

THE CLEAN DEVELOPMENT MECHANISM

BUILDING INTERNATIONAL PUBLIC-PRIVATE PARTNERSHIPS UNDER THE KYOTO PROTOCOL

Technical, Financial and Institutional Issues



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*Technical, Financial and Institutional Issues**

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The views expressed in this report are those of the authors and do not necessarily reflect those of the participants in the Working Group or the institutions concerned, namely UNCTAD, UNDP, UNEP and UNIDO.

List of Acronyms

AA	-	assigned amount
AIJ	-	Activity Implemented Jointly
CDM	-	Clean Development Mechanism
CER	-	certified emission reduction
COP	-	Conference of Parties
CTO	-	certified tradable offset
EPA	-	Environmental Protection Agency (United States)
ERU	-	emission reduction units
ET	-	emissions trading
GEF	-	Global Environment Facility
GHG	-	Greenhouse Gas Emissions
GWP	-	Global Warming Potential
HFC	-	Hydrofluorocarbon
IBRD	-	International Bank for Reconstruction and Development
IEA	-	International Energy Agency
IFC	-	International Finance Corporation
IPCC	-	Intergovernmental Panel on Climate Change
IWG	-	International Working Group
JI	-	Joint Implementation
LUCF	-	land-use change and forestry
LDC	-	least developed country
MOP	-	Meeting of Parties
NGO	-	non-governmental organisation
PFC	-	Perfluorocarbon
QERLC	-	quantified emission reduction and limitation commitments
RIIA	-	Royal Institute of International Affairs
SF ₆	-	sulphur hexafluoride
SPC	-	Special Purpose Company
UNFCCC	-	United Nations Framework Convention on Climate Change
USJI	-	United States Initiative for Joint Implementation
WBCSD	-	World Business Council for Sustainable Development

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I. Introduction

This report on the technical, financial and institutional aspects of the Clean Development Mechanism (CDM) is based on the work and deliberations of the Ad Hoc Working Group on the CDM. The report was commissioned by the UNCTAD secretariat following a request from the Government of Brazil and was prepared with the financial support of USAID and the United Nations Environment Programme (UNEP). The Working Group met on three occasions (Ottawa, September 1998; Buenos Aires, November 1998; and Paris, March 1999) under the joint auspices of the United Nations Conference on Trade and Development (UNCTAD), the United Nations Development Programme (UNDP), UNEP and the United Nations Industrial Development Organisation (UNIDO).

Article 12 of the Kyoto Protocol to the United Nations Framework Convention on Climate Change defines the purpose of the CDM as being:

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

The CDM allows Annex I countries (mostly developed countries) to acquire certified emissions reductions (CERs) by undertaking greenhouse gas (GHG) mitigating project activities in non-Annex I countries (mostly developing), while contributing to sustainable development in the host country. Annex I Parties can use CERs to contribute to compliance with “part” of their quantified emission limitation and reduction commitments (QERLCs) under Article 3 of the Kyoto Protocol. Private entities may also participate in CDM activities in order to advance these objectives. The Conference of the Parties (COP) to the UN Framework Convention on Climate Change (UNFCCC) and the Meeting of the Parties to the Kyoto Protocol (MOP) are together mandated to determine the legal and constitutional structure within which these objectives will be achieved.

The CDM creates a commodity (GHG/carbon equivalent units) and aims to provide mutually shared benefits for investors and hosts. As a mechanism intended to channel private sector investment towards climate friendly projects, the CDM aims to support the development of a new set of international arrangements for public/private partnership. This aspect inevitably will have implications for the design and operation of the CDM’s procedures and institutions, including its Executive Board and operational entities and the scope for participation by non-party entities in decision making and dispute resolution.

At present, the CDM is in a nascent state and several contentious issues and uncertainties need to be resolved by the COP/MOP before the CDM can become operational. This report examines a number of issues and options for the design and operation of the CDM.

Part II of this report provides an overview of the issues discussed in the report. Part III discusses the structure of the CDM’s investment function. Part IV examines the criteria and procedures for project approval, monitoring, certification of emissions reductions and tracking. Part V examines issues relating to the allocation of project value and risk, managing the CDM, credit fungibility and raising revenues for adaptation and CDM administrative expenses. Part VI examines various sources of financing CDM projects, while

issues relating to the institutional structure and governance of the CDM are examined in Part VII.

II. Overview

Basic principles and essential functions of the CDM identified by the Working Group

- Investment in project activities and the transfer of certified emissions reductions under the clean development mechanism (CDM) should be on an equitable basis. This would meet the dual objectives of providing cost-effective compliance options for Annex I countries while assisting non-Annex I countries in achieving sustainable development, thereby contributing towards meeting the ultimate objective of the Convention. In this regard, the problem of unequal capacities (human and institutional) amongst the developed and the developing countries is an issue which must be addressed for the CDM to provide a level playing field and an equitable global solution.
- The major investment and trade-related functions of the CDM should be determined and the CDM organised in such a way as to fulfil these functions with the bare minimum of governance and bureaucracy.
- Investors require clarity and consistency of rules through a CDM framework with maximum transparency and minimum subjectivity.
- Keeping the above guiding principles in mind, the CDM project development and implementation cycle should be structured in order to implement the following principles:
 - *Registration* of a project should be carried out by the relevant CDM authority or an operational entity accredited by the CDM. This should be done after approval of the project concept, baseline methodology and the sustainable development content of the project as proposed jointly by the investors, local project sponsors and the host country.
 - The CDM should assist in arranging funding for project activity (as necessary).
 - After a project is implemented, operational entities accredited by the COP/MOP would periodically certify emissions reductions (CERs) on an *ex-post* basis, on the basis of project monitoring procedures established by the CDM.
 - The CDM should generate revenues from a portion of the CERs or other proceeds generated by projects in order to help developing countries meet the cost of adoption and to cover the CDM's administrative expenses.
 - The CDM should be structured to enable technology empowerment and transfer of the cleanest technology.

The political ramifications (both among as well as between Annex I and non-Annex I Parties) of international equity and sustainable development will significantly influence the speed of adoption and the evolution of this mechanism. The ability of some non-Annex I countries to identify CDM project opportunities is currently quite limited. This could be due to project scale or a shortage of emissions reduction opportunities, as well as a lack of private

or public funding instruments or sources. Appropriate financial mechanisms must be allowed to address this problem. There is also an urgent need for capacity building - at many levels - to facilitate the development and financing process of forthcoming CDM projects. Therefore, dissemination of the experience of successful project financing and management through case studies, particularly in challenging business and development environments, should be a priority.

The structure of the CDM's investment functions

The CDM may be described fundamentally as a financial and environmental mechanism and organisationally as a linked set of entities serving under and reporting to the COP/MOP with certain operational and functional responsibilities.

With regard to the CDM investment function, the Working Group considered the following organisational models:

- A **centralised multilateral model** in which the CDM entities or another international entity would receive funds from Annex I public and private entities wishing to invest in CDM projects, select and fund projects and remit a portion of credits and, perhaps, other revenues earned from the projects to the investors. This model could provide benefits from specialisation, scale economies, investment pooling and risk diversification and the capacity to steer investments to host countries in accordance with equity concerns. At the same time, it might be inefficient, excessively bureaucratic and subject to serious conflicts of interests because the CDM would serve both as investor and guardian of projects' environmental integrity.
- A **bilateral model** in which the CDM would be mainly a regulatory and facilitative body with the dual function of an investment/project "clearing house." Investors and project sponsors would negotiate project agreements on a case-by-case basis. As under other models, projects would be subject to approval by host governments. The bilateral approach would typically involve a joint venture between a private firm from an Annex I Party and a project sponsoring entity from a non-Annex I Party. This model has the advantages of decentralisation and flexibility and can potentially mobilise private sector funds for the most cost-effective projects. But it may involve high transaction costs and may not satisfy certain equity concerns.
- A **unilateral model** under which the host country would both develop and invest in a project and hold the sole or predominant equity interest. This arrangement would allow a developing country to identify and invest in a project in its own country and then sell or bank the CERs. This model could promote host country autonomy and financial reward, but requires considerable host country project development and financing capacities, as well as ready availability of extensive debt financing.
- A **mutual fund model** in which private sector financial intermediaries, multilateral development banks and other international entities or host countries would develop portfolios of individual projects for investment by an array of investors. Such a model could facilitate investments by reducing the transaction costs associated with individual project investments and reduce or spread investment risks through insurance pools and the like.

There was widespread agreement within the Working Group that the CDM should not be established or operate as a centralised multilateral fund. The other three arrangements are not mutually exclusive and the CDM would, most probably, be a “hybrid” of them. The CDM authority should play a regulatory role and facilitate various forms of project financing, with particular emphasis on market mechanisms. The CDM authority might also act as a platform for periodic auctioning of CERs to generate revenues for adaptation and to cover CDM administrative expenses. Such auctions would serve to promote the development of secondary as well as primary markets in CERs. It is the potential role of the CDM as a catalyst for private investment that is gaining ground in most international forums concerned with the subject. This interpretation of the CDM is the focus of this report. At the same time equity and capacity-building needs must be effectively addressed.

Project eligibility and approval:

Projects should be registered by a CDM operational entity after verification that the project design and its projected performance in reducing emissions comply with eligibility criteria established by the CDM. The project’s emissions baseline would be determined at this point, subject to possible future revision. Credits should be certified periodically on an *ex-post* basis, after the project becomes operational and its emissions performance has been monitored and verified. At the registration stage, the specifications of relevant eligibility criteria for the particular project should be incorporated into the project approval process; compliance with such specifications should be a condition for future credit certification. Although credits should be certified *ex-post*, the information provided and specifications incorporated at the time of project approval and registration would enable project sponsors and initial or potential investors to make reasonable projections of the future CERs that would be generated by the project; interests derived from these future credit streams could be packaged and marketed in various forms of derivative financial instruments.

There was substantial support for the view that no project types should *a priori* be declared ineligible for crediting, although problems in accurately determining the emissions reductions achieved by certain types of projects, including sink projects, were recognised. Any project-types that could be shown to meet the eligibility criteria of the CDM with respect to emissions reductions and sustainability should be eligible.

Additionality

Article 12 of the Kyoto Protocol provides that, in order to be creditable, emissions reductions must be “additional to any that would occur in the absence of the certified project activity.” It was agreed that the CDM authorities implementing this provision should not adopt any rigid test of additionality that would automatically rule out certain types of projects at the beginning. Further, there was widespread agreement that the Protocol drafters intended for additionality criteria to relate primarily to environmental factors (basically the status of emissions with versus without the project) and that the only requirement with respect to financial additionality should be that CDM investments are demonstrably additional to ODA. Financial additionality tests, applied on a case-by-case basis and aimed at excluding specific projects on the ground that they would have been undertaken anyway because of the project’s potential for financial returns in the absence of credits, run into serious difficulties. In cases where baseline-setting is bottom-up, the project sponsor could in principle seek to make the “case” for the financial additionality of the project (and the estimate of reductions/offsets therefrom) based on a comparison between the investment that would be financially or

economically justified “with” the opportunity to earn/sell credits versus the investment that would be financially justified “without” that opportunity. Under this approach, however, a given project could have both a creditable and non-creditable component. Some components might have been undertaken only if credits were available, while others might have been undertaken anyway. In practice applying such criteria on an operational basis may be too complex and prone to gaming to be workable. Accordingly, attention should be focused on resolving the additionality issue by developing standardised approaches to baseline-setting based solely on environmental criteria. There was widespread agreement that additionality and baseline-setting are inseparable.

Baselines

The Working Group analysed baseline-setting in terms of the requirements for and potential advantages and disadvantages of, three fundamental approaches: (1) the top-down approach; (2) the simplified methods approach; and (3) the bottom-up approach. There was widespread agreement that any and all of these methods should be allowed, since all have potential merit and since knowledge gained from their application in the initial period of CDM project activity with crediting would be useful to the COP and COP/MOP in their “rule-making” deliberations.

It was suggested that CDM host countries in regional groupings could co-operate in setting regional baselines for sectors in order to achieve economies of scale and methodological standardisation. Other approaches could include the following:

- A technology matrix approach, under which a number of pre-defined technologies would be identified as the baseline technologies for a region and for a specified timeframe. The emissions baseline for a given project would equal the emissions rate for the specified technology.
- A benchmarking approach, under which the emissions baseline for a given project would be set in relation to emissions performance “benchmark” rates based on such criteria as historic or projected emission intensity trends. Projects would receive credits for emissions below benchmark levels.
- Establishing standards for crediting emissions reductions to projects based on the extent to which they overcome barriers to investment, such as policy and market failures.

The challenge in developing and applying such methods and for setting baselines based on environmental performance criteria generally, will be to develop standards and procedures that a wide range of technical experts (including those from certification bodies, environmental groups, academia and governments) will agree are reasonable in the sense that they will ensure that in the vast majority of cases emissions reductions project sponsors only earn credits for emissions reductions that are additional, real and long term. Ways must be found to simplify baseline-setting while maintaining sufficient rigour to avoid compromising the integrity of the CDM.

Sustainable development

The sustainable development content of the project should reflect host country decisions regarding national priorities and needs to be determined at the time of project registration with the CDM authority. Sustainable development also needs to be an ongoing project function. The Working Group concluded that host country governments should have the ultimate responsibility for determining a project's compatibility with sustainable development criteria, as a matter of sovereignty, but that it would be desirable for the CDM to develop and provide an indicative, not restrictive, list of quantifiable sustainable development indicators/benchmarks. The project proponents and host country could then choose the appropriate sustainable development benchmarks, which the project should meet over time. These benchmarks could be incorporated within the project's contractual documents to assure their achievement.

Monitoring

The Working Group envisaged that monitoring, record keeping and reporting of project net emissions would be carried out by project sponsors in accordance with criteria and procedures established by the COP/MOP. A simple, widely accepted definition of monitoring is: "the systematic surveillance and measurement of defined project parameters."

Certification

Certification of emissions reductions would be performed by independent operational entities accredited by the COP/MOP on a periodic basis *ex-post*, after a project has become operational. Certification would include verification by the operational entity of the project's compliance with the eligibility specifications established at registration and its net emissions in relation to its baseline. With respect to emissions, the term verification refers to confirming that the reported reductions actually occurred based on objective evidence of emissions performance. Verification is analogous to an independent audit of a company's financial report. Some analysts argue that such verification should be operationalised as an annual audit.

Credit tracking

The CDM authority should arrange for an international registry, which could be run by a private entity, to record the issuance (in serialised form) of CERs, transfers of CERs, current holdings of CERs (including holdings by private entities and the Party to whom such holdings should be attributed for purposes of determining Annex I Parties' compliance with Protocol obligations). Eventually, a common international registry should be established for the three tradeable commodities CERs, emissions reduction units (ERUs) and assigned amounts (AAs).

Credit sharing

The sharing among investors, project sponsors and host countries of credits and other project proceeds was seen by some to be an issue of paramount importance upon which would hinge the perception of a "fair" CDM process and hence its success or failure. The sharing of CERs may include sharing the quantity of the generated CERs as well as sharing

the cost-price differential over time. This sharing could also take into account other factors, such as the division of other project-generated revenues and credit-reversal mechanisms, whereby investors would obtain the bulk of credits in a project's early years but host countries would obtain more of the credits in later years. Credit sharing would be influenced very strongly by project negotiations in which capacity and negotiation capabilities might be unequal between the developed and the developing countries. This inequality needs to be rectified through capacity-building measures, as discussed below. In addition, the CDM authority or international organisations might develop model "credit negotiation" contracts for CDM project types for guidance.

Liability issues

During the CDM project cycle, two types of commodities would be generated. After the project has been registered with the CDM authority, the stream of possible future CERs would constitute an "*ex-ante*" commodity that would be non-certified and sellable as a "promissory note" in the options/futures market, with a market discount based on the risks that anticipated future credits would not be earned and certified. Once the CERs have been actually generated and certified the *ex-post* commodity that would be generated would be irrevocably valid, protecting the buyer but also precluding any liability on the part of the seller.

The presence of both *ex-ante* and *ex-post* commodities in the CDM would have a direct relevance for liability, with the "*ex-ante*" commodity carrying a "buyer beware" liability whereas the "*ex-post*" commodity would have a "zero" liability for both buyers and sellers. In the case of the "*ex-ante*" commodity, buyers could undertake risk hedging through various means, including indemnities by sellers, over-buying credits, buying credit options or futures or insurance. In the case of the "*ex-post*" commodity, liability for improper certification would fall on the certifier and should be covered through mandatory insurance arrangements established under the CDM. The cost of such insurance would normally be part of the certification fee.

Early action measures to initiate CDM project activity beginning in 2000

At present, there is still a lack of private CDM project capital. This will persist, most likely, until substantial progress is made towards adopting definitive policies in the following areas:

- Modalities and procedures for the CDM
- International arrangements for implementing the CDM
- National policies of Annex I countries to provide early incentives for investment in credit-earning projects
- Host country investment and sustainable development policies and priorities

These policies will determine both the nature and value of the CER commodity in relation to the other emissions reduction mechanisms and options. Failure by the Parties to enable and encourage the early use of the CDM through early crediting systems will erode one of its key attractions over the other mechanisms – the ability to earn credits between 2000 and 2008. Annex I countries should be encouraged to develop domestic mechanisms

whereby CDM opportunities could be priced and utilised to meet internal emissions reduction targets or taxation liabilities. The establishment of complicated or onerous rules for participation (especially with respect to baseline requirements) would disadvantage the CDM in attracting corporate or private capital flows, when competing with other forms of emissions trading and domestic reduction options. CERs thus generated would ultimately benefit Annex I Parties in meeting their Kyoto targets. Alternatives might include the use of more conventional types of domestic reward systems (such as tax incentives or enhanced depreciation schedules) for early private sector participants in the CDM market.

The current pilot phase on Activities Implemented Jointly (AIJ) has demonstrated that with poorly defined investment guidelines and incentives, even a plethora of potential projects do not, in themselves, catalyse substantial new capital flows. The CDM's success will depend on developing the necessary private sector capital flows and infrastructure to enable investors to achieve competitive returns on capital employed through both the conventional project outputs and the CERs generated. Until threshold liquidity is achieved within the overall emissions trading market, it can be expected that investment flows to CDM projects will rely predominantly on the prospects of the conventional commercial outputs of projects; CERs will be seen as a bonus value, rather than the driving force, in most investment decisions. In order to transcend this stage, a demand for CERs must be created, a liquid market¹ needs to develop and the commodity and transaction mechanisms must be defined. The minimum policy requirements are:

- Simple and consistent mechanisms for identifying and capturing CER values.
- Confidence that there will be a liquid market to transact the CER value.
- Recognised equivalence between CERs, emissions reduction units from joint implementation and Annex I assigned amounts of transfers under the Kyoto Protocol.

It would also be desirable for Annex I countries to generate early opportunities for use of credits, as discussed above.

Article 12 of the Kyoto Protocol stipulates that the COP/MOP shall, at its first session following entry into force of the Protocol, elaborate modalities and procedures for the CDM. This does not preclude the COP from setting some policy directions, guidelines and rules between now and the first COP/MOP. There was, however, widespread agreement among the Working Group that it will not be necessary or appropriate to distinguish between an "interim phase" of CDM project activity and a subsequent permanent phase. Early establishment of criteria and procedures for CDM projects and the experience gained prior to the first COP/MOP in baseline-setting, monitoring and certification of emissions reductions for actual projects could provide invaluable learning-by-doing for COP/MOP deliberations. It could improve the climate for CDM investments by indicating to potential project sponsors the direction of future policies and procedures.

Indications are that a majority of developing countries are in favour of proceeding with an initial phase of projects undertaken in anticipation of earning credits. There remains, of course, a risk for project sponsors and investors that projected credits would not in fact be

¹ The term refers to a market in which there is an easy and regular flow of dealings, as opposed to an illiquid market, in which it is possible only to buy and sell comparatively small numbers of shares, or in which few people wish to deal at all.

recognised under the rules later established by the COP/MOP, but it was felt that this risk could be appropriately limited and managed and should not foreclose early action initiatives and their benefits.

Fungibility

In order to encourage the maximum development of hybrid GHG emissions trading markets, all practicable steps should be taken to ensure the fungibility of the three tradeable commodities – CERs, ERUs and AAs established under the three flexibility mechanisms – CDM, joint implementation (JI) and emissions trading (ET) respectively, including the establishment of a joint international tracking mechanism and registry. There are, however, a number of criteria and hurdles that CDM projects will have to meet and overcome, which qualifying projects in the other sectors will not have to satisfy:

- CDM projects and their CER outputs will have to be certified.
- The eligibility under the CDM of forestry or land use sequestration projects -- potentially a very important opportunity for less industrialised developing countries – has been questioned.
- Administrative expenses and adaptation charges will be levied on CDM project activities.
- CDM projects will have to meet the sustainable development objectives of the host country.

These aspects of the CDM should be implemented in such a way as not to unduly burden and discourage CDM investments and their development benefits for non-Annex I countries, relative to alternative investments in GHG reduction projects, both domestically and internationally.

Proceeds and CDM administrative expenses

The CDM authorities should collect a percentage of every project's CERs or other revenues. These authorities might periodically use a portion of project CERs to generate the requisite proceeds. These proceeds could be placed in an adaptation fund for disbursement to the most vulnerable countries, as well as used to meet CDM operating expenses.

It was felt that there are potentially two stark inequities with respect to these arrangements:

- Inequity between the instruments, as the burden of the adaptation proceeds has only been imposed on the CDM, which provides an unfair competitive advantage to JI and ET.
- Inequity of "tax" design, as an "adaptation" tax based on CDM project revenues, whether in the form of CERs or otherwise would, depending on the incidence of the "tax", be tantamount to a "South-South" transfer, with the burden falling, directly or indirectly, on the project's host developing country.

The first issue was considered a political negotiation issue. The second issue attracted various proposals, including assigning each Annex I country a given lump sum portion of adaptation costs, regardless of the extent of its participation in the CDM or use of CERs; requiring all investors participating in the CDM to pay a lump sum fee regardless of the extent of their participation; and efforts to levy adaptation proceeds from the investor's share. The Working Group reached no consensus on these alternatives.

Size of CDM market

The size of the CDM market would be dependent on the interaction of the three Protocol mechanisms as well as on domestic opportunities and incentives in GHG reduction investments and has a number of other associated variables. A study by the Royal Institute of International Affairs (Christiaan Vrolijk, RIIA, Nov. 1998) estimated the potential CDM market size to be in the range of USD 5 to 10 billion/annum investment potential. Viewed in the context of ODA flows (estimated at USD 50 billion) and FDI flows (estimated in the range of USD 240 billion) it was concluded that the CDM investments could be substantial, if used effectively. This could be done by focusing on fostering innovative and "top end" technology transfer in order to provide strong leverage for a cleaner growth trajectory in developing countries. The study also highlighted large potential "avoided cost" savings for Annex I countries through the CDM and this strengthened the need for an equitable balance of benefits accruing to the developing countries through ensuring sustainable development and technology empowerment.

The CDM will only reach its potential - both for emissions reductions and for enhancing capital flows to the developing world - if mainstream institutional, corporate and private sector capital investors from both Annex I and host countries are attracted to projects that generate CERs. Investment opportunities in CDM projects have to be attractive to entities with direct emissions liabilities as well as sources of development capital; this is the fundamental difference between the CDM on the one hand and JI and ET on the other hand.

Without proper structures and incentives, international capital may flow to emissions reductions in host countries that already have large, carbon-intensive energy and industrial sectors. This tendency would potentially marginalise those project developers and host country policy makers who seek to implement emissions reduction investments on an inclusive basis (both with respect to technologies and countries), thereby conforming with CDM parameters and objectives in their widest sense. In particular, for smaller-scale energy and forestry projects – many of which have the ability to meet both national sustainable development criteria and emissions reduction objectives – such selective restrictions or biases would prove counterproductive.

Availability of the full range of commercial and concessionary finance

Capital for implementation of CDM projects can come from a wide variety of sources, not exclusively carbon emitters. Rules and guidelines for the CDM should accommodate this flexibility - especially if it is to attract domestic investments in host countries - and encourage the use of concessionary multilateral funds to meet the sustainable development objectives of the CDM.

Once the CER commodity and transaction mechanisms are adequately defined, it is important to recognise that financing sources should broaden to include a wide spectrum of participants, including Annex I carbon emitters, host country investors, institutional investors and financial intermediaries. This should be both accepted and encouraged. CDM's specific development obligations should require active participation by the international development community in providing access to concessionary finance (subject to rules of additionality). This institutional development support could also be utilised to help build capacity in developing countries in order to enable them to participate effectively in the CDM. For a commodity of such potential global significance, CERs could be easy to generate and even easier to export, as they do not require physical infrastructure. Assuming project and investment risk can be mitigated, CERs may successfully compete with investment opportunities in more advanced economies.

Ideally CDM projects could be financed by various entities and through various types of financial arrangements and instruments. These include:

- Direct finance by end-users of credits
- Internal host financing
- Use of various project finance models
- Grants and other non-market forms of financial assistance, including concessionary financing by the multilateral development banks
- Take or pay contracts
- International capital markets (e.g. Eurobonds)
- Secondary credit-based financial instruments

In order for these various financing sources to generate significant market expansion, it is important that the spectrum of parties who understand the CER market and the options within it be expanded beyond the current project developers and CER purchasers. Moreover, because of the comparatively small CER generation potential of many non-Annex I countries, some CDM projects could fail to meet current project investors' criteria.

Those providing domestic capital in developing countries – whether from public or private sectors – would only incur a fraction of the transaction costs and virtually none of the opportunity costs that might discourage external investors in small-scale projects in developing countries. Local financial institutions are more likely to cope with the risk profiles of these projects and have their own risk mitigation mechanisms. They are also more likely to identify projects that are compatible with local infrastructure capacity and development objectives. The conundrum is, however, that local developers and financiers are less likely to be familiar with the CDM regulatory environment and potential outlets for CERs. This reinforces the requirement for capacity building and the potential need for multilateral finance on favourable terms to deal with country risks.

Early investors in successful projects could achieve significant economic rents between CER production costs and potential market prices – especially as they are bankable

for the first commitment period. There is no inherent reason why developing countries cannot retain a substantial portion – or even all – of the rents in the early phase of the market. For industrialised countries and multilateral institutions, there should be a strong motivation to use aid finance (subject to CDM rules and modalities) to catalyse the widest number of projects while accepting that non Annex I host country participants will capture a substantial portion of those rents. The universal benefit would be that such an initiative will prevent CER prices from rising too fast and create greater incentives for inclusive participation among a wide range of developing country participants. This will in turn improve the likelihood of long-term political acceptance of emissions trading and the CDM.

Finance and capacity building

For the CDM to fulfil its potential for both emissions reduction and sustainable development goals, it is vital that mechanisms be fostered that allow the greatest possible breadth of projects to be financed, with resultant CER streams easily accessible to those wishing to acquire them. The CDM is, by definition, project based and as such, project-financing techniques will be a key to its success. Project financing represents one of the more complex and risk-laden forms of investment, with substantial expertise requirements for project developers, investors and regulators. Under normal conditions of international investment, it is the goal of each financing party to minimise its own exposure to project failure while retaining maximum benefits of project success. There is a significant difference in the level of knowledge and understanding of currently available financing techniques (let alone the CDM and other emission trading tools) between host and Annex I country participants. This is likely to affect the outcomes of negotiations between parties and the sharing of project benefits and risks, which in turn could have an impact on investment trends and the effectiveness of the CDM. It could undermine the commercial and political viability of the CDM system.

Therefore, for private sector project-based finance to flourish in the CDM process there is an immediate need for capacity building among the potential participants, particularly in the host countries. There is a danger that without such capacity building, the CDM could simply replicate forms of development capitalism that are often considered exploitative by observers in many developing countries. Capacity building, in its broadest sense, should involve a concerted campaign of information dissemination about current project finance tools to developers, local financiers and domestic regulators of the CDM process. It will also be important to encourage as much “learning by doing” to create positive shareable experiences throughout the earlier stages of the CDM, while it remains an untried tool of doubtful value to many potential participants.

Host country capacity to understand and negotiate CERs needs enhancement, which could be done through multilateral or bilateral assistance, by developing standard project contracts for guidance and by initiating regional pilot projects and support capacities. Dissemination of the current financial tool-kit for project development is not sufficient. There is a concurrent need to expand that tool-kit, to accommodate the dual objectives of the CDM in meeting host country sustainable development objectives as well as the criteria for emissions reduction. Risk mitigation mechanisms must also accommodate smaller projects in the more risky investment locations. Case studies should be used to develop an understanding of the impact of alternative financing tools currently used for different types of projects in developing country, such as renewable energy, energy efficiency and related projects. To the extent that forestry projects are included, sustainable forestry project

evaluation would also be appropriate. Inclusion of such projects may be particularly important, recognising that the needs and capacities of some developing countries to participate in the CDM on any reasonable scale may largely be restricted to forestry. Here also, suitable case studies - representing the range of project development and financing conditions - could be developed and used as capacity building programmes to train the host country private and public sectors in the art of project promotion and evaluation. These case studies could examine:

- The impact of host country investment policy on project viability and competitiveness;
- The importance, particularly in LDCs, of soft loans or grant finance to generate project viability;
- The potential use and impact of international and bilateral agencies' financial support (e.g. UN or World Bank);
- General commercial financing issues such as ratio of domestic to international capitalisation, debt-equity ratios, the use of public sources of capital (domestic or international), export or import guarantees and the mitigation of risk; and
- The impact of project performance and political and currency risk on the viability and competitiveness of project financing.

Issues of equity

An important question is the extent to which an unfettered capital market will give priority to financial flows to CDM countries, sectors or markets that are regarded as high risk or otherwise less attractive. To maximise participation of developing countries, international and domestic policy guidance must explicitly recognise that developing country motivation for the CDM is to increase capital and technology flows into sectors that enhance development priorities. Thus, a further question is the degree to which Annex I and non-Annex I countries will need to establish investment incentives or controls to steer financial flows towards target CDM markets and sectors. It is conceivable that such intervention might eventually contravene WTO rules, bilateral or multilateral investment agreements.

One solution to these problems is capacity building. But other measures will also be needed. Thus, it has been suggested that there will be a need for public sector finance in some cases - e.g. from the Global Environment Facility (GEF), the World Bank or the International Finance Corporation (IFC) to catalyse projects - particularly those in countries with poor institutional capacity or high-risk ratings. Utilising concessionary finance also provides an additional mechanism by which a host country could direct investment flows, by selecting multilateral funding for projects deemed to contribute to economic or sustainable development objectives.

Regrettably, the countries that are unable to attract capital inflows for CDM projects are also the least likely to have competitively developed financial institutional structures - a factor likely to compound the problem of the non-inclusive allocation of scarce capital. The

key issue of equity that needs to be addressed early on in the CDM development process is the inevitable competition between the more industrialised CDM economies and weaker developing countries. The latter have fewer opportunities to achieve emissions reductions by virtue of the fact that they are poorer, less industrially developed and have fewer emissions reduction opportunities. The introduction of clean energy technology (leap-frogging the carbon cycle into lower carbon dioxide (CO₂) or CO₂ free energy sources) is greatly desired, but will only take place if returns on investment (including the value of CERs) are as economically attractive as equivalent emissions reductions via retro-fitting existing power sources, for example. This will be dependent - at least in part - on the CER values and costs, as well as on the additionality criteria applicable to projects, such as retro-fitting existing power sources, that arguably might have been based on economic grounds rather than to achieve CERs. The poor institutional and commercial capacity in these countries and their inability to attract and manage such projects exacerbates this structural disadvantage. A combination of intensive capacity building and mechanisms for supporting CDM project funding on a basis other than private capital market financing, including sources such as multilateral finance from the GEF, World Bank, IFC, the regional development banks and "soft finance" from bilateral donor governments should be developed in order to address these problems. It has to be kept in mind however that these mechanisms might possibly raise questions in light of the principle that CDM investments should be "additional" to ODA. Financing arrangements should be carefully structured to address this question.

Further, host countries may initially have to establish investment incentives and guidelines to direct financial flows towards a country's preferred target sectors or projects, thus ensuring that projects remain consistent with the individual country's sustainable development priorities.

Organisation of the CDM

It is essential to bear in mind that the CDM is not a single institution. Rather, it is a *mechanism* the legal and institutional set-up of which will be determined by the COP/MOP. That set-up is likely to include a variety of entities, including Parties, international institutions and private entities. It also includes rules, standards and procedures linking these components in fulfilment of the CDM's objectives. While the configuration of the CDM and its constituent parts can take many different forms, its design must address the following elements:

- The role and functions of the plenary body (COP/MOP), including its relationship with the Executive Board (EB) and the COP.
- The functions, composition and decision-making processes of the EB, including whether it is the principal organ of the COP/MOP or a subsidiary body.
- Issues of administrative support: should all, some or any of the CDM's core administrative tasks be undertaken by the Convention's secretariat or by an administrative staff under and accountable to the EB or should they be undertaken by a non-Convention/Protocol body or bodies and if so, which?

- The design of the CDM investment function, as discussed above. The definition of these investment functions will have major implications for the institutional design and organisational capacities required of the CDM.
- Arrangements for appropriate entities to monitor on an ongoing basis a project's emissions or sequestration services and report the monitoring results.
- Verification and certification criteria and procedures to enable appropriate entities to determine whether projects should be approved as satisfying CDM criteria and determining the emissions reductions and credits achieved by projects and the issuance of CERs.
- An international system of bookkeeping by an appropriate entity or entities to track CERs, including recording in a registry of transfers and credit holdings by private entities and Parties.
- Arrangements for auditing of CER accounts by appropriate entities.
- Selection of the "operational entities" that will certify emissions reductions and undertake "independent auditing and verification" of project activities and carry out other implementing activities and functions. This involves deciding the criteria to be applied by the COP/MOP or EB to define the role of and select or accredit such entities, including agreeing on criteria and procedures to guide their conduct, to periodically evaluate their performance and to withdraw accreditation in case of inadequate performance.
- Arrangements for financing the administrative expenses of the CDM. This will require consideration of (a) budget processes; (b) control over funds; and (c) the raising of revenues from CDM projects.
- Acquiring and disbursing funds to meet adaptation costs of developing countries particularly vulnerable to climate change, including the development of criteria for allocating disbursements.
- Stimulating and supporting markets in CERs and facilitating the identification of and investment in appropriate projects.
- Assisting in promoting capacity building in developing countries to enable them to be effective participants in the CDM process.
- Resolving issues relating to participation of other public and/or private entities in CDM activities and dispute resolution procedures.

Resolution of these issues must involve decisions on the following questions:

- What will be the appropriate level of activity for the different functions carried out by the CDM (project, national, regional or international)?
- Should existing international institutions within and outside the UN structure and private entities perform some of the CDM's functions?
- Should new institutions be created to perform some of these functions and if so, should they be directly controlled by the COP/MOP and EB or should they enjoy a degree of independence?
- What will be the decision-making processes of the various organisations and entities involved in or with the CDM (including the COP/MOP and EB).
- What will be the allocation of powers among the various entities constituting the CDM, the Parties to the Protocol and those private and public entities engaged in individual projects?
- What co-ordination should there be with existing or new sources of development finance (public and private), including the GEF?

One central issue in the organisation of the CDM is the relation between the COP/MOP and the EB and the latter's membership and procedures. The Working Group concluded that it would be important for the successful implementation of the CDM's investment and other functions to provide the EB with a degree of decisional and operational independence from the COP/MOP and define the EB's membership and voting rules in such a way as to enable it to perform its executive functions efficiently.

A second central issue relates to the role of operational entities in implementing the CDM's various functions. The Working Group discussed two "models" for operational entities. Under the "centralised" approach, CDM project registrations/validations, emissions monitoring and verification and certification functions would be performed by one or more subordinate bodies reporting to the CDM Executive Board. Under the "decentralised" approach these activities would be provided by independent entities (private firms and NGOs and possibly public agencies) operating under guidelines and rules set by the COP/MOP or the EB and accredited by them or another CDM authority. There was widespread agreement among the Working Group participants that the decentralised approach offers the advantages of flexibility, transparency and efficiency and should be adopted in preference to the centralised approach. It was recognised that CDM authorities should adopt guidelines for ensuring that conflicts of interest, which may arise when the same operational entity plays different roles in the same or similar project, are avoided.

A third set of fundamental issues relates to procedures to resolve disputes among the various entities - both State and non-State entities - participating in the CDM. The CDM represents a highly innovative private/public partnership model of international law and organisation. To work efficiently, the CDM must have one or more dispute settlement mechanisms, which will deliver clear and determinative decisions in a speedy and cost-effective manner. This becomes even more important if the private sector is sought to participate in CDM projects on a large scale. Disputes among Parties regarding compliance and related matters arising under the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol will have to be tackled through the development of appropriate non-compliance and related mechanisms addressed to Parties.

Existing contractual, arbitral or domestic law arrangements might be able to handle disputes between CDM authorities and operational entities over accreditation decisions, disputes between project sponsors and private sector entities over project arrangements and credit transfers and disputes between investors and project sponsors and host countries. However, it will probably be necessary to develop new dispute resolution procedures to resolve controversies between investors, project sponsors, Parties and other entities on the one hand and CDM authorities on the other, regarding the latter's decisions on project registration, determinations of baselines, credit certification and credit ownership. There will have to be assurances of general consistency of the relevant decisions, as well as consistency of individual resolutions of disputes with the CDM policies and objectives. This suggests a need to establish the new dispute resolution procedure on a centralised basis within the CDM, perhaps based on the model of the WTO dispute resolution mechanism.

Finally, there will be a need to address and promote the compatibility of CDM arrangements with other relevant international agreements and arrangements. In particular, the consistency of CDM credit trading arrangements with GATT/WTO rules must be addressed. The potential need for measures to resolve possible problems of market power in credit markets must also be considered.

III. Structure of the CDM investment function

A fundamental issue that must be resolved in the design of the CDM is the structure of the investment function. By what means will investments by Annex I Parties and private entities be channelled into qualified projects and how will CERs be distributed? The resolution of this issue has important implications for institutional and other elements of the CDM. In this section we review a number of options for the design of the investment function. As noted in the overview, these options are not mutually exclusive; mixed approaches may be feasible and desirable. Whatever mechanism is chosen, it must provide competitive opportunities for return on investment in greenhouse gas (GHG) mitigation if it is to attract a share of new investment capital.

A. The multilateral model

Under the model of a centralised multilateral investment entity, the CDM authority (or another international entity such as a multilateral development bank or UN agency) would constitute the sole (at least in the first instance) source of investments in CDM projects in developing countries. It would, according to some consistent criteria, review, evaluate and select for funding projects proposed by developing countries directly or by private entities with the approval of the host country. The multilateral investment entity would negotiate credit-sharing contracts with host countries or other local sponsors and arrange for registration, verification and certification of projects and CERs through independent third-party evaluators. Investment funds for projects would be contributed to the multilateral fund by Annex I governments or by private entities, who would, in return, receive a share, proportionate to their investment, of the CERs generated by the entity's portfolio of projects, net of credits due to host countries or local project sponsors and credits used to finance adaptation measures and CDM administrative costs. A portion of the project returns might consist of monetary revenues as well as CERs. These revenues could be distributed in the same or a similar fashion as the distribution of CERs or in some other manner.

The Parties participating in the CDM, particularly Annex I Parties, would presumably have to provide an initial capital contribution to the investment entity. The CDM could obtain revenues for adaptation funding and for its administrative costs by periodically auctioning a percentage of the CERs from each project. This could entail an annual auctioning of the adaptation/administration CERs to the highest international bidders. By acting as an effective price revelation mechanism, such auctions could provide protection to the host countries against potential exploitation and allow them the opportunity to estimate and negotiate for the difference between the costs of the project and the global market price for the CERs on a yearly basis. These periodic auctions would establish a primary market for CERs and generate price signals that would assist the development and functioning of a secondary market as well as the primary market.

If a multilateral investment fund were managed through the CDM authority, the CDM would carry out a substantial array of major financial and related functions, including project identification and selection, marketing of project investments and financial and investment management, all of which will require a correspondingly substantial institutional infrastructure. While some of these functions could be carried out by subsidiary or separate entities, the COP/MOP and Executive Board (EB) would necessarily be closely involved in investment policies and financial management, which imply a very substantial organisational

capacity including specialised investment management and project evaluation capacities. If these functions were carried out by another international entity, the COP/MOP and EB would have to establish a close working relationship with such an entity but at the same time exercise effective supervision and control over its activities and decisions in order to ensure that the regulatory objectives of the CDM – to achieve real, measurable and long-term reductions in net GHG emissions and promote sustainable development – are achieved.

A single investment entity could enjoy substantial advantages through specialisation and the ability to realise economies of scale. It could develop the capacity and experience to assess and select worthwhile projects, a systematic and consistent approach for project selection, standardised procedures and rules and lower transaction costs. It could also diversify risk for investors by spreading investments across a portfolio of projects and facilitate participation by smaller investors. The fund approach would also "shield" host countries and other project sponsors from direct "buying" and "selling" of CERs, offering an "umbrella" security against possible exploitation in an unequal bilateral negotiation scenario. It could help to meet developing country concerns over their inability to control investment flows and their impacts on their countries. In addition, it could promote an equitable allocation among developing countries of project investments and create, as discussed above, the potential for primary and secondary markets in certified credits.

However, a centralised multilateral investment fund model also has a number of disadvantages. Its reliance on a single centralised bureaucracy operating in a somewhat political setting may produce significant inefficiencies. Such an organisation will face difficulties in generating accurate and timely information about the costs and risks of various investment alternatives and in providing appropriate incentives for the fund's managers to adopt measures that will effectively achieve GHG reductions at the lowest cost. Moreover, a single funding and investment entity would be a CER monopoly constraining the flexibility of project investment negotiations and enjoying significant market power, to the potential disadvantage both of investors and host countries and other project sponsors. Further, the investors would not know up-front about the exact quantity and cost per tonne of CERs they would receive for their investment through the fund. Also, a number of other negative factors noted above may dampen significantly the inflow through the CDM of additional private investment into developing countries. Finally, if the CDM authority were to operate the multilateral fund, as the de-facto investor it would have a financial stake in the success of its projects and the continuing value of CERs that they generate, while at the same time being in charge of the validation of project performance and CERs (including the selection of certifying and verifying entities and the determination of baselines). This arrangement would create a troubling conflict of interest.

B. The bilateral model

A bilateral model of project investment represents a second approach to the design of the CDM investment function. Under this model, which would resemble in some respects the joint implementation (JI) regime, investors (both Annex I public and private entities), host countries and other host project sponsors would negotiate and decide amongst themselves on the sharing of costs and credits on a project-by-project basis. They would obtain registration of the projects and certification of CERs from independent third parties pursuant to the CDM criteria established by CDM authorities. The CDM authorities and entities would act together as a "regulating" mechanism, defining certain basic procedures and guidelines for project approval and issuance of CERs. Project registration, monitoring, credit certification

and tracking of CER transfers and holdings are functions that would, in any event, have to be carried out; whether under the single investment entity model or any other approach. These tasks could be carried out by public or private entities separate from the CDM EB and its administrative staff. In contrast to the model of a single multilateral investment entity, however, the selection and financing of CDM projects and the resolution of issues concerning the allocation of project benefits (including credits) and risks would, using a model of decentralised transactions, be dealt with on a project-by-project basis by negotiation and agreement among investors and project sponsors and would involve host countries to some extent.

Under this approach, the CDM would be designed to ensure that investors, project sponsors and host countries are given maximum choice to determine the nature of CDM projects, their financial contributions and the resulting sharing of CERs with minimal interference from a centralised bureaucracy. The CDM would aim to anticipate the needs of investors, project sponsors and host countries and provide generic support services to facilitate agreements among them, minimise transaction costs and promote the development of trading markets in CERs. The various CDM authorities and entities could do this in a variety of ways, e.g. by including clearinghouse functions by organising an electronic web "bazaar" to match project sponsors and investors, publishing details of projects for dissemination or taking other steps to fulfil their responsibilities stipulated in Article 12(6) to "assist in arranging funding of certified project activities as necessary," within the context of a decentralised bilateral model. The CDM would also insist on sound independent, verification, certification and tracking systems. It would impose a charge on projects, assessed either in monetary terms or CERs or both, to finance adaptation and administrative costs. The main advantages of this model are ease of project implementation, flexibility and speed of negotiations and curtailment of excessive bureaucracy in the process. If successful, this approach could generate vigorous primary and secondary trading markets in CERs and promote efficiency and cost-effectiveness.

The bilateral approach of decentralised transactions, however, also suffers from a number of possible disadvantages, including the inherent incentives of all parties to project agreements to inflate baselines (which would need to be countered by adequate regulatory intervention through the CDM), high transaction costs, potential limited negotiating capacity of host countries leading to possible exploitation and enhanced risk to the investor and host linked to a single project. Despite the fact that the COP/MOP and CDM authorities would remain in charge of its overall design and implementation, the model may fail to provide sufficient governmental control over investment decisions to meet the concerns of some Parties - especially some developing country Parties - about equity in the distribution of CDM investments among host countries and other equity concerns. This model would also have to overcome many of the problems that have plagued Joint Implementation (JI) and Activities Implemented Jointly (AIJ) projects. One reason why such projects have been quite limited is that no credit could be obtained for project emissions reductions against international or domestic emissions limitation obligations. The Kyoto Protocol resolves this problem by providing credit for CERs against Annex I Parties' Protocol obligations. But the CDM would still have to tackle the problem of the potentially high transactions costs involved in a decentralised process for identifying projects, identifying and bringing together investors, project sponsors and host countries and negotiating project agreements. In the JI/AIJ experience, these transaction costs have often equalled or exceeded the direct cost of the project itself. The extent to which these costs can be reduced by establishing central or regional clearinghouses to reduce investor-host search costs and by taking steps to promote

primary and secondary markets in CERs remains to be seen. A further potential problem is that of market power; there is a risk that a CER market could be dominated by a relatively few buyers or sellers. Steps can, however, be taken to address this danger.

C. The unilateral model

A third approach is the unilateral model. In this model the host country would itself develop a project, obtain the necessary financing, register it with the CDM authority, receive all or most of the certified project CERs and then bank, lease or sell them in the international market. The developing country would thus act as the main project “investor” and would retain the benefits as well as absorb the associated project risks. The role of the CDM authority in this case would be similar to that under the bilateral model, except that it would also provide various forms of technical and financial assistance to host countries to help them to develop and finance projects.

This system could allow a widespread and meaningful participation of the developing countries, eliminate credit-sharing negotiations and would potentially result in lower transaction costs than a bilateral model. However, given the absence of primary private sector investors and the lack of resources in many host countries, the role, availability and ease of financing in the debt market will be of critical importance for this model, as will the capacity of developing countries to carry out project development and financing functions. This model also creates an obvious incentive for inflation of baselines, which will have to be addressed by the CDM authorities. Furthermore host countries would bear all the project risk.

D. The mutual fund model

A fourth approach would rely on a system of mutual funds. The CDM would provide for and encourage the development by a substantial number of financial intermediaries - including multilateral development banks, host countries, NGOs and private firms - of mutual funds based on portfolios of GHG emission limitation projects in which governments or private sector entities could invest by subscribing to shares in the mutual fund. This approach would complement some of the other investment function models previously described. For example, it would overcome some of the limitations of the project-by-project bilateral model by providing economies of scale, reduced transactions costs, diversification of risk for investors and opportunity for participation by small investors. In these respects, it is similar to the model of a single, centralised investment entity. Unlike that model, however, it would allow many governments organisations and private entities to offer such funds. The CDM authority would not itself offer mutual funds, but promote their development by others and ensure the integrity of the credits offered. This approach would eliminate the conflict of interest problem and significantly reduce the market power dangers inherent in the model of a single fund managed by the CDM authority itself. This approach could also be used by developing countries following the unilateral model. They could bundle a group of projects within the country and offer investors participation in the project bundle. There are, however, questions as to whether, at least initially, the demand and supply for CERs would be sufficient to support a system of multiple mutual funds. In addition, there would be the need to address developing country Party concerns to ensure sufficient government control over the investment, and the financial and developmental elements of the system. This concern might be met by assuring the regional development banks a substantial role in the mutual fund approach, assigning them a main role in assisting developing countries in

individual financing of projects or groups of projects, while still allowing host countries and private entities who wish to offer mutual funds independently to do so.

E. The hybrid model

A variety of mixed approaches could combine some elements of these different models. The CDM could seek to promote a variety of different investment approaches simultaneously, for example by offering its own mutual fund while at the same time encouraging the development of similar mutual funds by other entities and also providing support for wholly decentralised project-by-project transactions between investors and hosts and for unilateral initiation and financing of projects by host countries. Thus, the ultimate role of the CDM could encompass one or all of the above approaches, each of which provides the mechanism with a different level of authority and responsibility. It is evident from the above discussion that many of the CDM functions are interspersed within the different models; accordingly, these functions and the organisational capabilities needed for the CDM will depend on how precisely the investment function is defined and implemented. An optimal and balanced combination of the above arrangements needs to be decided to carve out a simple, efficient and transparent role for the effective launch and operation of the CDM.

IV. Project eligibility and approval; certification and tracking of CERs

The COP/MOP must elaborate rules, modalities and guidelines for CDM projects. This section addresses key issues and options surrounding project approval and implementation and recognition of CERs. The specific issues covered are: additionality; sustainable development goals; baselines; project verification and registration; and monitoring and certification of emissions reductions. In considering project design and implementation aspects it is important to keep in mind that Article 12 has the dual objectives of emissions reduction and sustainable development. Meeting both objectives will require a regulatory climate conducive to investment, which at the same time ensures that environmental and developmental goals are achieved. Design criteria and regulations governing CDM projects need to be evaluated and selected with reference to these multiple objectives.

The main issues regarding *additionality* are how to define the term and how to apply the additionality criteria to proposed CDM projects. Related issues are the implications of a relatively lax definition versus a relatively strict one for investment flows, on the one hand and the goal of achieving real emissions reductions on the other. Options include:

- Accepting certain types of projects as additional by definition;
- Accepting profitable projects as additional if they overcome barriers; and
- Using benchmarks or performance standards to rationalise and streamline the process.

With respect to *baselines*, the main issues are whether to adopt country-level, sectoral or project-related baselines (or some combination thereof) and whether baselines should be static or dynamic (or a combination of the two approaches). Options include using different baselines or combinations of baseline criteria for different types of projects.

With respect to *sustainable development* the main issue is whether each host country should determine its own sustainable development objectives and whether particular projects comply with them or whether international sustainable development criteria should be developed by CDM authorities and whether such criteria should be used by host countries determining their sustainable development objectives or whether they should be mandatory and applied by CDM operational entities in project registration and credit certification decisions.

In respect to *registration, verification, monitoring and certification*, the main issues are: the relationship of these functions to one another in terms of sequencing and boundaries; and whether these functions should be performed by the same or by different operational entities. Related issues are: which aspects of project performance should be verified and monitored; what degree of precision should be used in quantifying actual emissions reductions; which entities should be responsible for verifying, monitoring and certifying project activities; how leakage should be quantified; whether these functions could overlap; and what monitoring methods should be used for specific project types.

A. Additionality

The Kyoto Protocol stipulates that emissions reductions certified by operational entities must be “additional” to any that would occur in the absence of the certified project activity.²

Additionality and baselines are closely related; some analysts argue that it is artificial to separate them. This report treats the additionality issue as the task of determining whether or not a CDM project is likely to reduce or offset emissions relative to business-as-usual. It is one of the screening tests in CDM project approval. This report considers the baseline issue as the task of setting the datum against which the expected emissions reductions will be quantified as part of the emissions reduction certification process. (Note: the term emissions reductions refer to reductions, avoidance and sequestration of emissions, as applicable). It is part of the emissions reduction certification process.

(I) Issues

The issue of ODA additionality was raised in a paper circulated by the G77/China group at the June 1998 subsidiary body meetings in Bonn. The specific question was: “How will it be ensured that the financing of CDM projects shall be additional to ODA and other international funding, additional to and separate from the financial obligations of the GEF and additional to the financial obligation of the Parties as provided in the Convention and the Protocol?” In a response paper, the European Union (EU) and Switzerland stated: “The EU and Switzerland expect that the majority of funds for project activities under the CDM will come from the private sector. Therefore financing for CDM activities should not compete with ODA and GEF funding”. The question is whether developing countries will find this answer satisfactory in light of their concern that developed country governments will view private sector investment as an acceptable substitute for ODA, which has declined sharply in recent years. At present in some least developed countries, the majority of investment inflows, particularly for infrastructure projects, comes directly from ODA sources. However, there seems to be unanimity in principle among the Parties to the Protocol and policy analysts that CDM investment flows should not substitute for ODA or provide developed country governments with a rationale for reducing ODA.

Two other aspects of additionality are: *financial additionality*, the concept that a project must represent a financial investment that would not be made on purely commercial grounds alone, without regard to environmental objectives and the prospect of obtaining CERs; and *environmental additionality*, the concept that a project must achieve emissions reductions over and above those that would have occurred “anyway” without the project. Analysts have different views on how these two aspects of additionality should be interpreted and applied.

Environmental groups have put forward the strictest definition of additionality. For example, the World-wide Fund for Nature argues that for a CDM project to be eligible for crediting of its net emissions reductions it must achieve reductions that go beyond those that would have occurred as a result of the project sponsors meeting their existing obligations and

² This standard appears stricter than the one established for the AIJ pilot phase, which has been interpreted as preventing reclassification of overseas development assistance (ODA) as joint implementation (JI).

result in emissions reductions exceeding those which would have happened anyway for other reasons. Further, the project must be undertaken *principally* to reduce or offset GHG emissions. The Association of Small Island States would apply essentially the same additionality ‘test’ to projects. One interpretation of this definition is that it would exclude projects that are potentially profitable in financial terms and other ‘no regrets’ projects that would be undertaken for independent environmental and other objectives.

The Annex I Parties most eager to see the CDM implemented as a means of promoting international GHG emissions reductions projects and CER trading tend to define additionality less restrictively. The United States argues that the additionality definition should not exclude profitable or cost-effective projects but should discourage the “repackaging” of projects, a suspected practice whereby project sponsors reformulate a project as primarily aimed at emissions reduction when in fact the project was originally conceived as a commercial venture with a primary purpose unrelated to or only marginally related to, emissions reduction. In the view of the United States, a project should qualify for credits if the sponsor can show that it will overcome technical or institutional barriers to emissions reduction and sustainable development, that the activities to be undertaken are not already required by existing laws or regulations; and that the proposed activities will improve upon prevailing technologies and management practices.

SGS Services, a firm actively involved in designing and certifying AIJ projects suggests a broad definition of environmental additionality:

“The validity of any particular project rests upon the case made that environmental performance—in terms of achieving GHG reductions—exceeds historical precedents, legal requirements, likely future developments or a combination of the three; the project case versus the baseline scenario.” (SGS, August 1998).

SGS agrees with the United States Environmental Protection Agency (EPA) that the test of financial additionality relates to intent: the sponsors must show that the project plan was initiated for the express purpose of lowering GHG emissions. Projects undertaken for commercial purposes that have coincidental GHG reduction benefits should be precluded from earning credits. This standard would rule out repackaged commercial projects.

There is disagreement among analysts as to whether “no regrets” projects – projects that would provide local environmental or economic benefits that exceed their costs -- should be accepted or not. Those in favour of inclusion point to the fact that most theoretically advantageous projects will not in fact be undertaken because of regulatory and legal obstacles, lack of information and personnel and organisational rigidities. They assert that additional incentives, in the form of CERs, are needed to make such projects happen and that the benefits of such projects justify making them eligible for crediting. Those opposed argue that “no regrets projects” should not receive emissions reduction credits because by definition such projects are commercially or otherwise viable (Michaelowa and Dutschke 1998).

There was widespread agreement within the Working Group that the Protocol drafters intended for the additionality criteria to relate to environmental factors (basically the status of emissions with *versus* without the project) rather than financial ones (with the exception that CDM project investments should be additional to ODA). However, the conceptual problem remains that CDM projects will involve threshold investment decisions and that in cases where baseline-setting is bottom-up, the project sponsor will make his/her “case” for the

additionality of the project (and the estimate of reductions/offsets therefrom) based on a comparison between the investment that would be financially or economically justified “with” the opportunity to earn/sell credits *versus* the investment that would be financially/economically justified “without” that opportunity. A given project could have creditable and non-creditable components. Under this approach, the emissions reductions achieved through project components that would have been undertaken in any event because they would be profitable even if no credits were available would not be creditable, whereas emissions reductions achieved pursuant to a component only profitable because of the opportunity to earn credits would be creditable. In practice, however, applying such criteria on an operational basis is likely to be too complex and prone to gaming to be workable. Accordingly, it was agreed that attention should be focused on developing standardised approaches to baseline setting based solely on environmental criteria.

The way in which the COP/MOP and CDM Executive Board define additionality and the project criteria that they adopt will have important implications for the magnitude of future investment flows under the CDM. If the additionality test is lax, the “supply” of credits will be greater and their cost lower, but their environmental contributions may also be reduced. The pool of potential projects offering positive benefits for emissions reductions is very large. One could argue that almost every power plant being planned in developing countries will be more efficient than current facilities and will therefore reduce emissions relative to a plausible business-as-usual scenario. However, the other side of this coin is that if the additionality criteria are too lax, some project sponsors will earn credits for projects that may be undertaken without regard to the objectives and incentives provided by the CDM.

The adoption of strict or complex additionality criteria could dry up funding for many potentially beneficial projects. If projects with profit potential are eliminated from consideration, investment funds will flow into other activities, including ones that increase emissions. Further, one investor’s ‘commercial winner’ is another’s sub-par performer. Investors have different “hurdle” rates and the profitability of a project depends in good measure on how skilfully it is conceived, planned and implemented. A tough set of criteria could eliminate many experimental or innovative technology improvement projects, including ones involving technology transfer.

There was widespread agreement that any COP criteria and procedures with respect to land-use change and forestry (LUCF) projects should take into consideration the Intergovernmental Panel on Climate Change’s (IPCC) “sinks” analysis currently being drafted. This is not because LUCF projects necessarily pose more difficult methodological problems with respect to baseline-setting, quantification, leakage, etc., as has been claimed by some analysts, but rather because of the ambiguous status of LUCF projects in the Protocol, especially as it pertains to Article 12 and the CDM.

However, some participants pointed out that the IPCC report may stop short of recommending policy and that irrespective of the conclusions of the IPCC analysis, the COP work plan calls for the subsidiary bodies to address the matter of “inclusion of sinks projects” (item 29). Some participants expressed the view that LUCF projects should proceed, provided sponsors are aware that the policy risks described above apply to a larger extent to “sinks” projects than to other project-types in view of the ambiguous status of such projects in the Protocol.

(2) *Options*

The additionality test must balance the objective of encouraging private sector investment with that of ensuring that the vast majority of projects earning emissions reduction credits are delivering real reductions. The transfer, via the CDM, of superior clean technologies to host countries should also be encouraged.³ Specific approaches that have been suggested are:

Accept certain types of projects as additional by definition: The Center for Clean Air Policy contends that there be no additionality standard for certain types of projects that, by definition or implication, clearly reduce emissions. In its view, such projects include: fuel switching to less-emitting fuels than those currently in use, actions that improve energy efficiency and all renewable energy projects that displace electricity from emitting sources or that add emission-free capacity to a country's electricity supply system. The US EPA also suggests developing narrow categories of projects whose emissions reduction benefits will *a priori* be considered additional.

Accept profitable projects as additional if they overcome barriers: The EPA and the International Energy Agency (IEA) argue that profitable projects be allowed to earn credits if they introduce new technology or contribute to overcoming technological, financial, informational or institutional barriers. SGS defines such barriers as "internal policy and legal requirements, shifting internal or external markets, geographic or topographical restrictions, local regulations, technological shifts, population pressures, etc."

Adopt benchmarks for additionality: This approach involves using objective performance standards taken from best practices or regulatory requirements. Projects that generate GHG reductions in excess of baselines formulated generically for the type of activity in question are deemed to meet the additionality test, while those that fail to meet the benchmark do not. A recent study by Hagler Bailey for the EPA concludes that such benchmarks could serve as determiners of additionality for projects in some sectors. In other cases a combination of generic benchmark criteria applied on a project-by-project basis could be used. For instance where data are available for a type of activity, e.g. development of a new energy source, whereby GHG emissions levels could be determined by relatively few factors (e.g., fuel type and heat rate), they could be used to set a benchmark. In contrast, the emissions reductions benefits of other projects, including energy end-use, conservation or forestry, can have fairly complex baselines because emissions are driven by a large number of project-specific factors (e.g.: kWh savings of efficient technologies, hours of use, fuel source and system losses). In such cases the development of generic benchmarks could involve more effort and risk of error than establishing project-specific baselines case-by-case. The project baseline scenario, however, presents what could be a contentious matter as the "without project" baseline could be any number of projects with differing energy efficiencies. In some such cases, however, benchmarks might be useful as an initial screening mechanism to determine, for example, whether demand side management or a tree-planting programme could potentially qualify.

³ The relation between the CDM and technology transfer is discussed in two papers prepared for the Working Group: Barta V., *Clean Technologies For Power Generation*, and Asamoah J.A. and I. Amuah, *The CDM as a Mechanism For Technical Information and Technology Transfer*.

Clearly, benchmarks are no panacea. Some analysts believe, however, that if benchmarks or generic performance standards were published by an expert international authority, they could help operational entities to apply additionality criteria to individual project proposals in an objective and consistent manner. It may also help prevent operational entities from applying additionality criteria in a lax manner in situations where the host country finds a project attractive even though the additionality of its emissions reductions are questionable. It should be noted that this problem could also be addressed through a robust and transparent accreditation and certification framework. Benchmarking could also help firms involved in designing projects put together environmentally sound, 'creditable' project proposals. CDM authorities could develop rules and guidelines for setting generic additionality benchmarks and for their administration by operational entities. Some of these benchmarks could be universal while others could be sector- or country-specific.

B. Baselines

Baselines are needed to quantify the emissions reductions or offsets achieved by a JI or CDM project. Baselines are also referred to as "reference cases" or "counter-factuals". The basic concept is that the quantity of an emissions offset or reduced is the difference between the emissions that would have occurred "but for" (without) the project and the quantity of emissions with the project. Many analysts consider the development of methodologies for setting baselines as the most difficult task in drafting rules for the CDM.⁴

"Without doubt, the greatest - and most critical - challenge to the CDM is the formulation of guidelines for project baselines. It is these baselines which will serve as the mechanical means of determining "additionality" of emissions reductions and of qualifying them as "surplus" for purposes of offsetting or replacing emissions reductions elsewhere. Thus, although the determination of "what would have happened otherwise" is, in part, a qualitative inquiry, ultimately, the baseline has to capture the emissions consequences in quantitative terms . . ." (Environmental Defense Fund, June 1998).

Broadly defined, a project's baseline is the collective set of economic, financial, regulatory, environmental and political circumstances, present and future, within which the project will operate during its life. Baselines may reflect different levels of aggregation.

(1) Individual project baselines

For project baselines the sponsor should be responsible for developing a baseline to be submitted to the relevant authority for approval. Developing a baseline is part of the feasibility study a sponsor would undertake to determine the emissions reductions a project is likely to achieve throughout its lifetime. Once approved, the baseline for the project can be certified for a specified period (see discussion below on static and dynamic baselines).

⁴ It should be noted that the precedent of "grandfathered" emission titles as laid out for Annex I parties in the Kyoto Protocol, based on emissions in a defined base year, unfortunately provides a perverse incentive for developing countries to increase emissions to enhance their national baselines for any future commitments. CDM measures can be effective in countering this trend.

(2) *Project-type baselines*

An alternative approach is for CDM authorities to develop (or generate) performance standards or benchmarks for types of projects, adjusting the standards to fit local conditions and updating them regularly as methodological refinements are made. In most cases a project can be viewed as a project-type (e.g.: solar panels, renewable energy) set in a particular geographical location and within a specific political, economic, social and sectoral context. Knowing the characteristics of the project type may make it possible to define some benchmarks or performance standards capable of being applied, if not universally then at least in a variety of contexts. For example, a given type of renewable energy project with no GHG emissions would earn CERs in proportion to its capacity (size), projected annual output and the amount of fossil fuel combustion that it will displace over time. Data covering these parameters, perhaps tailored for specific regions or countries and variations of project type, could be listed in reference tables. The calculation of the country or regional business-as-usual baseline would take into account likely changes in relevant regulations and laws, market developments and economic and political trends in order to define either a single baseline of medium probability or a range of baseline scenarios. If a renewable energy project replaces an existing coal-fired capacity, the reference case must consider the fuel that would have been burned “but for” the project. If, on the other hand, it will add new capacity, then an assumption must be made about how growth in electricity demand would have been met “but-for” the project. In the case of a sequestration project, assumptions need to be made about the carbon balance in the country with and without the project. Obviously, the best way to do this is on the basis of hard data if it is available (Michaelowa, 1998).

The potential benefits of adopting objective international standards are that they would make it easier for project sponsors, investors and CDM operational entities to determine project baselines and also facilitate the project approval process. Such benchmarks could be adopted from time to time without necessarily revising *ex-post* the baselines approved for existing projects. Generic benchmarks and performance standards may not work for project types where the quantification of emissions involves a complex set of factors. In such cases it may be more complicated to formulate and apply a performance standard than to establish baselines for projects on a case-by-case basis.

(3) *Sector-level baselines*

For some types of projects it may be useful to model the industrial, commercial or consumer sector in question in order to establish the business-as-usual scenario to set the baseline. Electricity supply is often mentioned as a sector which lends itself to this approach because most countries have information on the emission profiles of generating sources as well as trends in fuel consumption and electricity demand. Land use is a difficult sector to model but one in which it is extremely valuable to have a sectoral baseline in order to be able to gauge the potential for leakage.

(4) *Country-level baselines*

Even if a country has no cap on its emissions, it may still establish a national emissions baseline to serve as a reference point for emissions reductions from CDM projects. Many developing countries are reluctant to have such a baseline established for fear of being pressured into adopting ‘growth caps’ based on a percentage of projected business-as-usual

emissions. Analysts are also concerned that countries might manipulate the reference case to attract investment. Moreover, setting country-level baselines requires comprehensive modelling and analysis. All sectors of the economy have to be considered in enough detail to enable forecasts of trends, an exercise fraught with uncertainty and prone to manipulation. Attempts at such analyses to date have encountered difficulties in obtaining enough information from some if not most sectors.

Analytically, one can categorise these different approaches into three basic categories: bottom-up project-level baselines, top-down country-level or sector-level baselines and the simplified methods approach. There was general agreement within the Working Group that all of these methods have potential merit and should be allowed. These basic characteristics may be summarised as follows:

(a) Bottom-up approach

Requirements: The Project sponsor must make the case for a baseline (counterfactual or “without-project” reference scenario) based on comprehensive analysis of the technical and economic context (present and future) of the project. An independent body – operational entity or CDM supervisory body – must scrutinise and pass judgement on the case presented.

Potential advantages:	<ul style="list-style-type: none"> • Allows a wide range of methodological approaches and the opportunity for “learning-by-doing” • May encourage innovation, because project sponsors could be expected to be creative in addressing both methodological issues and in proposing novel projects.
Potential disadvantages/pitfalls:	<ul style="list-style-type: none"> • May not account as well for leakage as the top-down approaches (see below). • Data-intensive, time-consuming and possibly expensive for project sponsor(s). • Higher immediate transaction costs for project sponsor(s). • Prone to “gaming” – requires close administrative scrutiny project-by-project.

It was suggested that the COP/MOP might, on the basis of the experience gained from “testing” the application of baseline-setting methods from early projects, decide to require that specific methods be used for particular project-types or situations.

(b) Top-down approach

Requirements: Substantial data must be aggregated at the national and sectoral level and substantial administrative capacity is needed on the part of host country governments. In addition, a good understanding on the part of government officials regarding economic factors and stratification issues is vital on issues such as differences and similarities among sectors, regions, etc.

Potential advantages:	<ul style="list-style-type: none"> • May simplify the development and application of additionality criteria. • Reduces the direct transaction costs to project sponsor(s). • Could allow the host country government to direct investments in accordance with sustainable development priorities. • May help simplify the determination of leakage.
Potential disadvantages/pitfalls:	<ul style="list-style-type: none"> • Most host governments unwilling and/or administratively unprepared to set national or sectoral baselines. • If not properly substantiated, could lead to credit inflation. • May not reduce transaction costs ultimately because costs may be passed down to project sponsors in the form of fees or charges.

(c) Simplified methods

Requirements: The simplified methods approach requires extensive data collection and analysis.

Potential advantages:	<ul style="list-style-type: none"> • May reduce direct transaction costs for the project sponsor. • May be applied across countries to improve objectivity.
Potential disadvantages/pitfalls:	<ul style="list-style-type: none"> • May not ultimately reduce transaction costs, because costs may be passed down to project sponsors in the form of fees or charges.

It was suggested that countries in regional groupings could co-operate in setting sectoral baselines across national boundaries in order to achieve economies of scale and methodological standardisation.

The simplified baseline-setting approaches outlined by the Center for Clean Air Policy suggest one direction that policy development could take in the months ahead:

- Under the *technology matrix* approach, a number of pre-defined technologies would be identified as the baseline technologies for a region and for a specified timeframe. The emissions baseline for a given project would equal the emissions rate for the specified technology. Projects that introduce technologies with GHG emissions lower than the baseline technology would receive credits based on the calculation of reduced emissions.
- Under the *benchmarking* approach, the emissions baseline for a given project would be set in relation to emissions performance “benchmark” rates based on such criteria as historic or projected emission intensity trends. Projects would receive credits for emissions below benchmark levels.

Another suggested approach is to establish standards for crediting emissions reductions to projects based on the extent to which they overcome barriers to investment, such as policy and market failures.

The challenge in developing and applying such methods and for setting baselines based on environmental performance criteria generally, will be to develop standards and procedures that a wide range of technical experts (including certification bodies), environmental groups, academia and government officials will agree are reasonable. This is to say that they will ensure that, in the vast majority of cases, emissions reductions project sponsors only earn credits for emissions reductions that are additional, real and long-term. The challenge is to find ways to simplify baseline-setting while maintaining sufficient “rigour” to avoid compromising the integrity of the CDM.

(5) *Static versus dynamic baselines*

A static baseline is one, which is set for the life of a proposed project at the time the project is registered. This gives the investor assurance that as long as the project itself meets the technical performance criteria on which its approval was based, it will continue to receive CERs based on the difference between the emissions reductions that it achieves and the fixed baseline.

The problem with static baselines, especially with respect to projects with long lifetimes, is that they become more and more out of date as market, economic and regulatory conditions change over time. The reference case established at the outset of the project is almost certain to prove wrong simply because future events almost always turn out to differ from earlier expectations. Project sponsors and investors should regard periodic evaluations of product performance over the project’s lifetime as legitimate, but they may regard revision of the baseline as changing the ‘rules-of-the game’ unfairly. Regulators, on the other hand, will understandably be inclined to revise baseline assumptions as and when circumstances change and new information becomes available. Assume, for example, that a methane capture project for landfills is approved on the assumption that it will reduce emissions by 10MT over 20 years, compared to a baseline case assuming no other limitations of methane emissions in the host country over this time-frame. If, five years into the future, the host government imposes a methane-capping requirement on all landfills in the country, the basis for earning credits is removed. Investors will argue that the project should continue to earn credits because the investment decision was predicated on the baseline originally approved. On the other hand, investors should accept that if the project fails technically after five years and ceases to capture methane emissions, it should cease to earn credits.

There is thus a need to balance the interests of investors with the benefit to the environment of revising baselines in order to avoid over-crediting. One possibility is to adjust the baseline periodically but apply the modified reference case only to new projects:

“Baselines in a given country may need to be adjusted over time to reflect changes in market conditions and government policies. However any adjustments in the baselines should not be retrospectively imposed on projects which are already underway. Project baselines should remain fixed over the life of the project” (SGS, August 1998).

Another possibility is to update the baseline for an existing project at regular, but wide, intervals, such as ten years. This would help to limit investment risk and encourage investors to do more careful baseline assessment. A related issue is the determination of “project life” for CDM purposes. For how long a period can the emissions reductions achieved by a project earn CERs?

C. Sustainable development criteria

Article 12 of the Protocol provides that the CDM shall assist non-Annex I Parties “in achieving sustainable development.” As there is no commonly accepted definition of “sustainable development,” one may reasonably conclude, based on principles of sovereignty as well as on functional considerations, that each host country should decide for itself what its sustainable development objectives are in light of its own national circumstances and priorities and whether specific projects conform with those objectives. The CDM authority could, however, assist host countries in making sustainable development determinations by developing an indicative, not restrictive, list of sustainable development (SD) indicators. The project host country, along with other project sponsors and investors, could agree at the project outset as to how these indicators would apply to the project in question. Such indicators could include the following:⁵

- No adverse environmental impact
- No increase in external debt burden
- “Top end” technology transfer
- Energy efficiency promotion
- Renewable energy promotion
- Equitable distribution of benefits and experiences by sector and region within the host country
- Stakeholder participation
- Indicators could be specified for a particular project in the project agreement

Compliance with the sustainable development benchmarks over the life of the project would be a contractual function between the project sponsor and the host country. Thus negotiated contractual liabilities and penalties could apply on any investor non-compliance with these benchmarks over time.

Although the Working Group endorsed the approach outlined above, it has been questioned whether host countries should have *sole* responsibility for analysing and determining a project’s compliance with sustainable development criteria or whether they should share this responsibility with an international authority such as the COP/MOP or the

⁵ Karimanzira, R.P. *The CDM: How Developing Countries, especially Africa, can attract investments?* Short paper prepared for the WG meeting in Buenos Aires, November 1998.

CDM's EB. The argument for joint responsibility is that host countries may tend to exaggerate the long-term benefits of projects that they deem desirable because of their immediate economic benefits, including capital inflow and local employment. This approach, however, would introduce an additional element of centralised review and approval of projects; the criteria for approval and their application to given national circumstances and specific projects could be controversial.

At the present time there are no private firms offering verification and certification services with respect to sustainable development objectives. Assessments of a project's performance in meeting sustainable development criteria will necessarily be qualitative and involve the exercise of judgement. A prerequisite for verification could be the formulation of indicators or criteria for sustainable development.

Alternatively, CDM operational entities and authorities could review the sustainability indicators and their application to a project at the project approval stage and might also review compliance with the indicators in connection with the certification of emissions reductions.

D. Project approval and registration

When a sponsor has identified a project, which may qualify under the CDM and has obtained the approval of the host country, including sustainable development criteria, an application for approval should be submitted to the relevant CDM authority.

It is anticipated that this application will be prepared by the project sponsor and will include details of design and how the project satisfies the CDM criteria. The application should also include data and analysis in support of the proposed baseline.

An operational entity accredited by the relevant CDM authority would verify that all CDM criteria have been met and that the baseline is appropriate for the project. Once satisfied that all criteria have been fully met, the operational entity can recommend to the relevant CDM authority that the project be registered and the approved baseline be certified.

As part of a project feasibility study, the sponsor may have used an operational entity to assist with the determination of the baseline. If so, this entity should not be involved in the project registration process or the subsequent verification and certification of emissions reductions.

Once the baseline has been approved as a part of the project approval, the project sponsor will be able to make predictions, based on expected project performance, of the emissions reductions likely to be achieved and certified in the future. Based on these predictions, the owners of the potential CERs could offer futures or other interests in the CERs. These interests could be sold - or used otherwise - to provide financing for the project.

E. Monitoring

Assessment of CDM project performance requires measurement of net GHG reductions. Some analysts consider monitoring to be a general performance review that does not include the ultimate determination of net emissions calculations. Their view is that an

additional step, involving evaluation, is needed in which the information collected by the monitoring procedures is analysed in-depth in order to determine the project's net amount of GHG emissions (including sequestration) against the applicable leakage. Other analysts consider monitoring to include evaluation of net GHG reductions.

Monitoring provides the basis for *ex-post* verification that the reductions actually occurred. The purpose of verification is to establish the emissions reductions which a project achieves relative to the baseline. It is similar to an accounting audit performed by an objective, certified party. Verification is the prerequisite for certification of CERS.

The main issues surrounding monitoring, evaluation and verification are:

- What aspects of project performance should be monitored and verified?
- How should emissions reduction/avoidance/sequestration be quantified?
- How should leakage be quantified?
- What are the economic and social impacts, including contributions to sustainable development, technology transfer, bio-diversity, poverty alleviation, etc?
- What methodology and degree of precision should be used in quantifying actual emissions reductions?
- What monitoring methods should be used for specific project types?
- What entities should be responsible for monitoring, verification and certification? Could the same accredited organisation be authorised to perform more than one of these functions for the same project?
- To what extent should there be periodic revisions of additionality and baseline criteria, including benchmarks (if used). If so, how, and by whom, should they be carried out?

(1) *Quantification accuracy and precision*

There are concerns regarding the accuracy of net emission measurements from certain types of projects. Analysts have suggested various approaches for dealing with measurement accuracy issues. First, if measurement protocols can be developed that prevent systematic bias, the accuracy of individual project-level calculations will not be an impediment to achieving climate change mitigation objectives. The important consideration, however, is not how precise such measurements for a given project across a range of similar projects can be, but how consistently they can be made to fit within a known range of accuracy and without bias. Second, where measurement accuracy for a certain project type is questionable, discounting the emissions achieved can be used to guard against over-crediting. As long as a conservative approach is used in issuing emissions reduction credit to such projects there is no reason to exclude them if they can be shown to achieve real reductions. Setting measurement precision standards higher than is realistically achievable will only put an unnecessary constraint on potentially beneficial projects.

(2) *Methods for monitoring emissions*

The specific monitoring methods and technologies to be used will depend on the project type. The technical literature on this subject is expanding rapidly. The IPCC plans to provide specific recommendations on how best to monitor emissions and calculate emission offsets from sequestration projects. It could also be asked to make recommendations on how best to monitor emissions from other specific types of projects.

Emissions can be monitored either directly using monitoring devices or indirectly using predictive methods. Indirect methods, such as measuring fuel inputs or feedstock/product mass balances can be used for carbon and possibly some other gases. If predictive methods are inaccurate, direct emission monitoring must be used which involves actual measurement of emissions into the air. This can be done continuously, as in the United States sulphur dioxide allowance programme or by means of periodic sampling. Finally, direct measurement of production may be an accurate monitoring method for the manufactured gases covered by the Kyoto protocol (hydrofluorocarbons HFCs, perfluorocarbons PFCs and sulphur-hexafluoride SF₆), if producers are made responsible for downstream emissions (Tietenberg et. al. 1999).

Some analysts believe that sources and gases other than CO₂ cannot be monitored sufficiently for inclusion in an entitlements system at present. Point sources of methane such as landfills can, however, be monitored, but this requires estimations based on assumptions of overall humidity and temperature, which can vary throughout the landfill. Agricultural sources of methane, such as ruminant animals and animal wastes, sources of nitrous oxide and carbon sinks, are difficult to monitor accurately (Tietenberg et. al. 1999).

Monitoring emissions for purposes of determining compliance in a multi-gas system, which is what the Kyoto Protocol calls for, requires an index that converts different gases (and sinks) into common units. Such an index exists - the Global Warming Potential (GWP) - but some analysts remain critical about its use in the light of remaining uncertainties. Other analysts believe it can be used successfully if conservative values are used.

(3) *Quantification of leakage*

Leakage occurs when a project's outputs create incentives to stimulate other activities, which increase GHG emissions elsewhere. It may be direct or indirect. An example of direct leakage is a logging operation that moves to land adjacent to, or nearby, a forestation site where further logging has been prohibited. An example of indirect leakage is a community where the combined effect of several sustainable development projects is economic growth that results in more fuel use by residents, as they become more prosperous and mobile. An overly broad definition of indirect leakage, however, might disqualify any project, however environmentally benign in itself, that contributed to economic development. Leakage may reflect market effects and product life-cycle effects. An example of the former is a reforestation project resulting in an increase in timber supply in a region, causing an increase in wood consumption. An example of a product life-cycle effect together with a market effect is the shutting down of a coal-fired power plant that results in higher electricity prices, which leads to more direct coal fuel use by industry and households in lieu of electricity consumption.

In the application process, sponsors should be required to describe all forms of leakage that might result from the project. They should be required to estimate direct leakage and to explain how they plan to minimise it through project design and ongoing management. For example, a reforestation project may be able to reduce direct leakage by purchasing and retiring logging equipment that otherwise would be sold and reused locally. Unavoidable leakage should be taken into consideration in establishing the project baseline. Once a project is approved, however, refinements to the leakage estimate should be used only to improve baseline setting for future projects, not to revise the baselines of existing projects.

(4) *Economic and social impacts*

The monitoring of economic and social impacts can be a part of the application of sustainable development criteria.

Non-environmental impacts may be positive or negative. For evaluating project economic performance one may use such indicators as cost-benefit ratio, net present value, payback rates, rate of return and cost per tonne of GHG reduced. Macro-economic impacts can be measured in terms of effect on GDP, jobs created or lost, implications for long-term development, foreign exchange, etc. Institutions such as the World Bank are developing guidelines for addressing these issues.

The social analysis, sometimes called a social impact assessment, typically includes an evaluation of social benefits and costs to stakeholders, including community organisations, as well potential adverse impacts on population groups affected by the project. Areas suggested for analysis include: gains or losses in long-term employment opportunities for local persons; extent and appropriateness of technology transfer; extent of public participation and institutional capacity building; effect on local cultures; effect on land use rights and tenure patterns; and effect on gender equity and human rights.

F. Certification of emissions reductions

Certification is the process by which a CDM operational entity periodically verifies, *ex-post*, the extent of emissions reductions achieved by the project during the previous period, based on monitoring and other data submitted by the project sponsor and determines, based on the project's emissions performance and the project baseline, the number of CERs to be issued.⁶ Most analysts agree that whereas monitoring can be performed in-house or by parties contracted by project sponsors, verification and certification of a given project's performance should be performed by accredited operational entities independent of *that project's* sponsors and operators. Guidelines established by both the US Initiative for Joint Implementation (USIJI) and the World Business Council for Sustainable Development (WBCSD) call for external verification by independent third parties. Certification is closely linked with verification. The same operational entity could both verify the emissions reductions achieved relative to the applicable baseline and certify (subject to review by relevant CDM authorities) the CERs earned. Having two different entities perform these two functions could perhaps enhance the integrity of the process, but would involve added cost and delay.

⁶ The relation between verification and certification is discussed in a paper prepared for the Working Group: Jones G., *Certification and Verification of Greenhouse Gas Emissions Trading*.

The IPCC has suggested that with respect to determining GHG effects, the following questions should be addressed:

- Are the monitoring and evaluation methods well documented and reproducible?
- Have the results been checked against other methods?
- Have results (e.g. monitored data and emission impacts) been compared for reasonableness with outside or independently published estimates?
- Are the sources of emission factors well documented? and
- Have the sources of emission factors been compared with other sources?

SGS Forestry has established the first international third-party surveillance service for forestry-based carbon offset projects. This surveillance programme consists of periodic determinations of emissions reductions. The process involves audits of data gathered by the project sponsor's monitoring programme supplemented by field inspections. Based on the results of its surveillance programme, SGS issues (or withholds) certificates stating the amount of GHG (so far carbon) reduced/avoided/sequestered by the project up to the date of the most recent assessment.

G. Tracking CER transfers and holdings

To ensure the integrity and long-term sustainability of the CDM process and the credibility of the CER commodity in both primary and secondary markets, adequate arrangements will need to be worked out at both the international and the national levels for accounting and registration of credit transfers and holdings. A serialised registration of project generated CERs will need to be maintained through an electronic registry. Also, as CERs change ownership the transfer of title would also need to be recorded so that the commodity can be traced for credibility and authenticity, particularly in secondary market transactions.

International level: The CDM should arrange for recording of all project transactions, including project registration and certification of emissions reductions and the subsequent trades from the primary to the potential secondary markets. It should also arrange for or encourage the provision of authenticating services to buyers in the secondary market, allowing them to check the integrity of the certification of the CER, the seller's title to the credits sold, as well as emissions monitoring data and existence and nature of third party insurance and host government guarantees relating to particular credits and any other information related to the project backing the CER.

National level: CDM transactions would also need to be registered at the national levels in both, Annex I and non-Annex I countries. Annex I countries would require accounting offices to keep track of their national emission inventories and credit holdings and transfers, including JI credits as well as CDM credits.

V. Operational elements of the CDM

This section of the report discusses some of the basic issues that must be addressed in implementing CDM markets. These include managing the introduction of the CDM; the sharing of credits, revenues and risks between project investors and hosts; liability issues; fungibility of GHG emissions trading commodities; and generating revenues to provide adaptation funds and cover CDM administrative expenses.

A. Sharing project value between investors and hosts

The sharing of project value (including CERs and financial revenues) and project risks and liabilities between investors and hosts (including host countries and any other local project sponsors) is an issue most critical to the global acceptance and equitable operation of the CDM.

The CERs and financial revenues generated through the project activity will need to be shared between the investor and the hosts, as per the negotiated contract between them. In this regard, the unequal levels of knowledge and capacity between the investors and hosts, including their negotiating capabilities, could lead to a situation of exploitation and contractual inequity. Addressing this issue effectively will be instrumental in allaying host country fears about exploitation, selective choice of low cost options and concerns about mortgaging future development at the altar of short-term financial benefits through the CDM. These concerns were the basis for criticisms of the bilateral AIJ/JI process and will need to be addressed by the CDM. This could be done by exploring options such as laying out broad guidelines on equity and providing negotiating support to the developing countries through enhancing local capacity or extending the assistance of expert contract negotiating teams. Even if the CDM authority itself is not directly involved in host country capacity-building, other existing agencies, such as the GEF or national/multilateral ODA funding agencies, could take on this role in co-ordination with the relevant CDM authorities and target immediate capacity-building in developing countries for CDM participation.

Value sharing includes the equitable sharing of the quantity and/or the cost-price differential over time of the CERs generated by a project as well as traditional product outputs and financial revenues. This sharing will need to be determined in proportion to the project investment portfolio, the division of other project generated revenues and the levels of risk exposures of the parties. This allocation will necessarily differ from project to project and will depend on the outcome of the host-investor negotiations. The estimation of future CER prices would be a function of future credit markets and speculative factors will play a major role. If, however, the CDM authority auctioned a portion of project CERs in order to obtain revenues for adaptation and CDM administrative costs, the auction could provide very useful market price signals. The issue of credit sharing would not, however, arise to any significant extent under the unilateral model of project investment, under which the project host is also the equity investor who would receive all or most of the project CERs. Under other approaches, equitable credit sharing and further exploring and developing credit reversal mechanisms will be the key to addressing the developing country concerns of acquiring short term "carbon cash" at the expense and risk of burdening future generations with high-cost mitigation options.

It would be quite beneficial to use experience derived from the AIJ pilot phase as a basis for learning about value-sharing issues under the CDM as some of the AIJ projects included agreements on credit sharing due to the anticipation of future crediting⁷.

The temporal aspects of credit sharing will also need to be addressed in the value sharing negotiations. The agreement would have to determine whether the sharing ratio would remain the same or change/reverse with time. For instance, “depreciated leasing” contracts could be negotiated where the sharing ratio of credits accruing from the project (e.g.: a fuel switching project with a 30-year life) could be reversed over time between the two parties, according to a declining schedule. Thus, the investor might obtain a majority of the credits in the early years of the project, but on a declining schedule; credits might be transferred fully to the host after – for example - 70% of the project-life have elapsed. These types of contracts would also vary from sector to sector (e.g. forestry/longer term vs. energy/medium term) and would need to be negotiated accordingly.

Early investors in successful projects could achieve significant economic rents between CER production costs and potential market prices - especially as they are bankable for the first accounting period. There is no inherent reason why developing countries should not be able to retain a substantial portion - or even all - of the rents in the early phase of the market. This, however, would require industrialised countries and multilateral institutions to use aid finance to catalyse the widest number of projects (subject to CDM rules) while accepting that non Annex I host country participants may capture a substantial portion of those rents. The universal benefit would be that such an initiative would prevent CER prices from rising too fast and create greater incentives for inclusive participation among a wide range of developing country participants. This would in turn improve the likelihood of long-term political acceptance of emissions trading and the CDM. This approach could be targeted at countries unable to attract private sector commercial risk capital.

B. Risk sharing and liability rules

Under the CDM, risk concerning credits relates to non-performance of the project in achieving emissions reductions. The CDM would generate two types of credit-based commodities, as evident from the functions assigned to it under the Kyoto Protocol:

CER Options & Futures: These would be produced after verification and registration of the project with the CDM authority, including approval of the project concept and its baselines. After registration, the subsequent indicative stream of future expected project CERs could be sold as options and future commodities. This commodity would be highly speculative, non-certified and discounted by the market to account for the risk involved.

CERs: These would be generated, *ex-post*, after monitoring and determination of the actual emissions from the project, comparing actual emissions to the agreed baseline and certification by independent third party certifiers. CERs issued through this process should be irrevocably valid, “good as gold” with “zero liability” and fully transferable ownership titles, which would be usable against international commitments by Parties as well as against domestic emissions reductions obligations if Parties so choose. It should be noted that any liability due to possible fraud or failure by the certifying agency should not be borne by the

⁷ For example, the Decin project in the Czech Republic.

buyer but should be covered by the certifier through some mandatory insurance provisions. Any seller participating in the fraud, or abetting certifier misfeasance, might also share such liability.

As the CERs would be fully *ex-post* certified, neither CER sellers nor buyers would face liability for project failure. However, for CER options and futures, the default liability rule would be a “buyer beware” one, in which the buyer, including buyers in secondary markets, would bear the risk of dealing in a highly speculative commodity by weighing the “risk-reward” options. However, the impact of a rule of buyer liability could be cushioned by seller country sovereign guarantees or the opportunity to buy off extra credits or by transferring the risk to a third party by insuring the credits themselves or by contractual rearrangements of liability between buyers and sellers. All of these factors would obviously have a bearing on the market discount that is attached to the futures credit commodity. Although the system places liability on buyers, project hosts and other CER sellers will nonetheless face strong incentives to make sure that projects succeed in achieving projected emissions reductions and receive CERs. Project hosts with a persistent pattern of poor project performance would lack market credibility and creditworthiness. The market value of credit options and futures that they offer would be highly discounted. Ultimately, CDM investments would flow to project sponsors with the highest integrity. Sponsors with a consistent record of poor performance could also be subject to administrative sanctions under the CDM, such as refusal to register new projects or certify additional CERs until rectification of defaults or, in extreme cases, exclusion from participation in the CDM. The integrity of the CDM credit system would eventually be undermined if Annex I countries failed to comply with their Kyoto Protocol emission limitations commitments. Persistent Annex I country deficits would reduce the demand for and value of CERs and CER options and futures. Accordingly, it is vital for the market as well as the environmental success of the CDM to ensure an effective regime for addressing, preventing and sanctioning non-compliance by Annex I Parties.

C. Managing the introduction of the CDM

Most private investors will remain uncommitted until key definitive policies begin to emerge. The fundamental policies include:

- The international arrangements and rules established for the CDM and the other Kyoto Protocol flexibility mechanisms
- National policies of Annex I countries
- Host country investment and sustainable development policies and priorities

These policies will determine both the nature and value of the CER commodity in relation to the other emissions reduction mechanisms and options.

Emissions reductions achieved through the CDM can be credited and banked during the period from 2000 to 2008 and the credits can subsequently be used by the Annex I investor country to meet a part of its emissions limitations obligations during the first commitment period from 2008 to 2012. This could provide a competitive advantage to the CDM over other forms of emissions trading under the Protocol, as a project operational in 2000 can produce credits for 13 years (2000-2012), which can then be averaged out and

deducted from an Annex I Party's 5-year first commitment period emission budget. This feature could provide a very strong incentive and impetus for "kick starting" the CDM trading process earlier than that of the other flexibility instruments. However, a related policy issue is that the CER crediting cannot start unless the Kyoto Protocol is ratified which is unlikely to happen before the year 2000. In such a scenario, a CDM 2000 start and early crediting can only be possible if "early" rules and procedures are adopted for CDM projects under circumstances that would provide participants with adequate measures of confidence that emissions reductions achieved would obtain full recognition. Annex I countries - the countries that create value and demand for CERs by reason of their Quantified Emission Reduction and Limitation Commitments (QERLCs) - should consider ways to establish interim credit markets, for example by establishing early domestic emissions regulatory systems that allow domestic entities to use CERs to meet their regulatory obligations or establishing other early action reward systems for private sector CDM participants. These steps would stimulate a market value and liquidity for CERs, which will in turn encourage CDM investments. At the same time, for developing countries to maximise participation in the CDM, their policies must recognise the need to increase capital and technology flows into sectors that meet the host country's sustainable development priorities. Such arrangements could motivate investors to participate in any interim arrangements.⁸

The current AIJ pilot phase has demonstrated that even a plethora of potential projects do not catalyse substantial new capital flows in themselves, if investment guidelines remain poorly defined. Private sector capital flows are expected to be the driving force within the CDM. The CDM's success will depend on developing the necessary capital flows by enabling the investors to achieve competitive returns on capital employed through both the conventional project outputs and the CERs generated. To achieve this, demand is needed for CERs, a liquid market needs to develop and the commodity and transaction mechanisms need defining. The minimum policy requirements are:

- Concerted action on the part of Annex I countries to generate early trading opportunities.
- Simple and consistent mechanisms for identifying and capturing CER values.
- Confidence that there will be a liquid market to transact the CER value.
- Recognised equivalence between CERs, alongside emissions reduction units from Joint Implementation and Annex I emissions trades of Assigned Amounts under the Kyoto Protocol.

Until threshold liquidity is achieved within the overall emissions trading market, it can be expected that investment flows to CDM projects will predominantly depend upon the prospects of the conventional commercial outputs of projects. It seems likely that until a threshold of regular market activity is achieved, CERs will be seen as a bonus value, rather than the driving force, in most investment decisions. The consequence is that the early emergence of market liquidity for CERs could be frustrated, with good potential economic rents for early investors as the market develops.

⁸ A number of such arrangements are analysed in a paper prepared for the Working Group: Michaelowa A. and M. Stronzik, *Early Crediting of Emissions Reduction - A Panacea or Pandora's Box*.

Article 12 of the Kyoto Protocol stipulates that the COP/MOP shall, at its first session following entry into force of the Protocol, elaborate modalities and procedures for the CDM. This does not preclude the COP from setting some policy directions, guidelines and rules between now and the first COP/MOP. There was widespread agreement among Working Group participants that it will not be necessary or appropriate to distinguish between an “interim phase” of CDM project activity and a subsequent permanent phase. The COP should accordingly aim to adopt rules for the CDM that will govern its operation for the indefinite future in the reasonable expectation that such rules will, if appropriate, be endorsed by the COP/MOP after the Kyoto Protocol is ratified. In fact, such early “rule-making,” combined with experience gained prior to the first COP/MOP in baseline-setting, monitoring and certification of emissions reductions for actual projects, could provide valuable learning-by-doing for COP/MOP deliberations. It could improve the climate for CDM investments by indicating to potential project sponsors the direction of policies and procedures. It could help sponsors identify the sensitive issues associated with different types of projects as well as the methodological challenges in baseline-setting, monitoring, certifying emissions reductions and evaluating projects with respect to their contribution to sustainable development. When the COP/MOP meets for the first time, it can consider and decide the extent to which rules and guidelines established by the COP up to that time should be continued or changed.

The extent to which the COP will establish policy direction, guidelines and rules prior to the first COP/MOP is uncertain. For the meantime, those project sponsors interested in pursuing project in order to earn credits will have to accept the risk that they may receive no or fewer retroactive credits for the emissions reductions than have been certified. This is not the only risk that project sponsors will face, because credits can not be used to meet domestic regulatory obligations established pursuant to the Kyoto Protocol only after an investor country government has ratified the Protocol.⁹

There was widespread agreement that project activity aimed at earning CERs should be encouraged and initiated ahead of CDM rule making. A number of developing countries have indicated interest in such “early action” initiatives. It was agreed that early CDM project initiatives should build on experience and knowledge acquired during the AIJ pilot phase.

It was contemplated that financial intermediaries, established by CDM authorities or otherwise, might offer to receive and control CERs deposited by holders. These institutions might offer either a “current” or a “fixed” account. In the current account, the CER owner can call on them for use or sale at any time. In the fixed account, the depositor agrees to custody the credits for a given period. The depositor gets a return in the form of a “credit interest payment” and the depository institution can lease or sell them to other secondary investors for a period allowing them to use it in the first commitment period. In this case, the depositor could, potentially, be a developing country that wants to get a fixed return in the near term while keeping the option of attaining the project CERs accruing after the first commitment period.

⁹ The term “investor country” is used for lack of a better term – it refers to an Annex B Party that invests in, or whose companies invest in, a CDM project.

D. Fungibility of the tradeable commodity under CDM, JI and ET

The Kyoto Protocol defines three different forms of GHG emission units for purposes of international transfer and acquisitions. These are assigned amounts (AAs) under emissions trading, emissions reduction units (ERUs) under joint implementation and certified emissions reductions (CERs) under the CDM. The modes of trading these various commodities under the three instruments differ, as shown the table below. However, it is reasonable to assume that at some stage they will interact and it is therefore necessary to address the issues of fungibility or “compatibility” and “choice” between them so that they can be made to operate and be traded as one homogenous commodity in the secondary market.¹⁰

Table: Comparison of Trading under ET, JI and the CDM

Emissions Trading (ET)	Joint Implementation (JI)	Clean Development Mechanism (CDM)
Allowance trading (AAs)	Credit trading (ERUs)	Credit trading (CERs)
Quota based	Project based	Project based
Banking possible in Commitment period	No banking specified - possible only during commitment period	Banking possible from 2000
Applicable 2008-2012	Applicable 2008-2012	Early start - 2000
Includes “sinks”	Includes “sinks”	“Sinks” not mentioned
Compliance of host Party required for trade	Compliance of host Party required for credit transfer	Not applicable
Trade between Parties with emission limits	Trade between Parties with emission limits	At least one Party not required to have emission commitments

In addressing the issue of fungibility or “compatibility,” there are some distinct differences between the three units owing to differing characteristics. For instance, both JI and CDM are project-based mechanisms where the commodities are based on actual emissions reductions, whereas under ET this condition does not hold and the trading is based on pre-assigned QERLCs and the establishment by Annex I Parties of trading in assigned amounts. Furthermore, between JI and CDM, the distinct difference is the absence of legally binding commitments on host Parties under the CDM, whereas under JI, both the co-operating Parties will be subject to legally binding emissions reduction commitments.

¹⁰ The relation between CDM and JI is discussed in a paper prepared for the Working Group: Michaelowa A., *Clean Development Mechanism and Joint Implementation. Which instrument is likely to have a high impact?*

These differing characteristics will result in the market assigning different risk factors to different forms of emissions trading commodities in the secondary market. As an example, the risk of project failure under CDM credit futures from a given developing country project might be compared with the “country commitment fulfilment risk” which is applicable on a JI transaction. These and other risk factors (political, economic, and environmental) will eventually be factored in before making the three types of emissions trading commodities comparable and totally fungible. Also, the certification process will play a key role in extending equivalent credibility to the commodities.

With regard to “choice” between the three commodities, project investors and traders will assign the risk factors mentioned above, evaluate the costs and benefits of projects and the amount and reliability of the commodities that they are projected to generate and estimate the net cost/tonne of mitigating GHG emissions for different types of investment opportunities. Based on the analysis, investors will, for example, choose between a JI project in Eastern Europe, acquiring an ET assigned amount or carrying out a CDM project in a developing country, based on which opportunity offers the greatest risk-adjusted return. The other major factors affecting choice among investment opportunities in the secondary and primary markets will be speculation and arbitrage, which will be based on an estimation of market supply/demand and the anticipated future price of the respective units. Such speculation, which occurs in all markets, will also develop for the GHG credit market.

As stated above, the three flexible mechanisms are eventually expected to interact for creating a single fungible commodity in the global market (tonne equivalent of CO₂ emissions). The size of the CDM market will be influenced by a number of variables, such as the total size of the global market for this fungible commodity, the growth in Annex I emissions and the amount of their domestic reductions, the market price of the CERs vis-à-vis that of the ET - assigned amounts and JI emissions reduction units and the level of Annex I Parties’ emissions limitations obligations. However, according to preliminary model predictions, the potential exists for the CDM to become a multi-billion dollar market, owing to the fact that, compared to domestic actions among Annex I countries, the costs of Annex I Party compliance through CDM credits could be much lower, thereby creating a strong incentive to participate in the CDM. If the present uncertainties over the design of the CDM can be satisfactorily resolved and the CDM successfully operationalised, it could stimulate a potential market for new and additional investments between USD5 and USD10 billion/annum.¹¹ This investment potential is quite sizeable when compared with the annual ODA flows of about USD50 billion, although small relative to annual private foreign direct investment of about USD240 billion/annum. The CDM investment flows could be leveraged for cleaner growth and development in developing countries if they were aligned towards the transfer of “top end” technology from the developed countries. This objective needs to be factored into the design of the CDM to derive the maximum benefit from this potential investment flow.

¹¹ Vrolijk, Ch., *The potential size of the Clean Development Mechanism*. Short RIIA paper prepared for the WG meeting in Buenos Aires, November 1998

E. Financing adaptation and CDM administrative expenses

Article 12(8) of the Kyoto Protocol provides that a share of the proceeds from certified project activities shall be used to cover administrative expenses as well as to assist developing country Parties that are particularly vulnerable to climate change to meet the costs of adaptation. The mechanisms for collection of revenues for these two purposes can consist of cash assessments or a charge on CERs. It is apparently envisaged that the CDM will be self-financing. In order to implement Articles 12(7) and 12(8) of the Kyoto Protocol, the COP/MOP will accordingly have to determine a schedule of charges relating to project activities, which might be assessed either in cash, or as a percentage of the CERs generated (which could then be auctioned under the relevant CDM authority to generate revenues and also help stimulate the development of a market in CERs) or both. Fees for certifying, verifying, auditing and other services provided by operational entities could be covered out of these revenues. Alternatively, such entities could charge project sponsors directly for their services. If a substantial number of such entities were accredited, fees for services would be determined by market competition. The COP/MOP will also have to establish criteria and procedures for determining eligibility for adaptation funding and allocating funds.

The most obvious type of charge would be a certain percentage of CERs - generated by each CDM project approved - and collected by the CDM authority at the time of *ex-post* certification of CERs. To generate the required revenues from these CERs, the CDM authority would periodically auction off these CERs in the international market. Such auctions would have the desirable side benefit of providing support for the development of a secondary, as well as a primary market in CERs. Imposing a charge on CDM project revenues or credits, however, puts CDM projects and CERs at a competitive disadvantage vis-à-vis the other flexible mechanisms, JI and ET. Also, depending on the ultimate incidence of the charge, it may have the effect of burdening the developing countries in which CDM projects are located with paying the costs of adaptation in other developing countries making it a “South – South” transfer of resources. This result seems at odds with the UNFCCC’s guiding principle of “common but differentiated responsibilities”. This issue needs to be addressed equitably by measures, which would ensure that the possible burden of adaptation costs on developing countries is minimised and that all flexible mechanisms are based on a level playing field.

The following options could be considered for achieving these objectives:¹²

- *Bulk Tax*: A lump sum charge applied on all Annex I countries that is independent of the volume of CDM projects. This would make it a direct transfer from Annex I to developing countries and would have to be negotiated (both the amount as well as distribution within Annex I) among the Parties.
- *CDM License*: A lump sum fee charged to all investors in CDM projects that is independent of the number of projects undertaken. This would be tantamount to levying a CDM license fee on all prospective investors.

¹² Kopp R., *The Clean Development Mechanism: Who bears the burden of the adaptation tax?* Short paper prepared for the WG meeting in Buenos Aires, November 1998.

- *Investors' Tax*: A tax levied on the proceeds obtained by investors from individual CDM projects. Depending on the credit sharing negotiations and contracts, this tax could be obtained in the form of CERs taken out of the share of the investor.

The Working Group reached no consensus on the resolution of these issues.

VI. Investment incentives and opportunities

This chapter of the report reviews the various private sector investment and financing instruments potentially available for CDM projects and analyses how the CDM could be structured to tap these instruments in order to promote sustainable development and reduce GHG emissions.

A. Overview

The CDM is unlikely to reach its full potential – both for emissions reductions and for enhancing capital flows for sustainable development – unless mainstream institutional and private capital investors are attracted to projects that generate CERs. The CDM is project based and as such, project financing will be a key to its success. Therefore, for private sector investors to participate, there has to be an income motive related to both the overall project revenues and the CER-related element. To attract investment outside the public sector and multilateral institutions, there needs to be:

- Simple and consistent mechanisms for identifying and capturing CER values
- A liquid market to transact those values
- Recognised equivalence between CERs, ERUs and AAs

Article 12(6) of the Kyoto Protocol provides that the CDM “shall assist in arranging funding of certified project activities as necessary”. This assistance could include efforts to stimulate investments in projects generally. Under a bilateral model of decentralised investments, for example, the CDM authority could establish electronic bulletin boards and take other steps to reduce search costs. Under a mutual funds model, it could develop ground rules for funds and provide technical assistance to Parties or entities seeking to establish such funds. It could facilitate the development of credit markets by engaging in market-making activities, such as auctioning credits that had been taxed to support CDM administrative expenses or developing country adaptation costs. In all probability, however, the bulk of market-making activity would rest with private entities.

Until a threshold liquidity is achieved within the credit trading market, investment flows from the CDM will predominantly rely on the prospective commercial returns of the project and, only to a lesser extent, on CER values generated. Without a strong secondary market, it will be difficult to securitise expected CERs efficiently or otherwise attract investors to CDM projects and influence capital flows. The degree to which sufficient emissions liquidity can plausibly emerge prior to 2008 is an important but largely unanswered question. Its resolution depends on incentives for early investments in CDM projects and CER markets adopted by Annex I countries, through the adoption of domestic GHG regulatory programmes that recognise CERs, or other early action reward systems, as well as host country policies and the establishment of the CDM itself along with the determination of its functions, organisation, procedures and rules.

It should be recognised that the CDM is evolving and seeking private sector investment in emerging markets. Furthermore, the market price for CERs themselves remains highly uncertain, due to the unknown inputs to the prices from emissions trading and joint implementation projects in Annex I countries. This situation would be exacerbated if project revenues were linked exclusively to CERs.

It is therefore the task of the nascent CDM community to identify tools and mechanisms that would ensure that the CDM can flourish with these particularly challenging, and often conflicting, financing conditions and objectives. Six potential areas of concern are:

- To what extent will the structure and organisation of the CDM and administrative or registration costs applied by it to projects for registration, approval, certification or trade in CERs, either promote or discourage capital flows?
- How will small projects effectively compete in attracting investors compared with much larger projects? Will the fixed costs, linked to their approval as CDM projects, create an investment barrier for smaller projects?
- Two issues of equity need to be addressed early on. The first is the relative attractiveness of the three different trading mechanisms (CDM, JI, and ET) in attracting finance to acceptable and approved projects. The second is the competition between the rapidly industrialising CDM host countries and weaker developing countries, which have fewer opportunities to generate emissions reductions and poor institutional and commercial capacity to attract and manage such projects.
- Will low initial CER credit or credit-based trading activity reduce the CER value generated by CDM projects and, therefore, their ability to attract finance? What effect would a delay by Annex I Governments in finalising national emission programmes and making allowance allocations or rewarding early action have on traded CER values and the flow of capital into CDM projects?
- Will CDM host governments introduce supportive enabling environments by designing legal and policy frameworks that promote both long-term sustainable development objectives and private sector investment, for example, by reducing subsidies for fossil fuels and developing appropriate fiscal measures?
- What should be the role of ODA and institutional funds in generating early liquidity in CDM projects or in covering CDM administrative costs or in providing adaptation funds?

The administrative and financial burden imposed on project developers and financiers of CDM projects will be a major factor in determining the competitiveness of CERs against other emission trading options. Establishing very difficult rules for participation or excessively onerous baseline requirements will likely retard the interest of private investors in this new market.

Regardless of how its investment function is defined, the CDM has the potential to catalyse or provide new sources of capital for environmentally sustainable projects in the developing world. To the extent that CERs provide value for end-users, it is likely that financing modes for emissions offset projects will utilise a wide breadth of conventional finance markets and techniques. The CDM, however, will likely only reach its potential – both for emissions reductions and for enhancing capital flows - if mainstream institutional

investors recognise potential value in generating CERs. If the investment base for emission projects is to be extended beyond governments and emitters – the primary funding sources of offset projects to date -- approved mechanisms will be needed for capturing current and future CER value as well as liquid markets in which to transact that value in a simple manner.

At the same time, it should be understood that for developing countries to participate fully in the CDM, markets must recognise their explicit motivation to attract capital flows and technology transfers in sectors that meet their particular sustainable development objectives. Initially, under free market conditions, financial flows are unlikely to go to countries, sectors or markets that are regarded as high-risk or that are expected to generate low returns. Therefore, investment incentives and guidelines will be needed to direct the financing towards the preferred sector or project in the target country. Typically, relevant government policies have often been uncoordinated and have concentrated too much on public sector issues, often leading to policies which conflict across different sectors and which have frequently failed to integrate long-term private sector interests. These problems must be addressed by developing a co-ordinated approach between governments, private sector investors, multilateral and bilateral institutions and other stakeholders in order to support CDM investments. Credit sharing between host and investor parties may be a mechanism by which developing country governments could capture a portion of the value stream from this new commodity, which would in turn give host governments a direct financial incentive to attract CDM investments and maximise CER value. This advantage, however, would have to be weighed against the risk that such a levy would influence the competitive position of the host country in the CER market and of the CDM in competing with other emissions trading mechanisms.

The market will steer financial flows away from host countries, sectors or markets that are generally regarded as high-risk or that are expected to generate less attractive returns than alternative emission related trades. Will it be necessary for the Annex I and CDM countries to establish, at least initially, investment incentives to meet this concern? To what extent will such efforts to steer investments prove compatible with attracting private sector finance into CDM projects, or conflict with the additionality principle or WTO rules? A key objective of the CDM must be for investment to reach a wide pool of developing country participants and not simply those countries high on the curve of rapid industrialisation. Public finance (e.g. GEF, World Bank or IFC) will often be needed to catalyse projects – particularly those in countries with poor institutional capacity or high-risk ratings. This provides an extended controlling mechanism, since a host country may decline to request multilateral funding for those projects that it finds inimical to its economic or sustainable development objectives. Preventing or cancelling the export of CERs from an undesired project by the host government would be quite simple, as there is an explicit need for host government approval to begin and continue the process. Cancellation, however, could give rise to liability to investors depending on the particular investor-host country agreement.

Fortunately, there would appear to be a matrix of parameters for any given project that should ensure that all parties are able to achieve their objectives in this new investment arena. However, until there is threshold liquidity within this market for CERs, it should be understood that for many financing parties – especially those without direct emissions liability - project viability will rely heavily on commercial outputs other than CERs, with the CERs acting as a bonus value. This will challenge the more restrictive interpretations of the additionality criteria. It would be desirable to develop additionality criteria specifically to

accommodate those types of projects that can potentially succeed financially and environmentally but which are difficult to implement because of country risk, technology gaps or other biases of the conventional investment market. Examples of such projects include rural electrification schemes, small-scale co-generation plants, sustainable forest management schemes and a variety of energy efficiency measures. While these projects have strong sustainability credentials, they are not readily identified as profitable opportunities by many conventional capital markets.

B. Basic sources of private and public capital for CDM investments

This section summarises the various types of private sector financing tools and options that might be available under the CDM. It briefly discusses the advantages and disadvantages of the different options offered by the CDM in the context of the financing process. The following assumptions are made:

- That the CDM investment function will be defined in such a way as to allow for substantial flows of private investments through a number of different structures.
- That CERs are irrevocably valid once certified *ex-post*.
- That CDM projects will have both CER and conventional economic outputs, such as electricity or timber (reinforcing the conclusion, reflected in much of the recent literature on the CDM, that private sector resources and expertise will be a vital component in the successful implementation of the CDM).

This should not, however, be interpreted to mean that there is no room for various forms of public finance that may be available to help initiate projects and bolster the trading system. Public finance should be able to participate in all three of the capitalisation mechanisms described below – direct finance, internal finance and project-based third-party finance. Moreover, public finance could be a critical element in sourcing and directing finance for the least developed countries (LDCs). Indeed, it can be expected that public capital will play much the same role as it does in many challenging financing situations, as illustrated, for example, by the role of the IFC. Although the public sectors' contribution will often be only a small proportion of the overall financing package, it often provides the degree of assurance that private investors require to participate. This is particularly true in what are perceived to be higher risk countries. For relatively small projects, particularly in the alternative energy sector, public capital could be used to bundle projects together into packages to increase their overall marketability. Otherwise, small projects would have difficulty competing with larger projects that can amortise similar fixed development costs over a far higher capital base.

Capital for implementation of CDM projects can come from a wide variety of sources, not exclusively from current or future carbon emitters. Rules and guidelines for the CDM should accommodate this flexibility - especially if it is to attract domestic investments - and encourage the use of concessionary multilateral funds to meet the sustainable development objectives of the CDM.

Once the CER commodity and transaction mechanisms are adequately defined, it is important to realise that financing sources will broaden to include a wide spectrum of participants, ranging from Annex I carbon emitters and host country investors to speculators.

This should be both accepted and encouraged. CDM's specific development obligations should require active participation by the international development community in providing access to concessionary finance (subject to additionality rules). This institutional development support could also be used to meet the capacity-building requirements outlined above. For a commodity of such potential global significance, CERs could be comparatively easy to generate and even easier to export, requiring no physical infrastructure. Assuming project and investment risk can be mitigated, CERs could successfully compete with investment opportunities in more advanced economies.

For this kind of market expansion to occur, it is again important that the spectrum of parties who understand the CER market and the options within it, be expanded beyond the current project developers and CER purchasers. If CER related investment is frustrated by country-level risks in the host country business environment, new CDM investors will gravitate to more comfortable financing options through the other flexible mechanisms or they will use the CDM in the more industrially advanced non-Annex I countries. Moreover, given the comparatively small CER generation potential of many non-Annex I countries, some CDM projects may fail to meet "hurdle" criteria of Annex I countries' developers and financiers.

Developing country domestic capital sources – whether public or private – would only incur a fraction of the transaction costs and virtually none of the opportunity costs that might discourage external investors in small-scale projects in LDCs. Local financial institutions are more likely to cope with the risk profiles of these projects and have their own risk mitigation mechanisms. Local financiers are also likely to identify projects that are compatible with local infrastructure capacity and development objectives and would generally include both public and private sources of finance. The conundrum is, however, that local developers and financiers are likely to be less familiar with the CDM regulatory environment and potential outlets for the CERs generated. This reinforces the requirement for capacity-building and the potential use of multilateral finance to meet capacity-building and training needs.

In summary, various sources of private and public capital could include one or more of the following:

- Corporations with substantial emissions liabilities that are seeking to develop an emissions reduction portfolio
- Developing country private sector and public sector entities, acting as project hosts
- Annex I governments seeking to meet their emission limitations commitments
- Private speculative project capital from either industrial or developing countries with a range of sources and investment preferences, including loans, equity, equipment financing, leases, etc.
- Multilateral finance, from the International Bank for Reconstruction and Development (IBRD), IFC, the regional development banks and others
- Donor governments "soft finance" (possibly linked to host country natural resources)

- Non-governmental organisations, such as foundations and other interested parties

(1) *Financing issues*

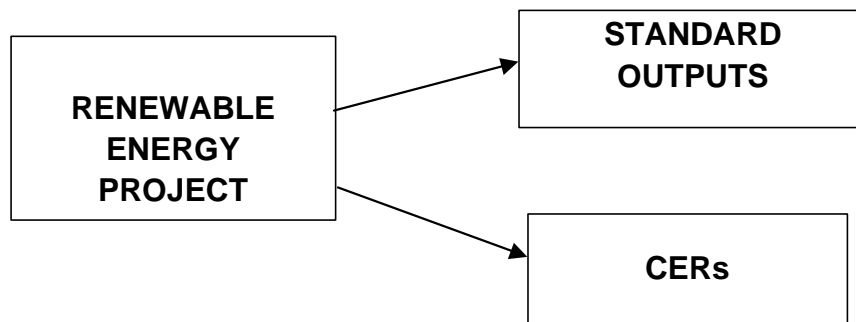
CDM projects will be competing for commercial finance with other investment opportunities. Factors influencing their success include the following:

- The structure and organisation of the CDM and the transaction costs that it imposes on projects for project registration and certification or transfers of CERs
- The efficiency of markets in transacting CER value from CDM projects
- The amount of CDM project returns that will be taxed in order to fund adaptation costs and CDM administrative costs
- The success of measures to overcome barriers to investment in small projects as a result of fixed project costs

In addressing these issues, one of the functions of the CDM that could be considered is to provide support for financing projects in LDCs on preferential or discount terms. However, the CDM will also be competing with JI projects and ET for capital. Further issues to consider include how CDM might implement (and ensure payment for) registration, verification and certification activities; whether the CDM should impose a differentiated transaction fee on projects; and whether the CDM authority should discount high-risk projects or leave this to the market. The marginal cost/benefit to project developers and financiers of using the CDM will be a major issue in any case. If the CDM process imposes onerous charges, or creates extremely difficult terms for participation, this will directly frustrate its use, particularly for third party financiers.

Depending on the situation, various financing tools can be used, which reflect the project type, the capacity of the project developer, the security of the financing environment and the priorities of the financing parties. However, not all investments will require the full, complex tool chest of project financing mechanisms. Some projects may be suited for specific and/or simple transaction mechanisms to access the value of CERs. While the external project finance model is an obvious choice, there are also other financial options for creating CER.

To begin with, consider the basic outputs of the majority of anticipated CDM projects.



Project developers will need to raise sufficient capital to operationalise the left-hand box.

There are three main possibilities for financing projects, including CDM projects

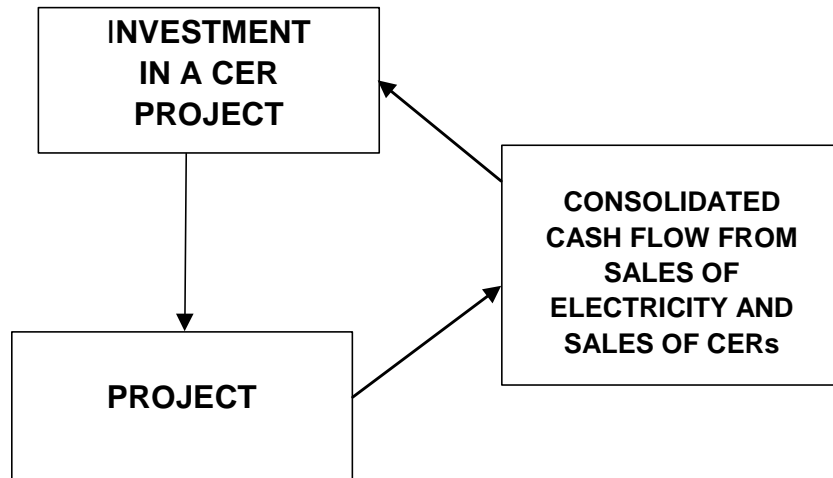
- Direct equity or loan financing by end-users of prospective output streams
- Internal finance from the prospective seller of the outputs
- Institutional, bank or speculative financing of capital provided by parties without direct interest in either developing or operating the project or using the resultant project outputs

The building blocks of a CDM project will be fairly simple to understand for parties in the business of investing in new assets. The only substantial difference between CDM projects and other projects in emerging markets relates to the marginal costs and revenues generated by creating and disbursing CERs. The basic elements of any CDM project include:

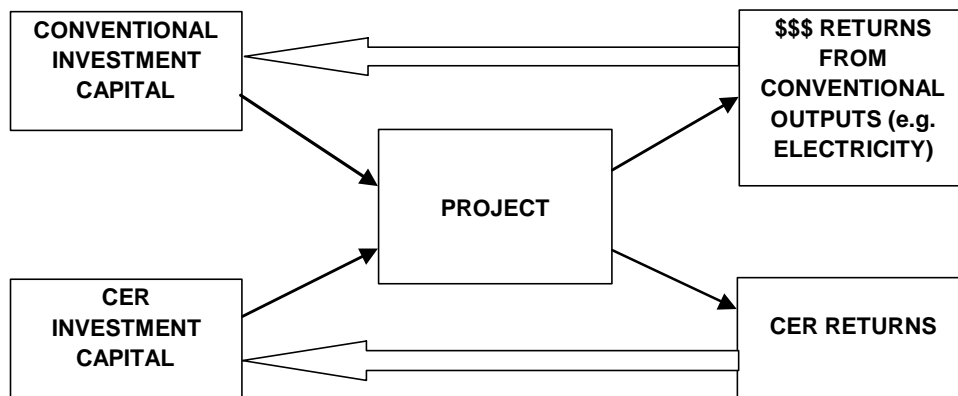
- The capital investment for capturing the returns from the outputs of the project (other than CERs)
- The marginal capital investment required for capturing the CER output of the project
- Host government approval for the project, as well as the future “export” of CERs
- Host government legislation and policy measures for capturing/subsidising a proportion of project output, including specific measures relating to CER outputs. These could include credit-sharing arrangements, an allowable export ratio or other measures.

As depicted below, a concentration of capital – potentially, though not necessarily, from multiple sources – appears as investments in the CER producing activity. Were the

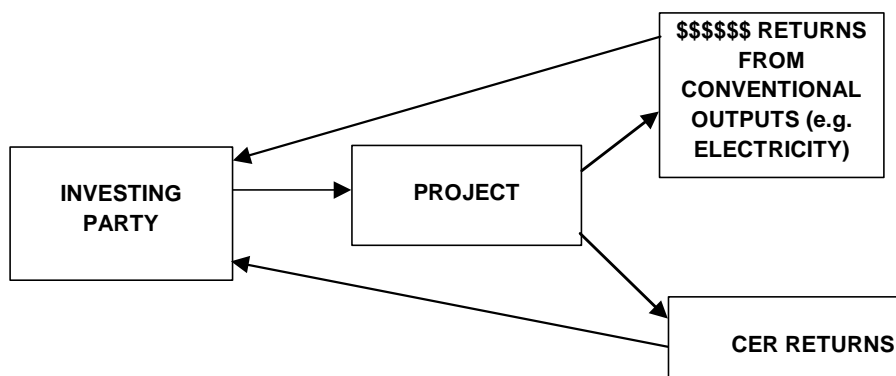
motivation accompanying that capital not for CERs as such, it would be for the total financial returns.



An alternative arrangement might be one in which an investor, such as an Annex I Party or firm (which might be the sole investor or a co-investor), puts equity finance into a project solely to obtain rights on the resulting CERs in order to meet regulatory commitments. This is the model of transactions under many domestic emissions quota trading programmes and JI/AIJ projects. The diagram below demonstrates this approach in a case where one investor is seeking a traditional financial return and the other is seeking a return in the form of emission limitation credits and shows the capital and CER flows as being distinct and separate. This model was quite common in the early initiatives of AIJ pilot projects.



A third model involves a single investor who seeks project returns both in the form of traditional revenues and CERs:



(2) *Direct finance by end-users of credits*

Direct financing by the ultimate consumers of GHG credits is currently the predominant method of capitalising transnational GHG emissions reduction projects. It is a form of FDI, albeit one in which the investor seeks contractual assignment of all – or a percentage – of the emission savings resulting from the investment. Most of the earliest GHG emissions reduction projects followed an FDI model and were undertaken through a Request For Proposal (RFP) process, under which dozens of entities submitted differing concepts for funding. Direct investment is somewhat akin to vertical integration, like an electric power utility taking ownership equity in a coal mining operation. In general, we would expect that FDI costs, assets and liabilities would be carried on the books of the investing party. A direct finance transaction is generally designed to lock in a flow of a good – CERs – presumably at an advantageous price. While this can help guarantee supply, FDI transactions can also limit downstream flexibility for both parties.

To date, FDI-style investments have targeted projects with low-costs, with the investor party agreeing to pay marginal costs of implementation in return for credits, and the project host keeping other returns. Often this has occurred as an “open books” system, whereby the seller briefs the buyer on fairly exact levels of direct attributable costs. Assignment of credits occurs through bilateral contracts between parties. Few of the early FDI-style contracts for credits addressed the potential for speculative investments in credits via re-selling. Developing countries might argue against re-selling under such conditions since credits would be generated and exported at cost, with developing country providers excluded from subsequent future profits due to changes in credit market values.¹³ These considerations must be included in the design of the CDM project transactions and agreements.

¹³ For example, the New England Electric contract for reduced high-impact logging in Malaysia entitled *Innoprise*, the contractor, to a 50 per cent share of the profits from any subsequent sale of emissions reductions. However, it is unclear what is likely to happen in future cases where, unlike in the case of this transaction, definitions are not left loose.

For project hosts, the advantages of direct financing transactions include the following:

- All (or most) of the implementation costs are borne by the investing/CER buying entity.
- Assuming the investing/CER buying party carries the risk of project failure (unless there is an agreement on specific production levels and on liability being borne by the supplier for failure to achieve the same), there is very little direct financial risk to the host, although there may be possible loss of reputation and, therefore, of potential future project investment funds.
- Any project verification and credit certification costs are the responsibility of the investor/buyer.
- In the past, GHG credit contracts have tended to be fairly simple (though this may change in the future, if the agreements become interlinked with complex project financing arrangements).

The potential disadvantages to a project host of direct financing include the following:

- There can be strong competition among potential project hosts, requiring substantial pre-investment in order even to be considered.
- The retention of outside representation in a brokering role is required and this often increases upfront costs.
- Investors/buyers may be very focused on their specific areas of core competence (to leverage their participation), which may not coincide with the particular project assets or development priorities of hosts.
- There could be potential loss of flexibility in the future use of the relevant assets.
- The seller may sell credits at production cost and may be removed from any further participation in CER transactions, with no opportunity for additional gains if the market price for CERs rises.
- If the seller agrees to a minimum production level, it may face possible liability in case of delivery failure.

Some of the risks referred to above can be mitigated through insurance mechanisms. It is anticipated that instruments are either already available or being developed that will allow CER-specific risks to be covered in the future. Direct finance will generally be contract-based and kept on the books of the investor/buyer party. Accordingly, it will likely tap few of the tools discussed below.

(3) Internal financing by project hosts

Internal financing by hosts of offset projects for the purpose of exporting GHG reduction credits has only recently gained acceptance. The most notable example is the Costa Rican Certified Tradeable Offset (CTO) initiative, launched in 1997. In an internal finance situation, a private firm or government (as demonstrated by Costa Rica) develops projects that will generate CERs and uses its own equity funds (perhaps supplemented by internal or external debt financing) to execute the strategy. The project activities are “on the books” of the project host entity.

This approach allows hosts to control their asset base and the flow of credits while also ensuring that projects are consistent with other relevant development goals. CER production can be more easily halted if more profitable uses of the asset base become available in the future, assuming there are no contractual liabilities on CER supply that would limit this flexibility. Since internal cost structures for creating the commodity are not revealed to the buyer, hosts may have the opportunity to maximise profit margins on their CER project activities, a situation reflective of more mature markets.

Overall, the advantages to host developing countries and other project hosts of this model include the following:

- The host maximises control of the asset base.
- The host has opportunities to minimise cash outlays by reallocating existing personnel and infrastructure and priorities.
- The host can potentially realise excellent margins, especially with regard to low-cost options that are compatible with the host country’s development objectives.
- The host exercises maximum control over future commitments and liabilities.

Disadvantages to hosts of this approach include the following:

- The risks (as well as benefits) with respect to project revenue streams (both in terms of traditional financing and CERs) lie with the host.
- Potential liabilities from the project are consolidated on the balance sheet; this potentially affects the ratios for evaluating the financial performance of the host, although to some extent, this exposure could be mitigated through suitable insurance mechanisms.
- The host must bear the costs of marketing CERs and the risks associated with future changes in CER prices.
- All project preparation and CER certification costs must be paid by the host before any sales commence, thereby increasing the load factor and risks.

(4) *Project finance model*

Project finance also provides a relevant model for financing CDM projects. As in internal finance, hosts can retain better control of their ability to define and manage the project and the returns that it generates – e.g. by joining small amounts of their own funds to those of foreign sources.

From an outsider investor’s perspective, a project that generates a stream of CERs is logistically similar to a project that generates electricity, pipes natural gas, or beverage bottles. Financing is feasible so long as there are relatively secure revenue streams for the product. It follows that if investors need to predict their financial returns based exclusively upon sales of CERs, financing will be difficult until there is a liquid CER marketplace. This said, commercial CER projects may have other attractions because of their simultaneous ability to generate revenue from conventional activities. Investments in CDM projects that will generate CERs will be attractive to some institutional investment managers of portfolio risks due to the prospect of GHG regulatory legislation. Some fund managers with holdings in conventional energy projects would almost certainly have some utility for a “sleeping value” of CER streams as part of their risk diversification.

There are several types of possible investors under a project finance model for CDM projects:

- Private parties speculating on a rising demand for CERs and, therefore, CER assets.
- Private parties financing activities with objectives other than CERs (e.g. electrical supply) for whom the CERs are a bonus.
- Parties acting as honest brokers and financial sources to hosts (e.g. World Bank Prototype Carbon Fund) thereby lowering administrative costs through the bundling of multiple projects.
- The CDM authority, were it to be a primary investor in CER producing assets, could invest with others through the project finance model.

The advantages of project financing to host countries include the following:

- It allows hosts to focus investment in priority areas.
- It allows hosts to retain substantial operational control over the project.
- For renewable energy projects and those aimed at energy and/or carbon efficiency - likely sources of CERs - there is substantial specialist experience in developing country financing options.

- Liability issues can be addressed in a number of ways including through appropriate project finance vehicles to spread liability risk.
- Project finance can easily create innovative structures to distribute the credit benefits of a particular investment in CERs, including through derivative instruments that reflect a contractual flow of CERs. Credits can then be securitised or otherwise marketed downstream through traditional financial arrangements.

The disadvantages of project finance include the following:

- It has fairly high-up front fixed costs for contract development.
- It requires fairly large projects or portfolios to be financially viable.
- Risk analysis discourages investments in small projects and in high-risk countries.¹⁴

C. Project risk management – special considerations

Under all types of financing, projects must be structured to manage and mitigate risks. There is a close interdependence between finance, risk management and project viability. Many CER projects may lie towards the outer edges of the acceptable risk spectrum for private sector financing. In project finance, a variety of guarantees and insurance mechanisms are often introduced in the project financing process to deal with similar risks. Both exporting governments and large financial institutions often provide such guarantees. Guarantees of this sort could serve to attract additional finance at lower cost to a CDM project and could also attract wider project participation since the resulting lower risk profile of the project is likely to fall within the risk parameters set by a larger range of potential investors.

Summarised below are some of the principal project risk considerations that will generate uncertainty and higher development and operating costs. The first two categories of risk considerations are exclusive to CDM projects.

- *UNFCCC and CDM Institutional and Policy Related Risks.* These risks will relate to uncertainty surrounding the policies, including in particular the policies to be adopted regarding project registration and CER certification, their implementation and the hazard of future changes in these policies. As these uncertainties affect the viability or profitability of CDM projects, they represent a major risk factor, especially for sequestration projects, the status of which under the CDM is currently quite uncertain.
- *Compliance Performance Risk.* There will be the risk that specific projects will fail to meet CDM or host country requirements for project approval and CER certification. This

¹⁴ For example, there have been only two privately financed co-generation plants in countries with Institutional Investor country risk ratings greater than 90. The Institutional Investor system ranks countries from 1 to 187, according to perceived risk from a variety of credit lenders.

risk is substantial for sequestration projects, where weather and pests can have a significant impact on incremental growth and, therefore, on sequestration rates. It can also be an issue in energy projects, in situations where economic or environmental factors can have an impact on energy production factors.

• *Other Aspects of Project Performance Risk.* The normal risks associated with capital projects in developing countries would also apply:

- Political risks
- Technology risks
- Natural hazards
- General economic risks
- Financial risks – investment profitability, competitiveness and ROI are affected by interest rates, currency fluctuations and other fiscal considerations

For some of these risks, in cases where the CER buyer carries the risk, conventional private insurance and other private risk-spreading financial mechanisms could be deployed, together with multilateral or bilateral partial risk guarantees, where these are available. Depending on the project investment structure and contractual arrangements, other risks could be carried in the first instance by the seller or buyer of CER futures or options. To some extent, these risks might be managed within a “buffer” of CERs held back from forward sale, based on the identified risks in their production. This is the model that SGS used in their certification of the Costa Rica Public Areas Project. Consequently, some of these buffered credits could be offered, should the project developer take acceptable steps to mitigate these risks through operational changes or insurance mechanisms.

How private insurance companies will provide cover for risks related to CER production remains to be seen. It is likely that insurers will need either to rely on forward markets for CERs to hedge against potential losses or invest in some form of CER mutual fund. This reflects the likely long-term need for insurance companies to investigate the possibility of using CERs as the unit of compensation for projects that fail to succeed.

(1) The utility of secondary instruments in financing CDM projects

In most GHG credit projects to date, it has been usual for contracts to assign legal ownership of the credits to one of the participating parties. However, such credits could, by contract, form the basis for secondary financial instruments, thereby promoting liquidity and diversification of risk.

One form of derivative instrument would bundle rights to future flows of traditional project outputs as well as CERs. Investors and speculators would own and transfer interests in project renewable energy assets, energy efficiency contracts and future CERs, according to expectations of the current and future prices of energy prices in local electricity markets and of CERs. A more complex model would separate the CER component from the

traditional conventional product streams of those assets, thereby substantially increasing flexibility and speculation options as well as creating more developed exit strategies for start-up financing parties.

As previously noted, an initial question is whether a CDM project will distribute CERs directly to project participants, or sell CERs in a liquid market to return cash to participants. Assuming that projects will directly distribute CERs to interested parties, there are two potential courses:

- Projects can contractually promise a fixed quantity of CERs in return for an upfront payment (like under the Costa Rican CTO model) leaving the provider to bear the full delivery risk. This can be viewed as structurally similar to a bond with set interest payments.
- Projects can contractually promise a percentage rate of whatever CERs are produced by the project reducing provider and shifting some risk to recipients. This arrangement is structurally similar to equity participation with floating dividend rates.

A popular mechanism for project finance is the creation of a Special Purpose Company (SPC). The sponsors of a project typically establish an SPC to ensure that lenders to the project only have recourse to the assets of the project itself rather than to the sponsoring entities. This serves to separate project risks from the balance sheets of the participating entities, as well as to provide more of a pure investment opportunity for the financing parties. Transposed onto the CDM model, this would mean that project developers could issue shares representing future CER outputs of a project or portfolio of projects as a separable SPC. In projects with both conventional and CER outputs, they could issue SPC shareholdings in respect of both types of value (either bundled together or sold separately).

In one suggested model, a project, or portfolio of projects, would contractually assign future CERs to a sister or third party SPC, which would sell shares in itself to outside parties. That secondary party could then either hold, sell or distribute the CERs (or resulting cash from CER sales) as dividends to shareholders. These arrangements could follow either a debt or preferred share model (in which the SPC would promise a fixed volume of CERs) or the equity model (in which the SPC would promise shareholders appropriate percentages of the annual CER stream). Project developers could use a combination of these mechanisms to split SPC returns, guaranteeing a base CER return through fixed return instruments, but also allowing the capture of some of the upside return through variable return equity-style instruments. Shareholders in the SPC could use the CERs generated by their SPC shares as credits against emissions, sell CER dividends in a liquid market, sell all or a portion of their SPC shares to others, or hold them for long-term investment or for speculation.

D. Financing tools for CDM projects

If the CDM is solely, or primarily, a regulatory and facilitative body and strongly encourages private financing of CER projects, it can be expected that a variety of conventional financing tools will be used. The private sector, however, is likely to have a preference for projects in countries that have familiar and predictable financing environments. The CDM might, for example, emulate the IFC or the IBRD and act as a primary or secondary source of concessionary finance in order to reduce investor risk and attract additional sources of private finance to host countries that would, because of their risk profiles, otherwise be unable to attract substantial private sector investors.

In either scenario, we would expect that some or all of the following types of instruments could be used for CDM project financing arrangements:

Equity shares. This is the most speculative area for participating in project-level financing. Equity returns generally have high operational gearing and in many cases, are highly sensitive to inflation. Equity providers may be domestic or international. At a minimum, equity investors will need the following:

- A clear legal infrastructure in the host country
- The ability to refer to arbitration or other speedy, impartial and binding mechanisms for dispute resolution
- The ability to expatriate dividends without high tax rates
- Transferability of equity shares

Loans. Depending on country risks, loans will come from a variety of sources (commercial lending, private placements, bond markets), and frequently will be a principal source of finance for many projects that are supported by the private sector. Although they may be structured in a number of ways (senior, junior, subordinated, secured, unsecured, zero coupon, deferred interest, etc.), loan products are largely homogeneous. Many loans have poor secondary markets; in such cases, project lenders will focus on evaluating the depreciating residual value of the underlying asset because it may need to serve as the source of repayment. For this reason, assets that are easily movable are preferred by lenders. Thus, countries with coastlines have been able to finance certain projects (e.g. barge-mounted power plants), while landlocked countries are at a disadvantage, despite virtually identical macroeconomic situations. Further issues for lenders will include:

- Currency movement risks, if the loan is externally sourced;
- Availability of funding from within the country in which the project is located;
- Legal infrastructure and dispute resolution procedures;
- Ability to take over ownership or control of a project in the event of non-payment;
- Ability to take over security and enforce it regardless of social consequences;

- Ability to replace the operator of a project.

Leases. Leases may be operational or financial. The principal difference is that in an operational lease, the owner of the asset takes the risk on the residual value of the asset at the end of the lease period. A financial lease, in substance, is similar to a loan in that the owner of the asset is paid back in full through the lease payments. The distinction is largely tax driven and therefore not generically important in the context of CDM, although specific tax policies in specific countries may be relevant for CDM projects in those countries. Most of the issues for financial lessors will be similar to those of lenders.

Grants and other non-market forms of financial assistance. There are a number of potential paths for non-market forms of financial assistance to projects. Many of these may be driven by policies in investor and recipient countries to catalyse greater volumes of CER projects. The regional application of these mechanisms will also be a critical factor in ensuring equity in the distribution of CDM projects in the LDCs. In CDM projects, such assistance takes many forms, including:

- Lump sum investments on concessionary terms
- Soft loans
- Credit guarantees and risk guarantees
- Higher than market price payments for outputs (e.g. renewable energy subsidies)
- Lower cost inputs (e.g. donation of waste in biomass co-generation projects)
- Tax and depreciation advantages

Take-or-pay contracts. Under take-or-pay contracts, the purchaser of a commodity or service agrees to pay for a given amount of output, regardless of whether the purchaser actually needs it or takes delivery. These mechanisms provide certainty of a minimum level of cash flow to projects. Some take-or-pay contracting will certainly be used for many CDM projects in regard to its conventional, non-CER outputs. Take-or-pay arrangements could also be applied to CERs thereby creating a guaranteed market for the CERs in certain financing situations, to the extent that the project investors have not also negotiated contractual liens on their production.

International capital markets (e.g. Eurobonds). Financing through international capital markets is suitable only for large institutions with investment grade credit ratings and is unlikely to represent a suitable mechanism for many small-scale CDM projects, at least in the early stages of the CDM. There may be large-scale, investment grade international companies (for example, in energy and forestry) that could tap these markets for project-specific finance or to develop CER subsidiaries. If the CDM itself moves into a position of being a primary or secondary financier, it could plausibly utilise these markets as well, to raise capital for investments in its portfolio of projects, provided that it had an adequate capital base, which would presumably receive contribution from Annex I countries.

Venture Capital and Emerging Market Funds. Neither venture capital markets nor emerging market funds are likely to be an appropriate vehicle for CER funding in most circumstances. Venture capital is generally associated with investments in higher-risk companies (start-ups and leveraged transactions) in mature markets generating exceptional, though risky, returns. CDM projects are unlikely to fit these criteria.

Built-operate-transfer (BOT) and build-operate-own investment (BOO). These are special forms of investment that have been very successfully used in South-East Asia and could act as potential vehicles for CDM investments. BOT and BOO allow for flexible and temporary combinations of out-sourced network operations and knowledge transfer capabilities that would fulfil needs, e.g. in power sector CDM projects, with customised solutions.

Funds that invest in emerging markets generally only invest in publicly quoted stocks, as they are uncomfortable with the relative illiquidity of project-level investments. However, large national power utilities or multinational companies could continue to tap emerging market funds for CDM projects in the same way as they do for conventional projects.

E. Issues of equity

There are two fundamental and related equity questions regarding the implications for developing countries of the FCCC/Kyoto Protocol and the CDM:

- *First*, to what extent should the developing world be restricted in its development ambitions by the current and accumulated levels of GHG emissions in the atmosphere?
- *Second*, will the poorest and least developed of the non-Annex I countries be able to attract already scarce investments in CDM projects away from the more advanced developing countries?

Finance lies at the heart of both these issues. A handful of large emerging non-Annex I economies – including Argentina, Brazil, China, India, Indonesia, Mexico and South Africa – have traditionally captured a high proportion of international investment among non-OECD countries. It is possible that an unfettered market in emissions reduction investments might simply repeat this pattern, thereby exacerbating economic divisions within the developing world and failing to provide development benefits to LDCs. A key objective of the CDM must be for investments to reach a wide range of developing country participants and not simply those countries high on the curve of rapid industrialisation. This need, however, must be balanced against the need to avoid imposing undue burdens on private sector investments in CDM projects as compared to investments in other emissions trading systems or conventional projects. One way to meet these twin needs is to promote the creation of enabling legislative and fiscal environments linking national sustainable development objectives with the Kyoto Protocol's implementation, thereby improving investment conditions and fostering private and public sector participation in the poorer non-Annex I countries. Concessionary financial arrangements and capacity building support by international development banks, other international bodies and Annex I governments must necessarily play a major role in these efforts.

As the CDM must cover its administrative costs and developing country adaptation costs, it is doubtful that it could prudently seek to extract additional revenues from certified projects to fund, on a direct basis, capacity-building in developing countries. It could, however, provide technical assistance through its various entities and co-ordinate with other entities, including the GEF, UNCTAD, UNDP, UNEP, UNIDO and the multilateral development banks, that provide bilateral or multilateral ODA, in order to promote these objectives. These underlying issues stretch well beyond the immediate issues related to the CDM and reflect basic structural features of the global financial system. Some possible ways of addressing these issues in the specific context of the CDM include the following:

- Introducing specific donor (multilateral or bilateral) and host country investment incentives for CDM projects in LDCs
- Earmarking a portion of any CDM investment funds managed directly by the CDM authority to LDCs
- Institutional capacity-building, focusing on local CDM-related legislation, project identification and evaluation and other measures that will support a more active marketing of CDM projects from LDCs
- Giving extra CERs for investments in such countries (which would, however, have to be offset by corresponding reductions in the CERs awarded for investments in other countries to avoid an environmental penalty)
- Providing external subsidies for CDM projects in the LDCs
- Providing political and project risk cover via export guarantees for CDM projects in LDCs. Providing investment guarantees for project investors who do not have interests in the CER transaction
- Bundling together smaller projects in smaller countries to attract finance
- Adjusting CDM project approval criteria, including additionality and baseline criteria, to meet the special circumstances of LDCs

F. Finance and capacity-building

For the CDM to fulfil its potential for both emissions reductions and sustainable development goals, it is vital that mechanisms be fostered that allow the greatest possible breadth of projects to be financed and with resultant CER streams easily accessible into the international carbon trading market. The CDM is, by definition, project based and as such, project financing techniques will be a key to its success. Project financing represents one of the more complex and risk-laden forms of investment, with substantial requirements of expertise among project developers, investors and regulators. Under normal conditions of international investment, it is the goal of each financing party to minimise its own exposure

to project failure while retaining maximum benefits of project success. There is a significant difference in the level of knowledge and understanding of currently available financing techniques (let alone the CDM and other emission trading tools) between host country and Annex I country participants. This is likely to affect the outcomes of negotiations between parties and the sharing of project benefits and risks, which in turn could have an impact on investment trends and CDM utility. At worst, it would undermine the political and therefore commercial viability of the CDM system.

Therefore, for private sector project-based finance to flourish in the CDM process there is an immediate need for capacity-building among the potential participants, particularly in the host countries. There is a danger that without such capacity-building, the CDM could simply replicate forms of development capitalism that are often considered exploitative by observers in many developing countries. Capacity-building, in its broadest sense, will involve a concerted campaign of information dissemination about current project finance tools to developers, local financiers and domestic regulators of the CDM process. It will also be important to encourage as much “learning by doing” to create positive experiences, including value-sharing throughout the earlier stages of the CDM, which at present an untried tool of doubtful value to many potential participants.

Host country capacity to understand and negotiate CER project financing arrangements needs enhancement which could be done through multilateral or bilateral flows, by developing standard project contracts for guidance and by initiating regional pilot projects and support capacities.

However, dissemination of the current financial tool kit for project development is not sufficient. There is a concurrent need to expand that tool kit in order to accommodate the dual objectives of the CDM in meeting host country sustainable development objectives and carbon emissions reduction criteria. Risk mitigation mechanisms must also accommodate smaller projects in the more risky investment locations. Case studies should be used to develop understanding of the impact of alternative financing tools currently used in developing country renewable energy, energy efficiency and related projects. To the extent that forestry projects are included, sustainable forestry project evaluation would also be appropriate. This may be particularly important, considering the needs and capacities of LDCs to participate in the CDM system on any reasonable scale may be restricted mainly to forestry. Suitable case studies - representing the range of project development and financing conditions - could be developed and used as capacity-building programmes to train the host country private and public sector in the art of project promotion and evaluation. These could examine:

- The impact of host country investment policy on project viability and competitiveness
- The importance, particularly in LDCs, of soft loans or grants to generate project competitiveness and viability
- The potential use and impact of international and bilateral agency financial instruments (e.g. the UN or World Bank)

- General commercial financing issues such as ratio of domestic to international capitalisation, debt-equity ratios, the use of public sources of capital (domestic or international), export or import guarantees and the mitigation of risk
- The impact of project performance and political and currency risk on the viability and competitiveness of project financing.

It should be possible to include a number of practical case studies demonstrating the mechanisms that have been used to finance different types of projects in a wide range of developing countries and relate them to the CDM process.

G. Categorising host countries by market capacity

The role of private sector finance in CDM projects and the need for host country capacity-building and for additional or supplementary financial arrangements to ensure an adequate and equitable level of CDM project funding in non-Annex I countries can be clarified based on grouping host countries into three categories according to their private market capacities:

Category 1 - Countries where there is already an established market for private finance (much of South America for example)

The main task in these countries is to provide firm legal recognition of and security for CERs as an integral output of registered projects in order to confirm and enhance market value to potential public and private investors. If this objective can be achieved quickly in these countries, the beneficial effects could trickle down to category 2 countries. Host government involvement would be primarily limited to approving projects and supervising the export of CERs into the international marketplace. To accomplish this, there is need for an education programme about the CDM and CERs, covering:

- Project developers/packagegers
- Lending banks (domestic and international)
- Equity providers
- Manufacturers
- Operators

Category 2 - Projects in countries where government support is generally required to catalyse investment (South Asia, South East Asia, parts of the Middle East)

The main task in these nations is to educate government bureaucracies about the CDM and its potential value to project developers. Unlike the situation in category 1, a project developers' enthusiasm in these countries is rarely enough to actually attract direct investment; therefore governments must play a far more active role in making transactions possible, by taking steps such as the following:

- Providing guarantees on behalf of purchasers of power from energy projects - often regional electricity companies in poor financial condition

- Guaranteeing the availability of foreign exchange and/or an exchange rate. If investors/lenders are foreign, most purchase/supply contracts will be priced in “hard” currency – usually the currency in which the loans are denominated. If they are in local currency, the government can guarantee to convert it to hard currency at an agreed rate
- Providing sovereign guarantees for pioneer projects.
- Underwriting shortfalls in project finance

Category 3 - Projects in countries where there is minimal or no private finance (most of Africa, South Pacific)

With but a few exceptions, the most important financial institutions in these countries are the multilateral institutions and aid agencies. These sources of funds are likely to be the most appropriate for direct or co-financing of CDM projects in these countries. Local governments would be able to assist the process by developing internal priority structures and bundling together low risk-low return CDM projects. Many of the above concerns regarding investment guarantees, discussed under category 2, apply here as well, often to an even greater degree.

H. Steps needed to promote funding of CDM projects

The CDM needs to be careful not to stifle the innovative nature of the financing market by creating excessive restrictions on how financing occurs. The CDM authority itself cannot act as the sole identifier of new investment opportunities and the sole designer of investment vehicles. It must recognise and encourage a vigorous response by the market to the emergence of this new value. CER markets could evolve in a number of ways and their exact mechanisms are difficult to anticipate, as are their relationships with other forms of emissions trading, until more institutional and organisational aspects are clarified or decided. CDM supporters should be prepared for numerous innovations. What is critical is that Annex I countries decide quickly on ways in which they can generate demand for CERs, resulting in liquidity in the market. The use of flexible forms of project finance and development of readily tradeable instruments that represent holding rights to streams of CERs could bring speculation into the CER market. This, in turn, would result in a series of useful tools to hedge both buyer and seller risks within the market. In order to accomplish these objectives, the following steps should be taken:

- Provide guidance on the potential impact of different levels and types of transaction fees that the CDM might attract
- Identify and recommend to host and investor countries appropriate CDM structures and international and domestic policies to create a positive investment framework for CDM investments of all types (direct, internal and third party).
- Identify the most promising sources of private sector capital and the market conditions needed to optimise this flow

- Delineate types of capital markets and financing tools that could be used at various levels of project participation and identify where bilateral, multilateral, CDM or other concessionary funding complement private sector participation
- Disseminate basic information about the CDM and the potential value of CER projects to a far wider audience of potential financiers (primarily, but not exclusively, in industrial countries), including bankers, equity investors, credit guarantors, financing companies, energy portfolio managers, energy efficiency lenders and potential forestry investment funds and learn from them the primary hurdles for private sector investment in CDM-type projects (e.g. untested technology, general country risks, lack of mature capital markets, etc.) that might hinder investment in CER projects
- Explore relevant recent experiences of successful financing of projects of the types that could generate CERs
- Develop a detailed compendium of project financing and risk management tools and resources that are applicable under the CDM
- Evaluate financing techniques from the AIJ pilot phase, as well as non-AIJ financing of CER compatible investments (e.g. renewable energy) and comparable investment funds through a detailed series of case studies
- Implement a series of one- or two-day capacity-building seminars in host countries. These could be linked to workshops with potential investing or financing parties
- Prepare recommendations regarding appropriate CDM structures and overall market conditions that would enhance private capital flows
- Identify areas where private capital will not be adequate and concessionary finance will be required

VII. Organisation of the CDM and its functions

Article 12(4) of the Kyoto Protocol provides that the CDM will be "supervised" by an Executive Board (EB). The COP/MOP will have to determine the authority, composition, voting rules and other organisational elements of the EB and the role and identity of other entities that may be created or enlisted to carry out the work of the CDM. While many of these issues are left entirely open by the Protocol, Article 12(5) expressly provides that the COP/MOP is to designate "operational entities" of the CDM to certify project activities on the basis of:

- voluntary participation approved by each Party involved
- real, measurable and long-term benefits related to the mitigation of climate change
- reductions in emissions that are additional to any that would occur in the absence of the certified project activity

Further, Article 12(7) provides that the COP/MOP shall, at its first meeting, "elaborate modalities and procedures with the objective of ensuring transparency, efficiency and accountability through independent auditing and verification of project activities". Article 12.9 provides that participation in the CDM "may involve private and/or public entities and is to be subject to whatever guidance may be provided by the executive board of the CDM". Article 12(6) provides that the CDM is to assist in arranging funding of certified project activities as necessary; and in Article 12(8) it is envisaged that the COP/MOP will ensure that "a share of the proceeds from certified project activities is used to cover administrative expenses as well as to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation".

These elements provide the parameters within which the institutional design of the CDM is to be addressed. It will of course be essential to establish a structure for governance of the CDM that will ensure that the interests of all Parties, including the developing country Parties, are protected. It should also be emphasised that participation in the CDM is entirely voluntary. But until the COP/MOP decides on the details of the CDM's objectives and how they are to be attained, including, in particular, how its investment functions will be defined and implemented, it will be premature to attempt to resolve all of the institutional aspects. Institutional considerations, however, may themselves influence the more substantive elements and certain essential characteristics of the CDM have relatively clear organisational implications.

A. Legal and institutional issues in the organisation of the CDM

It is essential to bear in mind that the CDM is not a single *organisation*. Rather, it is a legal and institutional *system* that includes a variety of entities, including Parties, international institutions and private entities. It also includes rules, standards and procedures linking these components together in fulfilment of its objectives. While the configuration of the CDM and its constituent parts can take many different forms, its design must address the following elements:

- The role and functions of the plenary body (COP/MOP), including its relationship to the Executive Board (EB) and to the COP.
- The functions, composition and decision-making processes of the EB, including whether it is the principal organ of the COP/MOP or a subsidiary body.
- Issues of administrative support: should all, some or any of the CDM's core administrative tasks be undertaken by the Convention's secretariat, or by an administrative staff under, and reporting to the EB or to a non-Convention/Protocol body or bodies and if so, which?
- The design of the CDM investment function: whether this will operate through a single multilateral investment entity, a decentralised system of bilateral investor-project transactions, the unilateral development of projects by host countries, a scheme of multiple mutual funds, or some compromise or combination of these and other possible approaches. This function may also include mechanisms to promote an equitable allocation of project investments among developing countries.
- Arrangements for monitoring a project's emissions or sequestration services by appropriate entities on an ongoing basis and reporting of the monitoring results.
- Verification and certification criteria and procedures for determination by appropriate entities as to whether projects should be approved as satisfying CDM criteria and determining the emissions reductions and credits achieved by projects and the issuance of CERs. This will include: determination of the emissions or sequestration services that will be generated by the project; establishment of an appropriate baseline to determine the amount of CERs for the project; establishment of further criteria, if needed, to gauge compliance with the Article 12(5) requirement that projects, in order to be certified, must secure reductions in emissions "that are additional to any that would occur in the absence of the certified project activity" and that produce "real, measurable and long-term benefits related to the mitigation of climate change"; and establishment of criteria or procedures, if needed, for determining whether given projects further the overall purpose of sustainable development, Article 12(2).
- A system of bookkeeping by an appropriate entity or entities to track CERs, including recording of transfers and credit holdings, by private entities and Parties.
- Arrangements for auditing of CER accounts by appropriate entities.
- Selection of "operational entities" to certify projects and entities that will undertake "independent auditing and verification" of project activities and carry out other implementing activities and functions. This involves deciding the criteria to be applied by the COP/MOP or EB to define the role of these entities and select or accredit them, including agreeing on criteria and procedures to guide their conduct, to periodically evaluate their performance and to terminate or withdraw accreditation from such entities for inadequate performance.

- Arrangements for financing the administrative and operational expenses of the CDM. This will require consideration of (a) budget processes; (b) control over funds; and (c) the raising of revenues from CDM projects.
- Acquiring and disbursing funds to meet adaptation costs of developing countries particularly vulnerable to climate change, including the development of criteria for allocating disbursements.
- Stimulating and supporting markets in CER credits and facilitating the identification of and investment in appropriate projects.
- Assisting in promoting capacity-building in developing countries to enable them to be effective participants in the CDM process.
- Resolving issues relating to participation of other public and/or private entities in CDM activities and dispute resolution procedures.

Resolution of these issues must involve decisions on the following questions:

- What will be the appropriate *level* of activity for the different functions carried out by the CDM (project, national, regional or international)?
- Should existing international institutions, within and outside the UN family and including private entities, perform some of the CDM's functions? Should new institutions be created and, if so, should they be directly controlled by the COP/MOP and EB or should they enjoy a degree of independence?
- What will be the decision-making processes of the various organisations and entities involved in or with the CDM (including the COP/MOP and EB)?
- How will powers be allocated among the various entities constituting the CDM, the Parties to the Protocol and those private and public entities engaged in individual projects?
- What form of co-ordination will there be with existing or new sources of development finance (public and private), including the GEF?

Two issues dominate: the short-term or interim role of the COP before the COP/MOP meets and the longer-term role for the COP once the COP/MOP is up and running.

B. Governance of the CDM

(1) The role of the COP and the COP/MOP

The COP's interim role. The CDM is subject to the authority and guidance of the COP/MOP. The first meeting of the COP/MOP will take place only after the Protocol has entered into force,¹⁵ which is not expected before 2001 or 2002. Investors and hosts will want to see the CDM operational by 2000, particularly if they want to make use of the provisions on pre-commitment period banking from 2000 pursuant to Article 12(10). The COP cannot make COP/MOP decisions and it cannot bind the COP/MOP to follow a particular course. It is to be noted that the "prompt start" Decision 1/CP.1 only gives the FCCC bodies a mandate to examine the implications of Article 12(10), rather than all of the institutional questions raised in establishing the CDM.

Before the first meeting of the COP/MOP, after the Protocol enters into force, the COP (and its subsidiary bodies) could assume a larger mandate than the one contained in Decision 1/CP.1, if Parties so wish. Thus, FCCC Parties could agree to establish the CDM on an interim basis, leaving the COP/MOP to confirm arrangements as permanent. Politically it is unlikely that such a scheme would be overturned and that, accordingly, the degree of political uncertainty would be sufficiently minimised so as not to put off potential private sector participants in putative CDM projects. Before the entry into force of the Protocol the efforts of FCCC Parties should aim at paving the way for the COP/MOP to confirm prior decisions on the CDM.

The COP's longer-term role. The COP/MOP will be functionally autonomous from the COP. It is the plenary body of the CDM where all Parties to the Protocol can expect to be kept informed of developments relating to the CDM. The COP/MOP will make decisions about the CDM once it begins to meet. But the COP is mandated under Article 7 of the Framework Convention to "keep under regular review the implementation of the Convention and *any related legal instrument* adopted by the COP" (emphasis added).¹⁶ It could therefore continue to look at issues arising from the operation of the CDM, for example, on the sensitive issue of developing country commitments. The proper demarcation of the COP's review mandate and the appropriate level of oversight it exercises over the Protocol, remains to be decided. One specific instance of potential future institutional conflict between the COP and the COP/MOP stems from the mandate given to the COP by Article 17 of the Protocol on emissions trading. This provision is a rare example where the Protocol accords the institutional authority to determine the rules and modalities of emissions trading to the COP and not to the COP/MOP. The elaboration of these rules and any continuing oversight the COP retains over the implementation and further development of trading among Annex I Parties, could have a significant impact on the market for CERs generated by the CDM. The reverse is also true. Unless the COP and the COP/MOP make concerted efforts to avoid conflicts, it will be difficult to address the linkages and impacts of the CDM and Annex I emissions trading in a consistent manner.

¹⁵ The double-trigger contained in Article 25 means that practically and politically all of the major Annex I GHG emitters, including the United States and the Russian Federation, must have ratified the Protocol.

¹⁶ FCCC, Article 7.

(2) *The Executive Board*

Notwithstanding their desire not to create new institutions, by Article 12(3) of the Kyoto Protocol Parties agreed to establish one new institution: the executive board of the CDM. Its status and authority, its composition and voting rules and the organisational means by which it will carry out its various functions, all remain to be decided.

Subsidiary or principal organ. The institutional design of the CDM will have to clarify the extent of delegated authority the EB is given, the amount of freedom it has to undertake the functions assigned to it under the Protocol and the level of scrutiny the COP/MOP exercises over its day to day supervision of the CDM. Will the EB have full authority to “sign off” on a range of issues which have been defined as being within its functions? Or will it merely provide advice to the COP/MOP, which will take these decisions? In international legal terms, the distinction involves determining whether the EB is a subsidiary body or a principal organ in order to assess what degree of control can be exercised over it by the plenary organ, the COP/MOP. The hierarchical or parallel relationship between the COP/MOP and the EB is not an arcane legal matter. It goes to the heart -- in practical terms -- of how the EB will work.

In international law, a *subsidiary body* is subordinate to its plenary organ. There exists a clear hierarchy between the subsidiary body and the plenary organ with the latter delegating some of its authority to the former.¹⁷ A *principal body*, by contrast, may have a relationship, which is hierarchical or parallel, or a mixture of both concepts. A principal body may, for example, have some functions it is mandated to fulfil which the plenary organ is not entitled to take away or whose exercise it cannot control. The plenary body, on the other hand, may have some functions that cannot be delegated. This non-hierarchical relationship between the plenary organ and the principal body is typical of international financial institutions.¹⁸ Their executive boards (or equivalents) are not just subsidiary bodies, but institutions in their own right with specific mandates that the plenary body cannot take over. This approach is justified by the need for functional efficiency.

Article 12 of the Kyoto Protocol is not clear about the relationship between the COP/MOP and the EB.¹⁹ It gives the COP/MOP the following functions: to determine how much the CDM can contribute to Article 3 commitments; to designate “operational entities” to certify emissions reductions; to elaborate modalities and procedures for, *inter alia*, independent auditing and verification; and finally, to ensure that a share of the proceeds from projects covers adaptation and administrative expenses. Apart from its supervisory role, the EB is given one specific and highly important function, namely to determine participation in the CDM. The term “participation” could be read to cover both the participation of non-

¹⁷ C.F. Amersinghe, *Principles of the Institutional Law of International Organizations*, Cambridge University Press, 1996.

¹⁸ For example, the World Bank has a plenary body composed of the Board of Governors (one per member). The Executive Directors of the Bank, limited to 12 members, “exercise all the powers delegated to them by the board”. The Directors have some powers the Governors cannot take away, such as the power to elect a President.

¹⁹ Article 12(4) provides that the CDM “shall be subject to the authority and guidance of the COP/MOP and be supervised by an executive board of the clean development mechanism”. It may be tempting to interpret this as “overall authority and guidance”, but this is not what the text says.

Annex I Parties in project activities (Article 12(3)(a)) as well as guidance for the participation of public and/or private entities in CDM projects and the acquisition of CERs (Article 12 (9)). No specific body is charged with assisting in arranging funding of certified project activities as referred to in Article 12 (6).

Size and composition. The composition of a body indicates its size and the capacity in which its members should serve. The EB could be a board “of Parties” comprised solely of government representatives or it could include independent and former national or international officials designated by the Parties. It could also include representatives of existing international institutions.²⁰ In any event, a body of limited membership will be essential for the efficient functioning of the CDM. An open-ended EB could not supervise the CDM efficiently on a day-to-day basis. This is true no matter what approach is taken for the discharge of the CDM’s investment and other functions. The selection of approach, however, will have potentially important implications for the qualifications that should be sought in Board members. If the CDM were to operate as a multilateral fund, it would be a financial institution with fiduciary responsibilities to those who have contributed to its capital. In this case a significant number of Board members should presumably have experience with respect to financial and portfolio management, project assessment, contracting and marketing financial products. Under a model that relies on decentralised bilateral transactions to provide funds for CDM investments, skills in facilitating the development of private markets and associated financial products would presumably be needed. Under a mutual funds approach, or a unilateral approach, or various mixed approaches, somewhat different combinations of experiences and skills would be needed.

There may be significant difficulties in securing agreement by the COP/MOP on an EB with limited membership that includes a significant number of members with appropriate specialised experience and skills. Thus far, the FCCC has not successfully established any bodies of limited membership on either a temporary or permanent basis. Parties have resisted efforts to establish Technical Advisory Panels (TAPs) or an Implementation Committee to deal with non-compliance along the lines of those established under the Montreal Protocol.²¹ The most recent instance of Parties’ reluctance to delegate authority to smaller bodies was evidenced during the June meeting of the Ad Hoc Group on Article 13. The United States insisted that the Committee be composed of government delegates drawn equally from Annex I and non-Annex I Parties. The G-77 insisted it be based on traditional UN geographical representation, which gives developing countries four out of five regions.

In determining the composition of the EB, Parties may look to the executive boards of financial institutions, funds administered by various UN bodies, or those operating pursuant to a convention for guidance. The Montreal Protocol and the governance structure of the GEF are well known to many negotiators. But there are many other choices that illustrate the diversity of options. Table 2 summarises the salient institutional features of a number of such boards, including their voting procedures and administrative support.

²⁰ During COP-3 at Kyoto, the negotiating text on the CDM had at one stage specified that the EB be “an executive board of Parties”. As this would have excluded the GEF representative from being a full member of the EB, a number of developed country delegations requested deletion of the phrase “of Parties” to allow for such a possibility.

²¹ The June meeting of the Ad Hoc Group on Article 13 floundered precisely on the question of composition of the committee that would look into questions of implementation.

Voting. FCCC Parties have failed to agree on majority voting procedures for the COP.²² If followed, this precedent will hinder the consideration of voting procedures for a limited membership body like the EB. The EB's day-to-day functioning would be considerably hampered without voting procedures that allow it to work efficiently and speedily. Board members could block decisions at the board level knowing these would then have to be dealt with in the plenary body, the COP/MOP, where decisions are also made by consensus. This would, as a practical matter, render delegation of authority by the COP/MOP to the EB unworkable.²³

C. Organisational arrangements for essential CDM functions

Article 12(5) of the Protocol refers to "operational entities" designated by the COP/MOP undertaking certification of emissions reductions on the basis of additionality and other criteria discussed above. Article 12(7) mandates the first meeting of the COP/MOP "to elaborate modalities and procedures with the objective of ensuring transparency, efficiency and accountability through independent auditing and verification of project activities". As previously noted, the certification process must necessarily be tied to monitoring, which involves the collection of project data by direct measurement and its comparison with the baseline scenario. There must also be a sufficient level of verification to ensure that projects qualify for approval as established by Article 12 and by CDM authorities and to ensure the overall integrity and reliability of certification decisions and CERs. Further, there will be a need for bookkeeping to track CER trades and holdings as well as independent auditing of the CER accounts of Parties and private entities. The Parties must decide who should undertake certification, monitoring, verification, bookkeeping and auditing, according to what procedures and standards and how to ensure adherence to such standards. It would also be highly desirable to promote markets in CERs regardless of how the investment function is defined, to assist in arranging for financing for individual projects or 'packages' of projects and for the provision of insurance for CER futures and options.

There are essentially four choices of entities for carrying out these tasks: international institutions, national institutions, the private sector, or some combination of all three. Article 12 does not provide any guidance on how the appropriate operational entities should be selected. In the initial phase, the COP/MOP should be encouraged to designate more than one "operational entity" to carry out a given function in order to encourage competition between entities, thereby reducing costs and improving efficiencies. The COP/MOP may want to ensure, for example, that investors, project sponsors and host countries have a choice of operational entities at national, regional and international levels for their project needs. International organisations may have to prove they have a certain level of national or regional presence and the human and technical resources to cope with the certification process. Organisations such as the regional development banks and UNDP, with country

²² Rule 42 dealing with voting majorities remains bracketed. Article 12(5) of the Protocol applies the COP's rules of procedures to the COP/MOP *mutatis mutandis* unless agreed otherwise by the COP/MOP by consensus.

²³ The design of the EB is discussed in a paper prepared for the Working Group: Michaelowa A. and M. Dutschke, *Interest Groups and the Efficient Design of the CDM Executive Board*.

offices and a strong mandate in capacity-building, technical assistance and sustainable development, could be at an advantage, as could organisations like the International Energy Agency. Alternatively, there are a variety of private entities with very substantial capacity and experience for certifying the performance of various goods and services and projects.

National institutions could also be designated as operational entities provided they can demonstrate relevant expertise and resources. Numerous treaties dealing with trade in waste, chemicals and pharmaceuticals rely on national institutions to undertake awarding of permits or certification. National certification processes have certain substantial advantages over international operational entities. They may be more likely to enhance human development and capacity-building efforts in developing countries than if certification were done by international agencies. They might also generate greater public awareness and private sector involvement in developing countries than would be the case if a more remote, international agency were involved. Finally, the global market for CERs will spawn a new set of service industries. To maximise economic gains from the CDM, it is important that developing countries develop expertise in these new areas of economic activities. Otherwise, they risk becoming dependent on foreign consultants and agencies.

In Kyoto, some delegations argued that existing international organisations could play the role of operational entities. Regional development banks have been mentioned as having relevant expertise and experience. Some analysts think that relying on such banks, which are quasi-governmental and bureaucratic, might constrain, rather than foster, major private sector capital flows from industrialised to developing countries. However, it is clear that whether in the official capacity of operational entities or more generally as suppliers of project finance, regional development banks will play an important role in the CDM.

Most analysts seem to agree that verification, monitoring, certification, insurance and market-making functions should be assigned primarily to private sector institutions, although various international organisations and entities and domestic government agencies might also play a suitable role as operational entities with respect to some of these functions. If so, the role of the CDM Executive Board should be to set the rules and guidelines under which such organisations will operate as well as to accredit them. For example, Tietenberg et al. propose the following approach to certification by operational entities:

“The ultimate authority for certification would be the Conference of the Parties. While the Conference of Parties would be well-suited for defining the parameters of the certification process and exercising general oversight in that process, it would be ill-suited for dealing with the day-to-day operations of certification. The operational authority for certification can, and should, be delegated to subordinate organizations specifically designed to fulfil that function.

Although responsibility for the certification and verification of CERs would be vested in the subsidiary body, under stipulated circumstances that body would have the power to further delegate some authority to specific governmental units or private organizations, providing certain preconditions were met. These preconditions would include, (1) an identified organization willing and able to assume the responsibility for certification and/or verification; (2) the existence of sufficient enabling legislation to assure that it had adequate powers to carry out its mission, as well as adequate staff and resources, and (3) acceptance of, and willingness to apply, the standard certification and verification criteria”.

(Tietenberg T., Grubb M., Michaelowa A., Swift B. and Z. Zhang (1999)
International Rules for Greenhouse Gas Emissions Trading)

Whether or not one describes them as operational entities, national governments will play an important role in permitting and monitoring project activities and in enforcing their domestic laws. Host country governments may determine if a proposed project meets its criteria with respect, *inter alia*, to sustainable economic and social development, biodiversity, poverty alleviation and cultural and community values. Annex I country governments will also establish rules and guidelines governing the terms on which their nationals can earn CERs and apply them against domestic regulatory obligations as well as help satisfy such countries' international obligations. Such rules and guidelines may go beyond crediting issues, such as addressing the responsibilities of project sponsors to obtain host country approvals and meet certain standards of conduct.

It would be impracticable to conduct monitoring on a centralised basis. Monitoring can most appropriately be undertaken by project sponsors and reported in the first instance to host country governments, subject to suitable verification and safeguards. CDM authorities will of course have to specify monitoring, record keeping and reporting requirements.

More substantial issues are involved in the selection of the entities to undertake certification. As noted, certification of emissions reductions must be undertaken by "operational entities" designated by the COP/MOP. With respect to the auditing and verification functions, Article 12 (7) provides that they are to be "independent," that is, they cannot be undertaken by those directly involved in the development, financing or implementation of the project. Each of these tasks could be undertaken by the private sector, or by national or international bodies.

There is some confusion over the definition of verification and its relation to project approval and CER certification. This report proceeds on the assumption that there will be an initial stage of project review, approval and registration, followed thereafter by periodic *ex post* certification of CERs based on monitoring of project net emissions. It assumes that verification will occur at both stages. Operational entities responsible for project registration will verify that a project meets eligibility criteria identified by the CDM and will establish a project baseline. Subsequently, operational entities responsible for certification will verify the project's net emissions based on monitoring data and criteria and procedures established by the CDM. An issue may arise as to whether having these two functions performed by the same operational entity presents a conflict of interest. This could be resolved by having one entity perform registration and another the certification of credits.

Verification can only be done effectively by experts having technical knowledge of the CDM projects. A CDM energy sector project may require someone with an appropriate engineering background while a sinks project would require someone with a sound scientific understanding of carbon sequestration. To generate confidence, verification in connection with project registration and credit certification must be undertaken by institutions respected and trusted by Parties and whose impartiality is beyond question.

Decisions by operational entities to register specific projects or certify particular CERs could be subject to potential challenge and/or review through procedures to be established by the CDM before the decisions to register or certify were finalised. Further, if

the performance of operational entities in fulfilling these or other responsibilities were found by CDM authorities to be significantly deficient, their accreditation could be restricted, suspended, or revoked, or other sanctions imposed. As previously discussed, however, decisions to certify credits, once final, could not be subsequently revoked so as to invalidate or compromise the validity of the CERs issued.

Some Parties are likely to resist the international scrutiny inherent in an independent verification process. They may seek to limit or weaken verification procedures. Alternatively, they may promote a more decentralised verification process, which stresses the role of national institutions. It is difficult, however, to see how the impartiality and integrity underpinning verification could be maintained if verification were carried out by a network of national institutions. Parties participating in the CDM may have to accept international scrutiny as the price worth paying for the financial flows and technological transfers generated by CDM projects.

The bookkeeping task of keeping track of CER transfers and holdings by Parties and private entities is an administrative function that could be undertaken by the CDM administration or contracted out to a private entity. The experience with emissions trading in the United States indicates that bookkeeping is not a difficult task to carry out.

Auditing of CER accounts, including accounts of transfers and holdings involving Parties and private entities, could be undertaken by the private sector through firms marketing consultancy services in this area, including accounting firms or similar organisations. There is no reason to exclude non-profit organisations with the relevant expertise. The various standardisation organisations accredited by the International Standards Organisation (ISO) represent a hybrid example of private/public national bodies. At the international level, the Convention secretariat is the most obvious candidate. It is independent, has expert knowledge of national circumstances and inventories, could apply standards consistently and may be able to extend its capacity to cover these new functions at a modest cost. In this and other aspects of the CDM's operation, keeping the CDM's transaction costs as low as possible will be an important consideration.

D. Participation by public and/or private entities in the CDM

Article 12 sanctions participation in the CDM by public and private entities subject to "whatever guidance" is provided by the EB. It is clear that if the CDM is to work, it will have to encourage the full participation of the private sector. For this to occur, the private sector must have confidence in the operation of the mechanism. This necessarily involves allowing private entities a degree of participation in the mechanism. The COP/MOP and EB will have to deal with, *inter alia*, the following issues: (1) whether to allow public institutions funded by ODA from Annex I Parties to participate in the CDM; (2) how to exercise their institutional authority over public and private institutions that are outside the Convention/Protocol but associated with the mechanism; and (3) how to resolve disputes arising among the COP/MOP, the EB and other CDM components, including operational entities and other public and private institutions and entities.

(1) Entities funded by official development assistance

The direct participation of public bodies funded by ODA contributions from Annex I Parties in CDM projects raises the controversial issue of financial additionality discussed

above. To prevent the CDM from getting bogged down in political debates surrounding additionality, it has been suggested that Parties might want to agree that public funds from Annex I Parties will not be used to generate CERs. Public entities could participate in the CDM but would not use the ODA-funded elements of their operational budgets for claiming CERs for donor countries. If the GEF began to leverage private funds for CDM projects, however, it could potentially become involved in the generation of CERs. So too could other international entities, including the World Bank and the regional development banks, by serving as financial intermediaries and, as discussed above, by providing inducements for private investments in projects in developing countries that might otherwise experience difficulty in attracting such investments.

Alternatively, the participation of public entities in the CDM might focus on supporting developing country Parties' activities linked to the development and certification of CDM projects. Capacity-building and training projects are an obvious example. GEF public funds could, for example, support the work of its implementing agencies, such as UNDP, to help develop endogenous capacity relevant to the CDM.²⁴ This could include setting up national certification institutions or CDM focal points.

(2) Institutional relations with other entities

The CDM will involve a partnership of actors of diverse legal character: Parties, national and international organisations, agencies and other entities, as well as profit and non-profit private entities. In order to succeed in attracting CDM investments, stimulating successful projects and ensuring the integrity of CERs, policies and requirements adopted by the COP/MOP and the EB will have to generate legal, regulatory and financial certainty among these diverse entities as to their roles and ensure that their guidance is respected and is otherwise effective. The Parties have some experience with "contracting out" certain tasks to other international bodies. The GEF's operation of the Convention's financial mechanism is the best example. The relationship with the Intergovernmental Panel on Climate Change (IPCC) is another. By contrast, the COP has not had any formal relationship with private entities and those that have participated in the Convention process have done so as NGOs.²⁵

The COP/MOP will have to decide whether and who will enter into any contracts or memorandums of understanding with the various entities described above on behalf of the CDM, and on accreditation arrangements. Together with the EB it will have to specify the following:

²⁴ By COP3, only 3 developing countries had AIJ projects. Although many more have designated focal points and are developing AIJ projects, the majority have no direct experience of setting up and reporting on an AIJ project and are not practically familiar with the complex methodological and technical issues relating to the calculation of environmental benefits or baselines.

²⁵ The role of the business community and other NGOs has been on the Subsidiary Body's agenda since 1995 when COP-1 requested examination of the possibility of their involvement in response to a New Zealand proposal to establish a business consultative mechanism. Parties have failed to adopt any substantive conclusions.

- Tasks each entity must undertake and the time frame;
- Frequency of guidance;
- Reporting requirements (e.g. annual/quarterly reports, oral presentations at COP/MOP, subsidiary body or EB sessions)
- Institutional arrangements (e.g. a joint working group of officers, "observer" status for officers of the entity at the EB level, an inter-entity co-ordination committee, etc.)
- Frequency and basis of performance reviews of each entity
- Incentive/sanction structure suitable for each entity type to ensure adherence to guidelines.

E. Dispute resolution

The complexity of the CDM suggests that disputes can arise on a whole range of issues including decision-making within the EB, retention or accreditation of private entities involved in the implementation of the CDM, certification and verification of individual projects and CERs, bookkeeping and CER audits. Some examples of the disputes that may arise include the following:

- Disputes between, on the one hand, certifying entities and, on the other hand, investors, project sponsors, project host countries, or environmental NGOs, over decisions by certifying entities regarding project registration and CER certification. In addition, the EB may want to exercise the authority to review such decisions.
- Disputes between all of the entities described in the previous paragraph as well as CER buyers, over verifying entities' decisions concerning the validity of CERs previously certified. In addition, the EB may want to exercise the authority to review such decisions
- Disputes over bookkeeping and auditing decisions about the ownership and amount of CERs.
- Disputes regarding the retention or accreditation of private entities by CDM authorities, as well those relating to dismissal or revocation of accreditation.
- Disputes between investors, project sponsors and credit buyers, on the one hand, and host countries, on the other, over host country regulatory or other decisions that allegedly have frustrated project activities and their ability to earn credits.

To work efficiently, the CDM will have to associate with it one or more dispute-settlement mechanisms which delivers clear and determinative decisions in a speedy and cost-effective manner.²⁶ This becomes all the more necessary if the private sector is to be attracted to participate in projects on a large-scale. In particular, the COP/MOP will have to consider what mechanisms are needed for dispute settlement between the COP/MOP (and EB) and public and private institutions participating (either as project participants or as operational entities) in the CDM, as well as the role of national courts and the allocation of powers between these courts and relevant international bodies. This is a complex issue. We note that the legal framework for dispute settlement created by Article 14 of the FCCC appears ill-suited to creating legal certainty, even for Parties and that it is not applicable to entities that may be contracted or designated by the COP/MOP. It may be appropriate to consider developing a dispute resolution procedure as part of the CDM, along the lines of the GATT/WTO dispute resolution process, to resolve at least some types of disputes through procedures that will help promote consistency and uniformity in the development and application of the law governing the matters in dispute. This in turn implies that the CDM should adopt liability or other rules to deal with some of these disputes. Other disputes, especially those involving only private entities, may be appropriately resolved through contractual arrangements or by reference to domestic law and dispute resolution procedures.

²⁶ The design of appropriate dispute resolution mechanisms is discussed in Sebastian Deschler's *Dispute Prevention and Dispute Resolution in the Clean Development Mechanism* (New York University, Center of Environment and Land Use Law, May, 1999).

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ANNEXES

Article 12 of the Kyoto Protocol to the UNFCCC

1. A clean development mechanism is hereby defined.
2. The purpose of the clean development mechanism shall be to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention and to assist Parties included in Annex I in achieving commitments under Article 3.
3. Under the clean development mechanism:
 - (a) Parties not included in Annex I will benefit from project activities resulting in certified emissions reduction; and
 - (b) Parties included in Annex I may use the certified emissions reductions accruing from such project activities to contribute to compliance with part of their quantified emission limitation and reduction commitments under Article 3, as determined by the Conference of the Parties serving as the meeting of the Parties to this Protocol.
4. The clean development mechanism shall be subject to the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to this Protocol and be supervised as the meeting of the Parties to this Protocol.
5. Emissions reductions resulting from each project activity shall be certified by operational entities to be designated by the Conference of the Parties serving as the meeting of the Parties to this Protocol, on the basis of:
 - (a) Voluntary participation approved by each Party involved;
 - (b) Real, measurable and long-term benefits related to the mitigation of climate change; and
 - (c) Reductions in emissions that are additional to any that would occur in the absence of the certified project activity.
6. The clean development mechanism shall assist in arranging funding of certified project activities as necessary.

7. The Conference of the Parties serving as the meetings of the Parties to this Protocol shall, at its first session, elaborate modalities and procedures with the objective of ensuring transparency, efficiency and accountability through independent auditing and verification of project activities.

8. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall ensure that a share of the proceeds from certified project activities is used to cover administrative expenses as well as to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation.

9. Participation under the clean development mechanism, including in activities mentioned in paragraph 3(a) above and in the acquisition of certified emissions reductions, may involve private and/or public entities and is to be subject to whatever guidance may be provided by the executive board of the clean development mechanism.

10. Certified emissions reductions obtained during the period from the year 2000 up to the beginning of the first commitment period can be used to assist in achieving compliance in the first commitment period.

List of Technical Short Papers prepared

- Akumu G., *Equity issues in the Clean Development Mechanism with Emphasis on Africa.*
- Anderson D., *Defining CDM baselines: Criteria and Interim Rules for Early Implementation.*
- Asamoah J. and I. Amuah, *The CDM as a Mechanism for Technical Information and Technology Transfer.*
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- Karimanzira R.P., *The Clean Development Mechanism: How Developing Countries, Especially Africa, Can Attract Investments.*
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- Michaelowa A., *Interest groups and efficient design of the CDM Executive Board.*
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- Michaelowa A., *Clean Development Mechanism and Joint Implementation: Which Instrument is Likely to Have a High Impact?*
- Nyagba S.I., *A Preview from the Nigerian Cement Industrial Sub-Sector.*
- Philibert C., *The Clean Development Mechanism: An Economic Approach to ‘Environmental Additionality’.*

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Trines E., *Project Certification Under the CDM: Some Technical and Institutional Issues.*

Vrolijk C., *The Potential Size of the Clean Development Mechanism.*

Zhang Z. X., *Implications of the CDM for Developing Countries and Linkages Between the CDM and Emissions Trading.*

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