB should transform itself into a professional body with full-time staff, guided by the Parties. The resources budgeted for the EB's operations, and those of the Methodology Panel, should be dramatically increased.
2. The EB and methodology panels should open and institutionalize better channels of communication with investors in general, and with project proponents whose projects are under consideration.
3. The criteria for additionality should be reviewed with a view to further downplaying the importance of financial additionality. Additionality for small-scale projects should be assumed.

Changing the rules of the game: The CDM as currently elaborated works on a bottom-up model, building the portfolio of emissions reduction efforts on a project-by-project basis. Unless current trends are drastically altered, this will not come close to satisfying Annex 1 demand for CERs. The only factor that seems likely to work against this trend is the increase in end-of-pipe capture/destruction of high-GWP gases, and projects of that type seem to offer little in the way of a development dividend.

A number of top-down approaches have been suggested that offer the possibility of both expanding the level of CDM activity (going from a "retail" to a "wholesale" effort), and generating projects that will tend to produce more environmental, social and economic benefits for the communities involved.

Recommendations:

1. Parties should allow policy-based CDM. Such an approach could remove the bottlenecks that exist in a project-by-project model, and might offer developing countries an element to be used in negotiating any future actions post-2012. It would allow for a focus on sectors where a strong development dividend is known to be likely, such as transportation, energy efficiency, renewable energy and others.
2. Parties should allow sectoral CDM. This approach shares many of the advantages offered by policy-based CDM.
3. Parties should also affirm their approval for the concept of unilateral CDM—projects that do not have Annex I investors. These offer an avenue for small-scale, development-rich projects in which many investors would have little interest. The EB has registered a unilateral project, but made no decisions pertaining to the project’s treatment throughout the rest of the project cycle.
4. Parties should explore ways to expand the CDM to include sinks projects in agriculture (land-use change) and avoided deforestation, while guarding against registry of projects with few environmental development benefits. One means of doing so would be to only allow for small-scale projects in this sector. In any case, small-scale sinks projects should benefit from an approval process even more favourable than they now enjoy.

Engaging development assistance/international finance: Some development assistance agencies and multilateral development banks have already been active in fostering the ability of least-developed countries to attract and manage the CDM. The World Bank has been particularly active in facilitating carbon finance for CDM, and for projects with strong sustainable development benefits.

But there is more that could be done to fully exploit the potential offered by ODA, and by various sources of financing for the CDM.

Recommendations:

1. International financial institutions (IFIs), private investors and governments should increase their support for those investment funds that address sustainable development more discretely, such as the Community Development and Bio Carbon Funds in the World Bank.
2. The relationship of ODA with the CDM should be further explored, particularly in support of projects that clearly provide sustainable development benefits. In other words, ODA could possibly support the development benefits incremental to an environmental investment out of the CDM.
3. There should be an effort to raise the awareness of the CDM to local/national development banks and other commercial entities in the developing world. .
3. Export credit agencies should develop innovative risk management products specifically geared for CDM investors, and should explore other ways in which they might support CDM investment.

CDM, the development dividend and post-2012: Given normal project lead times, and the ever-narrowing window of opportunity for earning credits in the first commitment period, we may soon

see significant new CDM activity disappearing and, with it, the development dividend. However, it is not possible to give complete certainty to investors about the shape of the climate change regime after 2012, since the discussions on this topic have not yet formally begun.

Recommendation:

1. The Parties need to find and implement some manner of assuring investors that their emissions reductions post-2012 will have value. This does not have to involve spelling out the details of a future whose shape is not yet known—an impossible task. Rather, it will involve granting as much certainty as investors need, while retaining as much flexibility as negotiators need.

Defining Sustainable Development: The development dividend might be well served by an internationally-agreed set of criteria for sustainable development. The aim would be to increase the number of projects delivering high levels of sustainable development benefits. The first problem with this is that it is difficult to define sustainable development at the general level—like all principles it needs specific context to attain real meaning. The second problem is related to the first. The fact that sustainable development needs context led developing countries to reject a one-size-fits-all definition in the negotiations, preferring to elaborate at the domestic level what would be appropriate in their contexts. It is not conceivable that this decision might be revisited.

This, of course, puts a weighty onus on each host country, since there are few precedents for this type of exercise. There have been complaints from investors that they face criteria that are too restrictive in some cases, and too vague in others. And there have been concerns that loose definitions are in some part responsible for allowing projects that generate large numbers of CERs but deliver very little development dividend.

Recommendations:

1. IFIs, donor agencies, other multilateral institutions and NGOs should continue and intensify their current efforts at capacity building for developing countries in the process of elaborating their national regimes for approving CDM projects, with a clear mandate to assist in the definition of sustainable development at the national level.
2. The Parties should explore the idea of elaborating at the international level principles and criteria that could guide national efforts to define sustainable development.

Conclusion

The intent in offering these recommendations is not to provide final definitive solutions, but to develop a framework for a constructive way of going forward—to generate the discussion and debate that will be necessary precursors of lasting and effective solutions. The starting point is a recognition of the value and potential of the CDM in providing environmental, social and economic benefits to host countries above and beyond those offered by the prospects of climate change averted—in short, a development dividend.

To take this work further, IISD, in collaboration with various partners, is bringing together a Task Force of experts with a mandate to identify and assess new strategies and approaches for the CDM

to support the provision of the development dividend; bring the results of the analysis to negotiators, members of the CDM EB and other key stakeholders; and provide a solid foundation for shaping the evolution of the CDM and/or a new instrument in both the present commitment period and in the period after 2012.

1. Introduction

On February 16, 2005, the Kyoto Protocol entered into force, nearly seven years after protracted negotiations brought it to conclusion. The Protocol sets in place a framework for legally-binding reductions of greenhouse gases (GHGs) by 38 leading industrialized countries, each of which agreed to reach a specific reduction target during the period of 2008 to 2012. The details of Kyoto's implementation were elaborated through subsequent agreements, most importantly the Bonn Declaration and the Marrakesh Accords of 2001. These detailed operating agreements also came into effect on February 16.

A key achievement of the Kyoto Protocol is the establishment of three market mechanisms designed to help industrialized countries achieve their Kyoto commitments. One of those, the Clean Development Mechanism (CDM), was created as a way of assisting governments and private sector entities to reach their GHG reduction targets in a cost effective manner, while contributing to the sustainable development priorities of developing countries. As originally proposed the CDM was seen by various Parties as a vehicle for providing developing countries with an opportunity to access environmentally sustainable technology, receive increased foreign direct investment, and contribute directly to achieving the long-term objective of the United Nations Framework Convention on Climate Change (UNFCCC).

Since 1997, considerable effort has been undertaken at the national and international level to develop and prepare for implementation of the CDM. Capacity has been built to establish Designated National Authorities (DNAs), prepare Project Design Documents, and set sustainable development criteria. Experience in project development has been gained through the Activities Implemented Jointly process and the Prototype Carbon Fund. The CDM Executive Board (EB) and Methodological Panel have been established, a range of methodologies for baselines and monitoring have been developed, and the first CDM projects have been registered. As of this writing almost 100 projects are moving through the formal process of approval. Through these efforts, the ground work has been laid for implementation of the CDM.

The success of the CDM will be a key factor in ensuring the success of the Protocol itself, enabling industrialized countries to reach their emission reduction targets, and in turn helping achieve the objective of the UNFCCC. As the primary avenue through which developing countries participate in the Kyoto Protocol, a successful CDM could provide these nations with a means of leapfrogging to modern technology, achieving their development objectives, and preparing for the anticipated carbon constrained economy of the future. However, if the CDM does not provide developing countries with the sustainable development benefits they are expecting it will limit the success of the mechanism, and negatively affect the future development of the international climate change regime.

From the investment perspective, the CDM provides a cost-effective means for Annex B Parties and their industries to meet their GHG reduction commitments under the Kyoto Protocol. If the CDM is not able to effectively deliver such reductions in a sufficient quantity, reaching these targets may prove to be too difficult to achieve for many Annex B Parties, throwing into doubt both the effectiveness and legitimacy of the Kyoto Protocol regime.

With the Kyoto Protocol's entry into force, and the consequential official launch of the CDM, we have moved to a new phase of challenges, with few precedents by which to guide our progress. The CDM is pioneering in its efforts to involve private actors in the achievement of global environmental objectives and in its ambitions to deliver sustainable development and technology transfer to developing countries. Moving from design to operation will inevitably reveal areas of unexpected weakness.

Given the importance of the CDM within the Kyoto Protocol process and the overall climate change regime, it is timely to identify ways in which the CDM can produce projects with enduring development benefits and significant GHG reductions at a competitive rate in the global carbon market. The International Institute for Sustainable Development (IISD), in partnership with The Energy and Resources Institute (TERI), have set out to undertake this examination through its project "Realizing the Development Dividend".

1.1. The Development Dividend Concept

As noted above, the goal of the CDM is to contribute to the sustainable development of host countries and provide a cost-effective avenue for emissions reductions. Fully exploiting the CDM's potential for a development dividend requires a careful integration of two different sets of objectives: those of the private sector guided by the bottom line, and those of developing countries guided by their development priorities and emphasis on poverty eradication. Without that integration, the success of the CDM and its contribution to the wider objectives of the UNFCCC will be undermined. Alternatively, if encouraged to evolve strategically, the CDM could be a major impetus for sustainable development related projects and policy development in developing countries, as well as an important enabler for GHG emissions reductions.

Some observers, however, have questioned whether the CDM, as it has evolved to date, will be able to achieve its original objectives and match the expectations of governments and the private sector in developing and developed countries. During the tenth Conference of the Parties (COP) to the UNFCCC, Ambassador Raúl Estrada observed that the emerging CDM is not what negotiators had in mind when he presided over the development of the Kyoto Protocol. He specifically noted that many of the projects being developed do little to promote renewable energy or technology transfer.¹

Similar concerns have been expressed by a number of sources, surveyed in greater detail in Chapters 2 and 3. The early crop of CDM projects, it is said, may not contribute as much as had been hoped to the environmental, social and economic development priorities of host countries. As the first series of projects moves through the approval process, the trend is toward activities that have clear reductions and simple additionality. The type of projects easily meeting these criteria, such as those that reduce the release of hydrofluorocarbons (HFCs) and methane, are perceived by some as providing only a modest 'development dividend' for their host communities. There has also been a strong and growing perception that too few projects have made it through the formal approval process – that the scale of CDM activity is not commensurate with the needs, either for emissions reductions or for sustainable development benefits. As well, there have been complaints that the

¹ Marcela Valente. 2004. Climate Change: A disappointing start for the Clean Development Mechanism. <http://www.ipsnews.net/interna.asp?idnews=26604> Accessed January 2005.

flow of investment from the CDM is skewed toward a small sub-set of developing countries, in fact side-stepping those least-developed countries that need it most.

Reflecting the complexity and local-specificity of the issues involved, as well as the need to respect national sovereignty, host countries are responsible for determining if a proposed CDM project contributes to its overall sustainable development. It is therefore difficult to assess the likely success of the CDM in fostering sustainable development. But for all the difficulties, such an analysis is no less necessary. Indeed, it must be a fundamental part of any overall assessment of the CDM.

To address this situation, IISD is exploring how to increase the provision of the *development dividend* – the socio-economic and environmental gains that should be generated through the CDM – while also providing an efficient route for emission reductions. The starting point for the analysis is not to question whether the existing roster of proposed projects yields any level of development dividend; they have, after all, been defined as sustainable development by their host governments. Rather, the question is: to what extent can the CDM be steered in a direction that yields a much *higher* dividend of benefits? The scope for the latter analysis is broad, looking at both the current Kyoto framework—focussing on those changes that can be made for the first commitment period both with and without formal negotiation—and the post-2012 period.

Fully exploiting the CDM’s potential for providing a development dividend requires a careful integration of the two goals of the CDM: sustainable development and cost effective emission reductions. To be successful, the CDM needs to recognize the needs of the private sector, guided by the bottom line, and the needs of developing countries, guided by their development priorities and emphasis on poverty eradication. If it is unable to integrate these goals and interests, the success of the CDM and its contribution to the wider objectives of the UNFCCC will be undermined. Alternatively, if encouraged to evolve strategically, the CDM could be a major impetus for sustainable development related projects and policy development in developing countries, as well as an important enabler for GHG emissions reductions. It could also constitute one of the solid pillars on which the global community could build post-2012 international cooperation on climate change.

1.2. The Project

The objective of the “Development Dividend” project is to identify and assess new approaches that could enhance the ability of the CDM to provide host countries with the development dividend anticipated at the time of its inception. How can the CDM better encourage the development of those projects viewed as providing sustainable development to local communities and national governments? How could these projects be supported while recognizing that the CDM is a market-based mechanism, and as such any sort of reform must be done in a manner that encourages investment and project development?

Officially launched at COP10,² the first phase of the Development Dividend project sets out to:

- explore, given current practice and trends, the extent to which the CDM will provide a “development dividend” to host countries, and will be an attractive mechanism from investors’ viewpoint; and

² Coverage of IISD’s side event on the Development Dividend during the COP10 can be found at <http://www.iisd.org/climate/global/dividend.asp>.

- identify and assess ways in which the CDM might be modified, either in its current function or in some future manifestation post-2012, to better achieve those ends.

To help address these questions, IISD undertook a range of activities with the support of TERI, which was commissioned to provide a developing country perspective to the research and analysis.

A series of interviews were undertaken with key stakeholders, in their personal capacity, from developing and developed country governments, multilateral development and finance institutions, the private sector, research institutes and non-governmental organizations (NGOs) between December 2004 and March 2005. A total of 50 in person, e-mail and telephone interviews were completed by IISD and TERI; a list of individuals consulted is provided in Annex A. Interviews were tailored to each individual's expertise and perspective, building upon a basic open-ended questionnaire (see Annex B).

To increase the diversity of perspectives and information sources contributing to this research project, IISD and TERI also circulated a common questionnaire on Climate-L in early January; the questionnaire was also posted on the project's web site (<http://www.iisd.org/climate/global/dividend.asp>). This approach enabled IISD and TERI to reach a wider range of individuals within the international climate change community.

A literature review was also undertaken to gain a more comprehensive understanding of, for example, the current state of the CDM market and perspectives on the sustainable development criteria to be applied to CDM projects.

1.3. The Paper

This paper captures the main research findings from Phase I of the “Realizing the Development Dividend” project. It examines the current status and future direction of the CDM, aiming to understand how it could better deliver a development dividend to host countries while remaining an effective investment vehicle for investors. The remainder of this paper is divided into four chapters. *Chapter 2* outlines the current context of the CDM, focusing on the status of the CDM market and the trends that can be discerned. *Chapter 3* provides a survey of perspectives from developing countries, investors, donors and research organizations/NGOs on the evolution of the CDM to date, the successes of the current regime, and areas of weakness. *Chapter 4* outlines a range of possible ideas for reform under three separate scenarios: those feasible within the system as it currently stands; changes that would require negotiation amongst the Parties, and; options for a post-2012 regime. *Chapter 5* concludes by identifying four broad themes that are worthy of more in-depth examination.

IISD and TERI gratefully acknowledge the assistance provided by members of the international climate change community in completing this research. The views expressed in this report and any inaccuracies, however, are those of IISD and TERI alone.

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2. Setting the Context

The CDM is the one doorway in the Kyoto Protocol for developing countries—which were not subject to binding emissions reductions as part of the Protocol—to become involved directly in implementation of this agreement and to contribute to achieving the objectives of the UNFCCC. At the time the concept was elaborated in Kyoto, developing countries had high hopes for the mechanism, viewing it as an opportunity to improve efficiency, sustain economic development, and contribute to a cleaner environment for their citizens. They anticipated increased technology transfer and more trade and investment to be by-products of their involvement in the CDM.

Article 12 of the Kyoto Protocol outlines the dual goal of the CDM: “the purpose of the clean development mechanism shall be:

- 1) to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and;
- 2) to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments under Article 3”.³

The modalities and procedures were further elaborated in the Marrakech Accords, under which several key agreements were enunciated, including:

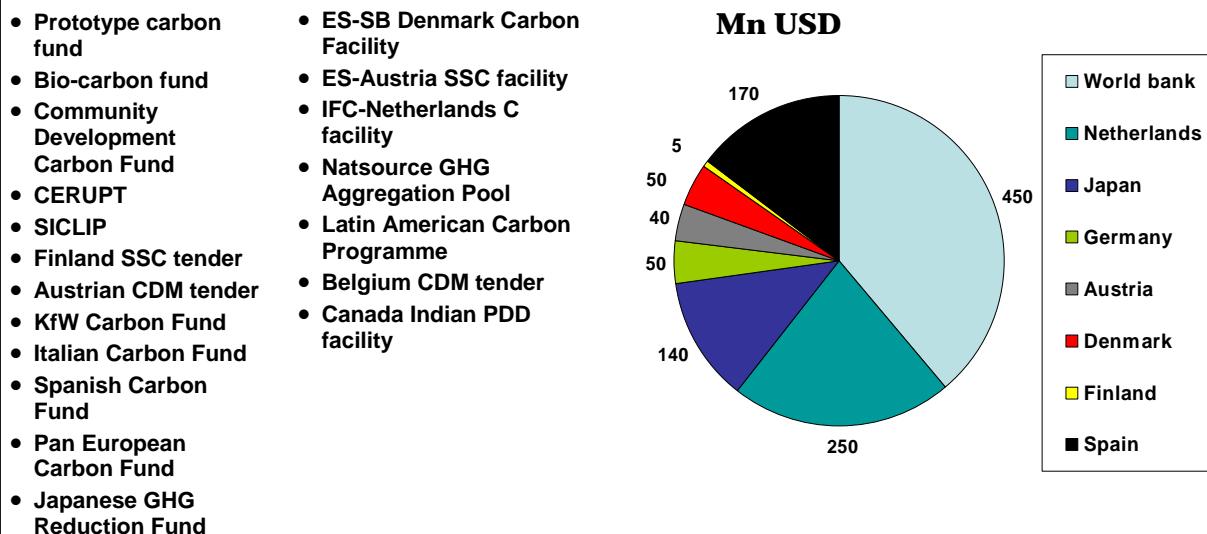
- a) It is the host country’s prerogative to determine whether a CDM project assists in its achievement of sustainable development.
- b) Public funding for CDM projects should not result in a diversion of official development assistance (ODA).
- c) CDM projects should lead to the transfer of environmentally safe and sound technology and know-how.

Important financial flows into host countries are expected to take place as a result of CDM activities; to date more than US\$800 million has been allocated to carbon funds or CDM/Joint Implementation (JI) programs. Together with private and other sources of funding, the Organisation for Economic Development and Cooperation (OECD) conservatively estimates financing for CER purchases under the CDM to 2012 at roughly one billion US dollars.⁴ Figure 1 gives an overview of the breakdown of this financing.

³UNFCCC Kyoto Protocol, Article 12.2 (numbers added for emphasis by authors)

⁴ Ellis, Jane, Jan Corfee-Merlot and Harald Winkler “Taking Stock of Progress under the Clean Development Mechanism (CDM)” OECD, June 15 2004, pg. 7.

Figure 1: Major Buyers of Carbon credits



Some might take a cynical view of the overall benefits of this level of activity. One billion dollars a year is dwarfed by official development assistance (ODA) flows (estimated at \$47.4 billion in 2004) and even more so by foreign direct investment (FDI) inflows to developing countries (\$172 billion in 2003).⁵ And, of course, all emissions reductions achieved via the CDM are matched by increased ability to emit in Annex I countries. Nonetheless, there are a number of reasons to consider the CDM an important engine of sustainable development:

- Unlike most FDI and much ODA, CDM flows are focussed on sustainable development as an outcome, and even offer the possibility of a subsidy (Certified Emission Reduction (CER) revenues). As such, CDM investments are in areas that clearly demonstrate that environment and development can be mutually supportive – a lesson that bears promoting in most countries. And it can direct investment to new environmentally preferable technologies, thereby helping to bring them closer to the mainstream, with environmental benefits that last long after the crediting period.
- CDM investment has the potential to create tangible and important side benefits that will increase quality of life in developing countries, for example through improved air quality, provision of energy and so on.
- CDM has the potential to funnel funds into small, community-based initiatives that may be unattractive to traditional investors, but which may have significant beneficial impacts.⁶ Depending on the value of CERs, pursuing such projects through the CDM may be more financially attractive than traditional investment.

⁵ ODA figures from World Bank, *Global Development Finance 2005: Mobilizing Finance and Managing Vulnerability*, 2005, Table 1.1; FDI figures from UNCTAD statistical database on FDI, www.unctad.org/fdistatistics.

⁶ See UNEP-Risø, *CDM Sustainable Development Impacts*, Roskilde, Denmark, 2004

- CDM is a way to involve both the private sector and developing countries in achieving the goals of the UNFCCC. The energies and support of both groups are critical to the long-term success of the Convention.

In short, the reason the CDM is worth improving, worth worrying about, even while it pales in comparison to traditional investment flows, is that it has the potential to pay a *development dividend* to developing countries, and at the same time help achieve the objectives of the UNFCCC. The core of this project is an effort to assess that potential, and to help augment it. This is particularly critical in setting the appropriate framework/tone for discussions on how the post-2012 climate change regime can best evolve. The CDM will play a critical role in those discussions, and the more we have it ‘right’ at the outset, the better for all involved.

In that context, there have been three broad concerns expressed about the ability of the CDM to deliver on its promise:

- Many of the projects that are coming down the pipeline do not seem to yield a large enough development dividend.
- The CDM process as presently constituted may not be capable of allowing a large enough volume of projects, given the great need for this sort of investment in non-Annex I countries, and given the need of Annex I countries for the resulting CERs.
- The projects that *are* proceeding through the approval process are clustered in relatively few countries – primarily larger developing countries – which are not necessarily those in most need of investment for sustainable development.

This section will examine these three concerns in turn. Before doing so, however, it will briefly survey the current state of affairs with the CDM, noting trends where they are discernable, and grounding the subsequent discussion in a solid understanding based on current data.

2.1. The Current State of the CDM

As preparations for meeting national targets for the first commitment period move forward, the demand as well as the supply side of the CER market is developing rapidly. A number of countries have initiated programs for the forward purchase of carbon units, and private companies are also starting to become directly involved in the market.

A recent exhaustive survey of analyses of the **demand** for carbon credits by OECD countries for 2010 turned up estimates between 869 million tonnes (Mt⁷) of carbon dioxide equivalent (CO₂e) and 1,098 Mt CO₂e.⁸ To be clear: this is an estimate of those emission reductions that analysts don’t feel Annex I countries will be able to accomplish through domestic policies alone. This is a fraction of its originally envisioned size, primarily due to the rejection of the Kyoto Protocol by the United States—the largest emitter of greenhouse gases in the world—and the existence of huge amounts of “hot air,” mainly from Russia and Ukraine (now possibly also from Kazakhstan). Primary purchasers

⁷ Also known as megatonnes.

⁸ Eric Haites, “Estimating the Market Potential for the Clean Development Mechanism: Review of Models and Lessons Learned,” PCF*plus* Report 19, June 2004. Most models use the year 2010 as the basis for analysis. Roughly speaking we can get accurate estimates for the whole commitment period by simply multiplying by five.

in the carbon market are projected to be Japan, the Netherlands, Sweden, Italy, Spain, Denmark, Norway and Canada.

The January 1, 2005 launch of the EU emissions trading scheme (ETS) boosted the demand for carbon credits. From this point forward, CO₂ emissions will directly impact the bottom line of companies participating in the scheme. Trades have been steadily increasing in volume as countries complete their National Allocation Plans and enter the market. The “linking directive” legislated in November 2004, allows CERs to be used for compliance starting in 2005, and emission removal units (from JI) starting in 2008. The new system has effectively widened the global market for carbon credits.⁹

The key question is what percentage of total demand will be satisfied by CERs, since outside of the ETS domestic shortfalls can be filled by CERs, emission removal units (ERUs) or assigned amount units (AAUs) – the unused portion of emissions allowances from countries such as Russia and the Ukraine. If, as many assume, AAUs will out-compete CERs in terms of price, and given estimates of supply from AAUs in the range of 575 – 2,162 Mt CO₂e in 2010, there could easily be no market for CERs at all.¹⁰ However, the price elasticity of demand makes it likely that suppliers of AAUs will restrict supply to increase prices, and modelling exercises that take this into account estimate a market for CERs of anywhere between 217 – 640 Mt CO₂e in 2010.¹¹ Obviously a number of factors will influence the accuracy of such estimates, including the effectiveness of domestic policies and measures, the price for CERs and the hesitancy of some governments to purchase AAUs.

This latter concern is an important political factor in many countries; governments are loath to be seen simply buying “hot air,” in purchases that seem more like transfer payments than productive investments to address climate change. In response to these concerns some governments, and the World Bank, have been exploring alternative modalities for the purchase of AAUs. One proposal is the Green Investment Scheme (GIS), whereby the seller of AAUs pledges to use the proceeds of the sale in ways that pursue energy efficiency, development of the renewables market, or other such goals related to climate change mitigation.¹²

As of this writing the price range for CERs hovers between 5 to 9 Euros per tonne CO₂e.¹³ However the transparency in the market is low, as most buyers and sellers are reluctant to provide any information on prices defined in private purchasing agreements.¹⁴ The price for EU allowances is trading at a higher level, with current prices in the range of 14 to 17 Euros per tonne CO₂e.¹⁵

⁹ The Linking Directive places several “quality” restrictions on the acceptability of CERs. It excludes CERs from sinks until 2008, and will not accept CERs from nuclear power, or from large hydropower not in accordance with unspecified “international rules,” including the recommendations of the World Commission on Dams.

¹⁰ Haites (2004).

¹¹ *Ibid.*

¹² See Alrid Moe, Kristian Tangen *et al.*, “A Green Investment Scheme: Achieving environmental benefits from trading with surplus quotas,” Briefing paper presented at a COP-7 side event, Climate Strategies, Imperial College, London; also “Options for Designing a Green Investment Scheme for Bulgaria,” Report 2998, World Bank Energy and Infrastructure Department, Europe and Central Asia Region, and Carbon Finance Unit, October 4 2004.

¹³ “CDM Market Comment,” *CDM & JI Monitor*, May 3, 2005.

¹⁴ IETA “Annex I Parties’ Current and Potential CER Demand”, Point Carbon, October 2003, at <http://www.icta.org> Feb 24, 2004.

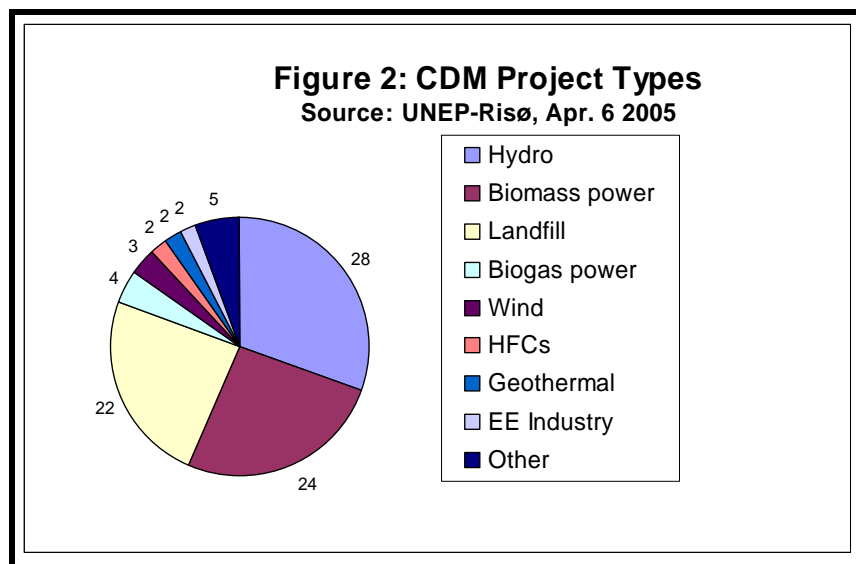
¹⁵ *Point Carbon’s* EUA 30-day price index, the month of April 2005.

On the **supply** of credits, there are a number of ways to break down the emerging regime. One is to look at projects currently in the process of validation, or that have been registered; as of April 6, 2005 there were 92 such projects. Another would be to also include those projects that are in the process of having new methodologies approved (see Box 4 on the CDM project cycle); as of April 6, 2005 there were 96 of these. Ideally we would also include in the analysis those projects that are in the project design phase.

Including the latter is not an option, however, as there is no publicly available database of such projects, though some private analysts have detailed information sets. Including design phase projects would, in any case, count activities that are not assured of ever getting registered. Including those projects seeking approval for methodologies introduces the same uncertainties. For the sake of analysis in this section, we will focus on the current roster of CDM projects in the process of validation, and those that have been registered. This information is freely available on the UNFCCC website in up-to-date format. Annex C shows the projects in the pipeline as of April 6 2005, based on data assembly done by the UNEP-Risø Centre.¹⁶ The following analysis is based on that data.

Some 88 projects are in the process of validation, and another four have been registered (two HFC23 decomposition projects, a landfill gas to energy project and a small-scale hydro project). Taken together these projects aim to abate some 131.6 Mt CO₂e by 2012, or 26.3 Mt CO₂e per year averaged over five years.

The great majority of projects is in the hydro power, biomass power and landfill gas capture sectors, as shown in Figure 2. There is a dearth of projects in energy efficiency (three projects – one residential and two industrial) and energy distribution (one project), and there are none using solar energy.

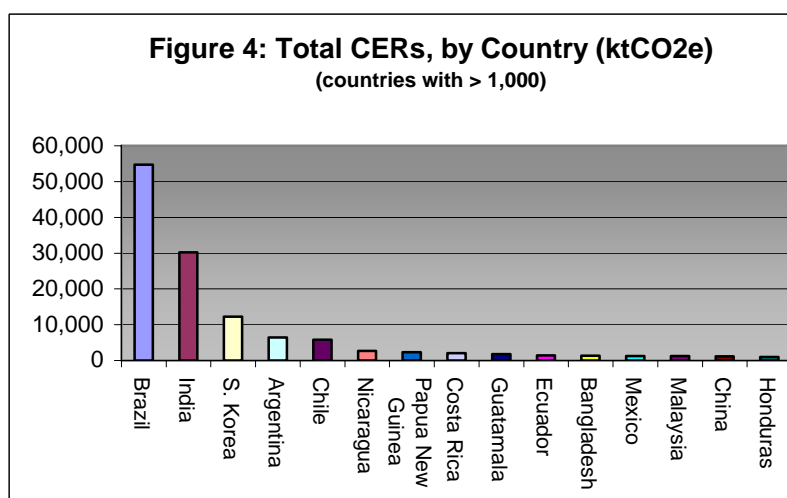
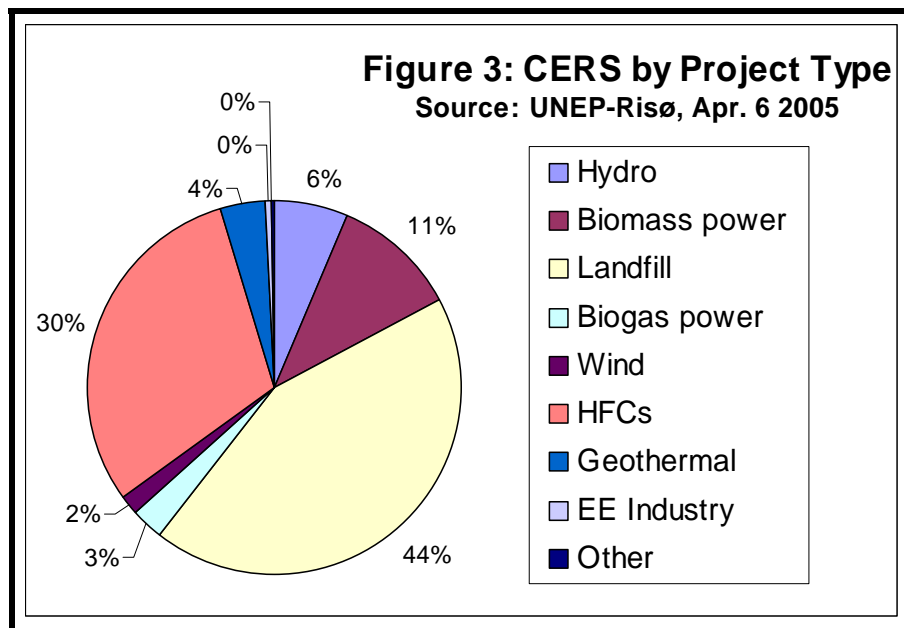


A different picture emerges, however, when we chart the CERs projected to be earned by the end of the first commitment period by project type, as shown in Figure 3. Seen from this perspective, landfill gas capture and HFC23 decomposition projects dominate the market, with almost three

¹⁶ See the UNEP-Risø CDM pipeline at www.cd4cdm.org.

quarters of all expected CERs. In both sectors this reflects the high global warming potential of the gases involved. In the so-called F-gas (fluorinated gas) sector it also reflects the scale of the projects contemplated; the two projects in this sector make up 30% of all the expected CERs in the project pipeline.

The distribution of CDM projects across countries is shown in Table 1. It is a rather skewed pattern, with just five countries – Brazil, India, Honduras, Chile and Mexico – accounting for 65% of all projects. Latin America dominates as a region, followed by Asia while Africa, the Middle East and the former Soviet Union states are hardly represented at all. This picture changes only slightly when we look at the number of expected CERs per country, as shown in figure 4.



The top five countries in this formulation account for 85% of all CERs. The result would be much flatter without the somewhat distorting influence of the two F-gas projects in South Korea (12,250

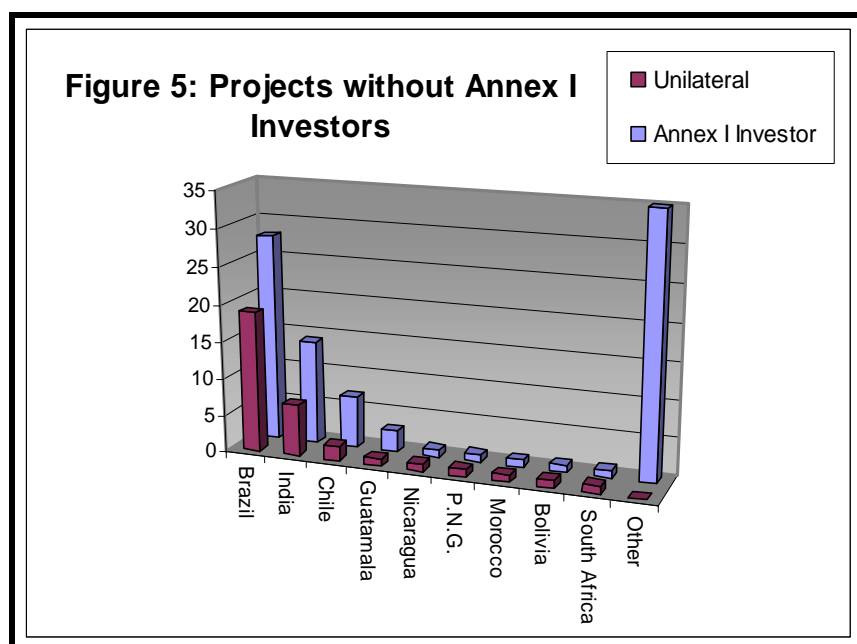
Mt CO₂e) and India (27,040 Mt CO₂e), which amount respectively to 100% and 90% of those countries' CER profiles. The remaining giant is Brazil, where the CER profile is mostly landfill gas capture (8 relatively large projects accounting for more than 41,000 Mt CO₂e, including two at more than 10,000 Mt each) and biomass power (13 relatively small projects, mostly bagasse cogeneration and energy from sawmill waste).

Table 1: Regional Distribution of CDM Projects (source: UNEP-Risø, Apr. 6 2005)

Region/Country	Number of Projects	Percentage
Latin America	59	64.1
Brazil	28	30.4
Honduras	7	7.6
Chile	7	7.6
Mexico	4	4.3
Peru	3	3.3
Argentina	2	2.2
Ecuador	2	2.2
Guatemala	3	3.3
Bolivia	1	1.1
Costa Rica	1	1.1
Nicaragua	1	1.1
Asia & Pacific DC	29	31.5
India	14	15.2
Malaysia	3	3.3
Sri Lanka	3	3.3
China	2	2.2
Bangladesh	1	1.1
Bhutan	1	1.1
Indonesia	1	1.1
Papua New Guinea	1	1.1
Philippines	1	1.1
South Korea	1	1.1
Thailand	1	1.1
Europe (FSU)	2	2.2
Armenia	1	1.1
Moldova	1	1.1
Africa	1	1.1
South Africa	1	1.1
Middle-East	1	1.1
Morocco	1	1.1
World	92	100

Least developed countries get very few of the projects in the current roster. Of the 49 countries classified as least-developed by the UNFCCC (UN classification), only 2 have projects in the pipeline: Bangladesh and Bhutan.¹⁷ Each has one project.¹⁸

Thirty-four of the projects in the pipeline (some 37%) have no declared Annex I investor. Figure 5 shows the breakdown. Twelve of these are being “shepherded” by a single consultant—Ecosecurities—that has made something of a specialty of unilateral projects. Most of these projects (21) are renewable energy projects (biomass power and hydro). Nine others are landfill gas capture and two are industrial energy efficiency projects. These sectoral breakdowns are roughly comparable to those that prevail in the total project mix.



Almost half of the projects in the pipeline (44 of 92) are small-scale projects. These are projected to contribute 15.5 Mt CO₂e of abatement, or roughly 12% of the total anticipated CERs. The breakdowns in terms of CERs and sectors are shown in Table 2. By far the most prominent of the small-scale projects listed here are the hydro and biomass power projects, which together account for some 80% of the total projects, and over 84% of the projected CERs.

¹⁷ To be precise: there are 50 such countries, but one of them – Somalia – is not a Party to the UNFCCC.

¹⁸ Using the World Bank low-income classification (less than \$761 gross national income per capita), yields six countries with projects in the pipeline. Of these, most (Bangladesh, Bhutan, Moldova, Nicaragua, Papua New Guinea) have only one project each. India is the exception, with 14.

Table 2: Small-Scale CDM Projects in the Pipeline

	Number		CERs	
Hydro	22	50%	3,990	25.8%
Biomass power	13	30%	9,031	58.5%
Landfill	3	7%	970	6.3%
EE Industry	2	5%	735	4.8%
Wind	1	2%	345	2.2%
Other waste	1	2%	31	0.2%
Energy distribution	1	2%	213	1.4%
EE Household	1	2%	136	0.9%
Totals	44		15,451	

With this overview of the current project mix as a basis, and with the caveat that what prevails now is not necessarily an accurate indication of what will eventually prevail, the following sections turn to consideration of the three concerns described above: not enough development dividend in the existing projects, not enough projects overall, and not enough equity in the global distribution of projects.

2.2. The Quality of CDM Projects

It was noted above that some—including at least one of the key architects of the current regime—have questioned whether the CDM that is taking shape will adequately deliver sustainable development benefits. One analyst, for example, argues:

“Even in the initial stages of CDM project preparation, it is evident that there are trade-offs between profit maximisation by investors and the sustainable development objectives of the CDM. The latter are most likely to be achieved through projects such as renewable energy schemes and such schemes would also contribute to the financing of necessary energy infrastructure investments in developing countries In contrast, large potential generators of CERs, such as fluorinated gases reduction projects, have no broader developmental impact, but these projects provide the lowest-cost means of generating Kyoto units.”¹⁹

The implicit breakdown offered here, between CDM for renewables and clean energy infrastructure on the one hand as sustainable development, and the example of F-gas projects on the other as no such thing, is common to many analysts.²⁰ Box 1 gives a brief description of the issues related to F-gas projects.

The approval of the two F-gas projects in India and South Korea brings to a head the potential conflict between the two objectives of the CDM. As a way to generate low-cost emissions reductions for Annex I countries they are unparalleled. Their costs of generating CERs have been cited at \$0.50 per tonne CO₂e, and they can supply an enormous quantity of reductions; the

¹⁹ John Humphrey, “The Clean Development Mechanism: How to Increase Benefits for Developing Countries,” *IDS Bulletin* 35.3: Climate Change and Development, p. 88.

²⁰ See, for example, TERI, “CDM Implementation in India: The National Strategy Study,” 2005: Table 8; Ben Pearson, “Comment: The Clean Development Mechanism and Sustainable Development,” *Tiempo Climate Newsletter*, April 24, 2005.

potential for CERs from F-gas decomposition has been estimated at “significantly above 100 Mt CO₂e per year.”²¹

Box 1: CDM HFC23 Decomposition Projects

Two of the four projects approved to date by the EB are HFC23 decomposition projects, in India and South Korea. As shown in Figure 3, these two projects alone make up 30% of the total CERs expected from the current roster of projects.

HFC23 is a by-product of the production of HCFC22, which is used as a refrigerant and as a feedstock for Teflon manufacture. It is normally vented to the atmosphere, where it is a powerful GHG, with 11,700 times the potency of CO₂. This accounts for the huge supply of CERs expected from such projects.

HCFC22 as a refrigerant is not manufactured in OECD countries (though there is feedstock production), being prohibited by the Montreal Protocol as a powerful ozone depleter. There are facilities in China, India, South Korea, Mexico and Brazil, which (except for South Korea, which has not ratified the relevant amendment) are not slated to phase out production until 2030. To avoid conflict with the ozone regime the EB ruled that only existing plants could be CDM-eligible.

The approved projects will treat the waste HFC23 with a thermal oxidization process, eventually capturing the fluorine (the “F” in the term “F-gas”) as salts. These are highly soluble, and must therefore be stored in underground hazardous waste landfills.

But do they contribute to sustainable development? F-gas decomposition is an end-of-pipe technological fix that has no apparent side benefits in terms of local air quality, local quality of life, employment, transformation of the energy supply regime, or any of the other indicators proposed by a host of authors (see Box 2 for one typical suggested list).²² The lists used in most analyses, like that shown in Box 2, fall into three categories: economic, social and environmental. In each category there are many possible sub-criteria. Measured against such lists, it is doubtful that projects involving HFC23 decomposition would score highly.

By itself the lack of sustainable development benefits from such projects would not be so great a concern unless they somehow detracted from the benefits potentially supplied by other projects. In fact, they might; the supply of CERs at the 100 Mt CO₂e per year level would dramatically change the nature of the market, driving down prices and potentially making other forms of CDM investment unviable.

²¹ Public comment by Othmar Schwank, leader of World Bank (CDM) National Strategy Studies in both China and India, to the Methodology Panel regarding Methodology AM0001

http://cdm.unfccc.int/methodologies/inputam0001/Comment_AM0001_Schwank_081004.pdf

²² For suggested indicators of sustainable development in CDM projects, see UNEP-Risø, *CDM Sustainable Development Impacts*, Roskilde, Denmark, 2004; Marcio Viegas, “GHG Reductions and Sustainable Development,” *Environmental Finance*, Nov. 2004; Saleemul Huq, *Applying Sustainable Development Criteria to CDM Projects: PCF Experience*. (PCF Report 10), Prototype Carbon Fund, World Bank. 2002; The World Wide Fund for Nature, “The Gold Standard: Quality Standards for CDM and JI Projects,” 2002; Cristophe Sutter, *Sustainability Check-Up for CDM Projects*, Berlin: Wissenschaftlicher Verlag, 2003.

Recall that the estimated demand for CERs as cited above was in the range of 217 – 640 Mt CO₂e in 2010. At the bottom end of this range it is clear that F-gas projects could have a significant negative price impact. At the top end it is less clear, particularly given the lack of supply coming from other sources; outside of the two HFC23 projects the current roster aims to deliver only 18.4 Mt CO₂e per year (averaged over the five year commitment period).

Box 2: Suggested CDM Sustainable Development Criteria	
Economic Dimension	<ul style="list-style-type: none"> Generate employment Reduce economic burden of energy imports Provide financial return to local entities Positive impact on balance of payments Technological change Cost effectiveness
Social Dimension	<ul style="list-style-type: none"> Increase equity Increase energy access Gender issues Education and training Health Alleviate poverty Legal framework Governance Information sharing
Environmental Dimension	<ul style="list-style-type: none"> GHG emission reductions Local environmental benefits (e.g., air quality) Pollution, water, soil, waste Use of exhaustible resources Use of renewable resources Biodiversity

Source: UNEP 2004 (fn 21)

The HFC23 projects are discussed here only to illustrate a more general problem; HFC is not the only sector of concern. A recent OECD report also predicted a large potential for N₂O reduction projects with similar characteristics: low cost, end-of-pipe fixes with few sustainable development benefits.²³ The 18th EB meeting approved an N₂O methodology (AM 0021) to start the validation process for a project, *N₂O Emission Reduction in Onsan, South Korea*, that would thermally decompose N₂O to produce three times as much mitigation of CO₂e per year as the biggest HFC23 project currently in the roster. Other similar projects will certainly follow. The large potential for CERs from landfill gas projects might also raise concerns, depending on the process in question.²⁴

On the other hand, it is striking that there are no solar energy projects, and only one residential energy efficiency project in the mix. Both sectors have potentially large development benefits, in effect providing more distributed power to poor and rural populations, generating employment, reducing non-climate related environmental degradation, etc.²⁵ Renewables in general, as noted

²³ Jane Ellis, Jan Corfee-Morlot and Harald Winkler, “Taking Stock of Progress under the Clean Development Mechanism,” COM/ENV/EPOC/IEA/SLT(2004)4/FINAL, OECD, 2004.

²⁴ Projects that use captured landfill gas for energy production arguably have tangible sustainable development benefits; those that simply flare the gas arguably have very few.

²⁵ See Hans Nilson, “Why are There So Few Energy Efficiency Projects in the CDM Register?” *CDM Investment Newsletter*, No. 2, 2005; Henry David Venema, Moussa Cisse (eds.) *Seeing the Light: Adapting to Climate Change*

above, do have good representation in the project mix, though the totals in terms of shares of CERs are rather low.

The question is: will the CDM's sustainable development objectives become a victim of the success of its market mechanism? Is there a way to maintain this type of success, but also to ensure that CDM projects in fact contribute strongly to sustainable development objectives of the type illustrated in Box 2?

One approach to the problem has been the World Bank's Community Development Carbon Fund (CDCF – see Box 3), which focuses on small-scale projects with strong community-level benefits. The rationale for the fund, born of the Bank's experience with the Prototype Carbon Fund, reinforces the premise of this paper: that the market mechanism by itself will not yield a significant number of such projects.

Box 3: The Community Development Carbon Fund

The Community Development Carbon Fund (CDCF) is an investment fund with Annex I government and private sector subscribers for which the World Bank acts as trustee. It provides carbon finance for small-scale projects designed to be CDM compatible. The fund has a special remit to focus on least developed countries, regional distribution of projects, and community-level side benefits.

The CDCF aims to fill the niche left open by CDM investors that typically avoid small-scale projects in small developing countries. The portfolio consists of energy efficiency, biogas, wind power, biomass power municipal solid waste and small hydro projects.

The World Bank agrees to purchase the emissions reductions created by the projects, and facilitates their establishment by helping pull together financing, manage risk, and steer the projects so that they accord with CDM rules. The CDCF*plus* facility marshals donor funding for CDM-related capacity building and technical assistance in target countries.

The Fund was launched in July 2003, and in March 2005 surpassed its first-round target with capitalization of \$128 million. As of September 2004, it had approved 29 Project Idea Notes. Of these 29 projects, eight had an approved Carbon Finance Document representing in total about 3.6 Mt CO₂e emission reductions and a potential financial commitment from the fund of \$16.8 million. Four other projects were negotiating emissions reduction agreements, for the purchase of 2.2 Mt CO₂e, for a total of \$10.5 million.

Another approach to ensuring greater sustainable development benefits in the CDM is the elaboration of special rules for small-scale projects. Small-scale projects benefit from:

- Simplified methodologies for monitoring and for determining baselines;
- Simplified project design documents;
- The ability to bundle several small projects together at various points in the project cycle;

with Decentralized Renewable Energy in Developing Countries, IISD/The Climate Change Knowledge Network, 2004.

- Simplified provisions for environmental impact analysis;
- A shorter review period before registration;
- An exemption from the adaptation fee (for afforestation and reforestation projects);
- The ability to use the same Designate Operational Entity (DOE) as validator and certifier; and
- Lower registration fees.

Nowhere in the official decisions of the COP or the EB is there any explicit justification for these special rules.²⁶ But it is widely understood that they are based on the assumption that what we are calling the development dividend is generally better delivered by such projects,²⁷ and the fact that smaller projects face proportionately higher barriers in term of transactions costs.

The question of how to boost the development dividend in the CDM presumes, of course, to know what sustainable development is – an inappropriate presumption given the prerogative of national authorities to make those decisions. Yet, as argued above, the problem remains. Chapters 3 – 5 will attempt to wrestle with the dimensions of the problem, and the policy options for addressing it.

2.3. The Quantity of CDM Projects

The second concern expressed above was that the current configuration of the CDM is not capable of providing enough CERs. This may sound out of place, given the predictions in the last section that F-gas, N₂O and landfill gas capture projects would somehow flood the market. From the perspective of ensuring the provision of a development dividend, though, the concern is still valid. If we accept that CDM projects can deliver sustainable development benefits, we need to worry that, even when the quality issues are addressed, the scale of operations may be below what is needed.

The current roster of projects, as noted above, is rather disappointing in this context, projecting to deliver just an average of 26.3 Mt CO₂e per year over the five year first commitment period (without counting HFC projects, just 18.4 Mt CO₂e per year). That compares to estimates of demand for CERs ranging from 217 – 640 Mt CO₂e per year by 2010. Granted, there are many more projects under development than are currently in the roster. There are 96 projects currently seeking approval for methodologies, and Point Carbon’s project database—which, however, contains both CDM *and* JI projects—lists 1,516 proposed projects, with 361 having reached the PDD stage.²⁸ So there are certainly more projects to come, though assuming a three- to four-year start-up time from approval and an uncertain post-2012 scenario, any project aiming to get even five years of credits would have to be on the drawing boards by now. Also to be considered is that many of the approved projects will not deliver their expected CERs, either because they fail to secure financing or because their operating projections are off.²⁹ In the end, it does look as though there will be unfulfilled market potential for CDM-generated CERs.

²⁶ The closest thing to such a justification is an affirmation in Decision 14/CP.10 that small-scale afforestation and reforestation projects under the CDM “should directly benefit the low-income community and individuals that are project participants.”

²⁷ UNEP-Risø, *CDM Sustainable Development Impacts*, Roskilde, Denmark, 2004.

²⁸ *CDM & JI Monitor*, 3 May 2005.

²⁹ The first available monitoring report under the CDM, for the Ulsan HFC₂₃ project, came in at only 30% of projected mitigation over the first monitoring period.

We can also consider the size of the CER market in light of the *needs* for CDM-like investment. To put it into context, the International Energy Agency projects that between 2003 and 2030, almost \$8 trillion will be spent on energy infrastructure in developing countries, with annual investment in China alone averaging 85.2 billion.³⁰ If the objective is to influence the development of this infrastructure in an environmentally friendly direction, the scale of CDM investment will have to be in some sense commensurate with the scale of traditional investment.

A small CER market is a development issue and an investment issue. It is a development issue because more CDM projects could mean more of the vital development dividend described above: more side benefits in terms of quality of life, local environmental improvement, and evolution toward a more sustainable energy regime in developing countries. If we can find ways to vastly increase the supply of CERs, it will mean a greater delivery of the development dividend (even if that dividend remains more diluted than we would like). It is an investment issue because it may be that the current configuration of the regime keeps the market small by deterring potential investment.³¹ A recent IETA report lays out a number of difficulties with the CDM that they argue work against the objectives of the Kyoto Protocol by doing so.³² These include concerns about lengthy and complex approval processes, including the thorny issue of defining additionality (These issues are dealt with in greater depth below).

These concerns may only get worse over time; the current approval system is straining at the seams dealing with just 92 validations. If we take the current roster of projects as indicative of the typical project size (with an average of 0.29 Mt CO₂e per year) and, as above, assume a demand for CERs of 217 – 640 Mt CO₂e per year, the EB would have to approve between 750 and 2,200 projects in the first commitment period to meet the annual global demand for CERs.³³ The majority of those approvals would have to take place over the next two years—an impossible scenario under the current arrangements.

The willingness of investors to embark on lengthy and costly emissions reduction projects is also being impacted by the level of uncertainty about the future of the climate regime post-2012. The success of a second commitment period is dependent on the engagement of the United States and high-emitting developing countries. Events at COP-10 indicate that the US is not prepared at this point to consider new commitments that might be perceived as restraining its economic development. More positive indicators may be seen within the actions of the developing countries. High-emitting countries such as India, Brazil and China are taking actions to reduce their emissions, and may be interested in at least informally discussing issues related to building a post-2012 global regime on climate change. Continued decoupling by China of its fossil fuel consumption from its economic growth will provide a critical model for other developing countries.

³⁰ International Energy Agency, *World Energy Investment Outlook 2003*, Paris: IEA.

³¹ Alex Michaelowa and Frank Jotzo, “Transaction Costs, Institutional Rigidities and the Size of the Clean Development Mechanism,” *Energy Policy* (33), 2005: 51 – 523.

³² Robert Dornau and Andrei Marcu, “Three Years After Marrakech: Lessons Learned from the Clean Development Mechanism,” International Emissions Trading Association, November 2004.

³³ A similar calculation in 2004 (with only 11 projects in the pipeline and assuming demand of 428 Mt CO₂e in 2010) yielded an estimate of 1,700 projects needed. See Joseph Kruger and William Pizer, “The EU Emissions Trading Directive: Opportunities and Potential Pitfalls,” Resources for the Future Discussion Paper 04-24, April 2004, p. 32.

In considering how the CDM might be remodelled in order to foster a richer development dividend, we need to be careful that our recommendations do not steer the CDM into territory that makes investors even more uncomfortable with the process. Indeed, ideally we would find win-win solutions that would take us in entirely the other direction.

2.4. The Distribution of CDM Projects

The final concern to be addressed is that CDM investment is being directed primarily to only a handful of developing countries. Table 1 and Figure 4 show a cluster of CDM investment in Brazil primarily, with major investment also in India and Chile; these three together make up more than half of all the projects in the pipeline, with 70% of the expected CERs. It is noted above that of the 49 least-developed countries as defined by the UNFCCC, only two (Bhutan and Bangladesh) have projects in the pipeline, and they have only one project each. The only African project in the roster is a single effort from South Africa, which is a middle income country.

This trend runs counter to the intentions of the Parties, who at COP 7 stressed “the need to promote equitable geographic distribution of clean development mechanism project activities at regional and subregional levels.”³⁴ It also runs counter to a notion of sustainable development that has a global, rather than a local, perspective.³⁵

It may be that a skewed distribution of CDM investment is unavoidable. The CDM is, at the end of the day, a vehicle for foreign direct investment (FDI), which flows in predictable patterns to destinations with a number of widely understood prerequisites: a stable macroeconomy, low political risk, adequate infrastructure, access to large domestic and regional markets, strong domestic institutions and bureaucracy, etc.³⁶ So it may not be surprising to see CDM investment clustered in much the same way we see other forms of FDI clustering around attractive hosts.³⁷ Of course, the CDM has unique characteristics—such as the over-riding need for an effective DNA, a clear definition of sustainable development, and so on—that shape its needs differently from traditional FDI. This may account for the observed divergence from expected patterns, which has seen strong flows to Latin America and India, and relatively few to China.³⁸ Africa, however, is relatively bereft of both traditional *and* CDM investment.

There have been various attempts to deal with this problem. The World Bank’s Community Development Carbon Fund (see Box 3) has a remit for geographical distribution, but has struggled to meet it (for example, as of this writing it is very low on African projects). It has, however, succeeded in helping start CDM projects in a number of least-developed countries.

³⁴ Decision 17/CP.7: Modalities and Procedures for a Clean Development Mechanism as Defined in Article 12 of the Kyoto Protocol.

³⁵ Saleemul Huq, “Applying Sustainable Development Criteria to CDM Projects: PCF Experience.” (PCF Report 10), Prototype Carbon Fund, World Bank. 2002.

³⁶ Aaron Cosbey, “Foreign Investment: Making it Work for Sustainable Development,” International Institute for Sustainable Development, September 2002.

³⁷ Jake Werksman, Kevin Baumert and Navroz Dubash, “Will International Investment Rules Obstruct Climate Protection Policies?” *Climate Notes*, World Resources Institute, April 2001.

³⁸ John Drexhage, “The Role of Development Assistance and Investment Flows,” in Taishi Sugiyama *et al.*, *Where to Next? Future Steps of the Global Climate Regime: Final Report*, International Institute for Sustainable Development (forthcoming).

As well, there has been a great deal of work supported by official development assistance, UN organizations and multilateral development banks in building capacity for CDM in host countries, focused on creating effective DNAs, regulatory frameworks and so on.³⁹ As this work continues and bears fruit we can expect to see a broader range of host countries in the CDM project roster.

The key questions to be addressed is whether there is any way to amend the CDM, or encourage actions by non-governmental actors, so as to increase the distribution of projects to the least likely recipients, or whether perhaps some new mechanism is needed. Another option, of course, is for such countries to simply focus on attracting traditional FDI and working toward sustainable development outside the CDM framework, and for the Parties to concede that distributional equity is an important goal at which they will achieve only measured success.

³⁹ *Ibid.*

3. Understanding the Challenge

3.1. *Developing Country Perspectives*

From the developing country perspective, the CDM is seen as a market-based mechanism, with concomitant expectations of technology transfer and investment flows from Annex I countries to developing countries. Based on interviews conducted for this project as well as literature review, this section surveys developing country perspectives on the success to date and current trends with the CDM with respect to achieving its sustainable-development related objectives.

3.1.1. Strengths and Limitations

CDM and FDI

Chapter 2 described a CDM market that is but a fraction of its originally envisioned size, primarily due to the rejection of the Kyoto Protocol by the United States and competition from International Emissions Trading (IET) and JI. As noted there, some have predicted that the global carbon market will be dominated by ERUs from JI projects and excess AAUs (70-92%).⁴⁰ If such is true, it argues for developing countries to approach the CDM with less than euphoric expectations, particularly if larger countries such as India and China have the ability to corner the market.

In the end, it must be asked what the CDM offers compared to traditional FDI in developing countries. To put it into perspective, even if India captures only 10 percent of the global CDM market (not an unreasonable assumption – it accounts for 15% of projects and 23% of CERs in the current pipeline), the resulting annual revenues would be about \$100 million, at the current prices of CERs. It is estimated that foreign direct investment in India is about \$4.5 billion, though much of it is in the information technology sector (in comparison China gets about \$50 billion FDI, primarily in the capital intensive sector). While other sources of investment and income are clearly of greater volume, CDM funds are not completely insignificant, particularly in resource constrained economies, and given that the recipient sectors are not traditional recipients of large volume FDI.

Of course this arithmetic may not hold for other countries that are less likely to attract a significant amount of CDM investment. A pragmatic assessment is needed in such countries as to whether it is better to invest in establishing a CDM regime, or to invest in creating an overall improved environment for FDI.

CDM and Sustainable Development

In Chapter 2 it was noted that the global carbon market is currently dominated by several large non-CO₂ projects based on industrial processes (i.e., HFC, N₂O) and landfill gas capture. As noted in Section 2, such projects comprise 74% of the current CDM market (a proportion that is expected to increase), thanks to their high GWP leverage, providing a large volume of CERs to meet the expected growth in demand in the carbon market. However, developing countries have widely

⁴⁰ World Bank, Government of China, GTZ, SECO, *Clean Development Mechanism in China: Taking a Proactive and Sustainable Approach*, June 2004.

differing potential to profit from such projects, and as such widely differing stances on their merits as CDM projects. The development of HFC projects under the CDM in particular has sparked substantial debate among the developing countries over the mechanism's contribution to sustainable development.

Developing countries like Indonesia that see the CDM as a narrow *development* mechanism tend not to favour such projects. The market to date has not been effective, in their view, at channelling funds into projects with high sustainable development benefits. In part this is due to low CER prices, which mean that the market incentive from CDM is not adequate to tilt the balance in favour of projects with greater sustainable development benefits, such as renewable energy systems.

In combination with appropriate government policies, however, CERs have the potential to play a vital role in promoting projects with significant sustainable development co-benefits. China has experimented with such policies having indicated, for example, its intention to tax the revenues from HFC CDM projects and utilise them for promoting sustainable development activities within the country.⁴¹ India, on the other hand, is adopting a market-based approach and has no such provisions. Project proponents are only responsible for meeting the interim criteria developed by the Indian DNA, which requires CDM project to provide social, environmental, economical and technological benefits as a condition of granting host country approval.⁴²

The debate in the end will tend to come back to the host country approval processes, since the onus for approving CDM projects from a sustainable development perspective lies with the host country. The major challenge in designing sustainable development criteria is the wide variance of priorities among and within developing countries. Qualitative factors dominate in assessing sustainable development needs and priorities, making it a difficult task to establish effective quantitative sustainable development indicators.

⁴¹ Provisional Measures for the Administration of the Operation of Clean Development Mechanism Projects (Issued by the State Development and Reform Commission, the Ministry of Science and Technology and the Ministry of Foreign Affairs with Order No. 10 on May 31, 2004. Effective from June 30, 2004.) : Chapter 5 - Article 24

⁴² See http://envfor.nic.in/divisions/ccd/cdm_iac.html.

Sectoral Issues

Three sectors in particular are seen as performing at less than their full capacity to date: industrial energy efficiency and power sector projects; the renewable energy sector; and small scale community projects. Industrial energy efficiency and power sector projects in developing countries have huge potential for GHG reductions due to current levels of inefficient operation, obsolete technologies, and limited or no access to funding and clean technology transfers. Although few proven business cases are emerging under CDM, energy efficiency both at the industrial and at the power sector level offers good prospects. Competition from other types of CDM projects is clearly not the only factor contributing to the lack of projects in this sector, so further analysis of the obstacles would be useful.

The renewable energy sector has responded well to the CDM; Figure 2 show that it accounts for over 65% of the projects in the current pipeline.⁴³ Such projects are regarded by many as providing some of the greatest sustainable development benefits. However while the project numbers are high, the volume of CERs produced is disappointing at just 25% (Figure 3). As well, accelerated regulatory reforms in some developing countries dampen the prospects for renewable energy CDM projects where the new rules mandate the use of renewables. In India, for example, such use is required under the new renewables portfolio standards, making it hard to show that renewables projects are additional, rather than business as usual.

Small-scale community-based projects command perhaps the least attention from investors. Such projects include energy efficiency in small- and medium-size enterprises (SMEs) and rural electrification projects. Few of these sorts of projects are commercially viable at the present low carbon prices. Community-based CDM projects offering high sustainable development benefits, however, may be able to find buyers ready to pay premiums for the CERs they produce. Most developing country analysts agree that, though they are constrained by limited mitigation potential, small-scale CDM projects need to be promoted on a wider scale to demonstrate their sustainable development benefits and to enhance their potential for replication.

The under performance of projects in these three sectors may also be tied to the current uncertainty about the future of the CDM in the post-2012 period. This uncertainty is spurring project development in sectors where there are short gestation periods, to ensure that credits can be earned within at least a seven-year time frame

⁴³ In order of importance, they are: hydro, biomass, biogas, wind and geothermal.

The International Regulatory Framework

At each step of the CDM project cycle (see Box 4) there continues to be ambiguities in interpretation and unresolved issues. Increased efficiency of the process will benefit developing countries by making CDM projects more attractive to investors. In this respect the perspective of developing countries on the CDM regime has some similarities to that of the private sector, surveyed in the next section. Some of the key developing country perspectives on the CDM project cycle are analysed below.

Box 4: The CDM Project Cycle

Project design: The project proponent must describe the project in a Project Design Document (PDD). Requirements include: approval by host country as contributing to sustainable development and demonstration of additionality.

Approval of new methodologies: If the project uses a *new* methodology for calculating baselines, it must be submitted for approval to the methodology panel before the project may be validated.

Validation: An independent consultant (a designated operational entity) accredited by the EB reviews the PDD and certifies that it meets the requirements as set out by the EB.

Registration: The EB reviews the project and, if all is in order, formally registers it as a CDM project.

Monitoring: The project activities and results must be monitored on an ongoing basis according to the plan submitted in the PDD.

Verification/certification: A DOE verifies through the monitoring process, and by an ex-post review, that the project met certain mitigation goals. Its written assurance to that effect is certification.

Issuance of CERs: After review, the EB issues the appropriate number of CERs to accounts of the host country and project proponent.

The limited number of approved methodologies is a bottleneck for project developers preparing PDDs. On the other hand, consolidated methodologies approved by the CDM EB may be difficult to apply in a developing country context due to data constraints. This concern primarily arises from the fact that the consolidated methodology subsumes a level of detail and understanding of the power sector that does not exist in many developing countries. There is a need to balance the detail of the data to calculate the operating and built margin, and the availability of such data. In many countries such updated and authentic electricity generation and fuel data is either not available or not easily accessible, making it incumbent on the DOE to use its discretion as to whether the project participant has made its best effort to obtain the required data.

Demonstrating additionality based on the tool approved by the EB is perceived as being complex, though establishing environmental additionality alone is viewed as adequate by developing countries. Project developers may have reservations about disclosing project financial details required to show

additionality on a financial basis. Further, as suggested by the tool, availability of adequate documentary evidence showing that CDM revenues have guided investment decisions may constrain many projects already initiated. Moreover, additional data and analysis requirement for demonstrating additionality using this tool would add to the transaction costs.

Reflecting the seriousness of developing country concerns on additionality, COP10 recalled the CDM EB decision that, “the use of the ‘tool for the demonstration and assessment of additionality’ is not mandatory for project participants.”⁴⁴

Validation of the PDD by DOEs greatly influences the transaction costs of a project. Most buyers opt for an internationally renowned (multinational, Northern) DOE, which will charge rates that are high from a developing country perspective. A number of barriers prevent the emergence of Southern competitors to the established DOEs, including the cost of accreditation establishment, competition with international DOEs and the liabilities attached to validators. It worth noting that international DOEs currently engage their counterparts (branch offices) in developing countries for validation by building their capacity for the tasks at hand.

Some have suggested that less frequent verification and certification of emissions reduction would lower transaction costs. But this change might also reduce the market value of the resulting CERs, as buyers might discount them because of higher risk of non-delivery.

Other obstacles

Revenues from the CDM are not yet recognised by most national financing institutions (FIs) for leveraging the underlying financing of CDM projects. Most developing country FIs have little or no awareness of the CDM, and thus have trouble valuing CER revenue streams. Low CDM revenues and perceived high CDM-related risks are other reasons limiting FI recognition of CERs. Capacity building in the lending sector could potentially help to improve this situation.

As well, the level of understanding of the CDM cycle varies across different stakeholders and countries, which inhibits the development of the market. Some of those surveyed felt that the capacity building programmes of several international donors were not adequate for addressing this problem, in part due to their lack of synergy. A coordinated approach would multiply the benefits of capacity building efforts by avoiding duplication and focussing on project development in key CDM sectors.

A lack of practical information on the eligibility criteria and national-level guidance on designing CDM projects means that project developers are often not sure whether their projects will be eligible under CDM rules. A key problem is that host countries’ sustainable development criteria are not always clearly enunciated.

3.1.2. Conclusions

A clear enunciation of the fate of the CDM beyond 2012 would go a long way toward maintaining and sustaining global efforts to establish this flexibility instrument. It would also help allay fears of unnecessary expenditures of both time and money in establishing elaborate criteria and institutional

⁴⁴ http://unfccc.int/files/meetings/cop_10/adopted_decisions/application/pdf/16_cp_1_2.pdf; page 2 point 9.

frameworks and undertaking capacity building exercises for CDM in host countries. Further, if the development aspect of CDM is to be enhanced through promotion of small-scale CDM projects or through community development projects or sectoral programs, the prognosis for such activities is critically dependent on an international understanding of the aim of the next phase of CDM/negotiations.

In this context, building trust among Annex I and non-Annex I countries is highly significant and perhaps recourse to CDM or a CDM-like mechanism can be seen as an important tool for doing so. It would help bridge the divide between developing country expectations of investments and technology transfer from CDM, and the developed countries' desire to have large developing countries take some action to mitigate climate change.

In the near term, however, the transparency and rigour in the regulatory framework that is being provided by the EB needs to be viewed in the overall context of the number of projects that might have to be registered by 2012 to meet the demand for CERs; it was estimated above that between 750 and 2,200 projects of average size would be needed. The current rate of approvals/registration of projects is perceived to be too slow, and the EB will soon have to accelerate its pace for the project development community to remain enthused about the CDM.

3.2. Investor Experiences

This section will survey the business perspective of the CDM, its role in providing sustainable development benefits for host countries, and how this objective might be enhanced. In this context, it is important to recognize that the overriding concern of these particular stakeholders is ensuring that the mechanism not become unattractive as an investment vehicle. On the contrary, any suggestions for reform should ideally make the CDM *more* attractive to investors, primarily by reducing uncertainties and transactions costs.

Section 2 noted that as the first commitment period approaches and binding caps are put into place, there will be a large demand for CERs. However, many in the business community view the current system as fundamentally unable to provide the necessary volumes of credits. If that is so, and if we assume—as seems likely—that a number of countries will not meet their targets through domestic actions alone, the alternatives would be the use of international emissions trading or joint implementation. IET is a straight exchange of permits, involves no investment, and would be no more effective than any other sort of transfer payment in fostering sustainable development. JI does involve investment, and *might* in fact foster sustainable development if done properly, but there are no requirements that it should do so.⁴⁵

As a foundation to the analysis that follows, it bears noting that most private sector actors see the objectives of the CDM not just in the terms spelled out in Article 12 of the Kyoto Protocol—sustainable development benefits and low-cost emissions reduction opportunities. They also understand it to be a mechanism for encouraging technology transfer (as per the Marrakech Accords), for promoting new technologies, and for involving developing countries in the international effort to reduce greenhouse gas emissions in a way that makes clear that environment

⁴⁵ An example of how to do JI in a way that fosters a development dividend is offered by the recent initiative of Energy & Environment Capital and AFK Sistema, which are starting up a carbon fund targeted at 500 million Euros to invest in Russian JI energy efficiency projects.

and economy need not be at loggerheads. As such, for many the CDM is seen as a precursor to future non-Annex I involvement at a more substantive level.

3.2.1. Strengths and Limitations

The private sector stakeholders surveyed were in some senses a group pre-selected to have positive views about the CDM, as all of them participate in the mechanism in some way. In general they felt that the CDM is a positive innovation in market mechanisms for achieving global environmental goods, particularly in the context of an international regime where such mechanisms are scarce. It was also generally felt that the CDM had good potential for demonstrating that environment and development in developing countries can be mutually supportive. Finally, the CDM was seen as a useful manner in which to facilitate new market development for environmental technologies in the South.

All that said, most private sector stakeholders also felt that the full potential of the CDM is not being tapped. In its current elaboration they saw high risk, great uncertainty, high costs and low payback – all the hallmarks of a poor investment proposition. But it needs to be stressed that those surveyed for this work are all engaged in the process, and believe strongly in its direction and potential. Their criticisms of particular aspects of the mechanism should not be taken as overall negativity.

The criticisms of the current state of affairs divide into two basic themes: the weak market for CERs, and the process of project approval. Both are examined in turn below.

The CER market is far from fluid, with low demand from a few buyers who in effect set prices. The result is a low price for CERs, which in turn creates a host of other problems. One, of course, is the low level of CERs supplied; given the transactions costs discussed below and a price for CERs of 5 – 9 Euros per tonne, running a project through the CDM is typically not a viable economic proposition. As well, the low price of carbon tends to select for projects developed by proponents with shaky financial and managerial abilities. Many projects in the current roster may have succeeded in selling the carbon, but are unlikely to ever get project financing.

All of those surveyed were unhappy with the process for project approval as it stands now. As a generality, the concern was that the current structure reflects relatively little understanding of the realities of business. The specifics of those concerns break down roughly into five areas:

Time delays: the amount of time from the submission of a project to the final registration is argued to be unacceptably long. This is another force that tends to weed out strong viable projects (which cannot suffer such delays as there are pressures for them to get going in one for or another independent of the CDM process) in favour of those that are more questionable.

Uncertainty, unfairness of process: some proponents argue that there is not enough certainty about what is required for project approval, noting in particular uncertainty on what methodologies will be accepted, and on whether any given project will meet host country sustainable development criteria (which are often vague). Several objected to the review process that can be triggered after the methodology is approved, with no requirement for explanation.

Poor communications channels: many surveyed felt that the lack of communication between the project proponents and the EB and Methodology Panel (MP) was problematic. As a result, detail problems that could have been resolved in short order often became time consuming. As well, it was felt that there was not enough explanation for EB and MP decisions, and no mechanism for requesting such details. Finally, many noted the lack of formal channels for business input on EB decisions and deliberations – a weakness in their eyes, and a departure from the regulatory model followed in most OECD countries.

Additionality: The consolidated tool for additionality, while seen by all as a positive step toward greater certainty, was also seen by most as conclusive evidence of the cultural gulf between the EB and the private sector.

- Step 1, for example, gives proponents the option of demonstrating that host country regulations are so poorly enforced that they should be ignored in considering whether a particular project is additional. That is, even where a practice is required by law, it could be considered not to be business as usual if the law is never enforced. In reality no investor would make such a public argument about the state where it hopes to take up economic residence.
- Several key elements of the tool are simply invitations for proponents to perform creative writing or creative accounting. The financial additionality criterion (step 2) is an example of the latter, asking proponents to show that CERs worth \$3/ton will tip the scales to make projects financially viable. Outside of HFC recovery projects, very few if any will be able to demonstrate this; any project that would actually qualify would be considered fundamentally too weak in the eyes of investors and financiers. Also, it goes against basic business practice to make this kind of financial information public, where competitors can find it.
- Barriers analysis (step 3) is seen as similarly strange from a business perspective. Overcoming barriers is what business does; it is what separates the winners from the losers. It seems strange to reward firms for painting a picture of barriers they cannot overcome.
- The *impact of registration* step (step 5) asks the proponent to demonstrate that registration as a CDM project will overcome the barriers or financial hurdles to allow the project to proceed. This sounds fine in theory, but in fact no investment decision can be broken up into component parts in this way, with any one being identified as the factor that makes the critical difference. Again, the demand here is for storytelling, which can be and will be done as required, but is a poor basis for business involvement in the Kyoto Protocol.

Cost of DOEs: Several of those surveyed, particularly from developing countries, argued that the costs of DOEs were prohibitively high. They must typically be hired from developed countries to make site visits, and they charge developed country rates to proponents with weak currencies.

The combined result of all these factors is high transactions costs, incurred at the front end of a project before there is any revenue stream, balanced against low paybacks occurring far in the future. The overall result will be to weed out any projects that do not produce large CER revenue streams (one source suggests the cut-off is around 1 million tons CO₂e). This should be a concern if it means that smaller projects with high sustainable development benefits are being in effect barred from participating.

Some of these problems can be viewed simply as growing pains that will disappear in time. For example, as methodologies and consolidated methodologies are developed for a variety of activities, there will be greater certainty for prospective investors in those sectors. And as the market for CERs matures, supply and demand will increase, leading to greater liquidity and likely raising prices.

Certainly this dynamic will be important in improving the CDM from investors' perspectives. But if the status quo remains, there will still be a number of more systemic problems to address, including most of the process concerns.

It is worth noting that there was, mixed with constructive criticism, staunch defence of one element of the CDM that is strongly criticized elsewhere in this section: HFC recovery projects and other low-cost non-CO₂ projects. Private sector respondents argued strongly that these projects should not be banned outright, on a number of grounds. First, they are performing a valuable service and reflecting the overall objective of the Kyoto Protocol by reducing greenhouse gas emissions in a highly cost-effective manner. Second, they are effective in engaging developing countries in the system. Third, like all low-hanging fruit, these opportunities will be more abundant early on, after which the regime will move on to other types of projects.

3.2.2. Conclusions

A number of changes were recommended to address the problems cited above.

1. Financial support for the work of the EB and the MP must be greatly increased. These panels should become fully professional bodies. Among other things this would greatly relieve the bottleneck that is the current approval process;
2. Formal channels of communication should be opened between project proponents and those considering their proposals. It was seen as absurd (and, more important, time-consuming) that the MP, for example, could not directly ask proponents questions of clarification. As well, a business advisory board should be established with a mandate to assist the EB and MP in their deliberations.
3. The EB needs to be more flexible in its approach to approvals. At the current pace, with the expected increase in volumes, the bottleneck pressures will become prohibitive. A more flexible approach might result in some business as usual projects being registered, but this will be outweighed by the value of demonstrating to developing countries that environment and development are not necessarily at loggerheads. Also to be counted on the plus side would be the potential of the CDM for promoting and transferring new technologies.
4. We need to move way from bottom-up approaches to determining baselines, and toward sectoral and policy-based approaches at the national and international levels. The project-by-project model is simply too cumbersome, and will not produce the volume of CERs needed.
5. Development finance agencies need to understand what the CDM is, and to invest more resources and capacity in its development. Multilateral development banks should inject liquidity into developing country capital markets, with the express condition that lending be earmarked for priority climate change related issues as identified by developing country governments.

6. Governments need to create the demand for emissions reductions that will make this a mature market, particularly given the critical impact of the US withdrawal. Foot dragging by some major Parties on the details of their plans for purchasing credits, and for domestic offset schemes, simply leads to uncertainty.

3.3. Donor Perspectives

Within Annex I national governments, support for the development of the CDM market has typically occurred through two channels—development agencies and project support offices. Development agencies have focused largely on ODA-funded capacity building activities that facilitate developing country participation in the CDM. As well, a number of Parties listed in Annex II of the Convention (OECD countries, excepting South Korea and Mexico) have established offices to provide local business interests with information regarding the CDM and to facilitate the development of projects. The extent to which Annex II Parties have engaged in either of these activities is influenced by national expectations regarding their need to purchase credits internationally. There is less activity in countries that expect to be able to meet their emission reduction targets predominately through domestic measures. The countries that have played a more active role in supporting the development of the CDM are the Netherlands, Denmark, Japan and Norway and Canada. CDM capacity development has also been supported by Austria, Belgium, France and Germany.

Multilateral organizations also continue to play an integral role in shaping the evolution of the CDM. The United Nations Development Programme and the United Nations Environment Programme are active in supporting capacity development activities in developing countries. A number of multilateral development banks, in particular the World Bank (see Box 5), are supporting the development of the CDM market itself through engagement with developing countries, developed countries and the private sector. At this time, the Global Environment Facility does not provide support for the CDM, either for project development or for capacity development.

Box 5: World Bank Carbon Finance

The World Bank Group has a number of funds providing carbon finance, or funding to purchase emissions reduction credits (mostly CERs and ERUs). The Bank acts as a trustee of funds from private sector and/or government subscribers, who will receive a pro rata share of the credits each fund produces.

Prototype Carbon Fund: The first carbon fund, playing a pioneering role, the PCF is a \$180 million fund with 17 private and 6 public investors. Augmented by the PCFplus fund that builds government capacity to manage the projects.

Community Development Carbon Fund (see Box 3): \$128 million public/private fund launched June 2003, focussed on small-scale projects, small developing countries, and high levels of community-level co-benefits. Augmented by the CDCFplus fund that builds governmental capacity to manage the projects.

Bio Carbon Fund: \$44 million public/private fund launched in May 2004 as a prototype to demonstrate and benchmark the use of carbon finance in forestry and agriculture sinks projects with high levels of co-benefits. Some of these projects are ineligible under CDM rules, but will be used to satisfy voluntary mitigation commitments.

National funds: The Bank acts as trustee for funds established with national governments, designed to assist those governments (and in some cases private sector nationals) in fulfilling their mitigation commitments. There are currently funds operating for the Netherlands, Italy, Spain and Denmark.

At the national and international level it is therefore possible to separate respondents into two groups: those whose primary focus has been on capacity development and those that have been more actively engaged in project development and working with investors and credit purchasers. The perspectives and ideas of these two groups will be treated separately in the remainder of this section.

3.3.1. Development Agencies and UN Multilateral Organizations

Multilateral organizations and bilateral development agencies share a number of common perspectives on the current status of the CDM and its future evolution. At present, their primary involvement is supporting capacity development activities in developing countries at the project and institutional level, including the creation and implementation of national sustainable development criteria. Their work tends to focus on the 8-12 countries expected to produce the majority of CDM credits.

This support is provided through a variety of channels, such as bilateral contributions, (e.g., the Canada Climate Change Development Fund), multilateral initiatives supported through donor contributions (e.g., UNEP-Risøe's CD4CDM project), and funding for non-governmental organizations (e.g., SouthSouthNorth). Bilateral donors' participation in CDM-related activities is concurrently shaped by agency-level development policies and objectives, by the orientation of national climate change policies, and by the stated needs of developing countries. These considerations influence factors such as the criteria by which support for CDM activities is assessed,

delivery mechanisms for support, the selection of priority countries, and the type of capacity support provided.

Strengths

Representatives of donor agencies noted that the CDM has been effective in increasing awareness of climate change and the importance of environmental concerns within national development strategies. It also provides a concrete example of how environmental problems can be solved through market mechanisms. The potential increase in foreign direct investment resulting from CDM investments was cited in particular as an expected positive outcome, as was technology transfer. It was further noted that the CDM has enabled the start of a carbon market and placed a value on emission reductions.

Some donor representatives mentioned specific successes that have been experienced in the implementation of biocarbon projects. These are seen as having provided greater sustainable development benefits to host countries. As well, it was noted that the presence of strong DNAs in some countries (e.g., India, China and Brazil) are at least in part the result of effective donor-supported capacity building.

Limitations

The dominant priority of bilateral development agencies is generally *adaptation* to climate change, with support for the CDM seen as a secondary activity. Adaptation is viewed as being more consistent with these agencies' development goals and priorities, such as supporting achievement of the Millennium Development Goals (MDGs – see Box 8). In some development agencies there is a perception that support for credit generation activities is inconsistent with achieving their overall goals and objectives – that facilitation of CDM projects falls outside the scope of their mandated activities. It was also noted that development agencies' have a remit that goes far beyond climate change activities. Other things being equal, they are more likely to directly finance projects, or project components, with high sustainable development benefits rather than trying to achieve these objectives indirectly through the CDM.

All that said, it was felt by some that as awareness of the CDM increases within development agencies, more interest will be expressed in seeing how it might be used to provide an additional source of support toward achieving sustainable development objectives.

A number of challenges were identified. Development agency representatives cited the current lack of capacity within developing country ministries to appreciate sustainable development and how to integrate CDM projects into existing structures, policy objectives and resources. It was suggested that developing countries need to create CDM project profiles that complement and serve as a tool for reaching their long-term sustainable development objectives. Otherwise, opportunities for synergy are wasted, and the CDM is unlikely to yield its full potential sustainable development benefits. A related observation is that where the CDM is not integrated into national planning processes, host countries are less likely to maintain ownership and ensure a country-driven approach to implementation. It was observed that a country-driven approach has been shown through years of development experience to be essential to ensuring that project benefits continue after external funding has been withdrawn.

Box 6: Unilateral CDM

Most CDM projects involve an investor from an Annex I country that agrees at the outset to either buy the resulting CERs, or to actually fund the project for an agreed share of the CERs. Figure 5 shows that 37% of the projects in the current roster (projects that are in the process of validation) do not follow this pattern, having no declared Annex I investor. These are being promoted by consultants or by host country governments that hope to sell the credits at some later date.

Including such projects in the CDM lets developing country proponents (such as governments and development NGOs) initiate projects that would not necessarily be attractive to investors at the outset – for example, projects with high development dividends that use uncertain technology or that are too small for outside many investors to bother with. Northern consultants are also major initiators/partners in such projects.

The EB in effect had to decide whether such projects were eligible for CDM status at its 18th meeting in February 2005, when it was asked to register a small-scale hydro project in Honduras (the Cuyamapa project) that had no declared Annex I investor. At that meeting the EB ruled that no Annex I investor was needed at the time of registration, opening the door to other similar projects.

A number of capacity concerns were raised. Primary among them was a lack of capacity within host countries' designated national authorities (DNAs). One respondent felt that of all the countries eligible to participate in the CDM, less than 15 are capable of running an approval process, and only five could be considered very strong. For example, disagreements within DNAs over how to interpret sustainable development criteria often slow down the application of these principles to CDM projects. High transaction costs and a lack of transparent institutional and legal frameworks in host countries were also cited as challenges. Limited capacity is also hampering the ability of some host countries to properly interpret decisions of the EB. A lack of capacity to develop unilateral projects (see Box 6), as well as a need to address knowledge gaps of investors and consultants, was also cited.

Concern was expressed as well regarding the burden associated with establishing the systems needed to participate in the CDM (e.g., formation of DNAs) that has been placed on (especially) lesser developed countries, particularly given their limited financial and human resources. Many countries have unrealistically high expectations about the benefits to be derived from participating in the CDM. It was suggested that some developing countries need help in understanding whether or not it will be beneficial for them to participate in the CDM. For some, it may be more appropriate to direct their attention towards adaptation concerns and broader sustainable development objectives (Box 7 discusses the apparent trade-off between adaptation and mitigation).

Respondents also expressed concerns about the evolution of the CDM market. There is a perception that most of the projects in development focus on generating a high volume of low cost CERs, at the expense of providing sustainable development benefits. It was suggested that some developing countries are focusing on maximizing the benefits received through the sale of CERs rather than on ensuring the provision of sustainable development benefits through the projects themselves. More specifically, concern was expressed regarding the potential inclusion of HFC projects within the CDM. It was suggested that should HFC projects be approved (which, as noted

above, they have now been), a greater proportion of investment would be directed toward these projects, rather than toward those that are perceived to provide host countries with more sustainable development benefits (e.g., renewable energy projects).

Box 7: Adaptation and Mitigation: A Trade-Off?

Venema and Cisse (2004) argue that there is no necessary trade-off between mitigation and adaptation. They offer a number of case studies of decentralized renewable energy investments that have contributed simultaneously to both goals. For example, in Senegal a project for decentralized photovoltaic solar power decreased the use of carbon-based fuels, achieving mitigation. It also increased the population's resilience in the face of climate change-induced drought, which would aggravate desertification and stress fuelwood and water supplies. Solar electricity meant that fuelwood and charcoal were not as critically needed for fuel, and that there was power to pump water from well points.

One respondent argued that in a market with low demand (and consequently low prices) for CERs, projects with sustainable development benefits will simply be too costly to be implemented – the returns will not cover the incremental costs of such projects.

These developments do not help make CDM a popular cause within donor agencies; providing cost effective emission reductions for developed countries is obviously not seen as part of their

mandate.

Other cited factors that militate against the CDM as a vehicle for sustainable development, and therefore against donor interest, included:

- The concentration of CDM investment in the more developed host countries;
- The lack of international experience in drafting sustainable development criteria, which leaves developing countries with few models and little guidance; and
- The limited number of Annex I countries that take sustainable development into consideration when establishing their carbon funds.

Respondents expressed uncertainty regarding the longer-term outcomes of the mechanism. Some felt that it is too early to judge the success or failure of the CDM in terms of its provision of sustainable development benefits, since projects have only just begun to be implemented.

Future Engagement

Development agencies generally do not see an expanded role for themselves in the promotion and implementation of the CDM, other than through their continued engagement in CDM capacity development. In that context, areas of work include assisting host countries to integrate CDM into national planning processes, and to assess whether projects are contributing to their long-term sustainable development.

However, for some, future engagement in these activities will depend upon an assessment of the CDM's contribution to sustainable development. Some bilateral agencies are questioning whether the funding they have provided is making a difference given the few CDM projects generated thus far and a perception that these have contributed little to achieving development objectives by which they are guided, such as the MDGs (see Box 8). If the CDM is viewed as providing few

development benefits, it is possible that Annex I development agencies will decide to withdraw from this process and redirect their financial support towards other needs (such as adaptation to climate change, or creating an attractive environment for foreign direct investment in general).

Box 8: The Millennium Development Goals

All 191 countries of the United Nations have pledged to meet the following goals by 2015:

- 1. Eradicate extreme poverty and hunger.** e.g.: Reduce by half the proportion of people living on a dollar a day.
- 2. Achieve universal primary education.** e.g.: Ensure that all boys and girls complete primary schooling.
- 3. Promote gender equality and empower women.** e.g.: Remove gender disparity in school participants at all levels of schooling.
- 4. Reduce child mortality.** e.g.: Reduce by 2/3 the mortality rate for children under five.
- 5. Improve maternal health.** e.g.: Reduce by 3/4 the maternal mortality ratio.
- 6. Combat HIV/AIDS, malaria and other diseases.** e.g.: Halt and begin to reverse the spread of AIDS.
- 7. Ensure environmental sustainability.** e.g.: Reduce by half the proportion of people without access to safe drinking water.
- 8. Develop a global partnership for development.** e.g.: Address the least-developed countries' special needs.

Future involvement in the CDM by development agencies has been further clarified by the 2004 recommendation of the OECD-Development Assistance Committee regarding the eligibility of ODA expenditures under the CDM. The committee recommended that “the value of any CERs received in connection with an ODA-financed CDM project should lead to a deduction of the equivalent value from ODA.”⁴⁶ The recommendation also requires the Executive Board to receive affirmation on a project-by-project basis that any ODA used to finance a CDM project has not been diverted from an alternative use.⁴⁷ The recommendation has provided development agencies with a better understanding of the boundaries between ODA-eligible and ODA-ineligible support for the CDM.

Although there was generally not much enthusiasm for the CDM expressed by donor representatives, at least one participant felt that if it is strengthened or modified, the mechanism could be a very useful tool for stimulating development in host countries. To accomplish this goal, it was suggested that Parties will need to establish clear and simplified processes (particularly for small scale projects), provide targeted capacity building based on a clear understanding of where skills are missing, and improve the approval process.

⁴⁶ Organization for Economic Co-operation and Development. “ODA Eligibility Issues for Expenditures under the Clean Development Mechanism”. A Proposal by the Chair of the Development Assistance Committee. DAC/CHAIR(2004)4. DAC High Level Meeting, 15-16 April 2004. p.3.

⁴⁷ *Ibid.*

3.3.2. Project Support Offices and Multilateral Development Banks

National project support offices have been established by some Annex II Parties to facilitate and encourage international credit purchases through either JI or CDM by governments and the private sector. These offices typically provide financing to companies for feasibility studies, partner identification, and the development of baselines and monitoring plans. They also may establish agreements with host country governments, provide technical advice, assist with the establishment and strengthening of DNAs, or directly purchase credits. In general, their primary objective is to help ensure that their home countries are able to meet their emission reduction targets.

Multilateral Development Banks similarly are engaged in directly supporting CDM project development. Through initiatives such as the Prototype Carbon Fund, international financial institutions (IFIs) have helped the private sector and governments in purchasing CERs, and helped host countries to gain experience in the CDM market. There is considerable variability in the level of engagement of IFIs in the CDM. The World Bank is the principal leader, with the Asian Development Bank also being actively engaged. Others, such as the Inter-American Development Bank, are involved to a lesser degree.

Strengths

Representatives of project support offices pointed to a number of benefits accruing from CDM projects. Some felt that each CDM project provides sustainable development benefits to a degree by contributing to real reductions in greenhouse gases, increasing awareness of climate change, transferring technology, and creating opportunities for new partnerships and investments in developing countries. The concept of combining emission reduction targets with financial incentives was identified as a truly unique opportunity for countries to engage in a new realm of international environmental cooperation. It was also suggested by one respondent that the CDM could encourage companies to comply with international norms and standards.

Limitations

From the perspective of project support offices and IFIs, the high transaction costs for companies are seen as a principal constraint on the evolution of the CDM. One respondent noted that these costs amount to about US \$200,000 per project, while another stated that they make it too expensive to seek CDM status for any project that produces less than approximately 0.5 Mt of emission reductions. It was recognized that transaction costs will naturally be higher for the early developers, and will decline as experience with CDM methodologies and design grows. However, it was noted that a number of costs are fixed (such as the registration fee), and that overall cost will remain an important problem.

The project-by-project approval by the EB was also identified as a limitation. This process was found to be too slow, reducing the viability of the CDM market. The built in turn-over of Executive Board members also poses a problem, since it results in a continual loss of expertise at a critical time in the development of the CDM. Stakeholders suggested that now is the time to rethink the management of the CDM.

An additional key challenge for project developers is accessing local financing. Banks and other domestic financial institutions are unlikely to support CDM projects due to their limited knowledge of this mechanism and their tendency toward short-term lending. Access to financing is particularly problematic for small-scale projects. The Community Development Carbon Fund established by the

World Bank has been created in part to help address this situation, but was viewed by one contact as doomed to always be a niche product.

Problems with the sustainable development criteria established by host countries were also noted. Some developing countries have established systems that are unclear and/or complicated, reducing their attractiveness to investors. This lack of host country capacity also hampers their ability to integrate departmental priorities to ensure CDM benefits for the entire country.

Representatives also noted that some developing countries may be approving projects that are expected to provide few sustainable development benefits, simply to attract new investment. The HFC projects currently under review were cited by several people as an example of these types of initiatives. At the same time it was recognized that developing countries have the sovereign right to determine which projects meet their criteria for sustainable development, and that this right needs to be respected.

Future Directions

Although there is some optimism regarding the future success of the CDM, some project support office and IFI representatives questioned whether the private sector will continue to be interested in the CDM given its high transaction costs, lack of clear criteria, and the complicated processes established by DNAs. Several were also concerned that the CDM is unlikely to provide substantial development benefits to host countries.

To address this situation, changes to the current process need to be made. Moving from project-by-project to more sector based or policy based approaches was supported. New avenues for providing financing to project developers in host countries need to be found. As well, there is a need to increase the stability and effectiveness of the EB to ensure its proper functioning.

As well, it was suggested that Annex II governments could play a stronger role in creating demand for CDM projects expected to provide higher benefits to host countries. The CERUPT program of the Netherlands, for example, has found that by offering a premium price for CERs from renewable projects, they have been able to increase the number of these projects in their portfolio to 75%. The Japanese government is reported to prefer energy efficiency projects in its CDM portfolio, and wants to limit HFC and N₂O projects (seeking to limit the latter to one sixth of its total purchases of CERs).⁴⁸ It was noted, however, that governments have greater flexibility than the private sector in determining the type of CERs they are willing to purchase, not being as driven by the bottom line.

Interviewees also expressed concern regarding the current uncertainty of the global climate regime. In the absence of clear direction regarding the post-2012 regime, particularly as it relates to the continuance and structure of the CDM, the viability of the current system is undermined and could implode due to a lack of financial flows. At the same time it was recognized that the success of the CDM in demonstrating the viability of and benefits from emission reductions by developing countries is critical to engaging these countries in discussions on a post-2012 climate change regime.

⁴⁸ “News in Brief,” *CDM and JI Monitor*, April 5, 2005.

3.3.3 Conclusions

Overall, there is a concern that Annex I and host countries have lost sight of the sustainable development component of the CDM. There is a perception that some investors are focused solely on obtaining a large number of low cost CERs, and that some host countries are more interested in ensuring access to a new source of foreign direct investment than putting in place the policies and systems needed to promote sustainable development benefits.

At the same time, bilateral development agencies that see a limited connection between the CDM and their overarching development objectives are increasingly likely to reduce their financial commitment to this mechanism if substantial development benefits for host countries do not emerge. As the capacity development provided by these organizations has proven key to the evolution of the CDM to date, reduction in this support would further weaken the CDM's viability.

3.4 *Perspectives of Research Organizations and NGOs*

Research organizations and non-governmental organizations have played an integral role in the evolution of the CDM. Representatives surveyed have conducted a wide range of research, capacity building, market analysis and project development/evaluation activities, and were drawn from a wide variety of sectors/orientations, including developing country NGOs, research-oriented groups, project developers, business-oriented groups, critics of the basic mechanism, etc.

This section will present a range of perspectives from this group of participants in the global CDM regime. Some felt the mechanism should be judged on the extent to which it finances new reductions without “free riding” on commercial funds or ODA, and also by the number of (developing) countries able to meaningfully participate. Others felt it should be measured by the degree to which it increased understanding of emissions trading, knowledge of developing and implementing emissions monitoring and accounting systems, and integration of emissions reductions evaluation within corporate decision making—in other words how firmly it set the foundation for a future regime of worldwide emissions trading.

Some NGOs and civil society groups oppose CDM altogether, viewing it as a loophole for Annex I polluters. Others suggest that it must be considerably restricted or reformed from its current state in order to deliver sustainable development. CDM Watch, for example has suggested there be ‘quality restrictions’ imposed on potential CDM projects, aimed at preventing subsidization of unsustainable technologies or supporting corporations that are viewed as being “anti-Kyoto”.

3.4.1 Strengths

The development and initial execution stages of the CDM have created a number of benefits for stakeholders, and made progress toward the overall aims of the Protocol and the Convention, including:

Mainstreaming Climate Change: Respondents noted that discussion of and experimentation with the CDM has helped the process of mainstreaming climate change issues in national policy development, though in most countries this process still has far to go. As well as increasing corporate awareness, the CDM has also served to build awareness within developing countries of the value and benefits of mitigation activities, thus increasing understanding of the issue of climate

change. Finance and other influential departments are becoming increasingly aware of climate change impacts, liabilities and opportunities, and this is opening the door for the issue to become part of government decision making processes. The mechanism has the long term potential to affect the absorption rate of technologies/energy forms that serve to shift energy paths in developing countries. It may also represent a bridge toward eventual targets for some countries.

Valuing reductions: The CDM, and more broadly the Kyoto Protocol in general, have brought the challenge of GHG emissions and environmental performance out of the isolated offices of firms' environment units, and into the realm of those wielding far greater decision-making and spending power. It has created incentives for developed countries to subsidize investment in clean technology in the South. And it has created possibilities for financially attractive projects that also reduce poverty.⁴⁹

Process/system design: Respondents highlighted several procedural accomplishments. These included the open and participative nature of the methodology development, and the improvements to the approval process as actors learn by doing. One respondent praised the dual step process of methodology and project approval, indicating that this model will pave the way for faster approval and registration going forward. In contrast to the private sector perspective, a number of environmental NGOs applauded the retention of the concept of additionality to date, emphasizing that this approach must not be diluted in the future.

3.4.2 Limitations

While many of those surveyed feel the core concept is sound, they also noted that the CDM has experienced a range of growing pains over the past several years. Respondents suggested the need to address some of the difficulties with the process and the application of the rules now, to ensure that the CDM is a viable tool for this commitment period. Lessons learned and problems identified in this phase of CDM would then be used to build a more effective mechanism as part of a post-2012 regime.

One respondent expressed disappointment that the focus on the provision of economic benefits has far outweighed concern for the delivery of social benefits. Another conveyed concern that rather than emphasizing reduction of carbon, many projects have instead focused on decreasing the release of methane, nitrogen oxide and HFCs (projects viewed by many of those interviewed as providing few sustainable development benefits). It was noted that the proposed methodologies have not spanned most available sectors, which may be in part due to single ministry involvement and lack of information sharing between departments in host countries.

Sustainable Development: Many respondents talked about a basic tension in the CDM, arising from its dual objectives. Some argued that it is not possible for the CDM to both provide sustainable development benefits and function as an effective market mechanism for delivering low-cost reduction options. One asserted that Parties need to revisit and rethink the basic objectives of the mechanism. As it stands, this respondent felt the CDM is not designed for delivery of sustainable development, and is unworkable in the long term.

⁴⁹ An example was provided of a housing project in South Africa that provides solar water heaters and will reduce 5500 tonnes of carbon annually. According to SouthSouthNorth, this project was rated as one of the best by Point Carbon.

In the same vein, some expressed concern that amending the CDM to try to boost development benefits might make it unmanageable, and unable to deliver on emission reductions. Several respondents, for example, argued for increased local ownership, planning and evaluation of projects. Others, however, cautioned that such measures might overload the CDM.

Some argued rather that the underlying cause for tension is simply that sustainable development is defined differently by local community members, national governments and global communities. Almost all had definite views on how sustainable development should be defined. One group of NGOs has actively campaigned for exclusion of the following types of projects because of sustainability concerns: sinks projects, large hydro projects (above 10 MW) (as well as small hydro projects not consistent with the principles of the World Commission on Dams), and coal projects.⁵⁰ Many opponents of including sinks under the CDM assert that large-scale plantation activities do not positively contribute to sustainable development. One respondent agreed, pointing to the danger of sinks allowances being taken up by large scale industrial exotic plantations. Another cautioned that it is difficult to judge the success or failure of the CDM in this area given the limited number of sinks projects that have been developed to date. Some respondents argued the need for greater inclusion of land use, land use change and forestry (LULUCF) activities within the CDM, questioning the decision to only include afforestation and reforestation activities because of the substantial sustainable development benefits that can be realized through projects that prevent deforestation.

Many respondents identified projects with direct links to local communities (e.g., small hydro, landfill-to-energy) as having clear sustainable development benefits. But almost all cited challenges as well with undertaking these types of community-level projects. As they involve stakeholder engagement processes, community-level projects by nature have higher costs and can take longer. Several interviewees agreed that these local-level projects have difficulties competing against projects such as HFC23 decomposition that have similar transaction costs, but which produce much higher reduction volumes. As well, incorporating local benefits

Box 9: The Gold Standard

The Gold Standard is a sort of ecolabel for CDM projects – an effort initiated by WWF to allow for a niche market in “high quality” CERs. Project developers voluntarily follow a more rigorous set of criteria and procedures than under the EB rules, and ask DOEs to verify that they have met the grade to be certified.

Gold Standard projects are assessed against a matrix of sustainable development indicators in the areas of environmental impacts, social and development impacts, and economic and technological development impacts. The only eligible project types are renewable energy (hydro must be small-scale) and energy efficiency. Requirements in areas such as baselines, additionality, impact assessment and public consultation are more demanding than for normal CDM projects.

The first two projects validated to the standard were approved as of this writing: a 90MW wind farm in New Zealand and a small-scale project to construct low-income energy efficient housing in Cape Town.

⁵⁰ See letters to a series of governments from a coalition of NGOs, posted at <http://www.cdmwatch.org/UK%20letter%20on%20CDM.doc>. Viewed Feb 25, 2005.

becomes difficult when PDDs are being developed by out of country consultants, as they lack understanding of local issues.

Others cautioned against broad assumptions about the types of projects that could bring sustainable development benefits. Small-scale projects should not be automatically equated with sustainable development benefits, it was cautioned. It was also pointed out that renewable energy projects are not necessarily ideal in this regard—for example, large-scale grid connected projects (such as wind) are often built in remote locations and do not tend to benefit local communities.

Several researchers/NGOs mentioned the World Wildlife Fund’s “Gold Standard” protocol (see Box 9), although perspectives varied from suggesting it as a reasonable measure of success, to emphasizing the unlikelihood that the vast majority of buyers would be willing to pay a premium price for Gold Standard CERs. A researcher from the CD4CDM initiative argued that “available studies do not suggest any simple relationship between the cost of a CDM project and its sustainable development benefits”.

Process/system design: NGOs involved in project development had several process-related concerns. They included excessive delays in methodology and project approval, and high transaction costs. It was argued that high levels of complexity (to ensure additionality) may lead to hesitancy to develop or engage in CDM projects, resulting in business as usual. As such, one respondent suggested letting a few free riders through the system might be an acceptable compromise for simplifying the approval process.

Distribution of benefits: Given the high costs and uncertainty characterizing the market so far, project developers have tended toward countries that have stable economies, large emission reduction potential and a predictable investment regime for CDM. Many of those surveyed agreed with the concern raised in Section 2.5 that CDM investment is not being equitably distributed.

Host country involvement: Respondents felt that host countries often lack the capacity and awareness needed to realize and assess sustainable development benefits from projects. Many potential benefits from the CDM do not accrue to private actors (project developers or investors), but instead are broadly beneficial. Many countries have weak or no criteria established that account for such benefits, and have received limited guidance on procedural options to help ensure that they materialize. For example, two mechanisms regularly used in developed countries—environmental impact assessments and stakeholder consultation—are not often mandated by host countries.

Some developing country researchers in particular argued for increasing strategic host country involvement in CDM by allowing for unilateral CDM initiatives. Several NGOs expressed a desire for such projects to be included in the CDM—a desire subsequently fulfilled by a recent EB decision (see Box 6).

Concern was expressed that some host countries are deterred from imposing strict sustainable development criteria for fear of turning away investors—a race to the bottom effect. Weaker criteria, other things being equal, lower the opportunities for development dividends. Others worried that the current system creates disincentives to adopting progressive domestic policies that reduce GHGs (either directly or indirectly), as these impact baselines and make it more difficult for projects to show additionality.

Investors/project developers: Those respondents involved in project development identified access to funding as a major challenge. Funds for renewable energy and small scale projects are particularly difficult to obtain. This was cited as an explanation for the small number of such projects, particularly when the proportionally higher transaction costs associated with these projects are taken into consideration. One respondent emphasized the importance of showing investors that community involvement can *lower* the costs of projects, if residents participate in measurement and monitoring of carbon stocks, for example. This suggestion would require modifications to the rules for small scale methodologies.

Role of donors: Researchers and NGOs viewed donor-driven capacity building initiatives in host countries as important to the development of the mechanism, but inadequate. They noted needs, for example, in training for application of CDM criteria, in translation of official documents into local languages, and in education on the rules and potential involved in developing CDM projects in the area of LULUCF. It was also suggested that donors could play a stronger role in providing the incentives needed to support financial investments in projects with good sustainable development benefits. A suggestion was made for greater integration of development tools (such as CDM) with the MDGs, to ensure that projects achieve long term benefits. Another respondent suggested donor countries should be willing to pay a higher price for CDM projects that provide significant development dividends.

3.4.3 Conclusions

The input gathered from research organizations and NGOs portrays a wide range of opinions on the experience of the CDM to date. This diversity is in part due to the heterogeneous nature of this group of stakeholders, which includes developing country based institutions, business oriented groups, researchers and advisors to government, critics of the basic mechanism, etc. Nevertheless, the responses provide useful insight into the key challenges facing the mechanism and help to shape options for going forward.

The following section will build on these and on the other stakeholder perspectives surveyed above.

4. Key Issues, Possible Solutions and Analysis

4.1 Introduction

The previous section surveyed a wide range of views on the current workings and future potential of the CDM to deliver a development dividend. In this section we synthesize those views, focusing on six key issues of concern and for each asking what options might be desirable or feasible. The options are broken down into those that can be pursued immediately without negotiation, those that would involve negotiated agreement on changes, and those that would be relevant to consider only for the post-2012 period.

In the first category are actions that can be taken unilaterally by governments, investors and NGOs, as well as actions that are within the mandate given to the EB by the Parties to the Kyoto Protocol. These could be implemented at any time, given the will and the resources. The second category involves changes to the rules primarily – changes of such substance as would involve further negotiation. The natural venue to consider such changes would be the COP/MOP 2 (probably late in 2006), at which the Parties are to review, and possibly amend, the rules for the CDM. The third category involves thinking about a regime that is not yet officially the subject of discussion, and which will only be broached at COP/MOP 1 in December 2005 (though some governments and observers have been in informal discussions since as early as COP-9). Some Parties have been reluctant to discuss any of the details of the post-2012 regime; some have indicated that they would seek fundamental changes. The ideas in this section are presented in that context of uncertainty, and in an effort to help contribute to the evolving debate.

4.2 Defining Sustainable Development.

In Chapter 1 we noted that there seemed to be consensus among a number of sources on the proposition that some project types offer more development benefits than others. Arriving at a definition for sustainable development is fundamental to this project; it is impossible to make recommendations aimed at increasing something that has not been defined. Yet arriving at a definition is fraught with problems. Primary among them is that the CDM rules have delegated the task of definition to participant states. They have done this with good reason; development is a process of improving well-being, and well-being can only be defined by those involved in the process.

The problem, however, remains: the CDM seems to be developing in a way that many see as diverging from what they had expected or hoped. Some fear (though there is no concrete evidence to date of) a race to the bottom in sustainable development standards, driven by a desire to attract investment. As well, many respondents criticize the lack of clarity in what definitions do exist – a source of uncertainty that has hampered CDM investment. A solution to all these problems would be adoption of strong, clearly enunciated, criteria for sustainable development, whether at the national or international levels (it has been noted above that the international route presents redoubtable methodological and political challenges). Respondents made a number of suggestions that move toward that end.

4.2.1 Non-Negotiated Options

Capacity building: Annex II countries, and multilateral agencies with relevant mandates, could engage in capacity building exercises aimed at strengthening the capacity of DNAs to elaborate clear definitions of sustainable development that give certainty to investors and strive to maximize sustainable development benefits in line with domestic priorities. The same expertise would be used to assess the sustainable development impacts of ongoing or completed projects.

Role for NGOs, research institutions: NGOs and research institutions, it was suggested, need to maintain their vigorous monitoring of the results of CDM projects, as part of a wider international effort to ensure that such projects do indeed result in sustainable development.

4.2.2 Negotiated options:

Internationally-agreed criteria: The COP could agree to a set of sustainable development criteria to be adopted by all DNAs. This solution, however, is politically unlikely. As earlier negotiations have shown, this approach would face solid resistance from many quarters, particularly developing countries. As well, it is unlikely that a one-size-fits-all solution could be found to the question of sustainable development criteria.

A more feasible option would be the elaboration of *principles and guidelines* at the international level, to be further developed into substantive criteria at the domestic level. The Forest Stewardship Council certification is an example of this approach. Each national certifying body develops its own forest sector sustainability criteria, appropriate to the national or regional level, based on a common set of internationally-agreed principles and guidelines.

4.3 High transaction costs.

It has been suggested that the average CDM project adds some USD 200,000 to its costs by pursuing CDM status, and estimated that no project producing less than 0.5Mt CO₂e/year could be viable at these cost levels.⁵¹ It was also noted that in addition to the direct costs there is considerable risk, uncertainty and delay in the process of approval and project implementation. These too amount to costs in the eyes of investors, project proponents and financiers.

High transaction costs dampen all investment in the CDM, and with it the potential of such investment to yield a development dividend. But they may *disproportionately* affect projects with significant development benefits. Since they amount to a fixed cost, they penalize smaller projects more heavily. If we accept that small-scale CDM is inherently better at delivering development benefits, then high transactions costs become a key issue in the search for a greater development dividend.

4.3.1 Non-negotiated options:

Focus on DOEs: Fees paid to DOEs make up a sizable portion of project transaction costs. Training and establishment of developing country DOEs might lower these costs, as host country

⁵¹ Though, note that the average project size in the current roster is only 0.29_{Mt CO₂e}/year expected emissions reductions. The actual minimum size will obviously depend on the prices received for the CERs generated.

offices would presumably offer a more attractive fee schedule than their northern-based counterparts. This would be a task for national governments or regional associations, working in concert with donors and multilateral agencies with expertise in this area.

It was also suggested that the EB might relax its standards for accreditation somewhat, focusing more on technical expertise than on CDM project experience. Note that others (see below) have called for devolution of power from the EB to the DOEs – a process which would seem to demand an accreditation process that was rather strict.

It has also been suggested by some that the EB involve the ISO, as the pre-eminent international standards body and authority on accreditation, in its work on accreditation of DOEs.

Focus on the EB: It has been suggested that the EB needs the input of the community of investors and project developers who are governed by its rules. For general advice, a business advisory committee has been suggested, similar to those that advise multilateral organizations such as the OECD and regional groupings such as APEC.

It has also been suggested that the approval process could be greatly sped up if the EB and/or MP could directly communicate with the project proponents, particularly in cases of requests for details, clarifications, going in either direction. The example of the EB decision to consider the Cuyamapa project invalid because the project documents were submitted in Spanish is instructive; simple direct communication to the proponents would have saved work all around and sped up the process.

Focus on Small-Scale Projects: Section 2.2 described the special rules applicable to small-scale CDM projects, including a lower registration fee, simplified procedures for PDDs, monitoring and baselines, and the ability to bundle together more than one project. All of these are specifically designed to lower the transaction costs that apply to small-scale projects, and seem to be laudable steps. It is worth asking whether they go far enough. Are there other rule changes that might further ease the costs borne by such projects? Some suggestions are made below in Section 4.4.2.

Section 2.2 also noted the work done by the World Bank's Community Development Carbon Fund in providing carbon finance to small-scale CDM-eligible projects. It has been suggested by some that this is a good model with which to work, but at a larger scale. This could only happen if there were increased uptake by government and private sector subscribers. Here again, it is worth asking if there are improvements that might be made to the existing efforts outside of increasing the available resources.

4.3.2 Negotiated options:

Focus on the EB: All respondents agree that the EB is not being given nearly enough resources to do the job at hand. The result is a bottleneck in the approval and decision-making processes – an added transaction cost. The straightforward solution is to vastly increase the EB's budget, in line with the expected increased volume of projects in the years to come. But money alone will not solve the problem. Many experts suggest that as well the EB needs to become a permanent body of professionals with greater emphasis on technical expertise, rather than a rotating membership body of quasi-volunteers more expert at negotiation.

Focus on the approval process: A number of suggestions were made for streamlining the approval process.

It was proposed that verification need not take place in all cases. A random audit procedure was proposed, similar to standard practice in financial auditing.

It was suggested that DOEs might take on a greater share of responsibility for project approval, acting as certifiers, for example, and leaving the EB with a more limited role.

There was a range of opinions on the question of additionality. Those that wanted the bar lowered argued that the financial additionality and barriers tests can only be passed by fundamentally weak projects or shameless story-tellers. They argued that environmental additionality should be the real focus. This might mean that a few false positives would get through the system but, they argued, that is a small price to pay for the vast increases in the level of projects we would see. While this means an increase in emissions in the first instance, there may be compensating benefits: the demonstration effect of CDM projects, the technology transfer and the engagement of developing countries in a substantive way – all of which will mean more emissions reductions in the long run. It can also be argued that CDM is better at such indirect effects than its immediate competitors in the international carbon market – JI or IET—and, again, should thus be encouraged even at the cost of allowing some false positives.

Those that argue against lowering the additionality bar point out that any false positives increase the levels of emissions, which is fundamentally at odds with the objectives of the Framework Convention. Moreover, they note, this loophole is made more objectionable since it will be used by developed countries that are trying to avoid real adjustments at home.

In the end it comes down to the question of the side benefits of the CDM. If CDM projects by their existence contribute substantially enough to indirect emissions reductions (outside of their project-level impacts, by demonstration effect, etc.), then there is a strong case to be made for a looser definition of additionality.

4.4 Managing the market

It should be no surprise that the CDM, as a market mechanism, is finding and exploiting low-hanging fruit such as F-gas decomposition projects. Indeed, the beauty of any market mechanism is precisely that it will find the lowest-cost way to achieve its objectives. Other things being equal, lowest cost reductions are obviously best.

But the fundamental point of this project is that other things are not equal – that the low-hanging fruit are often not as effective in delivering development benefits. There have been a number of suggested responses that involve managing the market in which the mechanism works, changing the structures and incentives. For the most part these are not aimed at stopping the effectiveness with which the CDM is producing low-cost credits—low-hanging fruit will eventually all be picked off in any event—but rather with boosting the attractiveness of investments that deliver more development benefits.

4.4.1 Non-negotiated options

Tax incentives: Host countries could offer tax incentives to CDM investments in sectors likely to deliver the greatest sustainable development benefits. They could stipulate that such projects provide certain types of social, environmental and economic benefits. Columbia has implemented just such a scheme (see Box 10).

Premium purchasing: Annex I countries buying CERs could set criteria for the types of projects from which they will purchase credits, with preference for those they see as following their definition of sustainable development. The CERUPT program already offers premium prices for renewables projects, for example. There is also an NGO-organized “Gold Standard” (see Box 9) to which projects can be certified, which is aimed at ensuring sustainable development benefits for (it is hoped) a higher price.

Dedicated funds: A variation on the theme of premium purchasing is being pioneered by the World Bank’s Community Development Carbon Fund – a fund that supplies carbon credit for CDM projects with significant community benefits, with a focus on those in least-developed countries (see Box 3). In this case, rather than Annex 1 countries themselves specifying sustainable development criteria for their purchases, the specification and management is done by the CDCF on behalf of Annex 1 subscribers (which include private sector and government buyers). As a complement to these efforts, there is a parallel World Bank effort in the same countries on capacity building and technical advice (PCFP/US). This model could be copied by other development banks and national financing institutions, and expanded.

GIS-type pledges: A green investment scheme (GIS) involves pledges by sellers of AAUs to use the proceeds in ways that actually contribute to the goals of the UNFCCC, thus also reducing some of the trepidation with which some Annex I countries approach this type of purchase. A similar sort of arrangement is possible with CERs, whereby host country governments might pledge to invest in development initiatives with the proceeds of their share of CERs from projects yielding low development benefits. China, for example, has pledged to do this with its share of CERs from F-gas projects.

Increased demand from Annex I Parties: Annex I Parties unable to meet their Kyoto commitments domestically can increase demand for CERs in two basic ways: by declaring that a high percentage of their purchases of credits be in the form of CERs (as opposed to ERUs and AAUs); and by emulating the EU’s cap-and-trade scheme and linking to the international market for carbon credits. Both of these actions would drive up the demand for CERs, and therefore the price. Increased prices, of course, would be a rising tide that floated *all* boats – CDM projects would benefit regardless of whether they provided significant development benefits. But on the whole, more CDM means more opportunities for the provision of sustainable development benefits, even if not all of those projects yield a strong development dividend.

Box 10: Fiscal Incentives for CDM: The Colombian Case

Columbian Law *Decreto 2755* (Art. 1), propounded in 2003, gives tax breaks and allowances to help foster CDM and its related benefits. It offers 15 year tax exemption on income from electricity sales from CDM project wind power, biomass and agricultural residue generation. To qualify, operators must devote half of the income from CERs to projects aimed at achieving local social benefits.

Unilateral CDM: Many respondents supported allowing unilateral CDM, a sentiment that was recently supported by the EB at their 18th meeting (see Box 6). It was noted that allowing host governments and development NGOs to take a lead in identifying and registering projects might address concerns that CDM investment is not evenly spread and often does not reach those countries in serious need of development. It may also be that the closer the ownership is to the affected communities, the more likely that the project will generate development benefits. Finally, unilateral CDM may provide an avenue for projects that are too small to be attractive to most investors, and may lower transactions costs by cutting out the investor's need to clear various bureaucratic hurdles.⁵²

4.4.2 Negotiated options

Special track for small scale projects: Again, on the assumption that small-scale CDM projects tend to deliver more development benefits than the norm, it has been proposed that they be subject to special treatment in the approval process. They are, of course, accorded a wide variety of advantages already, as described in Section 2.2. But some argue that more can be done. For example, some have suggested that they should also be accorded special treatment in demonstrating additionality. Such projects at the current and projected levels, even assuming an unexpectedly high percentage of false positives (that is, business as usual certified as additional), will not make a substantial difference in terms of global emissions. It has therefore been argued that those meeting the criteria set out by the EB for small-scale should be automatically deemed additional. Complete waiving of registration fees has also been suggested (there is currently a special tariff structure based on size). It has also been suggested that ODA be allowed to finance such projects. Many of these sorts of changes could actually be implemented without negotiation, at the will of the EB. Others, such as redefining the role of ODA, would require a decision of the Parties.

Policy-based CDM: It has been proposed that the current bottom-up, project-by-project approach might be augmented with various types of top-down approaches. One such is policy-based CDM (the next section describes another – sectoral CDM).⁵³ These types of reform might be possible either as rule changes put into effect by the EB without guidance from the COP, but more likely would have to be negotiated agreements among the parties. They might even only be feasible in a post-2012 regime. But they are listed here as negotiated options, as a best guess.

Policy-based CDM would grant credits to governments that enacted GHG-reducing policy reforms. A government might, for example, adopt a particularly strong efficiency standard in its building code, saving on the energy used in heating and cooling. Or it might adopt a policy that mandated improved standards and encouraged the retirement of older vehicles that would create an estimable amount of reductions in emissions. In either case the resulting emission reduction (or some portion

⁵² Jahn, Michael, Axel Michaelowa, Stefan Raubenheimer and Holger Liptow, "Measuring the Potential of Unilateral CDM – A Pilot Study." Hamburg Institute of International Economics (HWWA) Discussion Paper 263, 2004.

⁵³ Since the writing of this paper a policy-based CDM methodology has been submitted for registration. NM0072 proposes a mandatory energy efficiency standard for room air conditioners in Ghana. The MP asked for advice from the EB on the admissibility of such a methodology, and the EB (at its 19th meeting) was unable to reach consensus on whether such a methodology required negotiated direction from the Parties, or was within the ambit of the EB to approve.

of it) would be credited to the government. Baselines in most cases would be dynamic, accounting for projected increases in emissions over time, and for baseline case improvements in policy.

Such an approach involves a fundamental shift in the way CDM is conducted, but would provide scope for vastly increased levels of CDM activity, would remove the bottlenecks that exist in a project-by-project model, and might offer developing countries an element to be used in negotiating any future actions post-2012. Calculating baselines and additionality would obviously be difficult – how do we prove that such a policy would not have been adopted anyway? That said, one of the chief advantages of such an approach is precisely that it gets us away from the morass of difficulty that is the need to demonstrate additionality project-by-project. Monitoring would be tough as well, and would in most cases have to rely at least partially on modelling rather than actual observations.

Another key advantage to a policy-based approach is that it would remove the current disincentives for proactive policies. Under the present system any policy improvements in host countries immediately translate into a higher baseline, narrowing that gap between business as usual and additional efforts wherein exists the CDM.

Sectoral CDM: Like policy-based CDM, this would involve a top-down approach to CDM, as distinguished from the current bottom-up project-by-project approach. A sectoral CDM approach would focus on a particular sector, setting baselines for the operations in that sector. Any operation that made investments that resulted in exceeding the baseline would be credited for the difference between actual emissions and baseline emissions. From the development dividend perspective, this would allow a focus on sectors known to generate high development benefits, sectors such as transportation (see Box 11) that are currently being passed over in the CDM project roster.

To be effective, such an approach would have to involve a complex procedure for baseline calculation the result of which would vary from operation to operation, according to such factors as age of equipment, energy sources used, access to alternative input types, etc. Baselines would have to be dynamic, accounting for estimated natural rates of technological improvement over time, as well as for projected increases or decreases in production levels.

Box 11: CDM and Transportation in Chile

Globally, the transportation sector is responsible for almost 25% of CO₂ emissions, but CDM transportation projects do not fit well with the CDM's project-based focus. The emissions come from many small non-point sources (i.e., individual vehicles), so baselines and monitoring for any large-scale projects are unworkable at less than a sectoral level.

IISD recently concluded a project in Chile that analyzed how the CDM might be used to foster both technological and demand-side solutions for reducing transport emissions. It found that the key to long-term reductions is in an integrated approach, where transportation is part of a broader focus on sustainable development that also encompasses housing, land use and economic development. Policy-based or sectoral CDM would be able to cover the kinds of system-wide changes needed, such as: comprehensive transit and land use strategies, fuel economy standards and renewable fuel standards.

For more information about the Transport and CDM project, or to download a copy of the full report in either English or Spanish, please visit:

<http://www.iisd.org/climate/global/ctp.asp>

Sectoral CDM could be introduced at a number of levels. Implemented at the national or sub-national level, it resembles policy-based CDM in its scope, since policy-based CDM would normally focus on a particular sector. But it does not involve a particular government policy as the driver for change; rather it sets baselines and allows private sector actors to do better if they so choose. Of course, the CERs generated would accrue to investors rather than to policy-makers.

Any particular sectoral initiative could also be implemented by international agreement in all non-Annex I countries. Even national-level sectoral CDM, of course, would require international agreement on the use of the modality, and on the methodology for baseline calculation.

Sinks: The current rules of the CDM allow for sinks projects under very restricted conditions: only for afforestation and reforestation, and only to be used by Annex B Parties to a maximum of 1% of base year emissions per year in the first commitment period. Agricultural sinks are not allowed. The concerns that lead to those restrictions are many, including uncertainty over the possible accuracy of baseline and monitoring methodologies, the potential for leakage and the potential under CDM for large monoculture plantation projects that might work against sustainable development objectives.

The problem is that there is great potential for local development and environmental benefits from properly executed projects in land use change and in averted deforestation.⁵⁴ In recognition of these sorts of benefits the EB at COP-10 elaborated special rules for small-scale afforestation and reforestation projects under the CDM. It remains to be seen whether this will have much impact in terms of projects, but the options presented above for easing even further the process for small-scale CDM projects also apply in this context.

Further, there might be efforts to expand the scope of sinks projects eligible for CDM. The exclusion of avoided deforestation, and of agriculture, precludes a significant volume of high-benefits projects in precisely those countries not getting much CDM investment at present: poor African and Latin American states. At a minimum, there might be allowance for small-scale projects in these areas (according to the rules suggested above, including no need to demonstrate additionality). As argued above, registering some business as usual projects in this area will not make a substantive difference in terms of global GHG emissions, but the side benefits from such projects might be considerable.

4.4.3. Post-2012 options

A fourth mechanism: Some have suggested that the CDM as now constructed is good at capturing low-cost emissions reductions, and it should not be tinkered with. Instead of trying to achieve two aims with one instrument, the argument goes, we need two instruments. The fourth mechanism (in addition to CDM, JI and ET) would specifically focus on development benefits through emissions reductions. It would function like the CDM, but would focus on particular agreed types of projects (such as small-scale, community-based) or sectors (such as renewable energy or transportation). It might be subject to much easier treatment, much as the small-scale projects now are within the

⁵⁴ See Leach, Gerald and Melissa Leach, "Carbonizing Forest Landscapes? Linking Climate Change Mitigation and Rural Livelihoods," *IDS Bulletin* 35(3), 2004; Smith, Joyotee and Sara Scherr, "Forest Carbon and Local Livelihoods: Assessment of Opportunities and Policy Recommendations," *Occasional Paper* 37, Bogor, Indonesia: Center for International Forestry Research, 2002.

CDM. Some models for such an instrument were considered above, such as the World Bank's CDCF (see Box 3).

Many of the elements described as potentially part of a fourth mechanism are also described above as desirable reforms to the existing CDM. The major question in considering a fourth mechanism is whether it would yield better results than reform of the existing mechanism. Other things being equal, of course, it is better (by reason of political realism, among other things) not to try to create new institutions.

4.5 CDM project financing

It is not easy to find financing for any CDM project; financiers (those few who understand CDM) are reluctant to recognize the resulting revenue streams, but are strongly conscious of the up-front expenses involved in CDM project approval. Those projects with high development benefits may find financing particularly tough. They are often small-scale and use less-proven technologies. Compared to end-of-pipe retrofitting investments, such projects involve a high degree of uncertainty and low returns.

A number of suggestions were made on more easily finding project financing, particularly for projects with high potential development dividends.

4.5.1 Non-negotiated options

Greater emphasis on investing: Most of the governmental and multilateral institutions involved in CDM are in the business of purchasing CERs by forward contract, rather than investing in the projects that produce them. More emphasis on the latter might serve all parties better – it would provide a welcome new source of project funding, and it would provide an extra measure of security about the viability of the projects in the rosters. Japan has pioneered an approach that focuses much more heavily on investing.

Two-stage financing: The multilateral development banks might use a two-stage process to increase their focus on investment. They might lend to national banks in the host countries (perhaps at concessional rates), and stipulate that the re-lending should conform to certain criteria, the most basic being that it go toward CDM projects. This sort of injection of liquidity would build capacity in domestic lenders, strengthen the domestic financial sector, and would leave project screening up to those who are closest to the projects.

Education: Many lenders know very little about CDM. There was no point, from their perspective, in educating themselves at least until the Protocol came into force. There is a need for outreach to explain the workings and potential of the CDM. For example most development finance agencies have absolutely no involvement with the CDM, though it is a natural involvement for them given their mandates. For the most part the problem is simply a lack of knowledge.

Engaging ODA: It would seem a natural fit to engage ODA in supporting CDM projects that have high development benefits. But the rules on ODA are clear and sensible; if ODA is diverted from existing spending the result can hardly be called an increase in the development dividend. For that

reason any decision on how to spend existing ODA to support the CDM should be strategically assessed, always subject to the test: could this money be more effectively used elsewhere?

That said, if a given country is deemed a good candidate for CDM support, there are a number of ways in which ODA might be used to good effect. It could, of course, be used to build up the capacity of DNAs and related institutions responsible for handling CDM. It could also be used to help proponents prepare their PDDs, and to defray the transactions costs discussed above in various ways. And it could be used in training and assistance in technology transfer.

Some have suggested that ODA could be used to insure small projects, reducing risk for investors and boosting the flow of funds to this type of project. In the worst-case scenario, where the project did not produce the predicted CERs, it would simply become a development project funded by the aid agency, rather than the investor.

4.6 CDM timeframe

The uncertainty about the future shape of the Kyoto Protocol, if it indeed continues in *any* form after 2012, is a key factor in diluting the development dividend. The current time frame of certainty only favours CDM projects with rather short gestation periods and quick paybacks. This precludes an enormous amount of potential investment, a great deal of it with high development benefits. Small renewable energy projects, for example, have a two-year gestation period, while large projects such as fuel switching take up to seven years. At best, a project that was registered today would only have roughly five years in which to operate and earn CERs. On some types of projects the window has already closed. The magnitude of the problem, of course, gets ever more serious as time goes on.

4.6.1 Negotiated options

The solution to this dilemma is as obvious as it is difficult: international agreement on the shape of the future accord. Even in the absence of agreement on the successor to Kyoto, Parties to the UNFCCC might agree to principles and guidelines that include signals to the market about the value of carbon credits post-2012. Investors do not need to know the details at this point as much as they need to know whether there will be any value to their investments in emissions reduction, and whether they will be able to use international reductions against whatever form of domestic obligations eventually prevails.

4.7 Conclusions

The perspectives surveyed in Section 3 tended to focus on the problems with the current workings of the CDM, and as a whole they might be taken as painting a portrait of a broken instrument without much hope of effective repair. This section, however, draws out the strong positive elements from those perspectives. It starts from the belief, shared by almost all the survey respondents, that the CDM has an important role to play, and a potential worth devoting some energy to realizing. It goes from there to focussing on those actions that can be taken to improve the current situation. In total, it presents a surprising range of positive actions, most of which can be taken even outside the slow process of negotiation, and can be implemented in the first commitment period.

The next section goes further, to distil from this broad array a few key themes, and to make recommendations as a basis for their further elaboration.

5.0 Options and Next Steps

The analysis in Section 4 presents a wide range of ideas that might help realize a greater development dividend from the CDM. Some are relatively straightforward, while others need further work to assess the possibilities, barriers and appropriate modalities for their elaboration. This section recommends further work in five of those areas that seem most promising, giving some basic suggestions as to what is needed in each, and what sorts of research might be needed to underlie the recommended policy decisions. It concludes by proposing a manner for tackling the agenda set by this analysis, as a second phase of the project that produced this report.

The intent in offering these recommendations is not to provide final definitive solutions, but to develop a framework for a constructive way of going forward—to generate the discussion and debate that will be necessary precursors of lasting and effective solutions. The starting point is a recognition of the value and potential of the CDM in providing environmental, social and economic benefits to host countries above and beyond that offered by the prospects of climate change averted – in short, a development dividend.

5.1 *Reforming the EB/the CDM Project Cycle*

Synopsis:

The approval and monitoring processes for CDM projects has born some of the blame for two of the key concerns treated above: that the transactions costs of CDM are too high, and that the volume of CDM projects on the books is too low.

High transactions costs, it was argued, may disproportionately penalize projects with high sustainable development benefits, since these tend to be small, and to have lower paybacks. In the context of CDM, a number of factors contribute to those costs—including risk and uncertainty about approval, long processing times and arduous standards for monitoring and verification—that are within the power of the Parties and/or the EB to control.

A low volume of CDM projects may also be due in part to high transactions costs, at least relative to the expected price for CERs. But there are other factors as well that may limit the number of projects on the books. Several fundamental sorts of reform are discussed in the next section, but in the context of approval some have suggested that the criteria for additionality are too restrictive, even bearing in mind the basic objective of the UNFCCC and the need to avoid registering business-as-usual projects.

Recommendations:

1. The EB should transform itself in this new operational phase of the CDM's evolution, from a body staffed with semi-volunteers, most of whom are expert negotiators, to a professional body staffed with full-time technocrats and managers. Guidance would still come from the Parties. The resources budgeted for the EB's operations, and those of the Methodology Panel, should be dramatically increased to allow for timely processing of decisions and approvals.
2. The EB and methodology panels should open and institutionalize better channels of communication with investors in general, and with project proponents whose projects are under

consideration. The current opacity between the regulatory bodies and those being regulated is counter-productive.

3. The criteria for additionality should be reviewed with a view to further downplaying the importance of financial additionality. Additionality for small-scale projects should be assumed. The small number of false positives that would result would make a very small difference to climate change, but would make up for it by longer-term benefits in the climate context and in the context of side benefits such as human health and the non-climate-related environment.

Research Agenda:

There is a need for research that predicts the effects of lowering transaction costs, and of focusing on environmental additionality. Would the result be more small-scale projects? Can we predict the pattern of increase in project types, or sectors?

There is a need for research that critically examines the assumption that small-scale projects are inherently, or even predominantly, better at delivering a development dividend. It may well be that they are, but since so many of the prescriptions and analyses in this report hinge on this assumption, it should not go untested.

There is a need for research that tries to measure the side benefits of CDM projects – the health benefits, non-climate-related environmental benefits, and the value in terms of future GHG reduction of the demonstration effect, technology transfer and developing country engagement. There should be some attempt to compare the magnitude of these benefits to the expected level of false positives that might be allowed under a revised approval process.

5.2. Changing the Rules of the Game

Synopsis:

The CDM as currently elaborated works on a bottom-up model, building the portfolio of emissions reduction efforts on a project-by-project basis. It has been clearly demonstrated above that unless current trends are drastically altered, this will not come close to producing the number of CERs needed by Annex 1 countries. The only factor that seems likely to work against this trend is the increase in end-of-pipe capture/destruction of high-GWP gases, and projects of that type seem to offer little in the way of a development dividend.

A number of top-down approaches have been suggested that offer the possibility of both expanding the level of CDM activity (going from a “retail” to a “wholesale” effort), and generating projects that will tend to produce more environmental, social and economic benefits for the communities involved.

Recommendations:

1. Parties should allow policy-based CDM. Such an approach would involve a fundamental shift in the way CDM is conducted, but could provide scope for vastly increased levels of CDM activity, could remove the bottlenecks that exist in a project-by-project model, and might offer developing countries an element to be used in negotiating any future actions post-2012. Policy-based CDM would allow for a focus on sectors where a strong development dividend is known to be likely, such as transportation, energy efficiency, renewable energy and others.

2. Parties should allow sectoral CDM. Like policy-based CDM, this would represent a fundamental shift away from a bottom-up approach to CDM project approval to a top-down approach, with potential for much higher levels of CDM activity. Like policy-based CDM it lends itself to a targeted approach—a focus on those sectors that have highest potential for delivering a strong development dividend. A sectoral approach could foster a learning-by-doing effect where activities are replicated across an industrial sector (e.g. upgrading equipment and/or introducing energy efficiency measures in a selected sector within a region or country, such as the cement sector).

3. Parties should also affirm their approval for the concept of unilateral CDM – projects that do not have Annex I investors. The EB at its 18th meeting in February 2005 registered a unilateral project (see Box 6), but made no decisions pertaining to the project’s treatment throughout the rest of the project cycle. If there is still no Annex I investor by the time CERs are to be issued, will the EB balk at issuing them? This uncertainty should be removed, given the high potential for environmental and development benefits for the host communities that may be vested in such projects, and the avenue that unilateral CDM provides for small-scale development-rich projects in which many investors would have little interest.

4. Parties should explore ways to expand the CDM to include sinks projects in agriculture (land use change) and avoided deforestation, while guarding against registry of projects with few environmental or development benefits. One means of doing so would be to only allow for small-scale projects in this sector. In any case, small-scale sinks projects should benefit from an approval process even more favourable than they now enjoy, including for example the assumption of additionality.

Research agenda:

There is a need for research that predicts the potential for given countries/sectors under a scenario that allows policy-based or sectoral CDM. What sorts of volumes of CERs might be generated? What sorts of side benefits might follow? How might the international community address the thorny issue of establishing baselines in both policy-based and sectoral CDM?

There is a need for research that tests the assumption that unilateral CDM will tend to generate more of a development dividend. If it does, this bolsters the argument for affirming the legitimacy of this type of project.

5.3. CDM, the Development Dividend and Post-2012

Synopsis:

What does the international community need to be doing now to ensure that the current investment in CDM is long-term and yields a development dividend? Given normal project lead times, and the ever-narrowing window of opportunity for earning credits in the first commitment period, we can soon expect to see significant new CDM activity disappearing and with it the development dividend. However, it is not possible to give complete certainty to investors about the shape of the climate change regime after 2012, since the discussions on this topic have not yet formally begun (and will not until COP/MOP 1 in November 2005).

Recommendation:

1. The Parties need to find and implement some manner of assuring investors that their emissions reductions post-2012 will have value. This does not have to involve spelling out the details of a future whose shape is not yet known – an impossible task. Rather, it will involve granting as much certainty as investors need, while retaining as much flexibility as negotiators need. Finding the way to strike this policy balance will be difficult. Discussions on how to do so should begin at COP/MOP 1.

Research Agenda:

Private sector stakeholders should be surveyed to garner their suggestions on what governments might do that would allow them to continue making new CDM investments throughout the first commitment period.

5.4. Engaging Development Assistance/International Finance

Synopsis:

Some development assistance agencies and multilateral development banks have already been quite active in fostering the ability of least-developed countries to attract and manage CDM project investment. Box 3 describes the World Bank's Community Development Carbon Fund, for example, and the Bank's Bio Carbon Fund is another excellent example. These models need to be expanded, and more Annex I government and private sector funding should flow to them.

As well, much bilateral aid has been devoted to helping developing countries manage their regimes for hosting CDM projects. These efforts include work to build robust DNAs, and the associated institutions for attracting and managing CDM investment. This work should be expanded as well. But given the strong linkages between development goals and climate change objectives, this seems too narrow a range. There should be a way for additional ODA to support the type of CDM on which this project focuses: those that deliver a high quantity of sustainable development co-benefits, particularly in least developed countries.

Recommendations:

1. IFIs, private investors and governments should increase their support for those investment funds that address sustainable development more discretely, such as the Community Development and Bio Carbon Funds in the World Bank.
2. The relationship of ODA with the CDM should be further explored, particularly in support of projects that clearly provide sustainable development benefits.
3. There should be an effort to raise the awareness of the CDM to local/national development banks and other commercial entities in the developing world.
4. Export credit agencies should develop innovative risk management products specifically geared for CDM investors, and should explore other ways in which they might support CDM investment.

5.5. Defining Sustainable Development

Synopsis:

The problem has been described at length above: the development dividend might be well served by an internationally agreed set of criteria for sustainable development. The aim would be to increase the number of projects delivering high levels of sustainable development benefits.

The first problem with this is that it is difficult to define sustainable development at the general level – like all principles it needs specific context to attain real meaning. So, for example, it may be possible to meaningfully define sustainable development in the context of the transportation sector in Chile. But defining it at a level that covers all sectors and countries would be less useful, even if it were possible.

The second problem is related to the first. The fact that sustainable development needs context led developing countries to reject a one-size-fits-all definition in the negotiations, preferring to elaborate at the domestic level what would be appropriate in their contexts. It is not conceivable that this decision might be revisited.

This, of course, puts a weighty onus on each host country, since there are few precedents for this type of exercise. There have been complaints from investors that they face criteria that are too restrictive in some cases, and too vague in others. And there have been concerns that loose definitions are in some part responsible for allowing projects that generate large numbers of CERs but which deliver very little development dividend.

Recommendations:

1. IFIs, donor agencies, other multilateral institutions and NGOs should continue and intensify their current efforts at capacity building for developing countries in the process of elaborating their national regimes for approving CDM projects, with a clear mandate to assist in the definition of sustainable development at the national level.
2. The Parties should explore the idea of elaborating at the international level principles and criteria that could guide national efforts to define sustainable development.

Research Agenda:

There is a need for research to assess the current state of sustainable development definitions in non-Annex I countries, and compare them, looking for notable innovations in the domestic regimes, and potential weaknesses that might need addressing.

There is a need for research on approaches in other areas to elaborate principles and guidelines at the international level that can then be adapted at the regional/national level. The Forest Stewardship Council criteria were mentioned above as one example worth exploring.

5.6. Next Steps for the Development Dividend Project

In this final section of the report, we consider how to advance the recommendations and analysis offered above. The attention of the international community needs to be focussed on the key problems and potential we have highlighted in this report. Solutions can certainly be found, and we have suggested a number of them as worthy of further consideration. But they will only be found if the Parties and other stakeholders devote sufficient resources to the task.

To that end, IISD aims to embark on a second phase of work on the Development Dividend project, building on this analytical research paper. Phase II will involve the creation of an international Task Force of leading experts in the field of CDM that will explore in greater depth selected options for altering the CDM to better realize the provision of sustainable development benefits for host countries. The Task Force will be comprised of 15-20 leaders in the field drawn from governments, development agencies, multilateral institutions, the business community, the non-governmental community, the CDM Executive Board and brokerage firms.

The primary purpose of the Task Force will be to hold discussions on options presented in this paper. The group will identify and assess new strategies and approaches for the CDM to support the provision of the development dividend; bring the results of the analysis to negotiators, members of the CDM EB and other key stakeholders; and provide a solid foundation for shaping the evolution of the CDM and/or a new instrument in both the present commitment period and in the period after 2012.

The objectives will be achieved through Task Force meetings; development of four analytical issues papers and a synthesis paper; and engagement and outreach activities throughout the course of the Phase II project. The four papers will be chosen by the Task Force members, and will consider different options for improving the CDM, laying out potential next steps. The Task Force will guide the work of the IISD in the process of writing the issues papers and synthesis, will comment on the terms of reference for and drafts of the papers and, in some cases, will take a more active role in producing the papers. The issues papers will be written by IISD staff with input from Southern and other researchers specialized on each topic.

As part of the Phase I project, the Task Force will be launched in June 2005. It is expected that the group will meet four more times prior to December 2006 as part of the Phase II project. The primary objectives of the meetings will be to review different ways of achieving the development dividend, and to review, discuss and provide input on the contents of the draft versions of the analytical issues papers.

Annex A: List of Participants

Interviews were conducted with the individuals listed below, either in person, by telephone or by e-mail. All of the participants were surveyed in their personal, rather than institutional, capacities. Their participation does not necessarily mean agreement with the details, analysis or recommendations presented in this report.

Name	Organization
Jiwan Sharma Acharya	Winrock International, Nepal
Mahua Acharya	World Business Council for Sustainable Development
Monzur Ahmed	Fed. Of Bangladesh Chambers of Commerce & Industry
Mozarahul Alam	Bangladesh Centre for Advanced Studies
Corinne Boone	CO2e.com
Jose Cabral	Inter-American Development Bank
Pedro Moura Costa	Ecosecurities
Brian Dawson	UNDP
Elliot Diringier	Pew Centre
Dirk Forrister	Natsource
Elizabeth Harvey	Canadian International Development Agency
Pam Hay	CDM-JI Office, Foreign Affairs Canada
Niklas Hoehne	Ecofys
Richard Hosier	Global Environment Fund
Ijaz Hossain	Bangladesh University of Engineering and Technology
Saleem Huq	International Institute for Environment and Development
Rod Janssen	Helio International
L P Jayasinghe	Haycarb Ltd., Sri Lanka
S M D P A Jayatilake	Ministry of Environment & Natural Resources, Sri Lanka
Lex de Jonge	Netherlands Ministry of Foreign Affairs
Frank Joshua	Climate Investment Partnership
Dr. Sami Kamel	UNEP-Risoe
Barrie Kantor	South South North, South Africa
Daniel Martino	Carbosur, Uruguay
Axel Michaelowa	Point Carbon/Hamburg Institute of Int'l Economics
Alan Miller	International Finance Corporation
Sir Charles Nicholson	BP Plc
Norbert Nzirimasanga	Southern Centre for Energy and Environment
Sara Offerman	Netherlands Ministry of Foreign Affairs
Anne Olhoff	UNEP-Risoe
Bob Page	TransAlta, Canada
Roger Peters	Pembina Institute for Appropriate Technology
Christine Pirenne	Netherlands Ministry of Foreign Affairs
Wendy Poulton	ESKOM, South Africa
Sandeep Chamling Rai	WWF Nepal
Stefan Raubenheimer	South South North, South Africa
Leslie-Ann Robertson	CDM-JI Office, DFAIT, Canada
Kirtan Sahoo	World Bank, Delhi

Name	Organization
Agus Sari	Pelangi
Sudhir Sharma	AIT
Chandra Sekhar Sinha	World Bank, USA
Shinichi Ioka	IGES
Thomas Stoner	Ecoenergy
Einer Telnes	DNV
Mark Trexler	Trexler Climate and Energy Services
Emily Tyler	South South North, South Africa
Bruno van der Borgh	Holcim
K B Wakhley	Bhutan Power Corporation
Roberto Yap	CD4CDM
Yasuko	NIES

Input received via on-line questionnaire from:

Name	Organization
Jane Desbarats	New Zealand Climate Change Office
Hector Ginzo	Argentina Ministry of Foreign Affairs
Diana Harutyunyan	UNDP-GEF
Tom Roper	The Climate Institute
Margaret Skutsch	University of Twente

Annex B: Interview Protocol

Realizing a Development Dividend through the CDM

Interview Protocol

1. What type of CDM-focused projects or programs does your organization primarily support?
 - a. With respect to developing countries?
 - b. How have you provided this support? (e.g., through bilateral assistance, a dedicated national fund, contributions to multilateral organizations, other?)
2. Within your organization, is the CDM perceived to be a significant tool for supporting the sustainable development of host countries and/or contributing to the achievement of your agency's broader policy objectives and mandate?
3. Of the CDM projects currently in development or being implemented, which do you feel will be most effective in providing sustainable development benefits to host countries? For which reasons?
4. Against what standard, in your view, should the mechanism's contribution to sustainable development be measured?
5. What do you see as the main challenges with using the CDM as a tool for providing sustainable development benefits, from the perspective of:
 - a. Host countries?
 - b. Investors?
6. There have been a number of proposals aiming to modify the CDM to better align the provision of sustainable development benefits to host countries with the provision of low-cost emission credits. These include:
 - i. Expanding the CDM so that policy-related initiatives may be incorporated;
 - ii. Taking a sectoral approach to emission reduction activities;
 - iii. Enabling donors to use Official Development Assistance to cover the additional cost to investors associated with providing sustainable development benefits through CDM projects; and
 - iv. Using tax incentives to support CDM investments that provide sustainable development benefits.
 - a. How successful do you feel any or all of these options could be in better ensuring the provision of sustainable development benefits from CDM projects? What do you see as being their key strengths or limitations?
 - b. What other approaches would you recommend?
7. What role, if any, could donor agencies play in ensuring the CDM provides a development dividend to host countries?

Annex C: The CDM Project Pipeline

The projects described below are, as of April 6 2005, all in the process of validation, or have been registered by the EB. All carbon figures are in metric kilotonnes CO₂e. This table is taken from the UNEP-Risø CDM Pipeline at www.cd4cdm.org.

Title	Methodology	Type	kt CO ₂ /yr.	yrs.	Start of Crediting Period	CER total to 2012 ktCO ₂	Status	Validator	Host country	Region	Investor	Consultant
Olvarria landfill gas recovery project (resubmitted)	AMS-III.D.	Landfill gas	13	7	1/1/2006	89	Under review	DNV	Argentina	LA	CDCF	CDCF
Landfill gas extraction on the landfill Villa Dominico, Buenos Aires (resubmitted)	AM11	Landfill gas	638	10	7/1/2005	6377	At validation	DNV	Argentina	LA	IFC-Netherlands	BGP+Van der Wiel, Netherlands
Nubarashen Landfill Gas Capture and Power Generation Project	AMS-I.D.+ACM1	Landfill gas	97	7	1/1/2007	553	At validation	JCI	Armenia	FS	Japan	Shimizu Corporation
Landfill Gas Extraction and Utilisation at Matuail Landfill, Dhaka	ACM1+ACM2	Landfill gas	187	7	8/1/2006	1308	At validation	SGS	Bangladesh	AP	Netherlands (WWR)	Royal Haskoning
E7 Bhutan 70 kW micro hydro power project	AMS-I.A.	Hydro	0.5	7	5/1/2005	4	At validation	JACO	Bhutan	AP	E7?	E7 (Kansai Electric Power)
Santa Cruz landfill gas combustion project	AM3	Landfill gas	87	7	1/1/2005	727	At validation	DNV	Bolivia	LA	n.a.	Grontmij Climate and Energy
Granja Becker GHG mitigation project (NM34)	AM16	Agriculture	5	10	7/1/2004	43	At validation	TÜV-SÜD	Brazil	LA	Canada	AgCert Canada Co.
GHG capture/combustion from swine manure man. systems at Faxinal dos Guedes and Toledo	AM6	Biogas	24	10	1/1/2004	218	At validation	DNV	Brazil	LA	n.a.	PriceWaterhouse Coopers

Title	Methodology	Type	kt CO2 /yr.	yrs.	Start of Crediting Period	CER total to 2012 ktCO2	Status	Validator	Host country	Region	Investor	Consultant
Irani biomass electricity (9.43 MW) generation project	AMS-I.D.	Biomass power	146	10	10/1/2004	1197	At validation	DNV	Brazil	LA	n.a.	EcoSecurities
Imbituva (13,8 MW) Biomass Project (by 200 kt sawmill waste from 42 companies)	AMS-I.D.-III.E.	Biomass power	312	7	6/1/2006	2030	At validation	DNV	Brazil	LA	n.a.	EcoSecurities
Inácio Martins (15 MW) Biomass Project (by 200 kt sawmill waste from 25 companies)	AMS-I.D.-III.E.	Biomass power	318	7	6/1/2006	2069	At validation	DNV	Brazil	LA	n.a.	EcoSecurities
Barralcool Bagasse Cogeneration Project (BBCP)	AM15	Biomass power	18	7	5/18/2002	226	At validation	DNV	Brazil	LA	n.a.	Econergy Brazil
Moema Bagasse Cogeneration Project, Brazil	AM15	Biomass power	61	7	5/20/2001	1085	At validation	TÜV-SÜD	Brazil	LA	Sweden	Econergy Brazil
Vale do Rosario - Sugar Bagasse, Brazil (NM1)	AM15	Biomass power	40	7	6/9/2001	551	At validation	TÜV-SÜD	Brazil	LA	Sweden	Econergy Brazil
Santa Elisa - Sugar Bagasse, Brazil	AM15	Biomass power	60	7	4/7/2003	695	At validation	TÜV-SÜD	Brazil	LA	Sweden	Econergy Brazil
Santa Cândida Bagasse Cogeneration Project (SCBCP)	AM15	Biomass power	25	7	6/11/2002	292	At validation	DNV	Brazil	LA	n.a.	Econergy Brazil
Jalles Machado Bagasse Cogeneration Project (JMBCP)	AM15	Biomass power	15	7	4/23/2001	241	At validation	DNV	Brazil	LA	n.a.	Econergy Brazil
Rickli (5MW) Biomass electricity generation project (sawmill waste)	AMS-I.D.-3.E.	Biomass power	127	7	1/1/2005	1019	At validation	DNV	Brazil	LA	UK?	EcoSecurities

Title	Methodology	Type	kt CO2 /yr.	yrs.	Start of Crediting Period	CER total to 2012 ktCO2	Status	Validator	Host country	Region	Investor	Consultant
Alta Mogiana (37.5 MW) bagasse cogeneration project	AM15	Biomass power	40	7	5/6/2002	509	At validation	TÜV-SÜD	Brazil	LA	PCF	Econergy Brazil
Lucélia bagasse cogeneration project	AM15	Biomass power	24	7	7/12/2002	358	At validation	DNV	Brazil	LA	n.a.	Econergy Brazil
Nova América Bagasse Cogeneration Project	AM15	Biomass power	20	7	5/20/2001	241	At validation	TÜV-SÜD	Brazil	LA	n.a.	Econergy Brazil
Cerradinho Bagasse Cogeneration Project	AM15	Biomass power	53	7	7/1/2002	760	At validation	TÜV-SÜD	Brazil	LA	n.a.	Econergy Brazil
UTE Barreiro Steel Plant (12.9 MW) Ren.El.Gen.Project	AMS-I.D.	EE, Industry	56	7	9/1/2004	465	At validation	DNV	Brazil	LA	n.a.	EcoSecurities
Cosipar renewable electricity generation project, state of Pará	AMS-I.D.	EE, industry	21	7	2/1/2005	270	At validation	DNV	Brazil	LA	n.a.	EcoSecurities
Aquarius Hydroelectric Project	AMS-I.D.	Hydro	15	7	7/1/2005	82	At validation	DNV	Brazil	LA	Japan (J-Power)	MGM International
Salvador Da Bahia landfill gas management project (NM4)	AM2	Landfill gas	702	7	1/1/2004	6667	At validation	DNV	Brazil	LA	n.a.	ICF Consulting
NovaGerar landfill gas to energy project (NM5)	AM3	Landfill gas	270	7	7/1/2004	2937	Registered	DNV	Brazil	LA	WB	NCDF EcoSecurities
10 MW landfill gas to energy project at Lara landfill, Maua	AM3	Landfill gas	647	7	1/1/2005	5130	At validation	DNV	Brazil	LA	n.a.	Factor Consulting+Management AG

Title	Methodology	Type	kt CO2 /yr.	yrs.	Start of Crediting Period	CER total to 2012 ktCO2	Status	Validator	Host country	Region	Investor	Consultant
Brazil MARCA 11 MW landfill gas to energy project	AM3	Landfill gas	171	7	7/1/2004	1200	At validation	DNV	Brazil	LA	n.a.	EcoSecurities
Onyx gas recovery project - SASA in Brazil (NM21) (resubmitted)	AM11	Landfill gas	70	10	1/1/2003	701	At validation	DNV	Brazil	LA	CERUP T	ONYX
Caieiras landfill gas emission reduction	ACM1	Landfill gas	321	7	9/1/2005	2838	At validation	DNV	Brazil	LA	n.a.	SUEZ Ambiental
ESTRE's Paulínia Landfill Gas Project (EPLGP)	AM3	Landfill gas	212	7	1/1/2006	1484	At validation	DNV	Brazil	LA	n.a.	Local
Bandeirantes Landfill Gas to Energy Project (BLFGE).	ACM1	Landfill gas	1306	7	12/23/2003	10829	At validation	DNV	Brazil	LA	n.a.	Econergy Brazil
São João Landfill Gas to Energy Project	ACM1	Landfill gas	1371	7	7/31/2005	10627	At validation	DNV	Brazil	LA	n.a.	Econergy Brazil
Biogas in Peralillo (NM22)	AM6	Biogas	79	7	1/1/2001	735	At validation	DNV	Chile	LA	Japan, Canada	Agrosuper, POCH Ambiental
Biogas in Pocillas and La Estrella	AM6	Biogas	249	7	1/1/2003	2550	At validation	DNV	Chile	LA	Japan, Canada	Agrosuper, POCH Ambiental
Biogas in Corneche and Los Guindos	AM6	Biogas	84	7	5/1/2002	953	At validation	DNV	Chile	LA	Japan, Canada	Agrosuper, POCH Ambiental
Metrogas methane recovery from pipeline rehabilitation	AMS-III.D	Energy distribution	15	10	1/1/2000	213	At validation	DNV	Chile	LA	Japan (J-Power)	MGM International

Title	Methodology	Type	kt CO2 /yr.	yrs.	Start of Crediting Period	CER total to 2012 ktCO2	Status	Validator	Host country	Region	Investor	Consultant
Graneros Plant Fuel Switching Project (NM16)	AM8	Fossil fuel switch	14	7	1/1/2004	134	Under review	DNV	Chile	LA	Japan (J-Power)	MGM International
Copiulemu landfill gas project	ACM1	Landfill gas	90	7	9/1/2005	632	At validation	DNV	Chile	LA	n.a.	EcoSecurities
Cosmito landfill gas project	ACM1	Landfill gas	85	7	9/1/2005	594	At validation	DNV	Chile	LA	n.a.	EcoSecurities
Anding Landfill Gas Recovery and Utilization Project	ACM1	Landfill gas	80	10	1/1/2005	640	At validation	DNV	China	AP	Netherlands (ESI)	Waste Management NZ Ltd.
Huitengxile (25.8 MW) Windfarm Project (Inner Mongolia)	AM5	Wind	54	10	1/1/2004	487	At validation	TÜV-SÜD	China	AP	CERUPT	Alex Westlake
Rio Azul landfill gas to energy project (3.7 MW)	AM11	Landfill gas	219	10	8/1/2004	2028	At validation	DNV	Costa Rica	CA	CERUPT	CERUPT
Abanico (14,8 MW) Hydroelectric Project	ACM2	Hydro	128	7	1/1/2006	896	At validation	DNV	Ecuador	LA	WB-CF	WB-CF
Sibimbe (15 MW) Hydroelectric Project (NM54)	ACM2	Hydro	63	7	2/1/2005	502	At validation	DNV	Ecuador	LA	WB-CF	WB-CF
Hidroeléctrica Candelaria (4.3 MW hydro)	AMS-I.D.	Hydro	24	7	7/1/2005	180	At validation	DNV	Guatemala	CA	Japan (J-Power)	MGM International
Rio Hondo II hydroelectric project (32 MW)	AM5	Hydro	107	7	2/1/2008	537	At validation	SGS	Guatemala	CA	n.a.	EcoSecurities

Title	Methodology	Type	kt CO2 /yr.	yrs.	Start of Crediting Period	CER total to 2012 ktCO2	Status	Validator	Host country	Region	Investor	Consultant
Las Vacas hydroelectric project (45 MW)	AM5	Hydro	93	7	1/1/2004	1111	At validation	AENOR	Guatemala	CA	Spain	Solea Consulting
Cececapa (2,9 MW) run of river Hydroelectric Project	AMS-I.D.	Hydro	2	10	8/1/2005	15	At validation	DNV	Honduras	CA	Finland	COMGELSA
Yojoa Small (0,6 MW) run of river Hydropower Project	AMS-I.D.	Hydro	1.2	10	1/1/2005	9.2	At validation	DNV	Honduras	CA	Finland	AHPPER
Rio Blanco (5 MW) Small Scale Hydroelectric Project	AMS-I.D.	Hydro	18	10	8/1/2004	150	Registered	DNV	Honduras	CA	Finland	AHPPER
Zacapa (0,5 MW) run of river Mini Hydro Station Project	AMS-I.D.	Hydro	1	10	6/1/2005	7.6	At validation	DNV	Honduras	CA	Finland	AHPPER
La Esperanza Hydroelectric 12.7 MW small scale project	AMS-I.D.	Hydro	34	7	6/1/2003	328	Under review	DNV	Honduras	CA	CDCF	2E Carbon Access
Cortecito (5.3MW) and San Carlos (4.0 MW) small-scale hydro project	AMS-I.D.	Hydro	37	10	12/1/2005	265	At validation	DNV	Honduras	CA	2E Carbon Access	HIDROCEL
Cuyamapa 12.2 MW Hydroelectric small scale project	AMS-I.D.	Hydro	36	10	5/1/2006	238	Req.2 for review	DNV	Honduras	CA	n.a., 2E Carbon Access	ENETRAN
18 MW biomass power project in Tamilnadu, India (NM25)	AM4	Biomass power	82	10	6/1/2004	695	At validation	DNV	India	AP	Sweden	Raghu Rama Ren. Energy ltd.
9 biomass gasifier based power plants totalling 2.25 MW	AMS-I.A.+AMS-I.D.	Biomass power	12	10	1/1/2005	99	At validation	DNV	India	AP	n.a.	Women for Sustainable Development
Clarion 12 MW (Gross) Renewable Sources Biomass Power Project	AMS-I.D.	Biomass power	39	7	2/21/2005	275	At validation	TÜV-Rhein	India	AP	n.a.	Clarion Power Company Ltd.

Title	Methodology	Type	kt CO2 /yr.	yrs.	Start of Crediting Period	CER total to 2012 ktCO2	Status	Validator	Host country	Region	Investor	Consultant
Biomass in Rajasthan - 7.8 MW from mustard crop residues	AMS-I.D.	Biomass power	31	10	8/1/2003	295	At validation	TÜV-SÜD	India	AP	CERUPT	Ecofys
Shree Renuka Sugars Bagasse Cogeneration	AMS-I.D.	Biomass power	22	10	9/1/2003	205	At validation	KPMG	India	AP	n.a.	Agrinergy
5 Biomass gasifier based power plants totalling around 2 MW	AMS.I. A.-I.D.	Biomass power	11	10	10/1/2004	95	At validation	DNV	India	AP	Finland	Women for Sustainable Development
APCL proposed 7.5 MW mustard crop residue base power project	AMS-I.D.	Biomass power	40	7	9/1/2005	277	At validation	SGS	India	AP	Austria	ACPL (Alwar Power Company)
GHG emission reduction by thermal oxidation of HFC23	AM1	HFCs	3380	7	1/1/2005	27040	Registered	SGS	India	AP	Japan, UK, Netherlands	PricewaterhouseCoopers
Parpikala (3*3 MW) Mini Hydel Scheme	AMS-I.D.	Hydro	40	7	1/1/2005	317	At validation	DNV	India	AP	Finland	Women for Sustainable Development
5 MW Dehar Grid-connected SHP in Himachal Pradesh	AMS-I.D.	Hydro	16	7	8/1/2004	138	At validation	DNV	India	AP	n.a.	Zenith Corporate Services
4.5 MW Maujhi Grid-connected SHP in Himachal Pradesh, India	AMS-I.D.	Hydro	13	10	7/1/2004	112	At validation	DNV	India	AP	n.a.	Zenith Corporate Services
6 MW Somanamaradi grid-connected SHP in Karnataka	AMS-I.D.	Hydro	17	7	12/1/2004	137	At validation	DNV	India	AP	n.a.	Zenith Corporate Services
10.25MW Chunchi Doddi SHP in Karnataka	AMS-I.D.	Hydro	26	7	1/1/2005	196	At validation	TÜV-SÜD	India	AP	n.a.	Zenith Corporate Services

Title	Methodology	Type	kt CO2 /yr.	yrs.	Start of Crediting Period	CER total to 2012 ktCO2	Status	Validator	Host country	Region	Investor	Consultant
Wind electricity generation in Tamil Nadu (15 MW)	AMS-I.D.	Wind	37	10	4/1/2003	345	At validation	TÜV-SÜD	India	AP	CERUPT	Ecofys
Bio-Diesel Fuel Production Project in Indonesia	AMS-III.B.	Other waste	5.5	10	4/1/2007	31	At validation	JCI	Indonesia	AP	Japan	Pacific Consultants International
Mbumibiopower biomass power project (biogas) (NM39)	AMS-I.D.	Biomass power	59	7	5/1/2005	453	At validation	DNV	Malaysia	AP	Japan	Mitsubishi Securities
Kunak 14 MW palm oil solid waste power plant	AMS-I.D.	Biomass power	51	7	1/1/2005	410	At validation	DNV	Malaysia	AP	Denmark	Danish Energy Management
Krubong Melaka Landfill Gas Collection & Energy Recovery Project	AM3 + ACM1	Landfill gas	60	10	1/1/2007	360	At validation	JCI	Malaysia	AP	Japan	Kajima Corporation
Trojes 8 MW hydro project	AMS-I.D.	Hydro	23	7	4/1/2003	209	At validation	DNV	Mexico	CA	PCF	PCF (Lasse Ringius)
Benito Juarez 15 MW hydro project	AMS-I.D.	Hydro	41	7	1/1/2007	244	At validation	DNV	Mexico	CA	PCF	PCF (Lasse Ringius)
Chilatán 15 MW hydro project	AMS-I.D.	Hydro	52	7	3/1/2006	354	At validation	DNV	Mexico	CA	PCF	PCF (Lasse Ringius)
El Gallo 30 MW hydro project (NM23)	AM5	Hydro	71	7	11/1/2006	437	At validation	DNV	Mexico	CA	PCF	PCF
Landfill Gas capture and flaring at Chisinau Landfill, Moldova (NM38)	AM11	Landfill gas	61	7	1/1/2005	488	At validation	DNV	Moldova	FSU	Denmark (EPA)	COWI

Title	Methodology	Type	kt CO2 /yr.	yrs.	Start of Crediting Period	CER total to 2012 ktCO2	Status	Validator	Host country	Region	Investor	Consultant
Essaouira (60 MW) wind power project	ACM2	Wind	156	10	1/1/2007	936	At validation	DNV	Morocco	ME	n.a.	EcoSecurities
San Jacinto Tizate (66 MWe) geothermal project	ACM2	Geothermal	311	7	5/1/2005	2717	At validation	DNV	Nicaragua	CA	n.a.	EcoSecurities
Lihir geothermal (33+22 MW) power project (at gold mine)	AM19	Geothermal	291	10	6/1/2005	2303	At validation	DNV	Papua New Guinea	AP	n.a.	EcoSecurities
Paramonga CDM bagasse boiler projects (from fuel oil)	AMS-I.C.	Biomass power	87	10	1/1/2006	607	At validation	DNV	Peru	LA	UK	NatSource
Poehos I ("The project") (15,4 MW)	ACM2	Hydro	32	7	4/1/2004	223	At validation	TÜV-SÜD	Peru	LA	PCF (Netherlands)	PCF
Santa Rosa (1,1 MW + 1,5 MW + 1,5 MW)	AMS-I.D	Hydro	14	7	1/1/2005	114	At validation	SGS	Peru	LA	CDCF	CDCF
PNOC Exploration Company Payatas Landfill Gas to Energy Project in the Philippines	AMS-I.D.+ACM1	Landfill gas	36	10	1/1/2006	328	At validation	TÜV-Rhein	Philippines	AP	Japan?	Mitsubishi Securities
HFC decomposition project in Ulsan (NM7)	AM1	HFCs	1400	7	4/1/2004	12250	Registered	JQA	S. Korea	AP	Japan	Local
Low-cost urban housing energy service upgrades, Khayelitsha	AMS-I.C.-II.C.-II.E.	EE, households	17	7	3/1/2004	136	At validation	DNV	South Africa	Africa	n.a.	City of Cape Town
Hapugastenne and Hulu Ganga Small Hydropower Projects	AMS-I.D	Hydro	49	10	9/1/2001	457	At validation	SGS	Sri Lanka	AP	IFC-Netherlands	IRG

Title	Methodology	Type	kt CO2 /yr.	yrs.	Start of Crediting Period	CER total to 2012 ktCO2	Status	Validator	Host country	Region	Investor	Consultant
Small Hydropower Projects at Alupola and Badulu Oya.	AMS-I.D	Hydro	32	10	6/1/2004	207	At validation	SGS	Sri Lanka	AP	IFC-Netherlands	IRG
Magal Ganga Small Hydropower Project (9,9 MW)	AMS-I.D	Hydro	35	10	6/1/2006	226	At validation	SGS	Sri Lanka	AP	IFC-Netherlands	IRG
Jaroensompong Corporation Rachathewa Landfill Gas to	ACM1	Landfill gas	99	10	1/1/2005	887	At validation	DNV	Thailand	AP	Japan	Mitsubishi Securities