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Equitable distribution of CDM projects among developing countries

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Alan Silayan

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Equitable Distribution of CDM Projects Among Developing Countries

Alan Silayan

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Abbreviations

AIJ	Activities Implemented Jointly
ASEAN	Association of Southeast Asian Nations
ASSOCHEM	Associated Chamber of Commerce of India
CAA	Clean Air Act
CDM	Clean Develoment Mechanism
CER	Certified Emissions Reductions
CERUPT	Certified Emission Reduction Unit Procurement Tender
CIDA	Canadian International Development Agency
CII	Confederation of Indian Industries
CO_2	Carbon Dioxide
COP	Conference of Parties
COP/MOP	Conference of Parties serving as the Meeting of Parties
DA	Development Alternatives
DNA	Designated National Authority
DNV	Det Norske Veritas
DOE	Designation Organizational Authority
EB	Executive Board
ECOWAS	Economic Community of West African States
EIA	Environmental Impact Assessment
ER	Emissions Reduction
EU	European Union
EU ETS	European Emissions Trading Scheme
FDI	Foreign Direct Investment
FICCI	Federation of Indian Chambers of Commerce and Industry
GDP	Gross Domestic Product
GHG	Greenhouse Gasses
HDI	Human Development Index
IDFC	Indian Development Finance Corporation
JI	Joint Implementation
KP	Kyoto Protocol
LDC	Least Developed Country
MERCUR	Mercado Común del Sur
MCDM	Multi-Criteria Decision Model
NAP	National Allocation Plan
NGO	Non-Government Organization

OECD	Organization for Economic Co-operation and Development
PCF	Prototype Carbon Fund
PDD	Project Design Document
SD	Sustainable Development
SIDS	Small Island Developing States
tCO_2e	Metric tons Carbon Dioxide equivalents
TERI	The Energy Research Institute
UN	United Nations
UNFCCC	United Nations Framework on Climate Change
USAID	US Agency for International Development
WB NCDF	World Bank Netherlands Clean Development Facility
WWF	World Wide Fund for Nature

Abstract

The Clean Development Mechanism as a global flexible mechanism of the Kyoto protocol has a sound basis in theory which has led to its inclusion in the international climate regime. Current trends of the CDM show a clustering of projects towards a few larger developing countries. Contrary to the inclusion of more developing nations in the climate change process, present participation requirements of the CDM have unfortunately prevented 67% of developing nations from engaging in CDM projects. Distinct conditions among developing countries have led to different implementation circumstances. This, in turn, has triggered differences in the capacity to implement CDM projects. Moreover, project investors, in pursuit of an optimum investment portfolio, have had a tendency to support the same cluster of countries. Revisiting the fundamentals of the UNFCCC, criteria can be formulated and applied to all developing countries to identify nations that should be given project priorities in the CDM. Enforcing redistribution of CDM projects among developing nations need not take a complete re-thinking of the CDM concept. An equitable distribution of CDM projects is possible within the current structure of the CDM framework.

1.0 Introduction

Climate change is perhaps the most important environmental issue facing today's generation. Global issues of concern such as biodiversity, freshwater, marine and forest conservation, poverty, health, food security, can and will be affected by the impacts of global climate change. Realizing this probability, the world community has come together under the United Nations Framework Convention on Climate Change (UNFCCC) to build a roadmap to address this concern. This roadmap has led to the Kyoto Protocol of 1997 which advocates taking concrete steps and binding commitments to reduce greenhouse gasses (GHG) that contribute to global warming. The protocol will enter into force after at least 55 member parties ratify it. The aggregate emissions of industrialised countries ("Annex B"), which have ratified the Protocol, must account for more than 55% of industrialised country CO2 emissions of 1990. After seven years of hard work, anticipation and anxiety, the Kyoto Protocol finally entered into force on 16 February 2005 with the ratification of 128 countries including the key signature of Russia which accounts for 17.6% of CO_2 emissions of 1990. This thus brings the total share of signatories in industrialised country CO_2 emissions to 61.6%. This is a major victory for global climate change. A decisive step has been taken in addressing perhaps the most important and critical environmental concern of this generation.

Industrialized countries which are parties to the protocol, also known as Annex B countries, have committed themselves to an aggregated reduction of CO_2 emissions to 5% below 1990 levels. To achieve this, Annex B countries will have to implement measures to reduce GHG emissions according to pre-defined country commitment levels. Other than domestic reduction measures, so called flexible mechanisms of the Kyoto protocol allow Annex B countries to pursue their goals of GHG reduction in relation with other countries as well. These flexible mechanisms are international emissions trading, joint implementation (JI) and the clean development mechanism (CDM).

The CDM allows industrialized countries to invest in GHG reduction projects in developing countries and be credited for GHG reduction achieved through these projects through the issuance of certified emission reductions (CER). The CDM aims to promote sustainable development in the countries hosting the projects. However, many observers fear that only a

few countries – those that are in any case attractive destinations for foreign direct investment – will benefit from CDM projects. This paper looks into the distribution of CDM project activities among developing countries, the reasons behind the distribution, and examines what can be done to ensure equity among developing countries concerning the harnessing of the benefits of the CDM.

It is of universal concern that an equitable distribution of CDM projects is achieved among developing countries. For developing countries that would not receive investments from CDM projects under a laissez-faire approach, a fair distribution of projects means an opportunity for technology transfer, for inflows of financial resources and for concrete steps towards sustainable development. Taking a broader long-term perspective, investing nations benefit as well because a wider distribution of projects in turn expands the scope of the supply of emission reduction credits, thus lowering the industrialised countries' costs of compliance with the Kyoto Protocol (Zhang, 2001).

While the CDM presents only one of many ways to reduce GHG emissions, it is unique in its design to elicit the participation of developing nations through a parallel objective of sustainable development. If implemented to its maximum potential, not only can the CDM reduce CO_2 emissions but may also prove to be an effective instrument for an equitable and sustainable development among nations.

2.0 Methodology

The purpose of this study is to take an in-depth look at the CDM from its foundations to its current mode of application. In achieving this, a review and comparison of the intentions of the CDM based on the UNFCCC principles, the negotiated agreements and the spirit of the Kyoto Protocol versus the current implementation will be done. More specifically, the analysis examines the various developing nations receiving CDM projects, the tendencies for project distribution and the underlying reasons.

In describing the methodology, this study can be divided into four sections. The first section provides a general overview of the CDM from the theoretical basis of the mechanism, its negotiating history from an international perspective and finally its current situation as

executed in various countries. This overview is covered in chapters three and four. As a bridge between the overview and the detailed analysis, Chapter five narrows the broad understanding of the CDM providing the scope of the study.

The second section of the study analyses the main causes of an inequitable distribution of CDM projects among developing countries. This covers chapters six, seven and eight offering much of the substance for the study. The third section, in chapter nine, seeks to formulate universal criteria for the equitable distribution of CDM projects, as well as to create a priority list of countries for the CDM by applying the criteria formulated. This chapter also offers a few observations on the countries on the list. The last section, in chapter ten, proposes several alternatives regarding the legal redistribution of CDM projects among developing countries.

The research aims to offer another perspective to policy makers, project developers, analysts and decision makers in viewing the CDM and the current mode of application.

3.0 Rationale of the clean development mechanism: From theory to practice

3.1 Economic theory of the CDM

The concept of the Clean Development Mechanism is based on the theory of a transferable emissions permit system. The economics of the so called 'marketable permits' (Perman, 2003, p.224), 'transferable emissions permits' (Tietenberg, 2001, p. 255) or 'transferable discharge permits' (Field, 2002, p. 257) states that a cost effective means of internalization of externalities such as CO_2 emissions can be achieved through a market system of certificates trading. This means that certificates permitting emissions can be bought and sold at a market price amongst market participants who are also emitters themselves. By virtue of market forces, cost-efficient emissions reductions can be achieved.

Permits or certificates can be seen as a newly created property right which gives holders the permission to discharge specified gasses (Field, 2002, p. 257). In other words, just as a person is not allowed to build a structure on a piece of land without a permit or a land title,

companies will not be allowed to emit GHGs without discharge certificates. Furthermore, emitters who discharge beyond the amount allowed per their certificates will have to pay a fine corresponding to the amount discharged without the permits. The aggregate of all certificates corresponding to the sum of allowable emissions, is less than the total emissions being emitted in a market. This shortage of permits (also known as a "cap") forces efficiency in the market. A limited amount of certificates can be allocated through one of two ways.

Firstly, certificates may be auctioned to the concerned emitters. Bid prices in this auction can then be ranked and the resulting prices can thus constitute the demand curve for the certificates. The demand curve is identical to the aggregate marginal abatement cost function assuming companies do not engage in unfair strategic behavior (ie. emitting large amounts before auction takes place). In the end, if permits are sold at a single price level, the equilibrium point is found based on the total number of permits sold by the issuing agency at price μ*. The aggregate number of permits auctioned corresponds to the cap at which the regulating agency would want emissions reduced or point M* in Figure 1 below (Perman et al., 2003, p. 225).

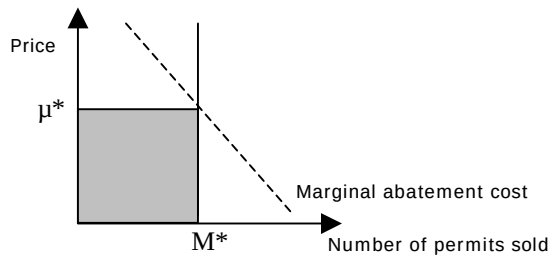

Figure 1: Equilibrium price for a given number of auctioned certificates (Source: Perman et. al.)

Alternatively, certificates may be allowed to be issued for free by the government based on certain distribution rules. This is also known as grandfathering. The equilibrium price μ* in this case would be determined by the intersection of supply and demand curves of permits once trading starts (Figure 2).

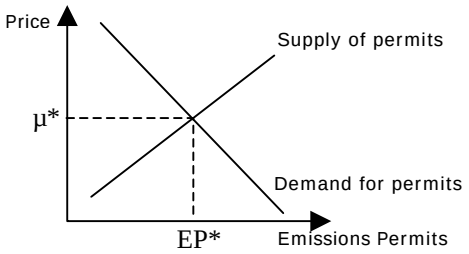

Figure 2: Equilibrium price at given free distribution of certificates
(Source: Perman et. al.)

It must be noted that no matter which method is chosen for certificate allocation, the resulting equilibrium price would be the same because the market forces of supply and demand are independent of the allocation method and will work in both instances to determine the equilibrium point. (Perman et al., 2003, p. 225).

The above theory describes a cap-and-trade system of emissions trading. To summarize, in a cap-and-trade system, an emission cap is imposed by limiting ("capping") the corresponding amount of emission allowances in the form of certificates or permits issued or auctioned to the concerned parties. These certificates or permits are in itself the traded commodity in this market. Over time, this shortage of allowances forces the market to find efficient ways and means to reduce emissions and comply with the amount of allocated permits (Figure 3). This system is currently applied in the European Emissions Trading Scheme (EU ETS) where each country must declare its National Allocation Plan (NAP) corresponding to the cap each country imposes on affected industries.

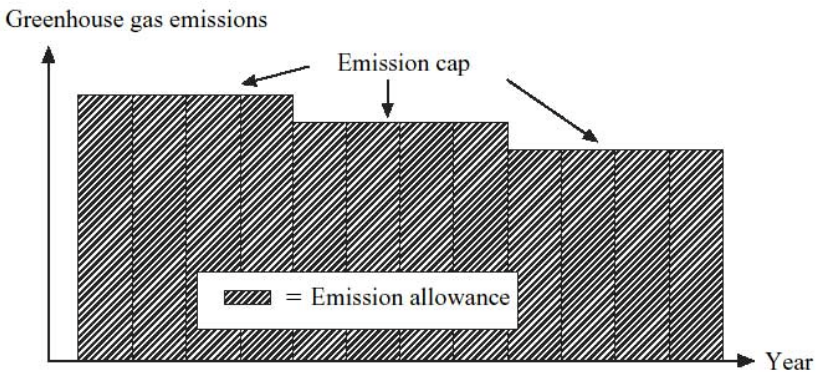

Figure 3: Cap-and-trade system
(Source: Palmisano, 2001)

Another system in emissions trading other than the cap-and-trade system is the baseline-credit system. In a baseline-credit system the trading entity establishes a baseline level akin to a business-as-usual scenario in which no action is taken to reduce emissions. If the trading entity achieves an emission level below the baseline within a specified period, it receives credits corresponding to the reduced emissions (Figure 4). These credits can then be traded in an emission trading scheme. The baseline-credit system is currently being applied in the CDM where each project must declare a baseline case which is the basis for future crediting of emissions reductions.

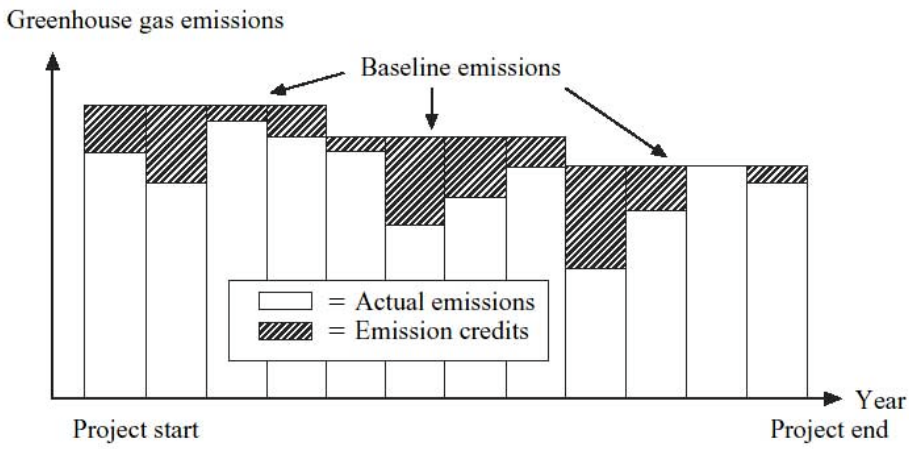

Figure 4: Baseline-credit system
(Source: Palmisano, 2001)

Compared to other incentives such as taxes and subsidies, tradable permits achieve both static and dynamic efficiencies simply by allowing the market to work. In other words, unwanted emissions are lowered at a minimum cost and simultaneously, incentives are provided to source emitters to conduct research and development on innovative technologies to further reduce emissions (Field, 2002, p. 268). Moreover, because the market does the work of reducing emissions, the governments can achieve their objectives without even having the need to know the details as to how reductions are being done. This is one of the main reasons why this concept has been a favorable policy in recent years since it avoids the often bureaucratic process of controlling emissions which beleaguers many governments, while at the same time allowing the various stakeholders flexibility as to how they are to meet these objectives (Tietenberg, 2001, p. 256).

The concept of the Clean Development Mechanism expands these ideas to include other countries, in particular, developing countries. Climate change is a global issue. Due to the uniform mixing of the greenhouse gases in the atmosphere, the location of greenhouse gas (GHG) emissions does not matter. Thus, it makes sense to reduce emissions in countries where such reductions would be cheaper. Developing countries are not bound by emission reduction targets and project implementation costs may be lower due to many factors, one of which is the price of labor. When a developed country invests in certified emission reduction units in a developing country, it is maximizing the reduction cost-efficiency by creating emissions reductions in other countries where reduction is less costly. The targeted amount of reduction is efficiently achieved thereby increasing overall social welfare. Figure 5 illustrates this point. The marginal cost curve for country A (MC Country A) represents the cost that would be incurred by industrial countries for domestic emissions reduction (ER). In Figure 5, the marginal cost curve for Country B is zero because it is assumed in this case that developing countries have no reduction commitments. Since global emission reduction targets are fixed and emissions reductions in developing countries cost less, emissions trading would result in the reduction of domestic mitigation in industrial countries and a rise in emissions reduction in developing countries. The total emissions reduction is achieved by both countries represented by the light grey area whereas the increase in overall social welfare is represented by the dark grey area (Müller-Pelzer, 2004, p.13). This is a theoretical case between two countries in a closed system. Expanding this case to cover the interactions between many nations, however, can yield a more negative overall effect.

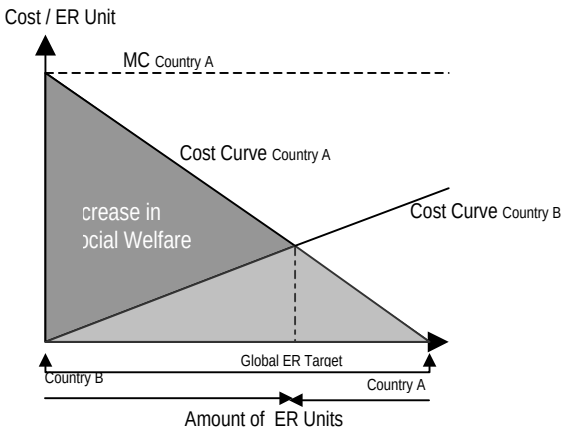

Figure 5: Increase in social welfare due to emission reduction in other countries without reduction commitments
(Source: Müller-Pelzer, 2004)

Taking a look at the theory from actual experience, an evaluation of the 1990 amendments to the US Clean Air Act (CAA) shows that the results of the tradable permit system in the reduction of sulfur dioxide have indeed been very encouraging. Because of the amendments allowing for a permit trading system, an estimated abatement cost savings of US$ 10 billion has been achieved. Moreover, because of the inherent flexibility of the system, compliance with the CAA provisions has increased (Perman et al., 2003, p. 229). The success of the program paved the way for the concept of emissions permit trading to eventually be included in the international negotiations on global climate change.

The economic theory on emissions trading presents a strong case for the CDM to be applied as a flexible and cost-effective means of reducing greenhouse gasses. In fact, past experience from the CAA of the United States indeed showed a cost effective reduction of emissions. However, applying the economic theory of emissions trade on an international scale involving a variety of nations in varying stages of development manifests a complex problem. Imposing a market mechanism on countries with different levels of competitiveness creates a trading environment conducive to imperfect competition whereby only a few nations benefit, and overall social welfare decreases. In contrast to the theory, the reality of the CDM shows that only a few countries reap the rewards of the mechanism of emissions reduction and sustainable development. Evidence of this claim will be presented in Chapter 6 of this paper.

The sound argument “in theory” for emissions trading and other market mechanisms as well as the empirical evidence presented by the United States has led to the eventual inclusion of these mechanisms in the international negotiations of climate change. It shall be years after the negotiation of the Kyoto Protocol and during the actual implementation of the CDM where the aggregate negative effects of this market mechanism will be seen.

3.2 History of the CDM from the UNFCCC perspective

From the time scientists through the Intergovernmental Panel on Climate Change (IPCC) had pointed out the possible implications of increasing carbon dioxide, the United Nations Framework Convention on Climate Change has stated in Art. 3 “that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the

lowest possible cost". The framework thus set the stage for further negotiations towards other flexible mechanisms (UNFCCC, 1992).

Negotiations on a global level for emissions trading began in the second conference of parties (COP 2) in Geneva on July 1996. The Clinton administration called for a "binding emission target" on the basis of three conditions, one of which is "through flexible and cost-effective market-based solutions". Even though skepticism from developing countries and environmental groups were voiced, emissions trading nonetheless found its way into article 17 of the Kyoto protocol on climate change (Oberthuer and Ott, 1999, p. 188).

The Clean Development Mechanism did not begin at the onset in its current form. The idea of a Joint Implementation (JI) mechanism was launched by Norway and Germany in 1991 which, at that time, did not encounter much resistance. The basic concept was that the transfer of technology to other countries to reduce greenhouse gases could be counted towards the benefit of the source country of the technology. While included in article 4 of the UNFCCC, it was at that time not well defined. In the years following, there was a lot of resistance from developing countries who were concerned that such mechanisms would let industrial countries "off-the-hook" by buying their way into compliance. Environmentalists were also uncomfortable with the notion of "pollution rights" given by the issuance of certificates or permits from JI (Dutschke & Michaelowa, 1998, p. 10).

At a later stage of the Kyoto process in May of 1997, Brazil proposed a clean development fund which would be financed by industrialized countries non-compliant to the protocol. Due to the "geographic flexibility" of the proposal, the United States took the opportunity to exercise further flexibility in the implementation of their commitments. The Brazilian proposal would later be transformed into something very closely resembling the JI concept. However, the name Clean Development Mechanism made the concept more palatable to skeptics because of the emphasis on sustainable development in its implementation. Hence, the CDM was drafted as Article 12 of the Kyoto protocol and dubbed as the "Kyoto Surprise" due to its rather late elaboration in the final days of the Kyoto protocol negotiations (Oberthur and Ott, 1999, p. 165).

From a negotiations perspective, the inclusion of the CDM in the Kyoto Protocol achieves several goals: (1) The CDM provides industrial countries increased flexibility in implementing compliance by allowing them to earn emission credits though project-based activities in developing countries. This means not only another option for compliance, but the fact that implementation was allowed through other countries meant geographical flexibility as well. (2) The CDM achieves an increased participation of developing countries in the climate change negotiations by linking the concerns of global climate change to the concerns of local sustainable development (SD). In the end, developing countries benefit from the transfer of financial and technological resources while industrialized countries benefit from the certification of emission reductions. (3) Added to this is the achievement of the principles set about by article 3 par. 4 and 5 of the UNFCCC whereby "Parties have the right to, and should promote sustainable development" and "Parties should cooperate to promote a supportive and open international economic system that would lead to sustainable economic growth and development in all Parties, particularly developing country Parties" (UNFCCC, 1992).

It must be emphasized at this point that the CDM has been successfully negotiated into the Kyoto Protocol and accepted by developing countries on the premise that such a mechanism would emphasize sustainable development. The concept of the CDM evolved from the Brazil proposal for a Clean Development Fund which would be open for all developing nations. Further negotiations transformed the 'fund' to the Clean Development Mechanism, highlighting sustainable development. Because of this subtle transformation, the CDM concept has been understood by many developing countries that such a mechanism would be available and beneficial not only to a few but to all developing nations. This change re-directed the focus of negotiation from mere development and adaptation towards cost-efficiency in the reduction of GHGs.

What was agreed upon in Kyoto was further outlined in 2000 during the second part of the 6th Conference of Parties (COP 6) in Bonn. The 'Bonn Agreement' detailed the CDM and paved the way for the ratification of the Kyoto Protocol by several countries (Huq, 2002, p. 6).

The consensus at the Kyoto Protocol specified in Bonn led in 2001 to the Marrakesh accords at the 7th COP (COP 7) which formed the final design of the international climate change policy regime and eventually paved the way for the ratification of all industrialized countries except the United States and Australia (Krey, 2004, p. 8). The modalities and procedures for a clean development mechanism were also established at COP7 in Marrakesh (Decision 17/CP.7, 2001).

On 13 October 2003 a directive was adopted by the European Parliament and the Council "establishing a scheme for greenhouse gas emission allowance trading within the Community" (European Parliament, 2003). The Directive lays the groundwork for the trading of emissions certificates by 1 January 2005. An amendment to Article 11 of the directive has been put forth establishing a link between the CDM and the EU emissions trading scheme. The proposed amendments specify the relationship between Certified Emission Reduction units gained from CDM projects with the certificates to be issued and traded under the EU Emissions Trading Scheme (Langrock, Sterk & Bunse, 2004, p. 6). The EU Directive made the CDM a policy to be taken seriously by all stakeholders concerned. Through the legislation of the CDM in the European Parliament, increased awareness in its implementation was created among the various stakeholders which include project developers, CDM fund managers, and third party creditors, among others. While the CDM as a concept has been written and accepted in European Union legislation, actual project implementation will still take several steps. It is therefore important to look at the current situation of the CDM in order to understand its definition according to the Kyoto Protocol and the necessary steps for the actual implementation of CDM projects.

4.0 Current situation of the CDM

4.1 Definition

The Clean Development Mechanism (CDM) is an instrument of the Kyoto Protocol designed to eliminate or reduce GHG that are or "would have been" emitted from developing countries. In so doing, developing countries benefiting from the CDM are placed on a development path involving reduced emissions. The objectives of the CDM are both the cost-effective reduction of GHGs and the sustainable development of the host country. The CDM is one of three so called flexible mechanisms of the Kyoto Protocol along with emissions trading and joint-implementation. Flexibility is achieved in the manner by which Annex I countries achieve GHG reduction. In general, this is done via the implementation of climate friendly technologies in non-Annex I countries. For the investment and actual GHG reductions, project investors from Annex I countries in turn receive certified emissions reductions (CERs). The CERs can then either be traded or banked by certificate owners.

The CDM is guided by the conference of parties and supervised by a ten-member executive board (EB) comprising one representative from each UN region (Asia, Latin America and the Caribbean, Africa, Central Eastern Europe and OECD), one from small island developing states (SIDS), and two each from Annex I and non-Annex I Parties. Among the main responsibilities of the EB are: i) establishing the ground rules for the implementation of the CDM among participating countries and organizations, ii) accreditation of independent operational entities (OE) tasked with validation and verification of project activities, and iii) reporting and dissemination of pertinent information relating to all aspects of the CDM. Relating to this paper, the EB is also to "report to the Conference of Parties serving as the Meeting of Parties (COP/MOP) on the regional and sub regional distribution of CDM project activities with a view to identifying systematic or systemic barriers to their equitable distribution" (Decision 17/CP.7, p. 28, 2001).

A typical example of a CDM project is the NovaGerar Landfill Gas to Energy Project in Brazil. One project proponent is NovaGerar which is a joint venture between EcoSecurities, an environmental finance company which specializes in GHG mitigation issues, and S.A. Paulista, a civil engineering and construction firm. The other project proponent is the World

Bank Netherlands Clean Development Facility (WB NCDF), a CDM project facility, managed by the International Bank for Reconstruction and Development (IBRD). Both bilateral and multi-lateral funds are involved from the government of the Netherlands and the WB NCDF, managed by the IBRD. The expected operational lifetime of the project is 21 years but the length of the first crediting period is seven years starting from 1 July 2004. It has been agreed that IBRD on behalf of the WB NCDF will receive the CERs at the later stages of the project after it has been proven that emission reductions have taken place. After seven years, the crediting period is then renewed for a maximum of seven years per period (EcoSecurities, 2004). This project will be used in the subsequent sections of this paper to illustrate the various stages in the CDM project development.

4.2 Participation requirements

Annex F of Decision 17/CP.7 specifies the participation requirements of countries interested in the CDM (2001). The requirements state i) that participation is voluntary, ii) that participant parties shall designate a national authority for the CDM and iii) that participant parties must have ratified the Kyoto Protocol. Countries must fulfill all three requirements in order to participate in the CDM.

4.3 Project cycle

An understanding of the process by which countries receive CERs from the implementation of a project can be truly obtained via an examination of the CDM project cycle. The essence of the project cycle is presented in Figure 6.

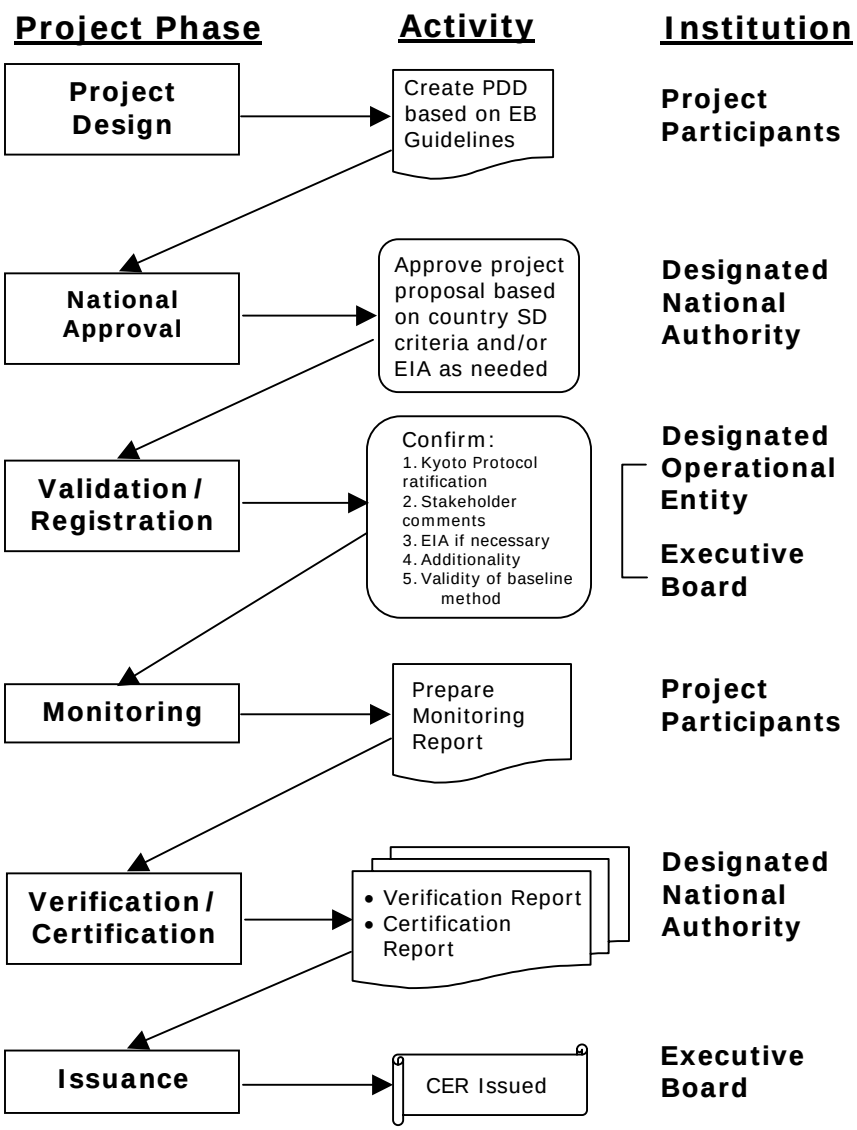

Figure 6: CDM project cycle
(Source: Author)

4.3.1 Project design

Project selection in a host country must have the potential to reduce GHGs and must conform to the sustainable development priorities of that nation. In theory, all projects that satisfy these two criteria can be eligible as CDM project activities except selected forestry and nuclear energy projects. The confirmation that these projects indeed contribute to a reduction of GHG compared to a baseline scenario will be done in the validation phase of the

project. In order to be able to uniformly evaluate various projects, the EB has prescribed a format for the project design document (PDD).

To date, the latest PDD template, effective since 1 July 2004, is based on the following outline:

Section	Description
A.	General description of project activity
B.	Application of a baseline methodology
C.	Duration of the project / crediting period
D.	Application of a monitoring methodology and plan
E.	Estimation GHG emissions by sources
F.	Environmental impacts
G.	Stakeholder comments
Annex 1.	Contact information on participants in the project activity
Annex 2.	Information regarding public funding
Annex 3.	Baseline information
Annex 4	Monitoring plan

Table 1: Project Design Document outline
(Source: UNFCCCc)

4.3.2 National approval

The approval of a project by the host country is a prerequisite step before validation and official registration of the project. Approval is done by the designated national authority (DNA) based on national environmental and sustainable development criteria. Depending on the type of project and/or national laws, an environmental impact assessment may be required for the approval process. The approval by the DNA is essential in ensuring that projects adhere to the objective of the CDM of promoting sustainable development in the host country.

For the NovaGerar Project, approval was signed by Edwardo Campos, the Minister of Science and Technology who is at the same time the President of the Brazil Interministerial Commission on Global Climate Change (See Annex 1). The Interministerial Commission on

Global Climate Change of Brazil is at the same time the official DNA of the country in charge with the national approval of all CDM projects.

4.3.3 Validation / Registration

In order for a project to be validated, a third party designated operational entity (DOE) is called upon to review the PDD. The DOE is normally an independent standards auditing enterprise. Most often DOEs are already involved in standards accreditation and certification in some form. Before a PDD can be reviewed however, DOEs must first be accredited by the EB in order to perform their validation function. Validation is the independent review of the project to ensure that the project conforms with the requirements and prerequisites agreed upon by the COP/MOP. Broadly, the DOE has to confirm: i) that the host country has ratified the Kyoto Protocol, ii) that comments from project stakeholder groups have been elicited, iii) that an Environmental Impact Assessment (EIA) has been made in accordance with national laws, iv) that the project emissions reduction is additional to any that would have occurred without the CDM, and finally, v) that the method for calculating the basis of additionality or the baseline scenario is valid. The concepts of baseline and additionality will be explained below.

Since the CDM is in its beginning stages, methods validation has so far taken up much of the time in the validation / registration phase of project development. This is so because the method for calculating the baseline scenario has to be carefully evaluated for each project type because once a method is valid it can be used as a basis for baseline calculation for other projects in the future. Another current hindrance in the validation process is the issue of additionality.

A project is defined as additional if emission reductions caused by the projects would not have occurred without the CDM project activity. Thus, two different scenarios have to be compared. The first scenario is the baseline or “business-as-usual” scenario which would have occurred without the CDM project activity. The second scenario is project scenario or emission reduction achieved because of the project implementation. Figure 7 illustrates this concept:

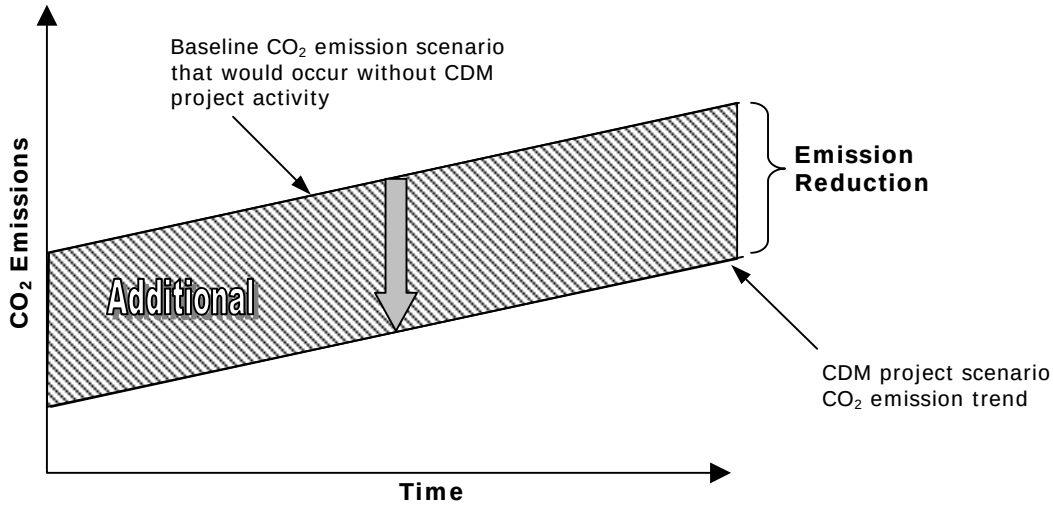

Figure 7: Additionality of CDM project from reference baseline scenario (Source: Müller-Pelzer, 2004)

Measuring additionality of a project requires a reference baseline case. As of 22 October 2004, 14 baseline methods have been approved by the EB. Two more methods are pending approval for their proposed additionality tests. The list of projects with approved methods is per follows:

Methodology Number	Methodology Title
AM0002	Greenhouse gas emission reductions through landfill gas capture and flaring where the baseline is established by a public concession contract (85 KB)
AM0003	Simplified financial analysis for landfill gas capture projects (72 KB)
AM0004	Grid-connected biomass power generation that avoids uncontrolled burning of biomass (95 KB)
AM0005	Small grid-connected zero-emissions renewable electricity generation (112 KB)
AM0006	GHG emission reductions from manure management systems (221 KB)
AM0007	Analysis of the least-cost fuel option for seasonally-operating (78 KB)
AM0008	Industrial fuel switching from coal and petroleum fuels to natural gas without extension of capacity and lifetime of the facility (91 KB)
AM0009	Recovery and utilization of gas from oil wells that would otherwise be flared (93 KB)
AM0010	Landfill gas capture and electricity generation projects where landfill gas capture is not mandated by law (62 KB)
AM0011	Landfill gas recovery with electricity generation and no capture or destruction of methane in the baseline scenario (64 KB)
AM0012	Biomethanation of municipal solid waste in India, using compliance with MSW rules (67 KB)
AM0013	Forced methane extraction from organic waste-water treatment plants for grid-connected electricity supply (109 KB)
AM0014	Natural gas-based package cogeneration (82 KB)
AM0015	Bagasse-based cogeneration connected to an electricity grid * (255 KB)

Table 2: List of approved baseline methodologies as of 21 October 2004
(Source: UNFCCC)

Other project specific baseline methods are constantly being proposed, revised and approved.

After a thorough assessment that a project is indeed additional and it meets all pre-defined requirements of the COP/MOP, it can be registered by the EB as an official and validated CDM project.

Validation of the NovaGerar Landfill Gas to Energy Project prior to registration was done by Det Norske Veritas AS (DNV) as commissioned by the WB NCDF. Registered on 18 November 2004, it is the first ever registered CDM project. DNV as the DOE or third independent third party assessor of the project, has been tasked to evaluate the project design "in particular the baseline, monitoring plan and the project's compliance with relevant UNFCCC and host party criteria." (DNV, 2003)

4.3.4 Monitoring

Included as part of the PDD is a project monitoring plan. The monitoring plan ensures the collection and archiving of data necessary to observe and calculate emissions within the project boundary. A monitoring report will be written in accordance with the monitoring plan by the project participants to be submitted to the DOE for CO_2 reduction verification.

4.3.5 Verification / Certification

Verification is the independent and periodic assessment of emissions reduction by the DOE based on the submitted monitoring report. After a detailed review, a verification report is produced by the DOE. If and when CO_2 reductions are confirmed to be within the specified project timeframe, the DOE issues a written certification of assurance that CO2 reduction has indeed been achieved by the project. Included in a certification report is a request to the EB to issue CERs accrued by the project.

4.3.6 Issuance

After 15 days of the certification report and the included CER issue request, the issuance will be considered final unless a Party involved in the project or at least three members of the EB request a review of the proposed issuance of the CER. The CDM registry under instructions from the executive board issues the CER and tracks all pending CERs for all CDM Party participants. Project participants of the NovaGerar Project have agreed that all communication regarding the issuance of CERs be forwarded to the IBRD, as trustee of the WB NCDF.

The implementation details of the CDM are in constant flux. The finer points of determining additionality and of baseline methods approval are changing very frequently. After all, this is the first time nations from rich and poor parts of the globe have come together to tackle a common objective of climate change. What has been presented is an overview of the CDM as it stands as at the writing of this paper. While the main CDM project cycle is not expected to change drastically, the details of the various stages of the cycle are likely to change constantly in the subsequent months ahead. Nonetheless, at this point having a better understanding for the CDM allows for a better appreciation of the topic of this thesis and the nuances of its scope.

5.0 Scope

The global debate on equity in climate change policy has been engaged since the UNFCCC was crafted. This began as the so called North-South debate between the countries as to who has the responsibility of lowering GHG emissions based on past levels of emissions. The debate took place between industrialized countries with long emissions history and developing countries which never had large emissions in the past nor in the foreseeable future (Miguez, 2002). For many developing countries the concern is that they would be most affected by the impacts of climate change. Moreover, current patterns of development have been largely dependent on the use of fossil fuels and any action to limit and/or reduce GHG emissions in developing countries has been seen as a threat to economic development (Agarwal & Narain, 1992).

The analysis of this paper proceeds by taking a different look into the debate. While much has been said about the question of equity between developing countries and developed countries, this paper focuses on the inherent differences among developing countries in the context of the CDM leading to inequitable distribution of CDM project activities among country participants.

In order to assess the distribution of CDM projects among developing countries, it is necessary to distinguish between the market for CERs and the market for CDM projects. While both markets are related, the factors affecting the supply and demand conditions in both cases are different. The demand for CERs is dependent on an Annex I country's GHG reduction needs and policy. This demand is expressed mainly as an interest to buy CERs (Jahn et al. 2004). This CER demand is, however, independent of where these CERs come from. In order that CERs be verified, and eventually issued to an Annex I country, a CDM project has to first be implemented in a Non-annex I country (Figure 8). Where these projects are implemented rests on an entirely different set of factors.

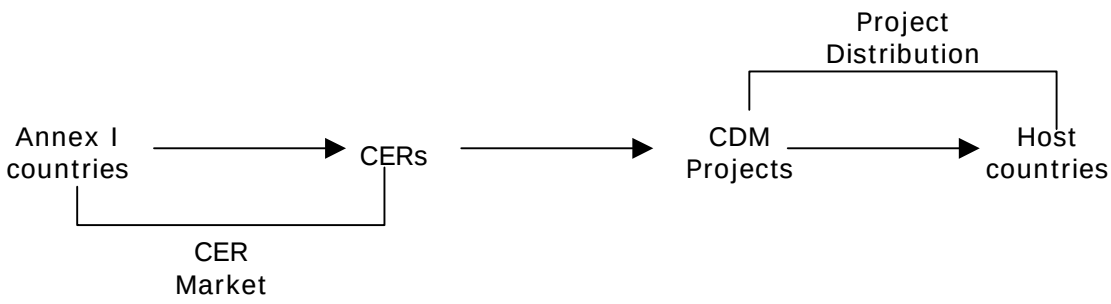

Figure 8: Focus on project distribution not CER market (Source: Author)

This paper takes into account the factors that affect project distribution and will not delve into an analysis of the market dynamics of the supply and demand of CERs. Specifically the focus will be on the conditions that affect the distribution of CDM projects among developing countries. The next chapter takes a look at these factors based on the implementation of the CDM framework in various developing countries.

6.0 Non-Annex I CDM implementation issues

As a market mechanism, there exist conditions for the CDM to function. Given the global dimension of this market mechanism, the implementation of these conditions for market participation differs from country to country. The differences in implementation create distortions in the market that at best give rise to inequities between developing countries in the distribution of CDM projects. Worse still, these conditions disallow participation of a large number of developing countries, effectively leaving them out of the CDM market. This section describes these conditions and the resulting implication for the distribution of CDM projects among developing countries.

6.1 Necessary conditions for participation in the CDM market

The necessary entry conditions for a country's participation in the CDM have been explicitly negotiated and written in the context of climate change negotiations. These conditions can be regarded as the official conditions for participation, namely: (1) a country's ratification of the Kyoto Protocol, and (2) a host country's establishment of a CDM focal point, also known as the Designated National Authority (DNA). Other than the conditions explicitly stated in the modalities of implementation however, there are also unofficial conditions which, while not explicitly written, are implied by the rules of participation in the CDM.

6.1.1 Official conditions

6.1.1.1 Kyoto ratification

As of 21 October 2004, a total of 127 countries, representing 61.6% of world greenhouse gas emissions, have ratified the Kyoto Protocol (UNFCCC, 2004). From a CDM perspective, a country must have ratified the Kyoto Protocol in order to be able to participate (Decision 17/CP.7, 2001). However, there are countries which, though actively participating in CDM project development, have yet to ratify the Kyoto Protocol. A case in point is Indonesia. While the country has so far submitted three project design documents to the EB for evaluation (Annex 2), it has managed to ratify the Kyoto Protocol only in October 2004

(UNFCCC, 2004). Because of this, the CDM as a project development incentive will necessarily go to countries which have already ratified the Kyoto Protocol, leaving out countries which have not yet done so.

6.1.1.2 DNA establishment

A second requirement for a country's participation in the CDM market is the establishment of the Designated National Authority (Decision 17/CP.7, 2001). In the CDM project cycle, the host country DNA plays an important role in providing a regulatory framework for the evaluation and approval of CDM projects. While many developing countries have ratified the Kyoto Protocol, some have yet to establish a functioning DNA working as a completely local legal entity. Without such a body to approve project proposals in accordance with local sustainable development criteria, project development will necessarily stall. Once again, CDM project development will favor countries with established DNAs.

Out of 126 developing nations (UNDP, 2004, p.146) only 88 non-Annex I countries have ratified the Kyoto Protocol (UNFCCC, 2004). A total 54 DNAs have been established among developing countries (UNFCCC). Some countries which have established DNAs, however, still lack the ratification of the Kyoto Protocol, for example Nepal, Pakistan, Syria, Lebanon, Mali, Niger, Zambia and Zimbabwe. Of the 126 developing nations, only 44 countries have ratified the Kyoto Protocol and have established a DNA.

While the establishment of a DNA can facilitate awareness on climate change as well as initiate project proposals and approve them, without the ratification of the Kyoto Protocol, emissions reductions which may be realized through projects cannot be counted due to a lack of the necessary prerequisite for market participation in the CDM.

Hence, despite all its noble objectives, the CDM is not available to all developing countries. The official participation conditions alone as seen from Table 3 have so far hindered the participation of 67% of all developing nations.

Developing Nations:		
total	135	100%
that have ratified the Kyoto protocol	88	65%
that have established DNAs	55	41%
that have ratified the protocol and have established DNAs	44	33%
Developing countries without KP ratification and/or DNA	91	67%

Table 3: Number of developing nations that meet participation conditions of the CDM
(Source: taken from data in Annex 1, October 2004)

6.1.2 Unofficial conditions

6.1.2.1 Minimum annual CO_2e

The CDM as seen from the flow of the project cycle (section 4.3) will entail substantial transaction costs (Michaelowa et al., 2003). A recent empirical study done by Krey of CDM projects in India, estimates a range of 0.06 – 0.47 US$/t$CO_2$e for specific transaction costs which constitutes 76% to 88% of the entire transaction costs (2004). Transaction costs may be in the form of search costs, negotiation costs, approval costs, registration costs, administration costs etc. These costs decrease as the project's total emissions reductions increase, i.e. transaction costs for larger projects cover a much smaller percentage of project costs as compared to small CDM projects. According to Michaelowa et al., given the current price range for CERs in the market, projects with annual emissions reductions of less than 50,000 tCO_2e are not viable under the current regime (2003).

Haites calculates that the average size of projects ranges from 130,000 to 180,000 tCO2e per year (2004). These project sizes alone already exceed the annual emissions of some countries. Due to the high transaction costs, an optimum project size is sought. With respect to the World Bank's Prototype Carbon Fund (PCF), which is an agglomeration of financial resources from 6 government entities and 17 private companies, the smallest project in its portfolio at the moment involves an annual reduction of 215,000 tCO2e. Current data suggests the minimum project size for regular projects to be 100,000 tCO2e (Haites, 2004).

Assuming that 10% of a country's emission can be optimally used for CDM projects and that the minimum project size is 100,000 tCO_2e, then the minimum country annual emissions should be at least 1 $MtCO_2e$. Looking at the list of developing country emissions, only 99 out of 135 developing nations can fit this criterion (Annex 3). Should this particular condition be added to the current official criteria, only 38 developing nations are eligible for participation in the CDM.

Of all the Project Design PDDs with approved methodologies and which are undergoing validation, Bhutan is the country with the lowest emission of 400,000 tCO_2e in 2000 according to the World Bank (Annex 2). A project proposed in Bhutan is to yield an emissions reduction of 50 tCO2e per year. While the project may sound attractive, one cannot help but ask: What was the cost to investors? What are the actual intentions of such an investment? Can the international community expect CDM investments in countries with similar conditions as Bhutan?

If CDM can indeed be understood as a market mechanism, simply put, projects will go to countries with the best opportunities for emissions reduction. Since success in the case of the CDM framework is measured in terms of reduced emissions, the first investment option will be to countries with high reduction potential. (Humphreys, 1998)

6.1.2.2 Existence of baseline data

Annex G of Decision 17/CP.7 of the Marrakesh accords outlines the rules for validation and registration of CDM projects (2001). A project has to be additional to be validated and eventually registered to the CDM EB. This means that it has to be proven that the project would not have occurred without the incentives offered by the CDM, namely, the issuance and trade of CERs. Paragraph 43 of Annex G states:

"*A CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity*"

(Decision 17/CP.7, 2001)

In order to prove the additionality of a project, a baseline scenario must be created. This baseline scenario analyses what may happen to emission trends if the CDM project is not pursued. The Marrakesh accords detail specific approaches in choosing a baseline methodology for various projects which includes the use of "existing actual or historical emissions", "emissions from a technology that represents an economically attractive course of action" and/or "the average of similar project activities undertaken in the previous five years" (Decision 17/CP.7, 2001). These rules assume that participating countries have such baseline data available. Unfortunately, many less developed countries lack such data.

The non-existence of such data in smaller countries can be seen as an unofficial barrier to participation in the CDM. Smaller and poorer developing countries, many of whom are categorized as LDCs, have difficulty providing existing baseline data. Without baseline data, a baseline scenario will be very difficult to conceive and objectively proving that a project is additional would be almost impossible.

While the above mentioned conditions are required for participation in the CDM market, not all participants can participate effectively in the market. This confirms the observation of several authors that the CDM will concentrate only in a few countries with many of the LDCs unable to participate simply because they are not positioned to implement the structures necessary for participation (Banuri & Gupta, 2000; Huq, 2002; Najam et al., 2003).

Instead of merely creating inequality among developing countries, the implementation conditions outlined in this section will likely impede many of the poorer developing countries from participation in the CDM. In order to focus on the conditions that create inequality among developing countries, an assessment of country capacity has to be made. The following section will look precisely at why some countries are better than others in attracting and initiating CDM projects.

6.2 Local capacity as a condition for effective CDM market participation

The previous section on the necessary conditions for participation in the CDM market has shown that many countries will be precluded from the CDM simply because the rules disallow

them or necessary conditions simply do not exist. This section will deal more with the subtleties of effective market participation, particularly the local capacity of a country.

Some authors have surmised that Foreign Direct Investment (FDI) may be a key indicator for effective participation in the CDM market (Humphreys, 1998; Kete et al., 2001). However, studies show that there are some countries with poor FDI performance and they are nevertheless very active in participating in CDM projects (World Bank, 2004c). This is primarily because they have invested heavily in domestic capacity building for the CDM. Countries in Latin America, most notably Brazil, Mexico, Costa Rica, Honduras and Argentina, have engaged in the establishment of national authorities as early as 1994 (Figueras & Olivas, 2002) and thus have had the benefit of attracting a bulk of CDM investments to the region due to the knowledge and experiences gained in the process (Annex 2). Why does local capacity play such a key role in a country's effective participation in the CDM market? The answer to this will be discussed in the following sections.

6.2.1 Capacity of the designated national authority

Perhaps one of the biggest factors in effective CDM market participation is the capacity of the host country's Designated National Authority (DNA). The number of projects a country is able to offer in the international market is a direct reflection of how well a country's DNA functions.

As mentioned previously, the main responsibility of a DNA is the guardian of its nation´s SD criteria in the implementation of CDM projects (section 4.3.2). The DNA must be able to effectively evaluate project proposals and either accept or reject them based on national priorities and interpretations of sustainable development.

More than this however, the DNA can play several roles that will enhance a country's participation in the CDM market. The DNA can be, among other things, the marketer of projects, a focal point for multi-stakeholder discussions, an information provider, a national CDM coordinator, a project advisor etc. (Aslam, 1999 as cited in Michaelowa, 2003).

Other than its various roles, the effectiveness of a DNA is also dependent on its structural design. In many countries the DNA is designed as a two-tiered agency with an approval body at the top and a secretariat in charge of day-to-day activities. Such a structure is reflected in countries such as the Philippines, Argentina, and India (Planning Commission, 2003; Asian Institute of Technology, 2004; Michaelowa, 2003). The disadvantage of such a structure is the involvement of a bureaucracy which can impede the approval process and increase transaction costs. Other countries have opted for a simplified DNA structure independent of the government and thus unimpeded from the bureaucracy that comes with it. A prime example is Honduras with an independent DNA structure with full approval powers (Michaelowa, 2003). As a result, Honduras, despite being a small country, has been able to propose seven projects to the EB, constituting the second largest number of projects in a country in Latin America, second only to Brazil (Annex 2).

Another factor for the effectiveness of a DNA is its experience and continuity (Michaelowa 2003). In the mid ´90s, several countries in Latin America actively participated in the Activities Implemented Jointly (AIJ), a pilot phase for greenhouse gas reduction projects abroad, and they set up institutions accordingly. The experience gained in the approval process, the transaction procedures and the dissemination of information has been reflected in the number of projects which have been proposed in the region to the Executive Board. Figure 9 clearly shows that Latin America has the bulk of CDM projects with 53% as compared to other continents. It is also interesting to note that Brazil leads the region in projects with a total of 15 projects. As mentioned, Honduras has been able to generate a total of 7 projects, which is more compared to countries like Chile with 6 projects, Mexico with 4 projects and Argentina with 2 projects.

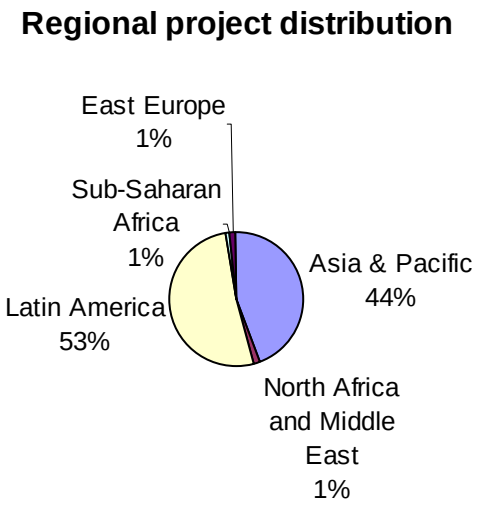

Figure 9: Regional CDM project distribution
(Source: Author)

A well established, trained and experienced DNA will have the capacity to minimize transaction time, thus cutting down on transaction costs and ultimately effectively influencing the perceived risk on the part of the project developers and project investors. Given this, projects will necessarily proliferate in countries where these conditions exist and dwindle in countries where these conditions are lacking.

While the capacity of the DNA is indeed critical in a country's journey towards effective participation in the CDM market, there are other stakeholders involved whose participation can lead to synergies which further enhance a country's ability to market CDM projects to potential investors.

6.2.2 Other stakeholders

Banks, national business associations, local governments, NGOs and the academe can effectively participate in creating the right conditions for project implementation. A case in point is the current success of India in using the CDM as a tool to achieve its objectives of sustainable development, pollution reduction and environmental protection (Planning Commission, 2003).

Banks which are aware of CDM as a finance instrument can be made familiar with CER dependent project financing. This can enhance a country's ability to develop CDM projects (Janssen, 2002). In India, capacity building in this sector still needs to be mainstreamed (Planning Commission, 2003). Nonetheless, the Indian Development Finance Corporation (IDFC) activity pursues CDM projects as a business opportunity (Michaelowa, 2003)

From a business perspective, industry associations also play a key role in maximizing the opportunities presented by the CDM. Three major associations in India, i.e., the Confederation of Indian Industry (CII), the Associated Chamber of Commerce of India (ASSOCHAM) and the Federation of Indian Chambers of Commerce of Industry (FICCI), have taken responsibility in creating awareness among their members (Michaelowa, 2003).

Although members of civil society do not have a direct benefit from the CDM, the academe, NGOs and research institutions play a critical role in a country's CDM market participation. Indian NGOs have been most vocal on the CDM in the international fora. Research institutes such as The Energy Research Institute (TERI) and Development Alternatives (DA) have not only endorsed the CDM but have also done several studies in relation to the CDM. Such studies by institutions can minimize the uncertainty investors face by publishing reports related to CDM. These publications increase the level of reassurance for investors in facing the risks involved in project development.

India is a prime example to illustrate the synergies between various sectoral and national institutions in capacity building. Of the several capacity building programs done in India, one of the most effective was the US effort in India whereby two US experts were seconded by TERI to focus on raising awareness in India's business associations (see Annex 2). One of the main highlights of the program was a dialogue with no less than the former US Vice President Al Gore with 50 CEOs of Indian companies. This drastically increased the level of awareness within the business community of India (Michaelowa, 2004b).

An indication as to the level of CDM institutional capacity within a country is the type of project implemented involving international support. A bilateral project is a project involving a host country and either an industrial country or a private entity within an industrial country. A multilateral type of project involves the pooling of industrial country resources

into a fund with a portfolio of projects and managed by a fund manager. A unilateral type of project is a project developed within a host country without a specific partner country involvement (Baumert et al, 2000). The CERs which can be generated from a unilateral project development may then later be sold to a country which needs the CERs.

Jahn et al. points to two main requirements for unilateral CDM projects (p. 25, 2004). The first is the mobilization of domestic capital which involves "joint action of financial institutions and establishment of financial standards, capability to handle project risks, financing tools specific to the needs of project participants," and finally "financial capacity building for local developers and financing institutions" (Jahn et al., p. 25, 2004). In order for this to take place, large efforts in creating awareness among financial institutions is critical for such development. The second requirement according to Jahn et al. is a minimum level of human skills, infrastructure and institutional capacity (p.27, 2004). Many projects need highly skilled engineers and financial experts. Moreover, a country has to have an adequate institutional framework for the CDM in order to harness the potential of all stakeholders involved in the development of CDM projects. In essence, in order for a country to develop its own CDM projects unilaterally, a minimum level of capacity should be established.

Once again the results of a synergistic relationship among various stakeholders in India for the CDM speak for themselves. Nine out of a total of fifteen projects in India, with approved methodologies and projects currently under evaluation, have been created unilaterally without international support (Annex 4). This clearly shows the high level of capacity which has already been developed within the nation. In capacity building for a country, there is a critical mass at which the synergies between stakeholders compliment each other in the development of CDM projects. In order to achieve this, a catalyst is needed in the form of a focused effort for capacity building. In the case of India, as mentioned, it has been the initial efforts from countries like Canada through CIDA and the United States through the USAID which have been instrumental in building a critical mass of local capacity in CDM. By the spring of 2001, India had the highest number of projects accepted by the Dutch Certified Emission Reduction Unit Procurement Tender (CERUPT)

program. The hosting of the 8th COP in New Delhi further complemented previous efforts in awareness building leading to a boom in the nation's capacity (Michaelowa, 2003).

Figure 10 shows various countries and the different transaction types. As of October 2004, India and Brazil have the most number of CDM projects with 15 and 14 projects respectively. While Brazil and India have almost the same amount of projects submitted, many of the projects in Brazil have been proposed with the involvement of bilateral support whereas the majority of projects in India come from internal unilateral project development.

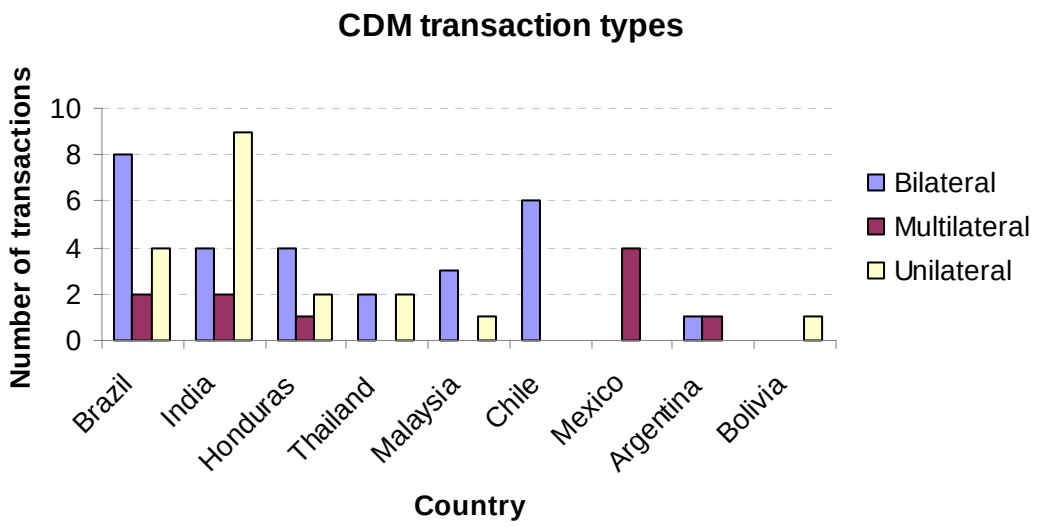

Figure 10: CDM transaction types in a few sample countries
(Source: Data taken from Annex 4)

A variety of national level stakeholders have been mentioned in this section which are critical for the effective participation of a country in the CDM project market. It is, however, important not to lose sight of the fact that one of the main objectives of the CDM is sustainable development. Therefore, as important as national stakeholders are stakeholders in the local, or project level – the citizens and communities that will be affected by CDM projects. Despite much effort on capacity building and awareness raising done on a national level, it is critical to have local stakeholders be aware of the CDM. Particularly for forestry projects or renewable energy projects, people's lives are affected due to the projects that are implemented. Part of building capacity on the local level involves clear national regulations

giving all affected stakeholders a comprehensive definition of their property rights. Local stakeholders with clear property rights will benefit the most from the project and the sustainable development component of the CDM because other than the technology transferred, other social factors such as job creation can have a positive impact on the local community (Brown, 2003).

Unfortunately at the moment, not all non-Annex I countries have been able to build up capacity for CDM market participation to a degree on par with India. This section has shown that India has been able to attract a large number of projects, due to a high level of awareness and the ability to deal with CDM issues on different national levels. If developing nations party to the Kyoto Protocol were to attract more projects and ultimately to have an equitable distribution of CDM projects, it will necessitate capacity building on various levels in all CDM participant countries.

6.3 Summary of host country implementation issues and their impact on equitable project distribution

Table 4 provides a summary of the above discussion on the implementation issues that play a role in the equitable distribution of projects among developing countries.

	Participation conditions	Effect on CDM project distribution
Official Conditions	Kyoto protocol ratification	Excludes countries from the participation of the Kyoto protocol
	DNA establishment	Excludes countries from the participation of the CDM
	Reasonable amount of CO_2e	Excludes countries from the optimal project size range considered by project investors
Non-official Conditions	Existence of baseline data	Excludes countries with no baseline data
	Local capacity	• Ability to initiate domestic project development • Increased competence in project implementation • Minimize risk perception by investor entities • Investor entities are drawn to countries with better overall competence in project execution and delivery • Efficient project evaluation procedure minimizing transaction costs • Lower transaction costs attract investors

Table 4: Summary of implementation conditions and their impact on CDM project distribution (Source: Author)

Many developing economies are in transition from a centralized planning economy to a market economy. Heller and Shakula have termed these states hybrid states - states which are still a central economy but at the same time a fledging market economy. One major feature of such states according to Heller and Shakula is that due to their struggle to transform from one type of economy to the other, climate change issues are not yet a salient political concern in the nation's development policy (2003, p. 118). The level to which these states have transformed themselves into market economies limits the degree to which CDM participation conditions can be attained. This is so because the establishment of optimal CDM conditions is similar to the establishment of optimal conditions for a market economy.

Due to the inherent design of the CDM and the differentiation of institutional implementation in various countries, projects are inequitably distributed towards countries which are able to meet the pre-defined conditions as well as to countries with a minimum amount of capacity. While the CDM is only in its beginning stages, it is clearly evident at this point that the project distribution of CDM activities favors only a handful of countries. To illustrate, table 5 lists the top 5 countries for CDM project proposals which constitute 68% of all CDM projects. That is 7 countries out of a total of 135 developing nations comprising 68% of all CDM projects. Out of an estimated 40 CDM eligible nations, Brazil and India currently possess 36% of all projects. Moreover, Least Developed Countries (LDCs) are unlikely to benefit from the CDM simply because their current political, social and/or economic situation is not positioned to attract private sector funding (Agarwal et al in Najam et al 225). However, as chapter 8 of this study will show, it is not only the number of projects but also the size of projects that is essential in discussing equitability among developing nations.

Country	**Number of projects**
1. India	15
2. Brazil	14
3. Honduras	7
4. Chile	6
5. Malaysia	4
Thailand	4
Mexico	4
Total	**54**

Table 5: Current top 5 countries for CDM project distribution
(Source: Data taken from Annex 1)

This chapter has established that current implementation conditions disallow the participation of many nations in the CDM. Despite this, the inequitable distribution of CDM projects is further aggravated by current patterns of donor flows based on capacity building and investor project selection criteria.

7.0 CDM capacity building

In the definition of financial mechanisms as written in the UNFCCC, paragraph 2 of article 11 states:

> *"The financial mechanism shall have an equitable and balanced representation of all Parties within a transparent system of governance." (UNFCCC, 1992)*

While the wordings can be generally interpreted, one interpretation is that capacity building does in fact need to be balanced and equitable according to the UNFCCC. In reality this provision may not necessarily be achieved among developing countries. This chapter examines how capacity building has been incorporated in climate change texts through the Marrakesh Accords and how in reality capacity building is distributed in various regions in the world.

7.1 Capacity building as mentioned in the Marrakesh accords

After the Kyoto Protocol had been agreed upon, it took some time for countries to understand the precise ramifications of the CDM. For many developing countries it would in fact take several years and much investment in studies and capacity building before the CDM would be clearly understood by key players in their countries. Capacity building involves the developing of competence in the implementation of the CDM at the national level. Capacity building funds in turn are the financial resources used to implement such activities. The Marrakesh accords clarified the CDM and arising from this it was realized that nations had difficulty setting up a DNA. This caused a shift in donor focus from National Strategic Studies to capacity building for the establishment of the DNA (Michaelowa, 2004b).

Decision 2/CP.7 of the Marrakesh accords details a framework for capacity building in developing countries. The capacity building framework specifically outlines the purposes, objectives and scope of capacity building needed in developing countries in order to make progress towards the ultimate objective of the Kyoto Protocol. The accords clearly recognize the need for capacity building. However, more than simply a recognition of the need, the framework does not indicate how capacity building resources, which are indeed limited, should be distributed among developing countries. The framework mentions the specific needs of least developed countries (LDCs) and small island developing states (SIDS) (Decision 2/CP.7 Annex B par. 9). There is also reference to the widely held view that "capacity building must be country-driven, addressing the specific needs and conditions of developing countries . .." (Decision 2/CP.7 Annex B par. 5). But the issue of exactly how or what criteria should be applied in the distribution of capacity building resources remains excluded in the framework. The following section provides a clear overview on how awareness and capacity building has been distributed among the different regions so far.

7.2 Funding distribution for capacity building

Figure 11 shows the estimated flow of capacity building funds to the various regions. Asia and the Pacific dominate among the regions for funding distribution. This is largely due to the fact that India and China are seen as countries with the largest potential for CER supply.

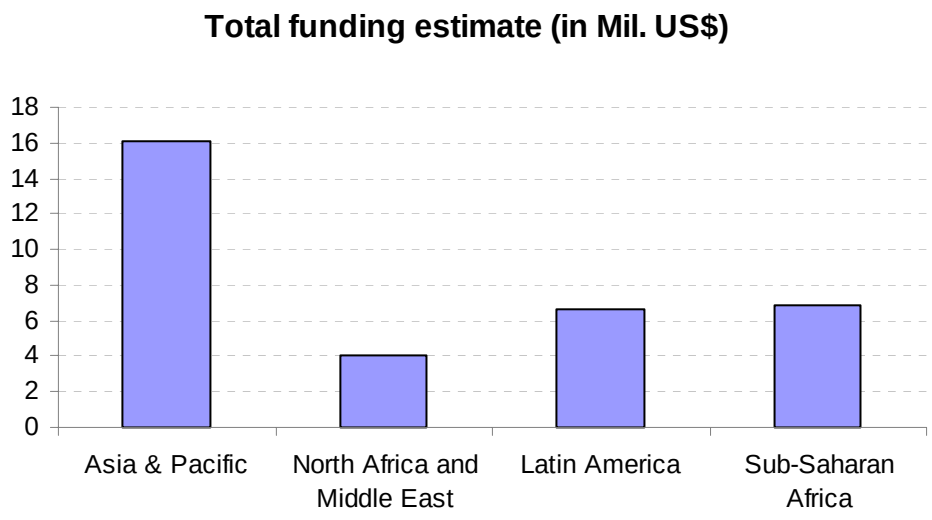

Figure 11: Regional estimate of capacity building flows
(Source: taken from Annex 2 data)

The initial effects of this flow can be seen from Figure 12 which shows the number of DNAs established in a region as well the number of proposals submitted to the EB. Latin America leads in the number of projects with a total of 41 projects submitted to date followed by Asia with a total of 35 projects to date (Annex 2). Interestingly, Latin America and Asia and the Pacific have almost the same number of DNAs established. The slight difference reflects the fact that project proposals have been better distributed among Latin American countries as compared to Asian countries. Projects in Latin America are spread over 12 different countries while in Asia, projects are spread among 10 different countries. In North Africa and the Middle East only Morocco is active in participation while in the sub-Saharan Africa, only South Africa has engaged in active participation.

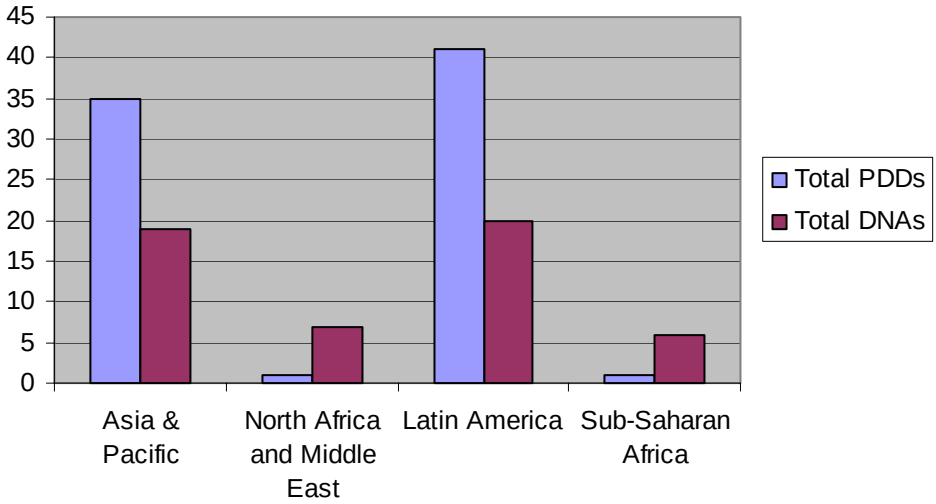

Figure 12: Regional distribution of projects and DNAs
(Source: taken from Annex 2 data and UNFCCC, 2004a)

7.3 Regional observations

From Figure 12 and the list of countries and donors in Annex I, a few interesting qualitative observations can be made. In Latin America, funding support for capacity building, while not as large as in Asia, is better distributed among the various countries. Moreover, there seems to be a much greater synergistic relationship among the countries in Latin America as compared to the other regions mentioned. This synergy is also evident in the fact that the national authorities established in Latin America have been set up almost all

at the same time. Perhaps, unlike Asia or Africa, there is a common language in all Latin American countries except Suriname, Brazil and French Guiana, and a relatively homogeneous culture among the countries in the region as well.

In contrast to Latin America, funding in Asia is mainly fragmented with the bulk of funding concentrated on China and India. India is the most aggressive country in Asia in pursuing CDM projects. As discussed earlier, institutions established in India are highly capable. Moreover, the infrastructure for renewable energy is perhaps the most sophisticated in the world outside of Europe. The large countries in Asia have played a pioneering role in the region in terms of the development of CDM structures.

Once again comparing Asia and Latin America, the time factor involved in the creation of the CDM DNA is significant. Apart from the fact that Latin American countries have created their DNAs almost at the same time, the DNAs in Latin America have also been created much earlier than leading CDM nations in Asia.

In Africa, there is only one project submitted so far, from South Africa. Funding for capacity building in Africa is also concentrated in South African as well. North Africa and the Middle East have a high potential for GHGs reduction especially in oil rich nations such as Saudi Arabia, Iraq and Iran. Unfortunately due to political circumstances in the area such as war, civil unrest, trade embargoes and ideological differences, only Morocco has submitted a project for evaluation to the EB.

Experience from donor funded capacity building has shown that some non-Annex I countries are favored more than others so much so that donor competition occurs for a few specific countries with a perceived high CDM potential. Such donor competition has been observed for countries like China and Indonesia (Michaelowa, 2003). This competition among donor countries could also be plausible for other large developing countries like India, Brazil, South Africa, and Mexico.

Donor entities providing capacity building support look for host country performance indicators that measure the effectiveness of financial support. Without proven effectiveness, it is possible that further funding will be discontinued. However, it is difficult to determine

the balance between proven effectiveness as an indicator for further funding and performance efficiency at which funding is no longer necessary. Should it be country efficiency due to capacity building or support due to capacity building efficiency? This is a cycle which often tilts the inequitable distribution of funding towards countries with an already developed infrastructure for the CDM.

In summary, though funding needs have been identified in global climate change negotiations, no clear guide has been set as to the distribution of funding among developing countries. As a result, funding for CDM capacity building has been focused on countries with the greatest perceived potential for providing the least cost CDM projects and CERs. Furthermore, this aggravates the already existing inequities derived from differing local condition in the implementation of the CDM in various national settings.

Unfortunately, the circumstances of where projects are to be implemented are not only driven by the quality of implementation of CDM institutions and the flow of CDM capacity building funds. The same few countries are chosen for CDM projects also because of the project selection criteria of Annex I investors and/or project developers.

8.0 Investor project selection criteria

In their pursuit to optimize limited project funds, Annex I CDM project investors also contribute to an inequitable distribution of projects among developing countries. The Prototype Carbon Fund (PCF) is a part of the carbon finance business of the World Bank. The participants of the fund come from 6 different governments and 17 different companies of Annex I countries. Its annual report of 2003 mentions that fund placements are to be invested as close as possible to an optimal level of asset cost, delivery risk and quality (Prototype Carbon Fund, 2003). These are the three main criteria used by PCF. While undeniably sound from a fund management point of view, the criteria nonetheless creates inequity in the distribution of projects among developing countries.

8.1 Asset cost

The pursuit of an optimum asset cost is in effect the pursuit of projects which can supply CERs with the minimum amount of investment. This can be done by investing in very large CDM projects, thereby maximizing economies of scale and thus minimizing fixed transaction costs (Michaelowa et al., 2003).

Another way of minimizing cost is to "piggy-back" on pre-existing infrastructures so as to minimize overall project development costs. Bernow et al. is of the opinion that CDM projects such as power supply retrofits, demand-side management and land use sinks could lead to a significant amount of non-additional free-rider credits (2001). Looking at CDM activities like the four hydro powerplant projects proposed in Mexico, namely, Trojes Hydro Electric Project, Benito Juarez Hydro Electric Project, Chilatan Hydro Electric Project and the El Gallo Hydro Electric Project, it is difficult to disprove the views of Bernow et al. All these projects will be implemented in existing dams to generate a total of 68MW of power (UNFCCCb). If minimizing project cost is the objective, then these projects clearly fit the criteria.

In both cases, the search for the least cost alternative for CDM projects leads to a preference for countries that can offer low priced projects as well as for countries which can offer very large projects which take advantage of economics of scale.

8.2 Quality

Project quality in the context of the CDM can be defined as the project's ability to meet the current regime's condition of additionality and its ability to meet the host country's aims in sustainable development. As defined under paragraph 43 in Decision 17/CP.7 of the Marrakesh Accords, "A CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity." As already mentioned in Section 5.1.2.2. the additionality criteria first of all presupposes the existence of a baseline from which it can be measured. This, in turn, assumes the existence of baseline data without which project quality cannot be assured.

Sustainable development is one of the cornerstones of the CDM. The CDM as worded in the Kyoto Protocol explicitly states that the objective of the mechanism is to promote sustainable development. The definition of sustainable development is, however, very broad. As agreed upon in COP 6 in Bonn, it is left to the host country to clearly define its priorities and criteria for sustainable development ("Summary of", 2001). Unfortunately, there are many countries without a clear long-term agenda for sustainable development, thus it is difficult to completely assess a project's quality without this basis. It is critical that countries have a clear understanding of their approval criteria and technological priorities (Michaelowa, 2004b). Without this, projects will have a tendency to flow towards countries with a clear national definition of sustainable development.

8.3 Delivery risk

Delivery risk is risk associated with the possibility that a project may be delayed or worse still, not be completed due to unavoidable circumstances. Associated with delivery risk are reputational risk of investors, especially those who have positioned themselves around their environmental reputations and their corporate social responsibility (WWF, 2002).

In assessing delivery risk, a country's enabling business environment is normally evaluated. Countries with the desired business infrastructure, in terms of legislation and institutions, will have the advantage of attracting CDM project investors. Thus as a criteria for project investment, delivery risk leads to a preference for countries with stable political, and economic conditions.

By design, the CDM is a market mechanism which leaves out the "losers" from the market. In the pursuit of an optimal investment portfolio, investors have clustered to only a few countries. The investor project selection criteria is another factor, along with the implementation conditions for the CDM and the distribution of capacity building funds, that contribute to the inequitable distribution of CDM projects among developing countries. If these factors leading towards inequity are to be mitigated, a new decision framework based on a globally accepted set of criteria must be found.

9.0 Criteria to prioritize CDM project distribution

As seen from the previous three chapters, the factors affecting the inequitable distribution of projects are wide and varied. The three main influences can, however, be summarized as follows:

- The inherent implementation design of the CDM which are conditions for participation.
- Repeated and perhaps redundant flow of capacity building donor funds to countries perceived to have the greatest potential for low-cost CDM projects.
- Investor project selection criteria leading to the choice of the same countries for CDM projects.

The question now arises as to what can be done, given the current climate change regime, to find an equitable balance between developing countries for project distribution. The current market model for the CDM implies competition between countries for limited funding resources. Winners of the competition will receive the full benefits of the CDM which is GHG reduction and projects leading to a country's sustainable development. Losers of the competition receive no benefit whatsoever. It is indeed apparent that the vast majority of CDM projects will go to a few larger developing countries, if the CDM regime is left alone to market forces (Huq, 2002).

The main problem is the use of market-based criteria of business competition, where minimum costs are key, within a climate framework whose main objectives are GHG reduction and sustainable development. While it is true that emissions trade in some form has proven to be the most efficient method of reducing negative externalities, this concept does not take into consideration the subtleties of a country's need for sustainable development. As stated in Chapter 3, the theory applied internationally covering developing countries of different levels of development can cause noticeable imperfections in the market that may lead to an overall negative impact. The CDM, as negotiated in the climate framework, was accepted by developing country groups because of its inherent capacity to pursue sustainable development.

Perspectives	Climate regime	Host country	International investors	Project developer
Project selection criteria	• GHG emissions reduction • Additional	• Suitability to national SD strategy • Local environmental benefits • Technology and know-how transfer • Local social benefits	• Low marginal incremental costs • Low project risk • Creating a good image	• Project developer's interest • Project progress status

Table 6: Various perspectives regarding CDM project criteria
(Source: adapted from World Bank, 2004b)

Table 6 demonstrates the various project selection criteria as seen from different perspectives. As seen from the table, criteria for project selection highly depend on the perspective of the various project proponents. On a global perspective, the international climate regime seeks the abatement of greenhouse gasses through additional project activities of the CDM. Host country representatives on the one hand look for projects with the greatest potential towards enhancing national SD strategies, technology transfer, social and environmental benefits. International investors, as shown in Table 6, seek low marginal incremental costs, low project risk, corporate image and project quality. Project developers, on the other hand, simply want to make sure that chosen projects go according to the owner's interest without delay.

Is there indeed a universal set of criteria which can be used by all which takes into account the issue of equity in project distribution? The following sections attempt to find a set of criteria which can reconcile the seemingly inconsistent perspectives and approaches towards equity in the CDM.

9.1 Formulation of a criteria

Several studies have been made in the search for an appropriate criteria for equity (Claussen & McNeilly, 2000; Metz et al., 2002; Huq, 2002). The question of equity in these studies have mainly dealt with the issues between developed and developing countries. Claussen and McNeilly, for example, have stressed that factors for equity are based on a country's responsibility, standard of living and opportunity (2000). Responsibility refers to

the past, present and future emissions of CO_2 of a particular country measured in CO_2 per capita. Standard of living refers to the basic needs that are met as measured in GDP per capita. Opportunity points to a country's potential for GHG reduction as measured in energy intensity or energy consumption per GDP.

Metz et al. recommends looking at a country's need, capability and responsibility as a basis for finding a criteria for equity (2002). As a basis for need, a discussion is given on the concept of a per capita emission rights as well as a transition period for developing countries to assume greater responsibility for carbon dioxide mitigation in the future. In terms of capability, Metz examines various studies on the possibility of intensity targets as a means towards an equitable climate change regime. Focusing on responsibility, Metz et al. mentions the Brazilian proposal of differentiating Annex I commitments based on their relative contributions to actual global temperature change.

Both studies cite 'responsibility' as a starting point for setting criteria for equitability in the climate regime. These criteria, however, would apply on a global scale looking at the question of equity between industrialized and developing nations. Looking at equity between developing countries, it is not reasonable to scrutinize a developing country's responsibility in emission reduction since it is recognized in the UNFCCC that industrial countries bear the largest share of past, current and near future GHG emissions (UNFCCC 1992).

Clausen & McNeilly suggest 'opportunity' as a criterion for equitable distribution while Metz et al. uses the word 'capability'. Both refer to a country's energy intensity which evaluates countries having better potential for greenhouse gas reduction. In the context of the CDM among developing countries, such a criterion may also be used to survey countries with a latent ability for GHG reduction.

Finally, both studies investigate the development situation of countries. Clausen & McNeilly focus here on the 'standard of living' in which the GDP per capita is used as a criterion while Metz et al. cites a country's 'need' in terms of development, taking into consideration the possibility of a per capita emission rights. In proposing a country's need or right to development, the CDM emphasizes sustainable development (SD). Each project must fulfill the host country's SD goals. The characterization of sustainable development and

the priorities associated with it is left to the host country to decide based on its own development plans, objectives and long-term goals. In putting forth an equitable distribution of CDM project activities in developing countries, however, a global criteria should be found which can be applied to all developing nations. Broadly, the Human Development Index (HDI) as developed by the UNDP recommends a basket of different variables measuring a country's development such as education, health, life expectancy, literacy, and income. Thus, looking at a country's need or standard of living, the HDI can serve as a good basis and starting point.

Huq suggests a distribution of projects among developing countries based on a global perspective of the relative sustainable development potential of developing nations (2002). Table 7 summarizes Huq's views on project distribution based on a developing nation's relative sustainable development potential:

Relative sustainable development potential	**High**	**Medium**	**Low**
Geographical distribution	LDCs	Medium sized countries	Larger developing countries
Project size	Small	Medium	Large
Project technologies	Community forestry SHS	Plantation forestry Landfill	Energy sector

Table 7: Project distribution according to relative sustainable development potential
(Source: Huq, 2002)

In Table 7, Huq submits that LDCs have a relatively high sustainable development potential compared to larger developing countries. At the same time, however, he identifies country limitations as to the size and type of technologies that can be implemented in these countries. LDCs with a high SD potential can accommodate smaller project sizes which may include forestry projects and solar home systems (SHS). In contrast, larger developing countries, while having a lower relative sustainability potential, have enough infrastructure in place to handle large projects in the energy sector. Moreover, Huq also points to GDP per capita, HDI and GHG emissions as a possible basis for looking at the global dimensions of sustainable development.

All authors mentioned above have investigated the prospect of finding criteria for an equitable global climate change regime. Clausen & McNeilly, and Metz et al. explore equity in an international context and suggest criteria for global equity in the climate change regime. The criteria, based on need, standard of living, capability and opportunity, are applicable to the question of equity among developing nations as well. Responsibility, however, applies only to the question of global climate change equity between industrialized and developing nations. Unlike the other two mentioned authors, Huq focuses on the sustainable development criteria for the CDM, recognizing the need to study the equitable distribution of projects among developing countries. In summary, past research explores three criteria for equitability in the climate change regime, namely: 'need' or 'standard of living'; 'capability' or 'opportunity' and sustainable development. These three criteria can be further addressed and substantiated by the principles set forth by the UNFCCC.

9.2 Criteria based on FCCC principles

Complementing the studies done on equity in the past, it is possible to find broad principles as a foundation to formulate criteria for an equitable distribution of CDM projects activities. These principles have been established early in the negotiations for global climate change under the Framework Convention on Climate Change. The framework declares these broad principles of equity among developing countries. The CDM, as a tool within the Kyoto Protocol to mitigate the causes of climate change, has been built upon the principles as agreed upon by nations in Article 3 of the UNFCCC.

Paragraph 2 of this article gives emphasis on the specific circumstances of developing countries and recognizes the need of developing countries to be given full consideration for bearing "a disproportionate or abnormal burden under the Convention...." In the context of the CDM, the alleviation of this „burden" can be seen among developing countries as flows of CDM capacity building. In the context of the equitable distribution of CDM projects, it has been shown that there is a tendency for capacity building to concentrate on specific countries while leaving out others, thus in fact increasing inequity. It can be argued that capacity building should flow to countries which have less capacity, thus reducing the tendency of inequality. To do this, the capacity building flows can be prioritized to countries which have

historically received less for capacity building. Development Aid/ Official Development Aid (DA/ODA) flows can also be considered as an indicator in this respect. However, there are two reasons why this cannot be used in this study. Firstly, ODA/DA information contains not only funding flows for environmental capacity building but it also includes funding for economic support which can be in the billions of dollars. Secondly, if the objective is to look at countries receiving less than a fair amount of ODA support as a proxy for capacity building, there are countries that receive less because of country risk and the inequitable global circumstances, but there are also countries who receive less simply because these countries are no longer in need of ODA support.

Paragraph 3 of Article 3 of the UNFCCC conveys the precautionary principle „to anticipate, prevent or minimize the causes of climate change ...“(UNFCCC, 1992). This precisely coincides with one of the objectives of the CDM, which is to “contribute to the ultimate objective of the Convention and to assist Parties in Annex I in achieving compliance with their quantified emissions limitations and reduction commitment....” (UNFCCC, 1997). On this basis, a country’s GHG reduction potential can be seen via its absolute GHG emissions as well as its energy intensity, which is a nation’s energy output per GDP.

Another principle in the UNFCCC critical to the CDM is in paragraph 4 of Article 3 which states that “The Parties have a right to, and should, promote sustainable development” (1992). This is the basis of the second objective of the CDM as defined in Article 12 of the Kyoto Protocol which is sustainable development (UNFCCC, 1997). In this context, a country’s sustainable development, as mentioned previously, is defined by each country. In the global context, however, and for purposes of simplicity, criteria such as GDP per capita, and the Human Development Index (HDI) can be used as a basis. The HDI is a rough estimate of a country’s level of development which takes into account not only economic indicators but social indicators as well. The indicators used in the HDI are: life expectancy at birth, adult literacy rate, combined gross enrollment ratio and GDP per capita. Since GDP per capita is already calculated as part of the HDI, it can be omitted as a criteria for a country’s development. Specifically, the inverse of the HDI should be used giving project priority to countries with the lowest HDI. Countries having the lowest HDI are theoretically “less developed” and thus have a higher potential for future sustainable development. By

inversing the HDI, CDM projects are prioritized in countries with the highest potential for sustainable development.

Table 8 below summarizes the principles of the UNFCCC and the corresponding indicators used. Since the main objectives of the CDM are sustainable development and GHG reduction, an equal weight of 0.4 has been used for paragraphs 3 and 4 of the UNFCCC principles. The estimated capacity building flow is weighted at 0.2.

UNFCCC Principle Art. 3	Criteria used	Relative Weight
Paragraph 2: Developing country "burden" alleviation	• Capacity building flow estimate	0.20
Paragraph 3: GHG Mitigation	• Emissions Intensity • Absolute CO2 emissions	0.20 0.20
Paragraph 4: Sustainable Development	• Inverse HDI	0.40

Table 8: CDM project distribution criteria
(Source: Author)

9.3 Applying the criteria

All five indicators have been simultaneously applied to 135 developing nations. A Multi-Criteria Decision Making (MCDM) approach has been used to examine the various developing nations based on the criteria set forth (Triantaphyllou, 2002). In essence, a decision matrix was created with all 135 developing nations as the alternatives and the four previously mentioned criteria as a basis for evaluation was used. All data points have been normalized such that the maximum value per indicator approaches 1.0 and the minimum value within the set of indicators approaches zero. The corresponding normalized data points for each country were then averaged using the system of weights discussed in the previous section. The resulting weighted average has been summarized in Table 9, showing a total of 104 developing nations ranked according to countries which should be given CDM project priorities. Thirty-one developing countries have not been included in the list below due to lack of data.

In the list below, 37,5% of the countries ranked are LDCs, most of which are in the top 40 of the listing shaded in grey. From the rankings, these LDCs thus have to be given priority because of their need for sustainable development, their relatively high emission intensity and because they have received little in terms of capacity building support for the CDM in the recent past. This need is so strong that even if the weights of the criteria were to be changed and priority were to be given to country emissions and emissions intensity, the priority list will not change much and actually only China and Singapore will have significant changes in priority. Unfortunately, because of the requirements for participation of the CDM as discussed in chapter 5.0, many LDCs will not benefit from this mechanism.

Rank	Country	Weighted Average	Rank	Country	Weighted Average	Rank	Country	Weighted Average
1	Sierra Leone	0,1543	36	Cameroon	0,1092	71	Tonga	0,0886
2	Niger	0,1458	37	Nepal	0,1061	72	Ecuador	0,0885
3	Burkina Faso	0,1416	38	Sudan	0,1061	73	Venezuela	0,0874
4	Congo, Dem. Rep. of the	0,1362	39	Senegal	0,1059	74	India	0,0867
5	Mongolia	0,1349	40	Swaziland	0,1040	75	Jamaica	0,0863
6	Mali	0,1343	41	Nigeria	0,1035	76	Dominican Republic	0,0862
7	Guinea-Bissau	0,1332	42	Comoros	0,1029	77	Cambodia	0,0857
8	Trinidad and Tobago	0,1331	43	Zimbabwe	0,1027	78	Guatemala	0,0842
9	Burundi	0,1311	44	Botswana	0,1026	79	Panama	0,0796
10	Ethiopia	0,1282	45	Gabon	0,1018	80	Dominica	0,0794
11	Angola	0,1281	46	Vanuatu	0,1005	81	Peru	0,0792
12	Central African Republic	0,1263	47	Guyana	0,0998	82	Bahamas	0,0784
13	Saudi Arabia	0,1254	48	Oman	0,0998	83	Malaysia	0,0774
14	Bahrain	0,1233	49	Kenya	0,0997	84	Morocco	0,0771
15	Mauritania	0,1232	50	Namibia	0,0980	85	Bolivia	0,0771
16	Malawi	0,1224	51	Solomon Islands	0,0980	86	Mexico	0,0767
17	Chad	0,1217	52	Egypt	0,0951	87	South Africa	0,0766
18	Benin	0,1199	53	Singapore	0,0946	88	Belize	0,0750
19	Yemen	0,1188	54	Bangladesh	0,0942	89	Thailand	0,0749
20	Djibouti	0,1159	55	Congo	0,0942	90	Viet Nam	0,0730
21	Guinea	0,1156	56	Uganda	0,0936	91	Hong Kong, China (SAR)	0,0721
22	Eritrea	0,1155	57	Grenada	0,0928	92	Honduras	0,0720
23	Pakistan	0,1150	58	El Salvador	0,0928	93	Antigua and Barbuda	0,0695
24	Côte d'Ivoire	0,1142	59	Papua New Guinea	0,0919	94	Tunisia	0,0683
25	Rwanda	0,1142	60	Lebanon	0,0911	95	Philippines	0,0679
26	Gambia	0,1125	61	Jordan	0,0908	96	Chile	0,0675
27	Zambia	0,1120	62	Sri Lanka	0,0902	97	Colombia	0,0661
28	Syrian Arab Republic	0,1118	63	Equatorial Guinea	0,0901	98	Indonesia	0,0661
29	Madagascar	0,1114	64	Mauritius	0,0900	99	Argentina	0,0659
30	China	0,1110	65	Algeria	0,0900	100	Paraguay	0,0643
31	Togo	0,1108	66	Fiji	0,0895	101	Uruguay	0,0615
32	Haiti	0,1107	67	Lao People's Dem. Rep.	0,0892	102	Barbados	0,0615
33	Iran, Islamic Rep. of	0,1106	68	Cape Verde	0,0892	103	Costa Rica	0,0613
34	Kuwait	0,1100	69	Ghana	0,0887	104	Brazil	0,0583
35	Tanzania, U. Rep. of	0,1093	70	Samoa (Western)	0,0886			

Table 9: CDM project distribution priority ranking based on applied criteria
(Source: based on Annex 2 rated average)

Afghanistan	Liberia	Occupied Palestinian Territories	Suriname
Bhutan	Libyan Arab Jamahiriya	Palau	Timor-Leste
Brunei Darussalam	Maldives	Qatar	Tuvalu
Cuba	Marshall Islands	Saint Kitts and Nevis	United Arab Emirates
Iraq	Micronesia, Fed. Sts.	Saint Lucia	
Kiribati	Mozambique	Saint Vincent and the Grenadines	
Korea, Dem. Rep.	Myanmar	São Tomé and Principe	
Korea, Rep. of	Nauru	Seychelles	
Lesotho	Nicaragua	Somalia	

Table 10: Countries excluded from ranking due to lack of data
(Source: Annex 2)

Notably in Table 10 showing countries not included in the list due to lack of data is the presence of a large number of small island states, many of whom will be directly affected by the effects of climate change. Countries also included in the table are nations currently facing unstable political situations such as Afghanistan, Iraq, and Occupied Palestinian Territories. If all LDCs in Table 9 were to be removed, a familiar list of countries emerges – countries which are mostly in active participation of the CDM (Table 11). What is interesting to note in this table is that it presents the potential for CDM projects to countries which have not yet been thoroughly explored. Countries like Mongolia, Pakistan, and a host of African countries present a large potential for the CDM which has been much overlooked. China, due to its very large emissions parameters, is still ranked among the priority groups for CDM project implementation. Worth mentioning are the grouping of Middle Eastern countries in the upper part of the ranking, indicating their need and potential for participation in the CDM. Countries such as Saudi Arabia, Bahrain, Iran, and Kuwait are all ranked in the top 10 of the list, indicating a large potential for CDM investment. Unfortunately, only very few Middle Eastern countries such as Morocco and Egypt have been in active participation in the CDM.

Of noteworthy as well is the fact that countries currently in active participation in CDM are actually in the lower end of the priority list. Latin American countries such as Brazil, Costa Rica, Argentina, Uruguay and Paraguay rank very low on the list because of their relatively low emissions and high human development index.

Rank	Country	Weighted Average	Rank	Country	Weighted Average	Rank	Country	Weighted Average
1	Mongolia	0,1349	24	Bangladesh	0,0942	47	Bahamas	0,0784
2	Trinidad and Tobago	0,1331	25	Congo	0,0942	48	Malaysia	0,0774
3	Saudi Arabia	0,1254	26	Grenada	0,0928	49	Morocco	0,0771
4	Bahrain	0,1233	27	El Salvador	0,0928	50	Bolivia	0,0771
5	Pakistan	0,1150	28	Papua New Guinea	0,0919	51	Mexico	0,0767
6	Côte d'Ivoire	0,1142	29	Lebanon	0,0911	52	South Africa	0,0766
7	Syrian Arab Republic	0,1118	30	Jordan	0,0908	53	Belize	0,0750
8	China	0,1110	31	Sri Lanka	0,0902	54	Thailand	0,0749
9	Iran, Islamic Rep. of	0,1106	32	Mauritius	0,0900	55	Viet Nam	0,0730
10	Kuwait	0,1100	33	Algeria	0,0900	56	Hong Kong, China (SAR)	0,0721
11	Cameroon	0,1092	34	Fiji	0,0895	57	Honduras	0,0720
12	Swaziland	0,1040	35	Ghana	0,0887	58	Antigua and Barbuda	0,0695
13	Nigeria	0,1035	36	Samoa (Western)	0,0886	59	Tunisia	0,0683
14	Zimbabwe	0,1027	37	Tonga	0,0886	60	Philippines	0,0679
15	Botswana	0,1026	38	Ecuador	0,0885	61	Chile	0,0675
16	Gabon	0,1018	39	Venezuela	0,0874	62	Colombia	0,0661
17	Guyana	0,0998	40	India	0,0867	63	Indonesia	0,0661
18	Oman	0,0998	41	Jamaica	0,0863	64	Argentina	0,0659
19	Kenya	0,0997	42	Dominican Republic	0,0862	65	Paraguay	0,0643
20	Namibia	0,0980	43	Guatemala	0,0842	66	Uruguay	0,0615
21	Solomon Islands	0,0980	44	Panama	0,0796	67	Barbados	0,0615
22	Egypt	0,0951	45	Dominica	0,0794	68	Costa Rica	0,0613
23	Singapore	0,0946	46	Peru	0,0792	69	Brazil	0,0583

Table 11: Country CDM project priority ranking without LDC
(Source: Annex 2)

Table 12 shows the current list of countries which have participated in the CDM with at least one project submitted to the EB either as a PDD or for methodology approval as of October 2004. It is interesting to note that while many of the project pioneers come from Latin America, according to Table 11, these countries should have less priority in the CDM project development.

Country	Projects	Country	Projects
India	15	Ecuador	1
Brazil	14	Papua New Guinea	1
Honduras	7	Panama	1
Chile	6	Moldova	1
Malaysia	4	Egypt	1
Thailand	4	Costa Rica	1
Mexico	4	Vietnam	1
S. Korea	3	Jamaica	1
Indonesia	3	South Africa	1
China	2	Bhutan	1
Columbia	2	Guatemala	1
Argentina	2	Bolivia	1
Bangladesh	1		
		total	79

Table 12: Actual number of country CDM project activity submitted to the EB which have not been rejected
(Source: data taken from Annex 1)

From the tables presented above, there appears to be a contradiction between the principles laid out in the UNFCCC and the current regime of the CDM. The CDM has been branded by many to be the link between increased participation of developing nations in the international climate change process. Indeed, developing countries have been able to participate in the climate change debate. However, because of the structure of the CDM, only a few are actually able to benefit. In theory, the CDM is the answer to many problems in the debate on equity in the climate change regime. In practice, however, the CDM has fallen short of the principles and ideals agreed upon in Rio.

Clearly, the CDM should be better distributed among developing countries if parties are to be faithful to the spirit of the Kyoto Protocol. In achieving this, one must be critical of the current structures and procedures in the implementation of the CDM. Innovation and creativity are needed to enforce the redistribution of CDM projects to countries with relatively high potential.

10.0 Legal options to enforce the redistribution of CDM projects

The current actual distribution of CDM projects and their causes have been presented in the previous chapters. From what has been shown, the CDM is a market mechanism which, if left alone, cannot in itself guarantee an equitable distribution of projects among developing countries. Banuri and Gupta argue that there are two alternatives in addressing this dilemma (2000). The first is to recognize that the CDM will not lead to an equitable distribution and to then look for alternatives to enforce distribution. The second alternative is a re-evaluation of the CDM to find a solution that addresses both equity as well as cost effectiveness in GHG reduction. The first alternative assumes that the CDM as a global GHG abatement mechanism is already settled and well advanced in its implementation stage as a market mechanism, i.e.: the basic premises of the mechanism can no longer be challenged and any procedure to address the equitable distribution of CDM projects among developing countries will have to be done within the existing rules and structures already agreed upon. The second alternative seeks to re-evaluate the current status of the CDM and re-engineer the current procedures and premises to achieve a better distribution of projects.

Both approaches are sound and can be applied in different contexts. The re-evaluation and re-negotiation of the basic concepts of the CDM can take place yearly during the annual Conference of Parties. At this forum, country representatives to some degree can raise an issue for discussion among the parties. Working with the existing global CDM structures for a redistribution of CDM projects is feasible and can be done throughout the year. In addressing the redistribution of CDM projects based on the argument of the this paper, the latter solution will be applied by examining the possible mechanisms which can enforce equity among developing countries within the current bounds of the CDM regime. These legal options to redistribute CDM projects will be based on specific objectives which are designed to mitigate the causes of inequitable distribution of projects as discussed in sections 6, 7, and 8 of this paper.

10.1 Objectives

The objectives to be used in finding legal options to redistribute CDM projects are simple and straightforward. These objectives are meant to curb current trends of capacity building flows and project investment habits.

10.1.1 Change in donor flows

As mentioned in chapter 6.2, local capacity is key to a country's success in the CDM. Chapter 7 argues that current funding flows reinforce the inequitable distribution of projects among developing countries. Therefore, the first objective towards the goal of CDM project redistribution within the existing CDM regime is to change current donor flows for CDM capacity building. Change could mean the re-direction of funds and/or the increase of it.

10.1.2 Manage buyer/investor perception of project supply side risk

Chapter 8 reviews typical investor criteria for CDM. Specifically, section 8.3 discusses delivery risk as a cause for favoring one country over another for CDM project investment. In enforcing project redistribution, one objective is to manage the risk perception of investors and project developers.

10.1.3 Influence buyer/investor sourcing of CERs

Currently, there are two main categories of investors who are interested in CERs from CDM projects. The first category comprises government agencies of Annex I countries willing to buy CERs and invest in projects as part of their national strategic plan for GHG mitigation. The second category comprises pooled private funds, composed of banks, private companies and also government entities. An example of such a fund is the Prototype Carbon Fund (PCF) of the World Bank composed of 6 governments and 17 private companies. These two general categories of investors contribute the bulk of funding for CDM projects. In the pursuit of an equitable distribution of CDM projects, a legal regime should be able to influence the investors´ investment decision towards priority countries as ranked in the previous chapter.

Having these objectives in mind, various legal instruments can now be considered as a means towards a more equitable distribution of projects among developing countries.

10.2 Instruments

The instruments for redistribution of projects presented here are quite broad. Nonetheless they address the objectives which have been set in the previous section. Basically four main redistribution instruments are outlined: i) redistribution as enforceable by the current EB structure, ii) limiting the CDM project type which can be implemented, iii) capacity building country quotas, and lastly iv) the establishment of a regional CDM supply cooperative.

10.2.1 Redistribution as enforceable by the EB

10.2.1.1 Country quotas

Country quotas are based on the concept of limiting the number of projects per country based on criteria of equity. The use of country quotas as a means to enforce redistribution among developing countries has been discussed in the past. Sokona et al., for example, suggests that one-third of CDM projects should go to African nations on the basis of "future reductions" (1998). The cost savings of using the CDM as compared to local emission reduction efforts in Annex I countries are substantial (Salter and Pearson, 2003) and the risk of shunning investors due to a quota is unlikely. From this perspective, the implementation of quotas is feasible.

Banuri and Gupta argue that while country quotas may be viable, they carry the risk of distorting the market for CERs and thereby discouraging participation of countries in the mechanism. Another disadvantage of quotas mentioned by Banuri and Gupta is the risk of generating poor quality projects because project developers may be forced to cut corners in the face of increased costs caused by exhausted country quotas in countries where project implementation is cheaper. Lastly, Banuri and Gupta point to the uncertainty of the total number of projects that may be implemented worldwide (2000). Placing a quota for an unknown quantity does not make sense. The analogy to this would be placing global

agricultural quotas without knowing the future agricultural output (Banuri & Gupta, 2000). Although quotas may in theory be enforceable through the EB, given the last argument that the total number of projects is still undeterminable, imposing a quota per country may be counterproductive.

10.2.1.2 Country priority incentives

Paragraph 5 of Art.12 of the Kyoto Protocol stipulates that "a share of the proceeds from certified projects activities is used to cover administrative activities as well as . . . the costs of adaptation" (UNFCCC, 1997). The Marrakesh Accords specify this further to two percent of CERs issued. However, "least developed country Parties shall be exempt from the share of proceeds to assist with the costs of adaptation" (Decision 17/CP.7, 2001). Banuri and Gupta suggest linking a developing country's per capita income to the amount to be contributed to administrative costs and the adaptation fund (2000). Thus "richer" developing countries will have to contribute a larger percentage of CERs to the adaptation fund while "poorer" developing countries will have to contribute less or none at all. The advantage of this instrument is that it is able to enforce a form of equity by giving investors an investment priority incentive towards poorer developing countries. This instrument also does away with the uncertainties involved with a country quota. This country incentive can be perceived as a tax to richer developing countries and thus a clear and perhaps complicated set of modalities may have to be developed. Nonetheless, the instrument is a sound alternative which may be implemented through the EB towards an equitable distribution of CDM projects among developing countries.

10.2.2 Limit on project type

The idea behind placing a limit on the various kinds of projects that can be implemented for the CDM is to be able to reduce the entry barriers associated with larger projects, in order to allow countries with fewer infrastructures to participate. For example, Banuri and Gupta propose concentrating on renewable energy and energy security for the poor, arguing that the restriction is not selective and feasible throughout the developing world (2000). This concept is also reflected in the concept of certification or a label of quality for CDM

projects whereby projects are certified for obtaining strictly defined quality standards as proposed by WWF through the Gold Standard (WWF, 2002). In the Gold Standard projects types are limited not because of equity goals in mind but because of quality objectives that the certificate promotes. By limiting the type of projects, the Gold Standard hopes to assure that risks of non-additionality of emission reductions as well as leaks are altogether avoided. The problem of limiting certain project types is that it may imperil the potential of GHG reduction in other project types. Thus, it risks undermining the basic objective of the CDM which is to reduce GHG where it exists.

10.2.3 Capacity building fund quotas

Prior to Marrakesh, financial resources for climate change revolved around covering the full costs incurred by developing country Parties for implementation and adaptation (Oberthür & Ott, 1999). Capacity building as a key role in climate change mitigation was fully threshed out in Marrakesh. Decision 2/CP.7 of the Marrakesh accords detail the modalities involved in capacity building in developing countries (2001). The decision, however, in the context of equity in CDM project distribution is very weak. Like the Kyoto Protocol, there is mention of the need to give special attention to LDCs and SIDS but amounts, quantities and distribution criteria for capacity building have still remained very vague.

As seen in Chapter 7, capacity building funds may in fact exacerbate the current situation of project distribution. Therefore, one instrument which may help in leveling the playing field are capacity building quotas. In theory the amount of funds available for capacity building is limited and known, thus capacity building fund quotas towards developing countries can work by linking funds to a country's development potential. Linking fund flows to indicators such as HDI and per capita income can be a start.

10.2.4 CER supply cooperative

Just as Annex I countries pool funding to create advantages in economies of scale, CER project supplier countries can come together to take advantage of regional synergies. One

may think of this concept as a cooperative on a regional scale where suppliers come together and have their CERs sold by a regional CER clearing house. Two advantages on the part of CER supplier countries can be established. Firstly, this provides a greater leverage in CER price negotiations for countries in the region. Secondly, this can be a mechanism whereby an equitable distribution of projects on a regional basis can be realized. Moreover, closer coordination among regional nations can result in a synergistic relationship among nations leading to larger leaps in capacity building development. In fact, existing regional organizations can be used as a platform for such a cooperative, for example: Association of South East Asian Nations (ASEAN), Economic Community of West African States (ECOWAS), MERCOSUR (Argentina, Brazil, Uruguay, Paraguay) etc. In this context, regional distribution rules and modalities will have to be developed to ensure equitable project distribution. There are, however, some conceivable disadvantages. Firstly, there is risk that such a procedure for buying CERs and project distribution may prolong the transaction time thereby increasing transaction costs. Secondly, since industrialized countries will be dealing indirectly with developing countries, there is a risk that a thorough technology transfer will not take place. If these risks can be addressed by the regional body, then such an instrument can benefit many countries on a regional basis.

11. Conclusion

Current trends in the CDM project market show an inequitable distribution of projects to a few larger and more affluent developing nations. Inequities occur due to the current CDM participation conditions that act as a barrier disallowing the participation of 67% of developing nations. Compounded to this are the discrepancies in the level of local capacity for the implementation of the CDM, leading to the clustering of projects to a few countries where seven out of 135 developing nations hold 68% of all CDM projects.

These inequalities have been augmented by current patterns of capacity building fund distribution which has been disproportionately allocated to larger developing nations in Asia and Latin America. Consequently, Asia and Latin America hold 97% of all project activities in the CDM virtually leaving out countries in Africa and the Middle East. Moreover, there is

currently no clear, internationally recognized guide to allocate capacity development funds, resulting in some countries receiving more funding while others receive no funding at all.

By design, the CDM as a market mechanism implies that investors in the market must pursue an optimal investment portfolio to maximize profit and minimize cost. As a result, investment trends tend to concentrate to only a few countries.

Central to this problem lies in the use of a market-based mechanism in a climate change framework that espouses equity among different parties. While a sound argument in theory, left alone to market forces for a single commodity, there will necessarily be winners and losers in the market. The winners will be those whose national structures are geared towards the development of CDM projects. These countries will reap the full benefits of the CDM of GHG abatement, and sustainable development through the transfer of technologies. Losers in the market, on the other hand, will be left behind. Unfortunately, because of the nature of the problem, climate change impacts will have the greatest impact on countries which will not have access to CDM projects. If these conditions are not recognized, the end result may be an overall negative effect for developing nations as a whole.

It must be clearly emphasized that the current framework policy of the CDM will have very little impact on the needs of LDCs and SIDS towards sustainable development and their adaptive capacity to climate change impacts. Current climate change policies will have to adjust accordingly to accommodate these countries.

Faithful to the principles as stated in the UNFCCC, criteria may be formulated and applied to all developing countries resulting in a priority ranking for CDM project investment. The resulting ranking is, however, contradictory to the current clustering trends of projects in Asia and the Latin America. Indeed, the ranking list prioritizes countries in Africa and the Middle East. Giving priority to top countries in the ranking can reduce the current inequalities in the CDM. At the very least, the international climate change community must exert greater efforts towards the inclusion of these nations in global climate efforts. To this end, the political, social and economic situation of each country must be recognized and realistically assessed.

The solutions towards equity in the CDM among developing countries exist and most have been proposed in the past. Equitable project redistribution can be addressed by the current implementation structure of the CDM. A country quota for CDM project allocation is counterproductive but a country quota for the distribution of capacity development funds may be one solution towards this problem. As another solution, limiting project types to a few categories may limit the potential for the CDM. A regional view towards equity presents a sound solution wherein synergies of countries within a region are created. A pioneering country in CDM within a region can play a key role in supporting the needs of countries lagging behind. From this, momentum can be gained for an entire region for CDM whereby all countries benefit from the mechanism. Moreover, countries in a region may come together forming a CER supply cooperative taking advantage of economies of scale and bearing responsibility for equitable distribution of projects. In this way, project distribution equity on a regional level may be realized.

This study hopes to give CDM project implementers, investors and policy makers a break from the details of implementation and offer a broader perspective on the realities versus the ideals of the CDM. Ultimately, action has to be taken by Parties to create stronger policies and modalities that address the gap between the UNFCCC framework and the current state of project distribution in the CDM. In so doing, a critical step would have been taken to address one of the greatest environmental challenges of this generation.

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Annex 1

Federative Republic of Brazil
Interministerial Commission on Global Climate Change

Letter of Approval

Date: 2 june, 2004

To: Project Participants and Designated Operational Entity

1. As President of the Interministerial Commission on Global Climate Change, Designated National Authority for the Clean Development Mechanism under the Kyoto Protocol, I hereby confirm that:

(i) The Federative Republic of Brazil has ratified the United Nations Framework Convention on Climate Change on February 28, 1994 and the Kyoto Protocol on August 23, 2002;

(ii) the Federative Republic of Brazil participates voluntarily in the CDM;

(iii) the "Project" as defined by the Project Design Document Landfill Gas to Energy Project of NovaGerar EcoEnergia Ltda and the Validation Report of the Designate Operational Entity Norske Veritas AS submitted to Interministerial Commission on Global Climate Change on March 30, 2004 and available at the web page at www.mct.gov.br/clima/dna.htm will assist the Federative Republic of Brazil to achieve sustainable development;

2. As President of the Interministerial Commission on Global Climate Change, Designated National Authority for the Clean Development Mechanism under the Kyoto Protocol, I further inform that the "Project" can be now considered ready for the submission by the Designated Operational Entity to the Executive Board in order to request registration of the "Project" as a Clean Development Mechanism project activity.

3. This letter shall only be valid in case the Project Design Document and the Validation Report submitted to the Executive Board of the CDM for registration correspond to the information publicly available on the DNA's web page.

4. As the authorized representative of the Designated National Authority for the Clean Development Mechanism under the Kyoto Protocol, I further acknowledge that for the specific purpose of the Kyoto Protocol as adopted on November 11, 1997, this approval shall be fully effective for the activities under the Clean Development Mechanism after its entry into force.

Yours sincerely

EDUARDO CAMPOS
His Excellency Minister of Science and Technology of the Federative Republic of Brazil
President of the Interministerial Commission on Global Climate Change

Annex 2

Asia and Pacific Countries	Kyoto Ratification (or Acceptance or Accession, or Approval) dd.mm.yy [a]	DNA in operation [b]	2000 CO2 Emissions ($MtCO_2e$) [c]	Agency or Supporting Country [d]	Capacity Building Programs Implemented [d]	Year [d]	Number of submitted PDDs [e]*
Bangladesh	22.10.2001	yes	29,25				1
Bhutan	26.08.2002	yes	0,40				1
Brunei Darussalam	..	..	..				
Cambodia	22.08.2002	yes	0,53	Institute for Global Environmental Strategies (IGES)	Integrated Capacity Strengthening	2003 - 2004	
				UNEP	CD4CDM	2002 - 2005	
China	30.08.2002	yes	2790,45	Switzerland	National Strategy Studies	2004	2
				Germany	National Strategy Studies	2004	
				Italy	National Strategy Studies	2004	
				ADB	Opportunities for the Clean Development Mechanism in the Energy Sector	2002 - 2003	
				EU Synergy Program	EU-China partnership in CDM implementation	2002 - 2003	
				CIDA	Diverse	2000 - 2004	
				UNDP (UN Foundation, Italy, Norway)	Capacity building for the CDM in China	2003 - 2006	
				EU Commission	Building-up the structures for commercializing renewable energy in China through policz advice, capacity building and idetification of CDM funds availability for such projects	2003	
Comoros			0,08				
Fiji	17.09.1998	yes	0,73,				
India	26.08.2002	yes	1070,86	Switzerland	National Strategy Studies	2004	15
				EU Synergy Program	Innovative Risk Coverage and Financing of Projects related to the implemantation of CDM Projects Focussin gon India and Morocco (IRIS)	2003 - 2004	
				CIDA	Diverse	2000 - 2004	
				GTZ	Climate protection Program (CAPP)	2003 - 2006	
				Institute for Global Environmental Strategies (IGES)	Integrated Capacity Strengthening	2003 - 2004	
				UK		2003 - 2004	
				UK	CDM Centres of Excellence	2004	
				USAID		1998 - 2000	
				EU Commission	Establishing the Institutional Capacitz to Enable Small Scale CDM projects in India	2003	
Indonesia	--		269,57	Germany	National Strategy Studies (Energy)	2001	3
				Australia	National Strategy Studies (LULUCF)	2003	
				UNIDO	Capacity Mobilization to enable Industrial Projects under the CDM	2001 - 2002	
				Institute for Global Environmental Strategies (IGES)	Integrated Capacity Strengthening	2003 - 2004	
				GTZ	CAPP	2002 - 2006	
Kazakhstan	--		41,70	Austria	National Strategy Studies	2000	
Kiribati	07.09.2000		0,03				

Asia and Pacific Countries	Kyoto Ratification (or Acceptance or Accession, or Approval) dd.mm.yy [a]	DNA in operation [b]	2000 CO2 Emissions ($MtCO_2e$) [c]	Agency or Supporting Country [d]	Capacity Building Programs Implemented [d]	Year [d]	Number of submitted PDDs [e]*
Lao Democratic People's Republic	06.02.2003	yes	0,41				
Malawi	26.10.2001		0,77				
Malaysia	04.09.2002	yes	144,41	UNIDO	Capacity Mobilization to enable Industrial Projects under the CDM	2001 - 2002	4
				DANIDA		2003	
Maldives	30.12.1998	yes	0,50				
Marshal Islands	11.08.2003		..				
Micronesia, (Federated States of)	21.06.1999		..				
Mongolia	15.12.1999		7,50	GTZ	CAPP	2002 - 2006	
Myanmar	13.08.2003		9,15				
Nauru	16.08.2001		..				
Nepal	--	yes	3,40				
Pakistan	--	yes	104,81				
Palau	10.12.1999		0,24				
Papua New Guinea	28.03.2002		2,43				1
Philippines	20.11.2003	yes	77,53	UNIDO	Capacity Mobilization to enable Industrial Projects under the CDM	2001 - 2002	
				Institute for Global Environmental Strategies (IGES)	Integrated Capacity Strengthening	2003 - 2004	
				UNEP	CD4CDM	2002 - 2005	
Samoa	27.11.2000		0,14				
Solomon Islands	13.03.2003		0,16				
Sri Lanka	03.09.2002	yes	10,18				
Thailand	28.08.2002	yes	198,65	Australia	National Strategy Studies	2002	4
				UNIDO	Capacity Mobilization to enable Industrial Projects under the CDM	2001 - 2002	
				DANIDA	CDM Programme	2003 - 2004	
Tuvalu	16.11.1998		..				
Vanuatu	17.07.2001		0,08				
Vietnam	25.09.2002	yes	57,46	Australia	National Strategy Studies	2004	1
				UNIDO	Capacity Mobilization to enable Industrial Projects under the CDM	2001 - 2002	
				UNEP	CD4CDM	2002 - 2005	

* PDDs with approved methodologies or methodologies currently under revision

a - UNFCCC. (2004). *Kyoto Protocol status of ratification*. Retrieved Oct 8, 2004 from: http//unfccc.int/files/essential_background/kyoto_protocol/application/pdf/kpstats.pdf

b - UNFCCCa (n.d.). *Designated national authorities (DNA)*. Retrieved October 13, 2004 , from http://cdm.unfccc.int/DANN

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d - Michaelowa, A. (2004b). CDM Incentives in industrialized countries: The long and winding road. *International Review for Environmental Strategies*, 5. Japan: IGES. + Author's own data

e - UNFCCCb. (n.d.). *Projects open for comment at the validation stage*. Retrieved October 5, 2004 from http://cdm.unfccc.int/Projects Validation/?archive=yes + HWWA CDM project database c/o Dr. Michaelowa

Latin America	Kyoto Ratification (or Acceptance or Accession, or Approval) dd.mm.yy [a]	DNA in operation [b]	2000 CO2 Emissions ($MtCO_2e$) [c]	Agency or Supporting Country [d]	Capacity Building Programs Implemented [d]	Year [d]	Number of submitted PDDs [e]*
Antigua and Barbuda	03.11.1998	yes	0,35	Compania Andina de Fomento	diverse	2000 - 2003	
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Argentina	28.09.2001	yes	138,19	Compania Andina de Fomento	diverse	2000 - 2003	2
				Canada	National Strategy Studies	1998	
				CIDA	Diverse	2000 - 2004	
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Bahamas	09.04.1999		1,80	Compania Andina de Fomento	diverse	2000 - 2003	
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Barbados	07.08.2000		1,18	Compania Andina de Fomento	diverse	2000 - 2003	
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Belize	26.09.2003		0,78	Compania Andina de Fomento	diverse	2000 - 2003	
				EU Synergy Program	Planning and Strategies for the Implementation of Clean Development Mechanism of the Kyoto Protocol in Latin America (PLANER)	2001 - 2003	
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Bolivia	30.11.1999	yes 1997	11,07	Compania Andina de Fomento	diverse	2000 - 2003	1
				Switzerland	National Strategy Studies	2001	
				UNEP	CD4CDM	2002 - 2005	
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Brazil	23.08.2002	yes	307,52	Compania Andina de Fomento	diverse	2000 - 2003	14
				UNDP, UNCTAD, UNIDO, UNFCCC	Engaging the Private Sector in the CDM	2000-2002	
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Chile	26.08.2002	yes	59,50	Compania Andina de Fomento	diverse	2000 - 2003	6
				Germany	National Strategy Studies	2003	
Colombia	30.11.2001	yes	58,46	Switzerland	National Strategy Studies	2000	2
				EU Synergy Program	Planning and Strategies for the Implementation of Clean Development Mechanism of the Kyoto Protocol in Latin America (PLANER)	2001 - 2003	

Costa Rica	09.08.2002	1994	5,42	EU Synergy Program	Planning and Strategies for the Implementation of Clean Development Mechanism of the Kyoto Protocol in Latin America (PLANER)	2001 - 2003	1
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Cuba	30.04.2002	yes	30,91	Compania Andina de Fomento	diverse	2000 - 2003	
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				USAID		2000 - 2003	
Dominican Republic	12.02.2002		25,13	Compania Andina de Fomento	diverse	2000 - 2003	
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Ecuador	13.01.2000	2000	25,45	Compania Andina de Fomento	diverse	2000 - 2003	1
				EU Synergy Program	Planning and Strategies for the Implementation of Clean Development Mechanism of the Kyoto Protocol in Latin America (PLANER)	2001 - 2003	
				UNEP	CD4CDM	2002 - 2005	
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	

Latin America	Kyoto Ratification (or Acceptance or Accession, or Approval) dd.mm.yy [a]	DNA in operation b	2000 CO2 Emissions ($MtCO_2e$) [c]	Agency or Supporting Country d	Capacity Building Programs Implemented d	Year [d]	Number of submitted PDDs e*
El Salvador	30.11.1998	yes	6,66	Compania Andina de Fomento	diverse	2000 - 2003	
		2000		EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				USAID		2000 - 2003	
Grenada	06.08.2002		0,21	Compania Andina de Fomento	diverse	2000 - 2003	
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Guatemala	05.10.1999		9,89	Compania Andina de Fomento	diverse	2000 - 2003	1
				EU Synergy Program	Planning and Strategies for the Implementation of Clean Development Mechanism of the Kyoto Protocol in Latin America (PLANER)	2001 - 2003	
				UNEP	CD4CDM	2002 - 2005	
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Haiti	--		1,42	Compania Andina de Fomento	diverse	2000 - 2003	
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Honduras	19.07.2000	yes	4,79	Compania Andina de Fomento	diverse	2000 - 2003	7
		1999		EU Synergy Program	Planning and Strategies for the Implementation of Clean Development Mechanism of the Kyoto Protocol in Latin America (PLANER)	2001 - 2003	
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	

Latin America	Kyoto Ratification (or Acceptance or Accession, or Approval) dd.mm.yy [a]	DNA in operation [b]	2000 CO2 Emissions ($MtCO_2e$) [c]	Agency or Supporting Country [d]	Capacity Building Programs Implemented [d]	Year [d]	Number of submitted PDDs [e]*
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Jamaica	28.06.1999	yes	10,78	Compania Andina de Fomento	diverse	2000 - 2003	1
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Mexico	07.09.2000	yes	423,97	Compania Andina de Fomento	diverse	2000 - 2003	4
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Nicaragua	18.11.1999	yes	3,74	Compania Andina de Fomento	diverse	2000 - 2003	
				EU Synergy Program	Planning and Strategies for the Implementation of Clean Development Mechanism of the Kyoto Protocol in Latin America (PLANER)	2001 - 2003	
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Panama	25.12.2037	yes 1999	6,34	Compania Andina de Fomento	diverse	2000 - 2003	1
				EU Synergy Program	Planning and Strategies for the Implementation of Clean Development Mechanism of the Kyoto Protocol in Latin America (PLANER)	2001 - 2003	
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Paraguay	27.08.1999		3,66	Compania Andina de Fomento	diverse	2000 - 2003	
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Peru	12.09.2002	yes	29,54	Compania Andina de Fomento	diverse	2000 - 2003	
				Switzerland	National Strategy Studies	2003	
				EU Synergy Program	Planning and Strategies for the Implementation of Clean Development Mechanism of the Kyoto Protocol in Latin America (PLANER)	2001 - 2003	
				EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms-CDM	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	

Latin America	Kyoto Ratification (or Acceptance or Accession, or Approval) dd.mm.yy [a]	DNA in operation [b]	2000 CO2 Emissions ($MtCO_2e$) [c]	Agency or Supporting Country [d]	Capacity Building Programs Implemented [d]	Year [d]	Number of submitted PDDs [e]*
				USAID		2000 - 2003	
Trinidad and Tobago	28.01.1999	yes	26,36	Compania Andina de Fomento	diverse	2000 - 2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Uruguay	05.02.2001	yes	5,41	Switzerland	National Strategy Studies	2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	
Venezuela, RB	--		157,75	Compania Andina de Fomento	diverse	2000 - 2003	
				World Bank	PCF Plus	2000 - 2003	
				USAID		2000 - 2003	

* PDDs with approved methodologies or methodologies currently under revision

a - UNFCCC. (2004). *Kyoto protocol status of ratification*. Retrieved Oct 8, 2004 from: http//unfccc.int/files/essential_background/kyoto_protocol/application/pdf/kpstats.pdf

b - UNFCCCa (n.d.). *Designated national authorities (DNA)*. Retrieved October 13, 2004 , from http://cdm.unfccc.int/DANN

c - World Bank. (2004). *World development indicators*. Washington D.C.: Author.

d - Michaelowa, A. (2004b). CDM Incentives in industrialized countries: The long and winding road. *International Review for Environmental Strategies*, 5. Japan: IGES. + Author's own data

e - UNFCCCb. (n.d.). *Projects open for comment at the validation stage*. Retrieved October 5, 2004 from http://cdm.unfccc.int/Projects Validation/?archive=yes + HWWA CDM project database c/o Dr. Michaelowa

North Africa and Middle East	Kyoto Ratification (or Acceptance or Accession, or Approval) dd.mm.yy [a]	DNA in operation [b]	2000 CO2 Emissions ($MtCO_2e$) [c]	Agency or Supporting Country [d]	Capacity Building Programs Implemented [d]	Year [d]	Number of submitted PDDs [e]*
Afghanistan	--		0,91				
Algeria	--		89,42	UNDP	Climate Change in the Maghreb region	1999 - 2002	
Bahrain			19,50				
Egypt, Arab Rep.	--		142,23	Switzerland	National Strategy Studies	2002	1
			..	UNEP	CD4CDM	2002 - 2005	
Iran, Islamic Rep.	--		310,30				
Iraq			76,34				
Israel	15.03.2004	yes	..				
Jordan	17.01.2003	yes	15,55	UNEP	CD4CDM	2002 - 2005	
Kuwait	--		47,89				
Lebanon	--	yes	15,16	EU Synergy Program	Analysis of Viability of the CDM in the Mediterranean Area (AVINMAR)	2001 - 2002	
Lybian Arab Jamahiriya	--		57,13				
Mali	28.03.2002	yes	0,56				
Morocco		yes	36,55	UNDP	Climate Change in the Maghreb region	1999 - 2002	
				EU Synergy Program	Analysis of Viability of the CDM in the Mediterranean Area (AVINMAR)	2001 - 2002	
				EU Synergy Program	Innovative Risk Coverage and Financing of Projects related to the implementation of CDM Projects Focusing on India and Morocco (IRIS)	2003 - 2004	
				UNDP / UNEP	RAB	2003 - 2004	
				UNEP	CD4CDM	2002 - 2005	
Oman			19,77				
Palestine			..	EU Synergy Program	Analysis of Viability of the CDM in the Mediterranean Area (AVINMAR)	2001 - 2002	
Saudi Arabia	--		374,34				
Syrian Arab Republic	--	yes	54,19				
Tunisia	22.01.2003		18,39	UNDP	Climate Change in the Maghreb region	1999 - 2002	
				EU Synergy Program	Analysis of Viability of the CDM in the Mediterranean Area (AVINMAR)	2001 - 2002	
				GTZ	CAPP	2002 - 2006	
United Arab Emirates	--		58,91				
Yemen, Rep.	15.09.2004	yes	8,44				

* PDDs with approved methodologies or methodologies currently under revision

a - UNFCCC. (2004). *Kyoto protocol status of ratification*. Retrieved Oct 8, 2004 from: http//unfccc.int/files/essential_background/kyoto_protocol/application/pdf/kpstats.pdf

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d - Michaelowa, A. (2004b). CDM Incentives in industrialized countries: The long and winding road. *International Review for Environmental Strategies*, 5. Japan: IGES. + Author's own data

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Subsaharan Africa	Kyoto Ratification (or Acceptance or Accession, or Approval) dd.mm.yy [a]	DNA in operation [b]	2000 CO2 Emissions ($MtCO_2e$) [c]	Agency or Supporting Country [d]	Capacity Building Programs Implemented [d]	Year [d]	Number of submitted PDDs [e] *
Angola	--		6,40				
Benin	25.02.2002		1,62				
Botswana	08.08.2003		3,85				
Burkina Faso	--		1,03				
Burundi	18.10.2001		0,24				
Cameroon	28.08.2002		6,54				
Central African Republic	--		0,27				
Chad	--		0,12				
Congo	--		2,73	UNIDO	Concept for Developing National Capacity to Implement the Industrial CDM Project in Africa	1998 - 2001	
Congo, Dem. Rep	--		1,81				
Cote D'ivoire	--		10,48	UNEP	CD4CDM	2002 - 2005	
Djibouti	12.03.2002		0,38				
Equitorial Guinea	16.08.2000		0,21				
Eritrea			0,61				
Ethiopia	--		5,58				
Gabon	--		3,50				
Gambia	01.06.2001		0,27				
Ghana	30.05.2003		5,90	UNIDO	Concept for Developing National Capacity to Implement the Industrial CDM Project in Africa	1998 - 2001	
Guinea	07.09.2000		1,29				
Guinea-Bissau	--		0,26				
Kenya	--		9,35	UNIDO	Concept for Developing National Capacity to Implement the Industrial CDM Project in Africa	1998 - 2001	
Lesotho	06.09.2000		..				
Liberia	05.11.2002		0,40				
Madagascar	24.09.2003	yes	2,27				
Malawi	--		0,77				
Mali	--	yes	0,56				
Mauritius	09.05.2001	yes	2,89				
Mozambique	--		1,18	UNEP	CD4CDM	2002 - 2005	
Namibia	04.09.2003		1,82				
Niger	--	yes	1,18				
Nigeria	--		36,15	UNIDO	Concept for Developing National Capacity to Implement the Industrial CDM Project in Africa	1998 - 2001	
				UNIDO	Capacity Mobilization to Enable Industrial Projects under the CDM in Nigeria	2000 - 2004	
Rwanda	22.07.2004		0,57				
Senegal	20.07.2001		4,18	UNIDO	Concept for Developing National Capacity to Implement the Industrial CDM Project in Africa	1998 - 2001	
				EU Commission	Start-up CDM in ACP Countries	2000 - 2002	
Seychelles	22.07.2002		0,23				
Sierra Leone	--		0,56				
Somalia	--		..				

Subsaharan Africa	Kyoto Ratification (or Acceptance or Accession, or Approval) dd.mm.yy [a]	DNA in operation [b]	2000 CO2 Emissions ($MtCO_2e$) [c]	Agency or Supporting Country [d]	Capacity Building Programs Implemented [d]	Year [d]	Number of submitted PDDs [e] *
South Africa	31.07.2002		327,28	Switzerland	National Strategy Studies	2001	1
				UNDP, UNCTAD, UNIDO, UNFCCC	Engaging the Private Sector in the CDM	2000-2002	
				EU Commission	Start-up CDM in ACP Countries	2000 - 2002	
				EU Synergy Program	CDM Capacity Building amongst the Private Sector in Africa (CAPSSA)	2002 - 2003	
				DANIDA	CDM Programme	2003 - 2004	
				UK	CDM Centres of Excellence	2004	
Sudan	--		5,22				
Tanzania, United Rep.	26.08.2002		4,31	UNIDO	Concept for Developing National Capacity to Implement the Industrial CDM Project in Africa	1998 - 2001	
Togo	02.07.2004		1,80				
Uganda	25.03.2002		1,52				
				UNEP	CD4CDM	2002 - 2005	
Zambia	--	yes	1,82	UNIDO	Concept for Developing National Capacity to Implement the Industrial CDM Project in Africa	1998 - 2001	
				EU Commission	Start-up CDM in ACP Countries	2000 - 2002	
Zimbabwe	--	yes	14,80	Switzerland	National Strategy Studies	2001	
				UNIDO	Concept for Developing National Capacity to Implement the Industrial CDM Project in Africa	1998 - 2001	

* PDDs with approved methodologies or methodologies currently under revision

a - UNFCCC. (2004). *Kyoto protocol status of ratification*. Retrieved Oct 8, 2004 from: http//unfccc.int/files/essential_background/kyoto_protocol/application/pdf/kpstats.pdf

b - UNFCCCa (n.d.). *Designated national authorities (DNA)*. Retrieved October 13, 2004 , from http://cdm.unfccc.int/DANN

c - World Bank. (2004). *World development indicators*. Washington D.C.: Author.

d - Michaelowa, A. (2004b). CDM Incentives in industrialized countries: The long and winding road. *International Review for Environmental Strategies*, 5. Japan: IGES. + Author's own data

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Annex 3

Country	Criteria	HDI 2002	Inverse HDI 2002	Normalized Inverse HDI (Inverse HDI / 3,7)	assigned weight	HDI * assigned weight	CDM Capacity Building Flow Rating	assigned weight	CDM Capacity building flow index x assigned weight	CO2 emissions (mtCO2e) 2000	Normalized emissions 2000 (CO2emissions / 2800)	assigned weight	Normalized emissions x assigned weight	Emission Intensity CO2 emissions (kg per 1995 PPP $ of GDP) 2000	Normalized emission intensity (emission intensity / 2,5)	assigned weight	Normalized emissions intensity x assigned weight	Weighted Average
Afghanistan		..	..	..	0,4	..	1	0,2	0,2000	0,91	0,0003	0,2	0,0001	..	..	0,2	..	
Algeria		0,704	1,420	0,384	0,4	0,154	0,75	0,2	0,1500	89,42	0,0319	0,2	0,0064	0,6242	0,2497	0,2	0,0499	0,0900
Angola		0,381	2,625	0,709	0,4	0,284	1	0,2	0,2000	6,40	0,0023	0,2	0,0005	0,3531	0,1412	0,2	0,0282	0,1281
Antigua and Barbuda		0,8	1,250	0,338	0,4	0,135	0,5	0,2	0,1000	0,35	0,0001	0,2	0,0000	0,5332	0,2133	0,2	0,0427	0,0695
Argentina		0,853	1,172	0,317	0,4	0,127	0,5	0,2	0,1000	138,19	0,0494	0,2	0,0099	0,3368	0,1347	0,2	0,0269	0,0659
Bahamas		0,815	1,227	0,332	0,4	0,133	0,75	0,2	0,1500	1,80	0,0006	0,2	0,0001	0,3831	0,1532	0,2	0,0306	0,0784
Bahrain		0,843	1,186	0,321	0,4	0,128	1	0,2	0,2000	19,50	0,0070	0,2	0,0014	2,0466	0,8187	0,2	0,1637	0,1233
Bangladesh		0,509	1,965	0,531	0,4	0,212	0,75	0,2	0,1500	29,25	0,0104	0,2	0,0021	0,1554	0,0622	0,2	0,0124	0,0942
Barbados		0,888	1,126	0,304	0,4	0,122	0,5	0,2	0,1000	1,18	0,0004	0,2	0,0001	0,3038	0,1215	0,2	0,0243	0,0615
Belize		0,737	1,357	0,367	0,4	0,147	0,5	0,2	0,1000	0,78	0,0003	0,2	0,0001	0,6651	0,2660	0,2	0,0532	0,0750
Benin		0,421	2,375	0,642	0,4	0,257	1	0,2	0,2000	1,62	0,0006	0,2	0,0001	0,2854	0,1142	0,2	0,0228	0,1199
Bhutan		0,536	1,866	0,504	0,4	0,202	0,75	0,2	0,1500	0,40	0,0001	0,2	0,0000	..	..	0,2	..	..
Bolivia		0,681	1,468	0,397	0,4	0,159	0,5	0,2	0,1000	11,07	0,0040	0,2	0,0008	0,6110	0,2444	0,2	0,0489	0,0771
Botswana		0,589	1,698	0,459	0,4	0,184	1	0,2	0,2000	3,85	0,0014	0,2	0,0003	0,3314	0,1326	0,2	0,0265	0,1026
Brazil		0,775	1,290	0,349	0,4	0,139	0,25	0,2	0,0500	307,52	0,1098	0,2	0,0220	0,2705	0,1082	0,2	0,0216	0,0583
Brunei Darussalam		0,867	1,153	0,312	0,4	0,125	1	0,2	0,2000	..	..	0,2	..	..	..	0,2	..	..
Burkina Faso		0,302	3,311	0,895	0,4	0,358	1	0,2	0,2000	1,03	0,0004	0,2	0,0001	0,1052	0,0421	0,2	0,0084	0,1416
Burundi		0,339	2,950	0,797	0,4	0,319	1	0,2	0,2000	0,24	0,0001	0,2	0,0000	0,0660	0,0264	0,2	0,0053	0,1311
Cambodia		0,568	1,761	0,476	0,4	0,190	0,75	0,2	0,1500	0,53	0,0002	0,2	0,0000	0,0326	0,0131	0,2	0,0026	0,0857
Cameroon		0,501	1,996	0,539	0,4	0,216	1	0,2	0,2000	6,54	0,0023	0,2	0,0005	0,2551	0,1021	0,2	0,0204	0,1092
Cape Verde		0,717	1,395	0,377	0,4	0,151	1	0,2	0,2000	0,14	0,0000	0,2	0,0000	0,0758	0,0303	0,2	0,0061	0,0892
Central African Republic		0,361	2,770	0,749	0,4	0,299	1	0,2	0,2000	0,27	0,0001	0,2	0,0000	0,0690	0,0276	0,2	0,0055	0,1263
Chad		0,379	2,639	0,713	0,4	0,285	1	0,2	0,2000	0,12	0,0000	0,2	0,0000	0,0202	0,0081	0,2	0,0016	0,1217
Chile		0,839	1,192	0,322	0,4	0,129	0,5	0,2	0,1000	59,50	0,0212	0,2	0,0042	0,4613	0,1845	0,2	0,0369	0,0675
China		0,745	1,342	0,363	0,4	0,145	0,25	0,2	0,0500	2790,45	0,9966	0,2	0,1993	0,6219	0,2488	0,2	0,0498	0,1110
Colombia		0,773	1,294	0,350	0,4	0,140	0,5	0,2	0,1000	58,46	0,0209	0,2	0,0042	0,2570	0,1028	0,2	0,0206	0,0661
Comoros		0,53	1,887	0,510	0,4	0,204	1	0,2	0,2000	0,08	0,0000	0,2	0,0000	0,0967	0,0387	0,2	0,0077	0,1029
Congo		0,494	2,024	0,547	0,4	0,219	0,75	0,2	0,1500	2,73	0,0010	0,2	0,0002	0,0961	0,0384	0,2	0,0077	0,0942
Congo, Dem. Rep.		0,365	2,740	0,740	0,4	0,296	1	0,2	0,2000	1,81	0,0006	0,2	0,0001	0,6084	0,2434	0,2	0,0487	0,1362
Costa Rica		0,834	1,199	0,324	0,4	0,130	0,5	0,2	0,1000	5,42	0,0019	0,2	0,0004	0,1896	0,0758	0,2	0,0152	0,0613
Côte d'Ivoire		0,399	2,506	0,677	0,4	0,271	0,75	0,2	0,1500	10,48	0,0037	0,2	0,0007	0,4408	0,1763	0,2	0,0353	0,1142
Cuba		0,809	1,236	0,334	0,4	0,134	1	0,2	0,2000	30,91	0,0110	0,2	0,0022	..	..	0,2	..	..
Djibouti		0,454	2,203	0,595	0,4	0,238	1	0,2	0,2000	0,38	0,0001	0,2	0,0000	0,3199	0,1280	0,2	0,0256	0,1159
Dominica		0,743	1,346	0,364	0,4	0,146	0,75	0,2	0,1500	0,10	0,0000	0,2	0,0000	0,2770	0,1108	0,2	0,0222	0,0794
Dominican Republic		0,738	1,355	0,366	0,4	0,146	0,75	0,2	0,1500	25,13	0,0090	0,2	0,0018	0,5817	0,2327	0,2	0,0465	0,0862
Ecuador		0,735	1,361	0,368	0,4	0,147	0,75	0,2	0,1500	25,45	0,0091	0,2	0,0018	0,6893	0,2757	0,2	0,0551	0,0885
Egypt		0,653	1,531	0,414	0,4	0,166	0,75	0,2	0,1500	142,23	0,0508	0,2	0,0102	0,6824	0,2729	0,2	0,0546	0,0951
El Salvador		0,72	1,389	0,375	0,4	0,150	1	0,2	0,2000	6,66	0,0024	0,2	0,0005	0,2551	0,1021	0,2	0,0204	0,0928
Equatorial Guinea		0,703	1,422	0,384	0,4	0,154	1	0,2	0,2000	0,21	0,0001	0,2	0,0000	0,0849	0,0340	0,2	0,0068	0,0901
Eritrea		0,439	2,278	0,616	0,4	0,246	1	0,2	0,2000	0,61	0,0002	0,2	0,0000	0,1958	0,0783	0,2	0,0157	0,1155
Ethiopia		0,359	2,786	0,753	0,4	0,301	1	0,2	0,2000	5,58	0,0020	0,2	0,0004	0,1431	0,0572	0,2	0,0114	0,1282
Fiji		0,758	1,319	0,357	0,4	0,143	1	0,2	0,2000	0,73	0,0003	0,2	0,0001	0,1928	0,0771	0,2	0,0154	0,0895
Gabon		0,648	1,543	0,417	0,4	0,167	1	0,2	0,2000	3,50	0,0012	0,2	0,0002	0,5029	0,2012	0,2	0,0402	0,1018
Gambia		0,452	2,212	0,598	0,4	0,239	1	0,2	0,2000	0,27	0,0001	0,2	0,0000	0,1353	0,0541	0,2	0,0108	0,1125
Ghana		0,568	1,761	0,476	0,4	0,190	0,75	0,2	0,1500	5,90	0,0021	0,2	0,0004	0,1749	0,0699	0,2	0,0140	0,0887
Grenada		0,745	1,342	0,363	0,4	0,145	1	0,2	0,2000	0,21	0,0001	0,2	0,0000	0,3262	0,1305	0,2	0,0261	0,0928
Guatemala		0,649	1,541	0,416	0,4	0,167	0,75	0,2	0,1500	9,89	0,0035	0,2	0,0007	0,2427	0,0971	0,2	0,0194	0,0842
Guinea		0,425	2,353	0,636	0,4	0,254	1	0,2	0,2000	1,29	0,0005	0,2	0,0001	0,0975	0,0390	0,2	0,0078	0,1156
Guinea-Bissau		0,35	2,857	0,772	0,4	0,309	1	0,2	0,2000	0,26	0,0001	0,2	0,0000	0,2968	0,1187	0,2	0,0237	0,1332
Guyana		0,719	1,391	0,376	0,4	0,150	1	0,2	0,2000	1,60	0,0006	0,2	0,0001	0,6109	0,2444	0,2	0,0489	0,0998
Haiti		0,463	2,160	0,584	0,4	0,233	1	0,2	0,2000	1,42	0,0005	0,2	0,0001	0,1158	0,0463	0,2	0,0093	0,1107
Honduras		0,672	1,488	0,402	0,4	0,161	0,5	0,2	0,1000	4,79	0,0017	0,2	0,0003	0,3339	0,1336	0,2	0,0267	0,0720
Hong Kong, China		0,903	1,107	0,299	0,4	0,120	0,75	0,2	0,1500	33,07	0,0118	0,2	0,0024	0,2056	0,0822	0,2	0,0164	0,0721
India		0,595	1,681	0,454	0,4	0,182	0,25	0,2	0,0500	1070,86	0,3824	0,2	0,0765	0,4804	0,1922	0,2	0,0384	0,0867
Indonesia		0,692	1,445	0,391	0,4	0,156	0,25	0,2	0,0500	269,57	0,0963	0,2	0,0193	0,4887	0,1955	0,2	0,0391	0,0661
Iran, Islamic Rep. of		0,732	1,366	0,369	0,4	0,148	1	0,2	0,2000	310,30	0,1108	0,2	0,0222	0,9070	0,3628	0,2	0,0726	0,1106
Iraq		..	..	..	0,4	..	1	0,2	0,2000	76,34	0,0273	0,2	0,0055	..	..	0,2	..	..
Jamaica		0,764	1,309	0,354	0,4	0,142	0,5	0,2	0,1000	10,78	0,0038	0,2	0,0008	1,2859	0,5144	0,2	0,1029	0,0863
Jordan		0,75	1,333	0,360	0,4	0,144	0,75	0,2	0,1500	15,55	0,0056	0,2	0,0011	0,8490	0,3396	0,2	0,0679	0,0908
Kenya		0,488	2,049	0,554	0,4	0,222	0,75	0,2	0,1500	9,35	0,0033	0,2	0,0007	0,3332	0,1333	0,2	0,0267	0,0997
Kiribati		..	..	..	0,4	..	1	0,2	0,2000	0,03	0,0000	0,2	0,0000	..	..	0,2	..	..
Korea, Dem. Rep.		..	..	..	0,4	..	0,75	0,2	0,1500	188,86	0,0674	0,2	0,0135	..	..	0,2	..	..
Korea, Rep. of		0,888	1,126	0,304	0,4	0,122	1	0,2	0,2000	..	..	0,2	..		0,0000	0,2	0,0000	..
Kuwait		0,838	1,193	0,323	0,4	0,129	1	0,2	0,2000	47,89	0,0171	0,2	0,0034	1,3431	0,5372	0,2	0,1074	0,1100
Lao People's Dem. Rep.		0,534	1,873	0,506	0,4	0,202	0,75	0,2	0,1500	0,41	0,0001	0,2	0,0000	0,0564	0,0226	0,2	0,0045	0,0892
Lebanon		0,758	1,319	0,357	0,4	0,143	0,75	0,2	0,1500	15,16	0,0054	0,2	0,0011	0,8840	0,3536	0,2	0,0707	0,0911
Lesotho		0,493	2,028	0,548	0,4	0,219	1	0,2	0,2000	...	..	0,2	..	..	..	0,2	..	..
Liberia		..	..	..	0,4	..	1	0,2	0,2000	0,40	0,0001	0,2	0,0000	..	..	0,2	..	..
Libyan Arab Jamahiriya		0,794	1,259	0,340	0,4	0,136	1	0,2	0,2000	57,13	0,0204	0,2	0,0041	..	..	0,2	..	..
Madagascar		0,469	2,132	0,576	0,4	0,231	1	0,2	0,2000	2,27	0,0008	0,2	0,0002	0,1889	0,0756	0,2	0,0151	0,1114
Malawi		0,388	2,577	0,697	0,4	0,279	1	0,2	0,2000	0,77	0,0003	0,2	0,0001	0,1348	0,0539	0,2	0,0108	0,1224
Malaysia		0,793	1,261	0,341	0,4	0,136	0,5	0,2	0,1000	144,41	0,0516	0,2	0,0103	0,7868	0,3147	0,2	0,0629	0,0774
Maldives		0,752	1,330	0,359	0,4	0,144	1	0,2	0,2000	0,50	0,0002	0,2	0,0000	..	..	0,2	..	..
Mali		0,326	3,067	0,829	0,4	0,332	1	0,2	0,2000	0,56	0,0002	0,2	0,0000	0,0697	0,0279	0,2	0,0056	0,1343
Marshall Islands		..	..	..	0,4	..	1	0,2	0,2000	..	..	0,2	..	..	..	0,2	..	..
Mauritania		0,465	2,151	0,581	0,4	0,232	1	0,2	0,2000	3,07	0,0011	0,2	0,0002	0,7536	0,3014	0,2	0,0603	0,1232
Mauritius		0,785	1,274	0,344	0,4	0,138	1	0,2	0,2000	2,89	0,0010	0,2	0,0002	0,2752	0,1101	0,2	0,0220	0,0900
Mexico		0,802	1,247	0,337	0,4	0,135	0,5	0,2	0,1000	423,97	0,1514	0,2	0,0303	0,5207	0,2083	0,2	0,0417	0,0767
Micronesia, Fed. Sts.		..	..	..	0,4	..	1	0,2	0,2000	..	..	0,2	..	..	..	0,2	..	..
Mongolia		0,668	1,497	0,405	0,4	0,162	1	0,2	0,2000	7,50	0,0027	0,2	0,0005	2,2170	0,8868	0,2	0,1774	0,1349
Morocco		0,62	1,613	0,436	0,4	0,174	0,5	0,2	0,1000	36,55	0,0131	0,2	0,0026	0,3945	0,1578	0,2	0,0316	0,0771
Mozambique		0,354	2,825	0,763	0,4	0,305	0,75	0,2	0,1500	1,18	0,0004	0,2	0,0001	..	..	0,2	..	..
Myanmar		0,551	1,815	0,491	0,4	0,196	1	0,2	0,2000	9,15	0,0033	0,2	0,0007	..	..	0,2	..	..
Namibia		0,607	1,647	0,445	0,4	0,178	1	0,2	0,2000	1,82	0,0007	0,2	0,0001	0,1742	0,0697	0,2	0,0139	0,0980
Nauru		..	..	..	0,4	..	1	0,2	0,2000	..	..	0,2	..	..	..	0,2	..	..
Nepal		0,504	1,984	0,536	0,4	0,215	1	0,2	0,2000	3,40	0,0012	0,2	0,0002	0,1211	0,0484	0,2	0,0097	0,1061

Nicaragua		0,667	1,499	0,405	0,4	0,162	0,75	0,2	0,1500	3,74	0,0013	0,2	0,0003	..	..	0,2	..	..
Niger		0,292	3,425	0,926	0,4	0,370	1	0,2	0,2000	1,18	0,0004	0,2	0,0001	0,1612	0,0645	0,2	0,0129	0,1458
Nigeria		0,466	2,146	0,580	0,4	0,232	0,75	0,2	0,1500	36,15	0,0129	0,2	0,0026	0,3682	0,1473	0,2	0,0295	0,1035
Occupied Palestinian Territories		0,726	1,377	0,372	0,4	0,149	1	0,2	0,2000	..	..	0,2	..	..	..	0,2	..	..
Oman		0,77	1,299	0,351	0,4	0,140	1	0,2	0,2000	19,77	0,0071	0,2	0,0014	0,7189	0,2876	0,2	0,0575	0,0998
Pakistan		0,497	2,012	0,544	0,4	0,218	1	0,2	0,2000	104,81	0,0374	0,2	0,0075	0,4384	0,1754	0,2	0,0351	0,1150
Palau		..	..	..	0,4	..	1	0,2	0,2000	0,24	0,0001	0,2	0,0000	..	..	0,2	..	..
Panama		0,791	1,264	0,342	0,4	0,137	0,75	0,2	0,1500	6,34	0,0023	0,2	0,0005	0,3920	0,1568	0,2	0,0314	0,0796
Papua New Guinea		0,542	1,845	0,499	0,4	0,199	0,75	0,2	0,1500	2,43	0,0009	0,2	0,0002	0,2243	0,0897	0,2	0,0179	0,0919
Country	Criteria	HDI 2002	Inverse HDI 2002	Normalized Inverse HDI (Inverse HDI / 3,7)	assigned weight	HDI * assigned weight	CDM Capacity Building Flow Rating	assigned weight	CDM Capacity building flow index x assigned weight	CO2 emissions (mtCO2e) 2000	Normalized emissions 2000 (CO2emissions / 2800)	assigned weight	Normalized emissions x assigned weight	Emission intensity CO2 emissions (kg per 1995 PPP $ of GDP) 2000	Normalized emission intensity (emission intensity / 2,5)	assigned weight	Normalized emissions intensity x assigned weight	Weighted Average
Paraguay		0,751	1,332	0,360	0,4	0,144	0,5	0,2	0,1000	3,66	0,0013	0,2	0,0003	0,1644	0,0658	0,2	0,0132	0,0643
Peru		0,752	1,330	0,359	0,4	0,144	0,75	0,2	0,1500	29,54	0,0106	0,2	0,0021	0,2608	0,1043	0,2	0,0209	0,0792
Philippines		0,753	1,328	0,359	0,4	0,144	0,5	0,2	0,1000	77,53	0,0277	0,2	0,0055	0,2797	0,1119	0,2	0,0224	0,0679
Qatar		0,833	1,200	0,324	0,4	0,130	1	0,2	0,2000	40,69	0,0145	0,2	0,0029	..	..	0,2	..	..
Rwanda		0,431	2,320	0,627	0,4	0,251	1	0,2	0,2000	0,57	0,0002	0,2	0,0000	0,0742	0,0297	0,2	0,0059	0,1142
Saint Kitts and Nevis		0,844	1,185	0,320	0,4	0,128	1	0,2	0,2000	..	..	0,2	..	..	..	0,2	..	..
Saint Lucia		0,777	1,287	0,348	0,4	0,139	1	0,2	0,2000	..	..	0,2	..	..	..	0,2	..	..
Saint Vincent and the Grenadines		0,751	1,332	0,360	0,4	0,144	1	0,2	0,2000	..	..	0,2	..	..	..	0,2	..	..
Samoa (Western)		0,769	1,300	0,351	0,4	0,141	1	0,2	0,2000	0,14	0,0000	0,2	0,0000	0,1742	0,0697	0,2	0,0139	0,0886
São Tomé and Principe		0,645	1,550	0,419	0,4	0,168	1	0,2	0,2000	0,09	0,0000	0,2	0,0000	..	..	0,2	..	..
Saudi Arabia		0,768	1,302	0,352	0,4	0,141	1	0,2	0,2000	374,34	0,1337	0,2	0,0267	1,6777	0,6711	0,2	0,1342	0,1254
Senegal		0,437	2,288	0,618	0,4	0,247	0,75	0,2	0,1500	4,18	0,0015	0,2	0,0003	0,3223	0,1289	0,2	0,0258	0,1059
Seychelles		0,853	1,172	0,317	0,4	0,127	1	0,2	0,2000	0,23	0,0001	0,2	0,0000	..	..	0,2	..	..
Sierra Leone		0,273	3,663	0,990	0,4	0,396	1	0,2	0,2000	0,56	0,0002	0,2	0,0000	0,2650	0,1060	0,2	0,0212	0,1543
Singapore		0,902	1,109	0,300	0,4	0,120	1	0,2	0,2000	59,05	0,0211	0,2	0,0042	0,6811	0,2724	0,2	0,0545	0,0946
Solomon Islands		0,624	1,603	0,433	0,4	0,173	1	0,2	0,2000	0,16	0,0001	0,2	0,0000	0,2323	0,0929	0,2	0,0186	0,0980
Somalia		..	..	..	0,4	..	1	0,2	0,2000	..	..	0,2	..	..	..	0,2	..	..
South Africa		0,666	1,502	0,406	0,4	0,162	0,25	0,2	0,0500	327,28	0,1169	0,2	0,0234	0,8832	0,3533	0,2	0,0707	0,0766
Sri Lanka		0,74	1,351	0,365	0,4	0,146	1	0,2	0,2000	10,18	0,0036	0,2	0,0007	0,1740	0,0696	0,2	0,0139	0,0902
Sudan		0,505	1,980	0,535	0,4	0,214	1	0,2	0,2000	5,22	0,0019	0,2	0,0004	0,1240	0,0496	0,2	0,0099	0,1061
Suriname		0,78	1,282	0,347	0,4	0,139	1	0,2	0,2000	2,12	0,0008	0,2	0,0002	..	..	0,2	..	..
Swaziland		0,519	1,927	0,521	0,4	0,208	1	0,2	0,2000	0,38	0,0001	0,2	0,0000	0,0949	0,0380	0,2	0,0076	0,1040
Syrian Arab Republic		0,71	1,408	0,381	0,4	0,152	1	0,2	0,2000	54,19	0,0194	0,2	0,0039	1,1397	0,4559	0,2	0,0912	0,1118
Tanzania, U. Rep. of		0,407	2,457	0,664	0,4	0,266	0,75	0,2	0,1500	4,31	0,0015	0,2	0,0003	0,2673	0,1069	0,2	0,0214	0,1093
Thailand		0,768	1,302	0,352	0,4	0,141	0,5	0,2	0,1000	198,65	0,0709	0,2	0,0142	0,5564	0,2226	0,2	0,0445	0,0749
Timor-Leste		0,436	2,294	0,620	0,4	0,248	1	0,2	0,2000	..	..	0,2	..	..	..	0,2	..	..
Togo		0,495	2,020	0,546	0,4	0,218	1	0,2	0,2000	1,80	0,0006	0,2	0,0001	0,3059	0,1224	0,2	0,0245	0,1108
Tonga		0,787	1,271	0,343	0,4	0,137	1	0,2	0,2000	0,12	0,0000	0,2	0,0000	0,2111	0,0844	0,2	0,0169	0,0886
Trinidad and Tobago		0,801	1,248	0,337	0,4	0,135	1	0,2	0,2000	26,36	0,0094	0,2	0,0019	2,4436	0,9774	0,2	0,1955	0,1331
Tunisia		0,745	1,342	0,363	0,4	0,145	0,5	0,2	0,1000	18,39	0,0066	0,2	0,0013	0,3327	0,1331	0,2	0,0266	0,0683
Tuvalu		..	..	..	0,4	..	1	0,2	0,2000	..	..	0,2	..	..	..	0,2	..	..
Uganda		0,493	2,028	0,548	0,4	0,219	0,75	0,2	0,1500	1,52	0,0005	0,2	0,0001	0,0603	0,0241	0,2	0,0048	0,0936
United Arab Emirates		0,824	1,214	0,328	0,4	0,131	1	0,2	0,2000	58,91	0,0210	0,2	0,0042	..	..	0,2	..	..
Uruguay		0,833	1,200	0,324	0,4	0,130	0,5	0,2	0,1000	5,41	0,0019	0,2	0,0004	0,2002	0,0801	0,2	0,0160	0,0615
Vanuatu		0,57	1,754	0,474	0,4	0,190	1	0,2	0,2000	0,08	0,0000	0,2	0,0000	0,1519	0,0607	0,2	0,0121	0,1005
Venezuela		0,778	1,285	0,347	0,4	0,139	0,5	0,2	0,1000	157,75	0,0563	0,2	0,0113	1,2430	0,4972	0,2	0,0994	0,0874
Viet Nam		0,691	1,447	0,391	0,4	0,156	0,5	0,2	0,1000	57,46	0,0205	0,2	0,0041	0,3942	0,1577	0,2	0,0315	0,0730
Yemen		0,482	2,075	0,561	0,4	0,224	1	0,2	0,2000	8,44	0,0030	0,2	0,0006	0,6273	0,2509	0,2	0,0502	0,1188
Zambia		0,389	2,571	0,695	0,4	0,278	0,75	0,2	0,1500	1,82	0,0007	0,2	0,0001	0,2506	0,1002	0,2	0,0200	0,1120
Zimbabwe		0,491	2,037	0,550	0,4	0,220	0,75	0,2	0,1500	14,80	0,0053	0,2	0,0011	0,4932	0,1973	0,2	0,0395	0,1027

Sources: **HDI 2002**

UNDP (2004). Human development report 2004: Cultural liberty in today's diverse world. New York: Author.

CDM Capacity Building Flow Rating

Author's estimates based on Annex 1

CO2 emissions (mtCO2e) 2000

World Bank (2004). World development indicators 2004. Washington: Author

Emissions Intensity CO2 emissions (kg per 1995 PPP $ of GDP)

World Bank (2004). World development indicators 2004. Washington: Author

Annex 4

Countries	Number of Projects	Types of CDM transactions		
		Bilateral	Multilateral	Unilateral
Argentina	2	Netherlands	CDCF	
Bangladesh	1	Netherlands		
Bhutan	1	France		
Bolivia	1			1
Brazil	14	Canada	WBNDCF	4
		UK		
		Switzerland		
		Japan		
		Netherlands		
Chile	6	Canada (4)		
		Japan (6)		
China	2	Denmark		1
Columbia	2	Japan	PCF	
Costa Rica	1	Netherlands		
Ecuador	1		CF	
Egypt	1	Japan		
Guatemala	1	Japan		
Honduras	7	Finland(4)	CDCF	2
India	15	Sweden	CF	9
		Finland	PCF (2)	
		Netherlands (5)		
		UK		
		Japan		
Indonesia	3		PCF (2)	
Jamaica	1	Netherlands		
Malaysia	4	UK		1
		Japan (2)		
		Denmark		
Mexico	4		PCF (4)	
Moldova	1	Denmark		
Panama	1			1
Papua New Guinea	1	Australia		
South Africa	1		PCF	
South Korea	3	Japan (2)		
Thailand	4	Denmark		2
		Japan(3)		
Vietnam	1	Japan		
Total projects	79			

Source: UNFCCCb (n.d.). Projects open for comment at the validation stage. Retrieved October 5, 2004 from http://cdm.unfccc.int/Projects Validation/?archive=yes + HWWA CDM Project database

Annex 5

Estimate of Regional Distribution of CDM Funding Support (in Millions €)

Asia & Pacific	Program Name	Budget	
UNIDO	Capacity Mobilization to Enable Industrial Projects under the CDM	0,60	
ADB	Opportunities for the CDM in the Energy Sector	0,60	
EC Asean	CDM-Asean	0,40	
EU Synergy Program	EU-China partnership in CDM implementation	0,50	
EU Synergy Program	IRIS	0,20	
European Bank for Reconstruction and Devleopment	Bankable CDM projects in the Caucasus / Central Asia	n.a.	
CIDA	various programs	0,67	
DANIDA	CDM Programme	0,40	
GTZ	CAPP	1,50	
IGES	ICS	4,00	
UK	(India CDM)	0,50	
UK	CDM Centres of Excellence	0,05	
USAID		1,00	
Sub-total CDM Awareness Building			**10,42**
UNDP (UN Foundation, Italy, Norway)	Capacity building for CDM in China	1,20	
UNEP	CD4CDM	3,00	
EU Commission	Establishing the Institutional Capacity to Enable Small Scale CDM projects in India	0,30	
EU Commission	Building-up the structures for commercialising renewable energy in China	0,30	
DANIDA		0,50	
GTZ		0,40	
Sub-total CDM Institution Building Programs			**5,70**
	Total Funding to-date		**16,12**

North Africa and Middle East	Program Name	Budget	
UNDP	Climate Change in Maghreb Region	0,30	
EU Synergy Program	AVINMAR	0,60	
EU Synergy Program	Business opportunities for CDM project development in the Mediterranean	0,50	
EU Synergy Program	IRIS	0,20	
EU 5th Framework Program	CDMED	0,40	
EU 5th Framework Program	CDMEDI	0,10	
Sub-total CDM Awareness Building			**2,10**
UNDP/UNEP	RAB	0,80	
UNEP	CD4CDM	2,00	
Sub-total CDM Institution Building Programs			**2,00**
	Total Funding to-date		**4,10**

Estimate of Regional Distribution of CDM Funding Support (in Millions €)

Latin America	Program Name	Budget	
UNDP	various programs	0,80	
UNDP, UNCTAD, UNIDO, UNFCCC	Engaging the private sector in the Clean Development Mechanism	0,65	
Compania Andina de Fomento		0,50	
EU Commission	Methodologies for the implementation of the Kyoto flexible mechanisms - CDM	0,30	
EU Synergy Program	Planning and Strategies for the Implementation of the CDM of the Kyoto Protocol in Latin America	1,10	
World Bank	PCF plus	0,70	
CIDA	various programs	0,33	
USAID		0,80	
Sub-total CDM Awareness Building			**5,18**
UNEP	CD4CDM	1,50	
Sub-total CDM Institution Building Programs			**1,50**
	Total Funding to-date		**6,68**

Subsaharan Africa	Program Name	Budget	
UNIDO	Concept for Developing National Capacity to Implement the Industrial CDM Project in Africa	2,00	
UNIDO	Capacity Mobilization to Enable Industrial Projects under the CDM in Nigeria	0,20	
UNDP, UNCTAD, UNIDO, UNFCCC	Engaging the private sector in the Clean Development Mechanism	0,65	
EU Comission	Start-up CDM in ACP Countries (SUSAC)	1,20	
EU Synergy Program	CAPSSA	0,90	
DANIDA	CDM Programme	0,40	
UK	CDM Centres of Excellence	0,05	
Sub-total CDM Awareness Building			**5,40**
UNEP	CD4CDM	1,50	
Sub-total CDM Institution Building Programs			**1,50**
	Total Funding to-date		**6,90**

Source:
Michaelowa, A. (2004b). CDM incentives in industrialized countries: The long and winding road. International Review for Environmental Strategies, 5. Japan: IGES.
Author's own data