

# IRIS KYOTO

Innovative Risk Coverage and Financing of Projects related to the implementation of the CDM in India & Morocco  
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Workpackage 1 report: Tasks 1,2,3 & 4

## ANALYSIS OF CURRENT INITIATIVES & APPROACHES TO CDM RELATED PROJECT FINANCING AND RISK MANAGEMENT



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This document is volume 1 of the first workpackage of the IRIS Kyoto project.

Part 2 will be more focussed on projects:

More complete information on projects to be further analysed will be provided, as well as a synthesis of project risks and summary findings of discussions with the financial community. It will contain the findings and minutes of workshops held in Morocco, India, Paris and Brussels. This is scheduled to be available in April 2005.

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## 1 INTRODUCTION

### 1.1 Project Objective

This report is an output of a European Commission funded project called IRIS Kyoto. The objective of this project is to reveal innovative risk coverage instruments and clarify financing of projects related to the implementation of the Clean Development Mechanism (CDM) focussing specifically on India and Morocco.

The IRIS Kyoto project addresses important project development and financing barriers to the successful implementation of the CDM as presently proposed in the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC), building a practical methodology for bringing forward and implementing real CDM projects.

The project team, representing an international consortium of experts, believes that the actual development of projects under the CDM faces major bottlenecks, particularly in relation to the level of risk (of various types), that need to be removed all involved players. In addition, the project team believes that these underlying financial, political, and other risks, and market and non-market barriers reinforce the perceived risks of doing business in emerging markets, on the one hand, and add further to the difficulties in financing of clean technology projects, on the other.

In short, the team believes that, for the CDM to work, even more attention must be paid by national leaders, international donors and others to reducing risk than is paid for conventional investments. Without this attention, and without both national and international financial intermediation to reduce risk, the CDM will not become an instrument to promote investment in clean technologies that was anticipated in Kyoto in 1997.

### 1.2 Background : CDM, JI, Emissions trading

The Clean Development Mechanism (CDM) and Joint Implementation (JI) are market-oriented instruments aimed at addressing climate change problems, and were developed under the 1997 Kyoto Protocol to facilitate sustainable development in developing countries while enabling developed countries (referred to as Annex 1 countries) to meet their greenhouse gas emissions reduction commitments. Potential CDM projects include landfill gas, mini or micro hydropower plants, wind parks, biomass energy technologies and energy efficiency projects, among others.

The CDM was established under Article 12 of the Kyoto Protocol “to assist Annex 1 countries in achieving compliance with their quantified emission reduction commitments and to assist parties not included in Annex 1 in achieving sustainable development.”

Six years on, the CDM has been utilised in only a handful of projects. Few of the expectations raised in Kyoto in 1997 have been realised, for a wide variety of reasons. Traditional problems associated with investing in developing countries, along with other global and ethical hindrances have constrained private sector participation in the CDM.

Numerous people have commented upon the distinct possibility that CDM investments would track other direct foreign investment (DFI), and benefit only a handful of emerging markets (China, Brazil, India, South Africa, in particular). While there has been no rush to invest in the CDM in these countries, there has not been a rush to invest in the CDM anywhere in the world.

The Kyoto Protocol introduced three innovative mechanisms, the Clean Development Mechanism (CDM), Joint Implementation (JI) and Emissions Trading (ET).

JI refers to projects implemented in industrialised countries or economies in transition whereas the CDM refers to projects in developing countries. ET offers industrialised countries and private sector companies the opportunity to sell surpluses or buy so-called Assigned Amount Units (AAUs) if needed to meet their emissions reduction targets. Projects developed under JI and CDM can generate Emission Reduction Units (ERUs) through JI and Certified Emission Reductions (CERs) through the CDM. CERs generated through CDM projects, for example in Brazil or other developing countries, can be acquired by industrialised countries or companies within these countries to meet their emission reduction targets or to compensate for the omission of domestic or internal measures.

A CDM Executive Board and related expert panels have been established to elaborate the further modalities for CDM projects. The first round of applicants to become a Designated Operational Entity (DOE) - these entities are responsible for the validation, verification and certification of CDM projects - is under way. Furthermore, simplified modalities and procedures for small-scale CDM project activities have been established and the work on guidelines for methodologies for baselines and monitoring plans is ongoing. A Project Design Document (PDD) as well as a CDM Projects Activities Registration Form, both necessary for the registration of CDM project activities, have already been developed and a series of project proposals have been submitted to the CDM EB. In summary: most of the ground rules for the CDM are in place, setting the scene for a more active carbon market.

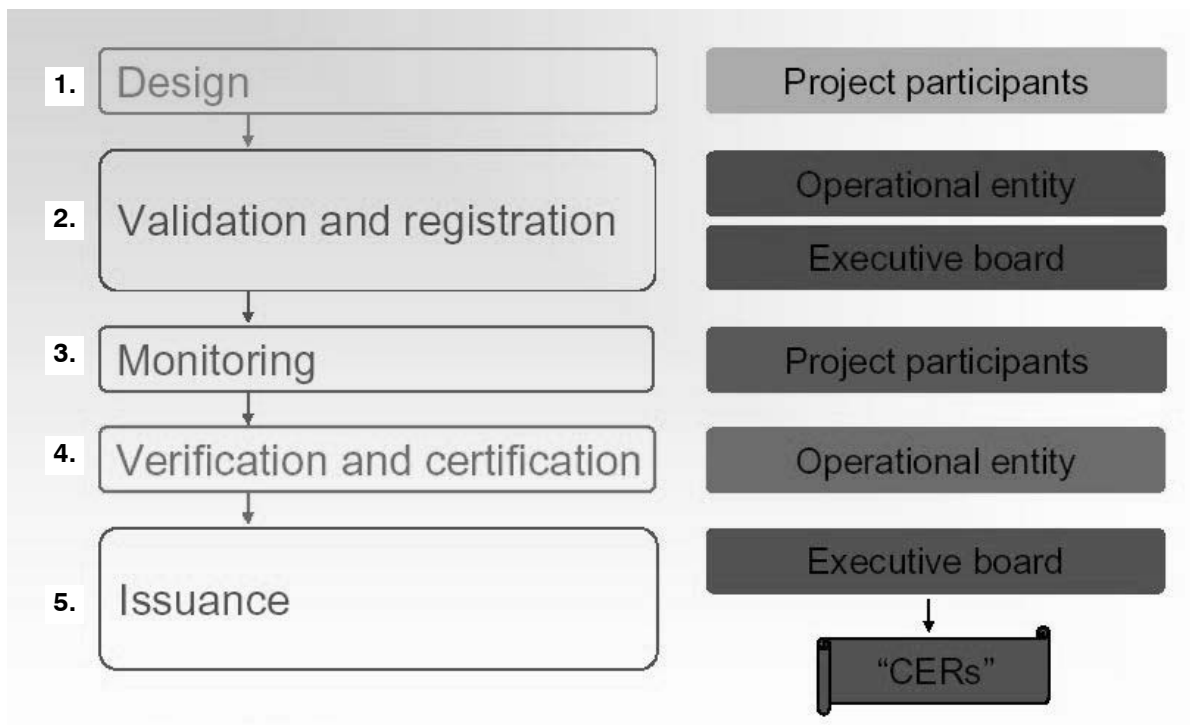
### **1.2.1 Clean Development Mechanism**

The Clean Development Mechanism has a triple purpose:

- ◆ to contribute to sustainable development by encouraging the use of sustainable energy and clean technologies in developing countries;
- ◆ to contribute to the absolute mitigation of greenhouse gas emissions and
- ◆ to enable industrialised countries to meet part of their emissions reduction commitments abroad in a cost-effective manner.

CDM Project Cycle:

The implementation of a CDM project requires several different additional steps that are additional compared to a conventional project cycle. The following figure shows the different steps and the parties involved in the related activities.



source: UNFCCC

The following documents or activities are included in step 1:

- Project design document
- Additionality and baseline methodologies (new or approved)
- Monitoring methodologies (new or approved)
- Select crediting period
- Determine project boundary
- Account of stakeholder comments and environmental impacts,

in step 2:

- Designated operational entity reviews project design document (PDD)
- This must meet validation requirements (new or approved methodologies).
- Designated national authority approves project activity
- Operational entity submits validation report to the executive board
- Executive board registers the project activity (an automatic step unless review requested),

in step 3:

- Emission reductions monitored by a project participant or a third party
- Monitoring plan included in the project design document
- Monitoring plan provisions
- Adjustment for leakage
- Preparation of a monitoring report,

in step 4:

- Designated operational entity:
  - Reviews monitoring and verifies reductions (ex post)
  - Certifies reductions (written assurance to the executive board)
- Certification report is a request to the executive board for CER issuance
- Verification, monitoring and certification reports made publicly available,

in step 5:

- Executive board issues CERs on the basis of the certification report (an automatic step unless review requested)
- CERs issued into the CDM registry
- CERs for the share of proceeds for administration and adaptation withheld
- Remaining CERs forwarded to Parties and project participants.

CDM-baselines:

Baseline and monitoring methodologies play a key role in determining how well the CDM functions as they help ensure that emission reduction credits claimed by CDM projects are legitimate. Proponents of a CDM project may use an approved baseline methodology to demonstrate that their project is truly "additional" and would not have happened anyway. It must also include an approved monitoring methodology to account for their project's actual emissions. A project, which properly applies a baseline and monitoring methodology and meets the other CDM requirements, could then proceed with the validation and registration.

The missing official approval of baseline methodologies by the Executive Board was one of the main obstacles for applying projects for CDM eligibility. So far 2 methodologies have been approved by the UNFCCC Executive Board on 28.07.03. The proposals had been developed for a landfill project in Brazil and an Hydrofluorcarbon (HFC) decomposition project in the Republic of Korea.

The following table<sup>1</sup> shows a summary of the current CDM projects by order of the Annex 1 buyer:

<b>Annex 1 buyer</b>	<b>Estimated amount of CERs</b>
11 PCF projects	27.000.000
18 CERUPT projects	15.000.000
2 INCaF and NCDF2 (Dutch) projects	21.000.000
7 Japanese projects	8.000.000

<sup>1</sup> Source: Energy Research Center of the Netherlands (ECN) "Overview of carbon transactions", march 2003

<sup>2</sup> Netherland's Clean Development Facility



The following table shows a summary of the current CDM projects by order of host countries:

Country	Projects	CERs
Brazil	8	52.032.346
Costa Rica	6	2.226.660
India	6	3.321.672
Panama	3	4.203.850
Guatemala	3	3.695.000
Chile	3	3.360.262
Thailand	2	1.185.076
Colombia	2	2.727.984
Malaysia	2	442.710
China	2	1.427.530
South Africa	2	3.907.722
Uganda	1	1.884.000
Bolivia	1	319.392
Jamaica	1	522.500
Mauritius	1	2.800.000
Nicaragua	1	212.395
El Salvador	1	100.000
Indonesia	1	5.432.469
South Korea	1	9.800.000

The following table shows a summary of the current CDM projects by order of the project type:

Project type	Projects	Tons CO2e	Percentage	
			CERs	Projects
Hydro	7	12.412.634	12	15
Renewables	24	17.351.912	17	51
Fuel Switching	4	29.883.723	29	7
Mono-culture plantation	1	4.299.951	4	2
Waste incineration	1	2.800.000	3	2
Gas Capture/removal	7	31.377.362	31	15
Energy efficiency	4	1.752.976	2	8

### 1.2.2 Joint Implementation

Joint Implementation (JI) promotes investment by developed countries and economies in transition (Annex I Parties), in projects that reduce GHG, which are undertaken within the territory of other Annex I Parties. The investor country or private entity is able to credit the resulting "emission reduction units" (ERUs) against their own emissions target.

While all Annex I countries could potentially host JI projects, it is only the Countries with Economies in Transition (CEITs), which are actively promoting themselves as hosts for JI projects.

#### Project Eligibility:

The JI rules are less concerned with project attributes and more focused on the attributes and capabilities of the Parties.

The requirements that must be satisfied by Annex 1 countries under JI are:

- The Country must be a Party to the Kyoto Protocol;
- It must have calculated and recorded its Assigned Amounts;
- There must be a national registry in place;
- There must be a national system for estimating GHG emissions;
- The country must have submitted annually the most recent required GHG inventory and supplementary information on its Assigned Amount.

For those countries in full compliance with all of the criteria for participation in JI projects there will be no internationally imposed requirements for JI. However, there may be national host country requirements that will need to be satisfied by JI projects, and the Parties involved will need to determine whether the emission reductions from a project are additional.

It should also be noted that the “rules” of the CDM make a clear distinction between a project and a project activity. Although the distinction may seem arbitrary, it provides a useful distinction of activities under a project. This distinction could enable a portion of a larger project to be eligible for the CDM in cases where an entire project would not be eligible due to various reasons, inability for the overall project to meet the additionality test. Although this distinction is not made in the JI rules, it is an important factor to bear in mind when defining the JI project and its boundaries.

### **1.2.3 Emissions Trading**

Emission trading, the third flexible mechanism under the Kyoto Protocol, works by a free trading of emissions among Annex B countries. Since no baseline is required for this type of trading, the emission reductions not necessarily require additional efforts.

The underlying principle of emissions trading is the assumption that it is not important where on the earth a carbon emission has been generated.

Market transactions are driven by relative prices of emission reduction opportunities among market participants. For example, a company with a low cost opportunity to reduce emissions below its allocation of emission rights can sell these unneeded rights to a company with limited or uneconomic emission reduction opportunities.

There are several emissions trading markets as e. g. the cap and trade model which plays a major role for Europe: Cap and Trade Programs are more evolved forms of emissions trading. A regulatory authority establishes an aggregate cap on the emissions of a pollutant that is a firm and permanent limit for a group of emitters. The allowed cap has historically been a fraction of the historic emissions from those sources. Emission Allowances are units of trade created to account for the total emissions in the system. Trading occurs when an

entity with excess allowances, liberated through actions or improvements made, sells them to an entity requiring allowances.

Recent examples:

January 2003 saw a number of significant carbon transactions . By far the largest one -- in terms of the volume of CERs transacted -- is the trade between Toyota Tsusho (Japan), the Dutch facility of the International Finance Corporation and the V&M Do Brasil (Brazil), facilitated by EcoSecurities, Ltd. Under the terms of this deal, IFC-Netherlands Carbon Facility (INCaF) will provide a conditional commitment to the Brazilian steel producer V&M do Brasil (V&M) to purchase 5 Mt CO<sub>2</sub>e. The total contract value is about €15 million. In addition, Toyota Tsusho Corporation is to sign a contract with V&M to purchase an additional volume of emission reductions that the project will generate. The transaction was called the largest CDM trade up to date, with the national involvement of Brazil, Japan and the Netherlands.

In the second significant deal, the Climate Trust of Portland (Oregon, US) transferred 52.500 MTCO<sub>2</sub>e (in CO<sub>2</sub>) to Seattle City Light (SCL) of Seattle (Washington, US) at a cost of US\$102.375 or US\$1,95 per metric ton. The project is part of Oregon Climate Trust's recent US\$6 million offset solicitation effort. The project is managed by the Civil Engineering Research Foundation (CERF) based in Washington, DC and will deliver a total of 350.000 MTCO<sub>2</sub>e at a total cost of \$682.500.

#### **1.2.4 CDM Linkage to the European Emissions Trading Scheme (ETS)**

The European Emissions Trading Scheme is an entity-based domestic cap and trade emissions allowance programme. Effectively, individual greenhouse gas emitting sites within the EU are to be allocated emissions permits, and will then be allowed to trade surpluses or shortfalls in those permits. The scheme is governed by Community Law using a special unit of trade – called “allowances.”

The ETS is compatible with international emissions trading under Kyoto, in terms of making a contributing towards Kyoto targets. It covers the EU 15 countries and the 2004 “Accession States” (those countries in central Europe due to join the EU in 2004)

There are two phases to the scheme. Phase 1 runs from 2005-07. This is a “warm up phase” including carbon dioxide emissions only. National Allocation Plans must be put forward by EU member countries by 31 Mar 2004. Phase 2: 2008 -12. Phase 2 will include other greenhouse gases. There is a penalty for non compliance of Euro 40/tCO<sub>2</sub>e and thereafter the penalty is Euro 100/tCO<sub>2</sub>e.

There are a number of reasons why it is desirable that ETS is directly linked to CDM. For example:

- Increase compliance options for entities
- Reduce compliance costs
- Host countries' Sustainable Development
- Promotion of environmentally sound technologies
- Stimulate the demand for JI/CDM credits
- Improve liquidity of ET market within the EU
- Drive environmental policy integration in EU

The ETS covers Energy – combustion installations over 20MW; Ferrous Metals; Minerals – kilns, glass, ceramic, cement and some other sectors (e.g. Pulp and Paper). Renewables, transport & other sectors are not included in the ETS.

A “cap” of 6% JI and CDM credits entering the ETS has been nominally identified, but a review process will determine whether this remains appropriate.

In principle, the ETS is a positive development for CDM projects. It creates a market that is accessible, for instance, by international companies that have liabilities in the EU and in developing countries, as well as providing wider options for transfer and sale of CERs in general. It also paves the way for a more fluid market in CERs with wider options for meeting climate change commitments.

## 2 SUMMARY OF PROJECT/CDM RISKS, & MITIGATION OPTIONS

### 2.1 Introduction

The CDM has been slow to take off for a variety of reasons. One of the most important factors that has impeded investments in the CDM is the level of risk associated with CDM investments. Reducing risk sufficiently to stimulate investment remains one of the biggest challenges for any investment in emerging economies.

With the level of complexity of the CDM (i.e. the additional requirements for a project to be eligible for emission reduction credits under the UNFCCC), risk reduction under the CDM must be one of the most important priorities for all those interested in the use of the CDM as a means to achieve global emission reductions under the Kyoto Protocol.

Defining risk is key to identifying means to reduce it, thereby stimulating investments under the CDM. The following categories are explored in sections 2.2 to 2.3.

#### **Traditional Risk: Investing in Emerging Markets in the Developing World**

- Political Risk, War, Civil Unrest and Expropriation Risk
- Economic and Foreign Exchange Risk
- Policy Risk
- Financial and Project risk

#### **Kyoto CDM Risk: Obtaining CERs from an Investment**

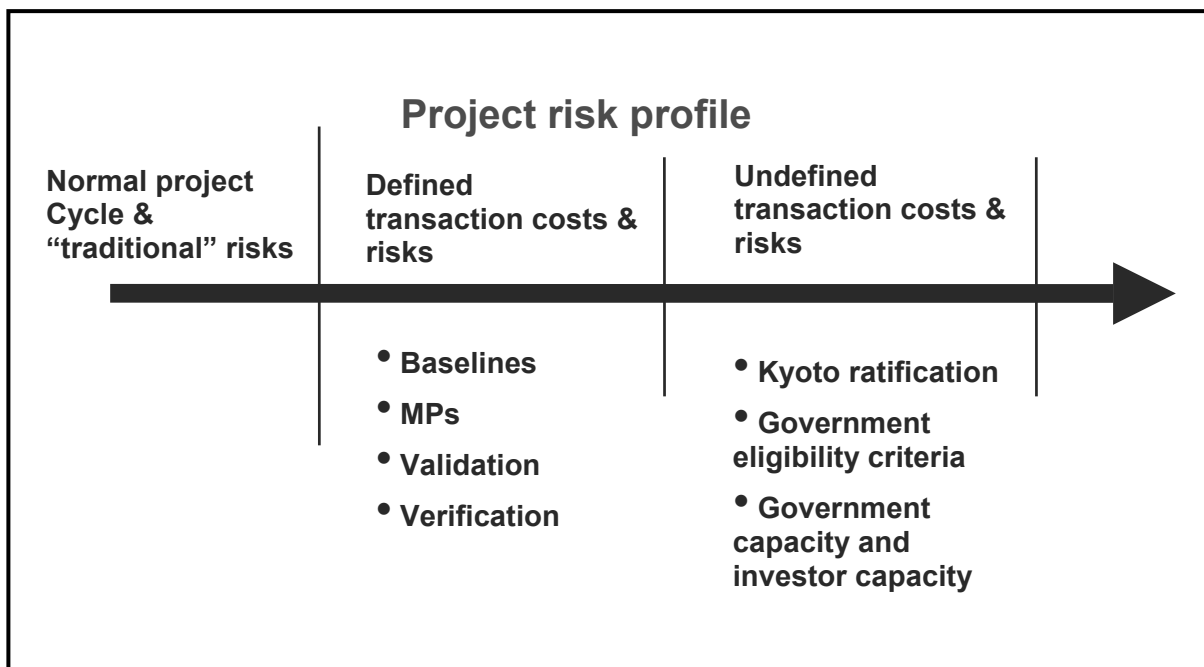
- Kyoto Protocol Ratification Risk
- Local Key Stakeholder Capacity and Awareness Risk
- Local Government Risk - UNFCCC DNA Host Country Approval and Agreement to transfer CERs
- Baseline Risk
- Validation, Monitoring and Verification Risk
- Executive Board Approval Risk
- Recipient Country Approval Risk
- Purchaser Approval Risk
- Emission Reductions Purchase Agreement Risk (term risk)

The flow diagram in section 1.2.1 illustrates the CDM project cycle. The different risks listed above (and detailed in sections 2.2 to 2.3) will impact on overall project risk at different stages of the cycle.

Since 1950, over 85% of the direct foreign investment (DFI) has flowed into ten developing countries that qualify as non-Annex 1 (non-OPEC) countries under the Kyoto Protocol, including Mexico, Turkey, Brazil, South Africa, India, China, Chile, Argentina, Thailand and Malaysia. It has been clearly understood, since the drafting of the Kyoto Protocol in late-1997, that the CDM could only stimulate investment in these countries, and more specifically in those countries that had not benefited significantly from DFI if significant improvements in the investment climate were made, using the CDM as a means to raise awareness and local capacity and willingness to support CDM investment.

**CDM investment cannot take place unless there is in the first place a sound project leading potentially to GHG abatement. This means that traditional risk must be significantly addressed even before any real consideration of CDM is made. Simultaneously, risks associated with the CDM must be significantly reduced and / or rewards increased if investors are to utilise this innovative new financing mechanism.** There must be considerable willingness on the part of Annex 1 countries and their institutions (specifically their development agencies, their export credit and investment guarantee agencies, their trade promotion agencies, among others)

**The CDM offers many developing countries new opportunities to attract DFI, but only where there is a concerted effort to address both traditional risk and project financing issues, on the one hand, and to address Kyoto-related risk and project financing risk, on the other hand.** Otherwise, the true risk of the CDM is that, as with traditional DFI, investments will flow to the same countries who have received DFI over the past fifty years. Again, Annex 1 countries and multilateral agencies can help to build the capacity, to raise awareness, to set up the local and international frameworks that mitigate both traditional project risk, and Kyoto-related risk. However, this must be done in conjunction, and with the full participation of the non-Annex 1 CDM countries.



## **2.2 Traditional Risk: Investing in Emerging Markets in the Developing World**

### **2.2.1 Political Risk, War, Civil Unrest and Expropriation Risk**

Political risk is found everywhere, and primarily stems from changes in governments, and, through those changes, changes in the policy and economic framework for investments, both domestic and foreign. Political risk is one of the most significant risks for foreign investors, particularly in developing countries where political change can be uncertain. It is one of the most difficult to mitigate, as the risk primarily lies in the possibility of significant changes in foreign and domestic policy that affect local investments, exports, imports, foreign exchange transactions, banking, and other finance.

Mitigating political risk is difficult, but is essentially done in the same way as economic and policy risk are mitigated, that is, through good local knowledge, good local relations particularly at a local government level, good local partnerships, and good relations with key government agencies and IFIs.

The type of risk associated with civil unrest, war and expropriation is covered almost entirely by export credit agencies and investment guarantee agencies such as the Swedish EKN, the US Export Import Bank, the German Hermes GmbH and a number of international and national insurance companies. As with foreign exchange risk, risk from these types of activities are covered through payment of premiums on the value of imported equipment, the value of the overall investment itself, or any elements of that investment. This is the primary means of mitigating this risk.

Both these risks are often covered by national guarantee agencies and depend on country risk analysis.

### **2.2.2 Economic and Foreign Exchange Risk**

Economic risk is that set of risks that is associated with the economic state of a country, particularly relating to its economic state of health. It also includes key elements of risk associated with the state of infrastructure, including urban and rural infrastructure, roads, telecommunications, education (and level of education of the work force), health (and level of health of the work force). The economic state of a country, including its GDP, the growth in its GDP, inflation, unemployment and these national, regional and local economic affairs all carry risks. These risks are known well to the investor community, and can be mitigated through government assurances, various insurance options, and a fundamentally good understanding of the economy, its workings and how to operate in that economic environment.

For the new investor, the easiest way to mitigate against economic risks is to have both a good local partner, and good relations with national, regional and local governments. Additionally, membership in local and international trade, investor and business associations (e.g., chambers of commerce, associations of manufacturers, business associations, etc.) is an excellent way both to obtain good risk profiles, as well as to mitigate a number of “traditional” risks. Such associations not only have good information, but they also tend to be

well-placed with local, regional and national governments, departments, ministries and even political parties in an effort to serve and protect their members' interests.

Regarding foreign exchange risk, the general economic situation of a country, quite independently from a specific project development, leads to fluctuations in the rates of exchange for various currencies used in the investment. A key risk is that of obtaining capital and inputs from abroad, and obtaining project revenues in a local currency that is subject to devaluation. Any investment where revenues from that investment are fixed in local currency is subject to major exposure and risk.

This is one of the most common investment risks, and one which is probably most easily covered through a variety of means. On a local level, investors are often able to "index" their sales prices (e.g., the price of goods and services) to the foreign exchange rate. For example, an investor who has imported a substantial portion of his/her capital from abroad for an electrification project will often be able to index the sales price of electricity to the rate of exchange (and often on the local inflation rate).

Moreover, there are a number of insurance schemes, from a variety of sources, to protect against foreign exchange risk. All the Bern Union Group of export credit agencies (ECAs) offer foreign exchange risk coverage. Investors pay a premium on the value of their imports from those countries, or on the value of investment (where investment guarantee or insurance schemes exist) to protect against foreign exchange fluctuations.

### **2.2.3 Policy Risk**

Policy risk is one that investors throughout the world are familiar with. This ranges from policy that directly impinges on investment (particularly foreign investment), ranging from energy sector policy (e.g., liberalisation, monopolies, etc.), policy towards land and other fixed asset ownership by foreigners, to travel, residency and other types of policies that determine whether a foreign or local investor has an easy time with investment, movement of goods, approvals, licenses, and the like. Whilst CDM does not require foreign investment, many CDM projects will require some degree of foreign participation, particularly in those investments involving new technologies, new techniques, and new markets, which many CDM projects require.

Policy risk can be mitigated primarily the same way as economic risk through good local knowledge, local partners, and local investment. Good contacts and understanding of local, regional and national political institutions, particularly those related to investments (ministries or agencies for the environment, for foreign investment, for immigration, for exports, for licensing, for energy, etc.) are essential. There are often programmes through national agencies and ministries, on the one hand, and through local and regional development banks and intermediary financial institutions (IFIs), on the other, that help mitigate both policy and economic risk.

These risks need to be addressed as policy changes directly impact the project underlying the creation of CERs, through a variety of avenues. For example, changes in policy on electricity sector regulation can directly affect the viability of renewable electricity generating projects.

Developers are often weary of such changes and hence reluctant to take long term risks. For funding agencies to cover the longer term of these risks would be an important contribution.





## 2.2.4 Project Risk

A poor project will not reach financial closure and ultimately fail to generate CERs under CDM. There are a number of factors that must be considered under project risk and some examples of these are shown below; they are not analysed in detail here as there is much literature available on this issue, which is not CDM specific:

- **Technology** – reliability of chosen technologies, license agreements, technology transfer, Environmental Impact Assessment
- **Resource** – fuel supply, renewable resource assessments
- **Off take** – power purchase agreement, tariff setting, regulation
- **Construction** – natural disaster, accident and liability,
- **Management and Operations & Maintenance** – logistics, revenue management

The way in which project financiers appraise a project and the related risks will determine the level of exposure and terms and conditions they are willing to offer the project: for banks offering loans, the higher the risk, the higher the interest rate and the shorter the term. For equity investors, return on equity (ROE) and exit conditions will be affected.

## 2.3 Kyoto CDM Risk: Obtaining CERs from an Investment

The CDM carries with it a set of risks that are both new and additional to traditional investment risk. Requirements for approval of a CDM project under the United Nations Framework Convention on Climate Change (UNFCCC) can, at first blush, appear to be daunting to the investor. The benefits of obtaining a stream of revenues from emission reductions sold from a CDM project need to be weighed against the risks and costs of obtaining approval for a CDM eligible project (local and national governments) and certification of the reductions by the UNFCCC CDM Executive Board, approval by a recipient country (Annex 1) to accept CERs from the investment project, and, finally, agreement with the purchasing party to pay for those CERs (and the risks associated with long-term purchases of any good, service or commodity).

Only through the concerted efforts of the UNFCCC, interested Annex 1 country governments, multilateral and bilateral institutions (e.g., development banks, aid agencies, etc.), the host and recipient governments themselves, will CDM investments make financial sense. Reducing or mitigating the “Kyoto risks” of an investment is a new area for international business, finance and insurance, but major strides have been made over the past two years, and major changes are taking place in the international community to set the framework for mitigating against most CDM-related risks.

### 2.3.1 Kyoto Protocol Ratification Risk

There are two elements of risk associated with the Kyoto Protocol ratification process, that of ratification in the host country, and that of ratification of the Protocol on an international level. The former risk can be mitigated to a certain extent through the lobbying and political action, in some countries, of key groups, including trade and business associations.

The risk of the latter – overall Kyoto Protocol ratification – is virtually impossible to mitigate or hedge against. At present, the key requirement for the Kyoto Protocol to come into effect is the ratification of the Protocol by the Russian Federation. Considerable lobbying on behalf of such ratification is being undertaken by the European Commission and a number of its agencies, and by all EU Member States, as well agencies and governments from Japan, Canada and others. Many international trade and business associations are also working with the Russian Government to assure ratification.

### **2.3.2 Local Key Stakeholder Capacity and Awareness Risk**

Besides the capacity building required for host governments, there are important risks that arise from the lack of familiarity of the indigenous or local private sector, and particularly on the part of local government authorities. The risks of roles associated with key government stakeholders is outlined in the next section, but in the case of the private sector, until local investors are familiar with the CDM and its potential benefits, its requirements, its processes, the process of CDM investment will continue to be difficult and ad hoc. In particular, there is reluctance, as with any new market opportunity that is particularly dependent on government department decisions, to be the first “test case” since this can involve a significant cost exposure.

A number of capacity building initiatives aimed at the private sector have been sponsored by donors and developing country governments worldwide. These can and should continue but the most important way for risk in this category to be mitigated is through government communications and transparency as detailed in the following section.

### **2.3.3 Local Government Risk - UNFCCC DNA Host Country Approval and Agreement to Transfer CERs**

The Kyoto Protocol requires a level of capacity and familiarity at a national government level that is often lacking in both emerging and Annex 1 countries. Effectively, each host government has a Designated National Authority or “focal point” for Kyoto which has primarily been engaged in all the UNFCCC discussions and developments since the Rio Conference in 1992.

More often than not, these focal points are relatively small, understaffed departments in ministries of environment, often in climate and meteorological departments, with little experience, understanding or capacity to deal with the private sector. They lack the personnel and skills to understand the needs of investors and financiers, and lack the inter-governmental contacts for promoting projects and project sponsors that are now coming to them for assistance under the CDM.

Moreover, most of these focal points lack the political clout or sway of those national agencies, such as ministries of finance, ministries responsible for investments, exports and imports, and other technical ministries who deal with the private sector on a regular basis. They often lack the credibility with these ministries and agencies to put forward cases to support investors under the CDM, particularly considering that CDM type investments and criteria that must be set for CDM approval are often politically weighted. Consequently, investors are often unable to find the answers to the questions they seek regarding transfer of CERs, eligibility of investments, investment guarantees, licensing, registrations, and the manifold requirements investors have for any investment, let alone one under the CDM.

This adds substantial risks to the CDM process, making it unappealing to many investors who do not have the resources for prolonged investigations and discussions with agencies that might or might not be responsible for promoting or supporting their investment. An increasingly frequent refrain from potential CDM investors is that it is less trouble “just to invest in a traditional project than to go the CDM route”. This, in and of itself, can be a recipe for stifling, if not killing CDM projects.

The chief manner for mitigating this type of risk requires three party participation, good will and co-operation. The host government, on the one hand, must be willing and able to bring all agencies key to the CDM together to set out a framework for a type of “one stop shop” for CDM investors whereby they can obtain all, or most of the information they need on who to see, on what matters (e.g., licensing, permits, transfer of credits, etc.), and with a good idea how long the process should take.

This is not beyond the means of most of the countries who have attracted the bulk of the direct foreign investment over the past five decades, but it is for the majority of the developing countries. This makes it essential for the international community to work with these host governments to help bring about the consensus of the actions required, to help set up dedicated CDM units (wherever they might be located) that can serve as “on stop shops” for investors, to help build awareness at a national, regional and local level of the CDM, its potential benefits, and the process of participation.

A good case of where this process has gone well, which has been supported substantially by the EC, is Uganda, where, after an EC capacity building project, support from two EU Member States, the World Bank and the UN, the national investment authority, working hand-in-hand with the UNFCCC focal point has become a dynamic, proactive CDM promotion centre, with dozens of potential projects in the pipeline. The process by which this has been achieved illustrates in many important ways how risks to potential CDM investors can be mitigated in a manner that satisfies government, local and international NGOs, and the private sector community. Similar examples can be found in Zambia and elsewhere in some of the least developed countries in the world.

In line with the capacity building and consensus building identified above, it is crucial that those host country agencies and institutions responsible for exports, for export approval, for environment and for the legal framework for international treaties and trade, all agree the process and methodologies, and the legal framework for, the transfer of CERs to recipient countries for eligible projects under the CDM.

In all cases it is crucial that the national legal authorities (e.g., auditors and attorneys general) need to be involved in this process, understand and make determinations on whether transfers of CERs constitute transfers of sovereign rights, exports of goods or exports of services. The rules of approval and transfer need to be as transparent and understandable as the rules for exports of goods and services under “traditional” investments.

The legal framework for approvals, for licenses, for permits need to be developed, simplified, and made as common as the legal framework for other exports. Agencies charged with promoting and encouraging exports must understand the CDM process as well as they understand “traditional” investments and exports. Key private sector and trade associations need to be involved in this process so that there is confidence that officials responsible for ensuring that bona fide CDM projects receive the support and approval they require.

Only in an environment such as this will investors view the CDM as an acceptable and profitable alternative to “traditional” investments. Reducing “official” host country risk is of crucial importance to the CDM’s success, and international agencies, donors, recipient country governments (Annex 1 governments) and NGOs must provide the capacity building and awareness raising support that ensures this happens.

### **2.3.4 Baseline Risk**

Baseline risk is about the reliability of the measurements of emissions credits, and the methodology followed in arriving at the estimated amount of credits.

Baseline risk assessment is critical to the performance of CDM projects since it sets the pace implementation and the marketability of the resulting credits. Unlike JI projects, CDM projects must have project specific baselines, and although the methodologies used may be homogenous, there is no guarantee that they will be approved for CDM registration. Baseline methodologies are ultimately approved by the CDM Executive Board.

Mitigating baseline risk requires proactively dealing with eligibility, design and project performance problems, all of which are sometimes underestimated. Players like the Prototype Carbon Fund, Swiss Re and Arm Carbon Team recommend that investors in CDM projects should ensure that the estimated emission reductions are Kyoto-compliant, and that baseline assumptions remain valid overtime. The Dutch CERUPT program places a strong emphasis on their baselines because they “represent GHG emissions in the absence of actual project activity”. Producing a credible reliable, baseline is the greatest challenge for investors in CDM projects, which prompted the Dutch ministry of environment (VROM) to introduce the following five checks for its project baselines:

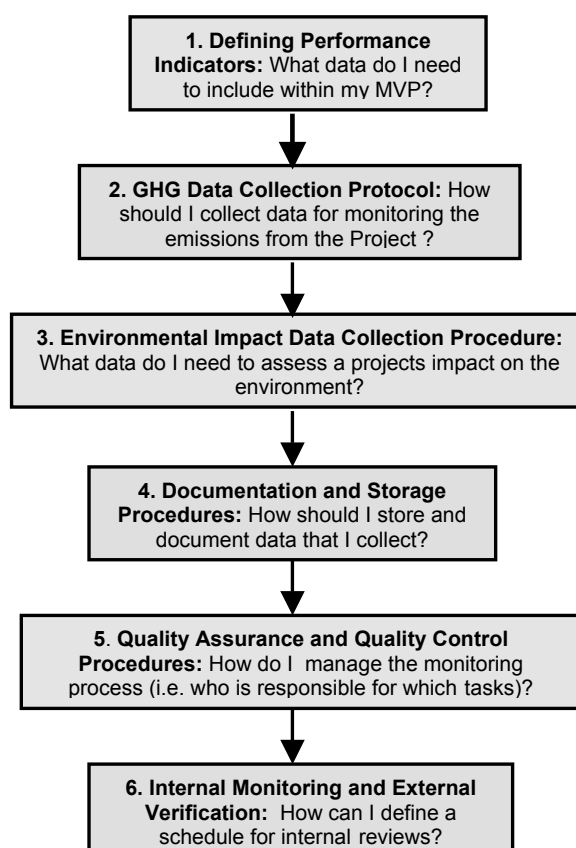
- Is it realistic from a financing perspective?
- Would there be sufficient local support?
- Would other physical obstructions such as fuels, skills and techniques impede baseline from ever being realised?
- Can legislation and other obligations be enforced?
- Is the economic attractiveness of the project equal to the baseline? Does it effectively capture the business-as-usual scenario?

It is easy to undermine a good project with poor documentation, validation and verification, and believe that this alone can undermine the success of the CDM projects in developing countries. PCF also counsels that to reduce baseline risk, emission reduction estimates should be reasonably conservative, and there should be rigorous monitoring of outcomes during project implementation.

### 2.3.5 Validation, Monitoring and Verification Risk

CDM projects must be validated and this task is performed by “Designated Operational Entities.” DOEs are accredited by the CDM Executive Board. They act as a type of “auditor” who checks the validity of the CDM documentation, and effectively certifies that CERs may be issued by the Executive Board. This is done when information related to the achievement of GHG reductions has been checked using the project Monitoring and Verification Protocol. All of these steps have related risks, which will be specific to the individual project. In general however, clear communication between project developers, the DNA and other government agencies involved in CDM projects can lead to mitigation of these risks

#### *Typical Contents of an Monitoring and Verification Plan<sup>3</sup>*



<sup>3</sup> Source – CDM CAPSSA Guidelines, 2003

### **2.3.6 Executive Board Approval Risk**

It goes without saying that until the UNFCCC Executive Board (EB) has developed enough guidelines, backed up by enough case studies, CDM investments will be very risky. The recent decisions by the EB's Methodologies Committee in June 2003, and subsequent confusion regarding the process by which the decisions were made on baseline and monitoring plan methodologies, has, at a minimum, confused many CDM investors and many agencies supporting the CDM process.

It should be noted that, at this stage of the Kyoto process, those investors who have developed project concepts with baselines, and monitoring plans, are at the cutting edge of the CDM, and have taken significant risks in proceeding with a process that has yet to be proven. The bulk of potential investors are waiting for the road to be constructed, the rules to be defined, the risks reduced before developing CDM projects.

The most important message from this process is that the Executive Board must realise that every decision they take, every process they endorse or reject, has significant implications on the CDM investment process. It is important to realise that without private investment CDM will not take place.

Therefore, it is of major importance for the Executive Board to seek to reduce risks to investors as much as possible, while ensuring the environmental integrity of the CDM. The most important way the EB can mitigate investor risk, and send the right signals to the investor community, is to develop the "rules of the road" quickly, making the rules as transparent and easy to understand as possible, and to ensure that the approval process is accelerated and promoted in such a manner as to assure the investor community that the EB consider them to be crucial for the success of the CDM process.

It is crucial for the EB to bring the investor community much further than previously into the process of setting the rules and the standards for the CDM as essential partners in that process. These actions would go far to increase investor confidence in the CDM and accelerate and broaden private sector participation in the CDM. Without this, investor confidence and interest in the CDM will wane. This would be an unfortunate outcome of the UNFCCC Kyoto process.

### **2.3.7 Recipient Country Approval Risk**

A number of countries, particularly several Member States of the EU and Japan, have initiated innovative programmes to promote the CDM, to build capacity to develop CDM in host countries, and to support investors in the CDM process. All Annex 1 countries need to focus much more than previously on setting out their policy framework for the use of CERs to meet national compliance requirements. Considerable progress has been made in this regard through the European Commission's Emissions Trading Scheme Directive, particularly the so-called "linking" initiative for the CDM and JI.

The private sector in all Annex 1 countries need to receive assurance that the CDM is viewed as an integral and essential mechanism for Kyoto compliance, whilst also setting out clear, transparent and easily comprehensible rules of the road regarding the use of CERs in their

countries. This, perhaps more than any other actions highlighted herein, would send the right signals to the investor community that the CDM is an important economic instrument.

This would significantly reduce investor risk, particularly if this were backed up with actions such as the active participation of export credit agencies in CDM projects, the active promotion of investments in the CDM by recipient country export agencies, environmental agencies and national trade bodies.

Simultaneously, the private sector, their associations, and the finance sector, need to understand that credits obtained through the CDM are important means for achieving national emission reduction targets. It must be clearly understood that CERs are key to achieving compliance under the Kyoto Protocol. This will go far to stimulate market demand for CERs, thereby stimulating investment through the CDM.

### **2.3.8 Purchaser Approval Risk**

With increased volume of transactions, with growing certainty from the Executive Board and recipient countries, more purchasers will enter the market place for CERs. Transaction costs will reduce as more buyers enter the market. With more transactions, demand for CERs will grow as important new financial instruments as a means to hedge risk, as a means to diversify investors' portfolios, and as derivatives for achieving a number of financial objectives. As transactions increase and become more routine, the risk of finding markets, and completing transactions will diminish, thereby stimulating more investment.

### **2.3.9 Emission Reductions Purchase Agreement Risk (term risk)**

In line with the above, with increased transactions, growing investments in the CDM, competition will grow as more investors enter the market. With growing competition, the risk associated with the long term price and demand for credits will reduce. This "term risk" will diminish because investors will have more buyers to sell to, and will thereby be able to negotiate better, more favourable terms for the long term flow of credits generated by their CDM investments. This will all lead to more market maturity, thereby reducing risks under the CDM and stimulating investment in the CDM.

It is crucial for the CDM market to grow and diversify if it is to become the instrument it was intended when the Kyoto Protocol was negotiated in 1997. CERs generated from bona fide CDM projects must become tradeable, common financial instruments in order to generate sufficient demand to reduce risks to investors in CDM projects. Growing institutional, government and market certainty can only help to make the CDM a less risky process than it is at present, to make it an investment instrument that is more attractive than "traditional" investments in emerging economies. Until this occurs, the CDM will remain a risky, case-by-case instrument that will only be utilised institutionally, not by the market.



### **3 SUMMARY OF CDM/JI STATUS**

#### **3.1 Introduction**

The level of interest and desire among investors and project developers to develop CDM projects is evidence that it will soon develop into a dynamic instrument for reducing greenhouse gas emissions – at least in some countries. Stakeholder interest in the CDM will become much greater when the “rules of the road” are better understood, when a number of projects have been approved, when experience with reducing transaction costs has been gained. Investments will accelerate when the CDM Executive Board gives its approval to the various new baseline methodologies that have been submitted. There is reason to expect growing clarification since the Executive Board recently approved two of the 20 methodologies that have been submitted since April 2003. With the European Union’s Emissions Trading Scheme coming on line in January 2005, with its portal for allowing companies in the soon-to-be 25 Member States of the Union, CDM has received a major boost.

Developers who had their projects denied approval in June 2003 should therefore not lose hope. At its first ever review meeting, the Executive Board rejected all the pioneer CDM methodologies projects on grounds that they lacked enough scope for additionality, and did not provide evidence to show that they would not have taken place in the absence of the CDM.

Available evidence shows that 2003 has already seen three rounds of submission of new methodologies to the Executive Board for approval, with the first round which ended in April seeing the highest number (16) of submitted methodologies. Only two methodologies were submitted in the second round while four were submitted in the third.

The absence of CDM project precedent has proved to be a major hindrance to future prospective investments, more so because of the desire by many, including many non-governmental organisations (NGOs), to ensure that emissions reductions and trading are as credible as possible and bring about real, demonstrable emission reductions. This adds a further level of risk to CDM projects. The potential for rejection on the grounds of not meeting environmental standards set higher than non-CDM projects, makes the CDM less attractive than conventional investments, and is leading a number of firms to proceed without CDM benefits.

All in all, the issue of additionality appears to be a primary factor affecting implementation of the CDM. When CDM Executive Board, following the recommendations of its “Methodologies Committee” rejected 12 new methodologies that were submitted, it signalled the level of difficulty investors and project developers would face in registering projects under the CDM. The Executive Board’s eventual approval of two new methodologies is a positive indication that uncertainty regarding CDM rules can be diminished, but there is a long way to go to reduce this type of uncertainty under the CDM enough to stimulate major investment using the Mechanism.

### 3.2 Additionality

One of the three criteria for registering CDM projects as spelt out in Article 12, section 5 of the Kyoto Protocol is the requirement that projects must “produce reductions in emissions that are additional to any that would occur in the absence of the certified project activity”. The implication of this is that projects cannot be certified just on the basis of promoting energy efficiency or enhancing sustainable development. The Coordinator of the UN’s cooperative mechanisms program, Christine Zumkeller stated mid 2003 that projects have to fully satisfy the question, “why would this not have happened anyway?”

A 2003 WWF International Report titled “Free-Riders and the Clean Development Mechanism” expresses concern that the CDM could give rise to “a considerable amount of spurious emissions allowances by crediting non-additional (or free-rider) activities that would have taken place even in the absence of the CDM” and warns that “free-rider credits from non-additional projects could reach a magnitude that has not previously been appreciated. Such sentiments have prompted a more critical look at the rules and regulations guiding implementation of the CDM, especially since they are coming from international NGOs. They have also left many potential CDM investors wary and generally confused about the wisdom of getting involved with CDM projects.

### 3.3 Kyoto Protocol Ratification

Despite accepting, approving or even ratifying the Kyoto Protocol, many countries have not yet integrated it into their national policies. Developing countries especially have been slow in making legislation to specifically address climate change problems, and some of them even lack institutions and technical experts for implementing the CDM.

The CDM is a market instrument under the Kyoto Protocol that was developed to address the harmful climate change effects such as rising temperatures, changing weather patterns, poor agricultural productivity, sea level rise, and more severe droughts.

128 countries have so far appended their signatures to the Protocol since it was adopted in 1997. With some of the world’s major polluters still refusing to accept or ratify the Kyoto Protocol, instruments such as the CDM has hardly taken off partly because of a small number of buyers and sellers of emission reductions. The Kyoto Protocol thermometer (a brainchild of the Secretariat of the United Nations Framework Convention for Climate Change) shows that ratification of the protocol by the USA and Russia, whose individual emissions total 36.1% and 17.4% respectively, would give it remarkable impact. However, 59 countries had ratified it by 6<sup>th</sup> June 2003, 11 of whom are members of the European Union..

In a nutshell, 28 out of 34 Annex 1 countries have ratified the protocol. Australia, Russia and the USA are some of the countries still refusing to ratify the protocol and between them are responsible for almost 60% of global GHG emissions. Their argument is that it could strangle business in their countries, and cause an economic downturn. This in effect means that the protocol cannot yet come into force until ratification has hit the 55% mark.

Due to the rules governing the Kyoto Protocol, Russia’s ratification is of prime importance. A bill to approve the ratification is expected to be submitted to the Russian lower house before the end of 2003, ending the uncertainty on entry into force of the Protocol.

Many developing countries have ratified the Kyoto Protocol, which is quite expected since they stand to be the main beneficiaries through increased income from CERs sales, increased direct foreign investment and the adoption of cleaner renewable energy. Although 39 OECD countries have of today ratified the Kyoto Protocol, the refusal of the United States of America (USA) to ratify the protocol has hampered its successful implementation. The USA is the world's biggest polluter, and if its large corporate world were to participate in the implementation of the protocol, it would boost CER market size and most likely the price of CERs traded.

### **3.4 CDM Buyers – status and projects**

With reductions in GHG emissions as the key objective, CDM projects have mainly tried to achieve this through securing improvements in energy efficiency, generating renewable energy, and implementing afforestation and reforestation projects (carbon sequestration).

Categories of CDM projects include renewable energy projects, fuel switching projects, as in industry and transport, solid waste management, advanced coal-based power generation technologies, renovation and modernization, demand-side management and industrial energy efficiency improvement: clearly, the project must reach closure for the emissions reductions to be possible and foreword buying of credits may be a source of finance which can contribute to financial closure.

Potential CDM credits buyers include industrialised countries (categorised as Annex 1 by the Protocol), multilateral agencies such as the World Bank and the United Nations Environment Program, and multinational corporations (mostly those in the energy sector).

The following table represents a summary of CDM/JI buyers, proposed projects, and current project status.

Due to the delay in ratification of the Kyoto Protocol, the lifespan of some credit purchasers (specifically created to perform that function) has had to be extended in order for them to remain active participants. These include the Dutch government's IFC program, the Swedish government's SICLIP, and the Finnish government's carbon purchase program, all of which were due to end by 2002.

In the section which follows, a few examples of funds are provided. Please note that the section does not have the ambition to be exhaustive but will cover:

- Initiatives from multilaterals
- From bilaterals
- From private companies

Purchasers of Carbon Credits	Eligibility	Geographical scope	Transactions	Comments
<b>Institutional Purchasers</b>				
<b>PCF</b> (private sector and government participation) <a href="http://prototypecarbonfund.org">http://prototypecarbonfund.org</a>	All GHG of the KP. Attempts to meet the agreed CDM rules. Priority to renewable energy technologies, though energy efficiency and afforestation/ reforestation may also be supported.	Economies in transition and developing countries	Purchase of carbon credits from project entities. Also working through intermediaries being funds, development banks etc.	Scheduled termination: 2012 Expects to fund 25-30 projects by 2004.
<b>Dutch Government (ERUPT, CERUPT; IBRD and IFC facilities)</b> <a href="http://www.senter.nl/">http://www.senter.nl/</a>	All GHG of the KP. Attempts to meet JI and CDM project criteria.  IBRD/IFC facilities apply to CDM projects only.	Economies in transition - (ERUPT).  Developing countries - (CERUPT and IBRD/IFC facility)	Purchase of carbon credits from project entities through tendering process.	ERUPT/ CERUPT projects selected end 2002. Duration of program uncertain. IFC operates from 2000-2003? IBRD facility operates from 2000-2002; may be extended from 2002-2004.
<b>IFC - Netherlands Carbon Facility (INCaF)</b> <a href="http://www.ifc.org/enviro/EMG/CarbonFinance/carbonfinance.htm">http://www.ifc.org/enviro/EMG/CarbonFinance/carbonfinance.htm</a>	CDM projects only. Renewable energy projects, energy efficiency projects, recovery and utilisation of methane, fuel switching.	All non Annex-1 countries	Payments over a period of 7-14 years upon annual certification.	The Facility will purchase GHG ER for the benefit of the Government of the Netherlands. €44 million available until 2005.
<b>Swedish Government Programme (SICLIP-CDM)</b> <a href="http://www.sida.se/Sida/articles/11500-11599/11518/">http://www.sida.se/Sida/articles/11500-11599/11518/</a>	Only CDM projects (excluding reforestation and afforestation), all GHG. Emphasis in contribution to sustainable development.	Developing countries that have ratified or plan to ratify the KP	Purchase of CERs. On a project by project basis up-front purchase will be possible.	End of programme December 2002
<b>Finnish government program</b>	All GHG of the KP. Attempts to meet JI and CDM criteria	Economies in transition and developing countries	Purchase of carbon credits from project entities	Duration of program: 1999-2002.
<b>Community Development Carbon Fund (CDCF)</b>	Small GHG reducing projects. Compatibility with UNFCCC definition of "small scale CDM"	Priority to small island DCs and LDCs	No > 20% of capital in one country	Launched September 2002, operational July 2003. Public and private shareholders.
<b>Austrian Government</b>	<b>To be announced</b>			
<b>Semi-institutional purchasers</b>				
<b>TransAlta</b> <a href="http://www.transalta.com">http://www.transalta.com</a>	All gasses. No restrictions but preference to: energy efficiency, energy savings in residential and industry, fuel switch in transport, renewables, CH <sub>4</sub> capture from landfills and soil conservation.	Worldwide	Purchase of GHG emission reduction credits	Greenhouse Gas Request for Proposal, ongoing.
<b>The Climate Trust (Organization charged under Oregon law)</b> <a href="http://www.climatetrust.org/index.html">http://www.climatetrust.org/index.html</a>	All gasses of the KP. Carbon reduction and carbon sequestration. Projects not verified by third party may also apply.	Worldwide	Purchase of emission reductions to offset emissions from new energy facilities in Oregon and other places.	Request for proposals in 2000 and 2001.
<b>Ontario Power Group</b> <a href="http://www.opg.com">http://www.opg.com</a>	Mainly emissions trading from North America, with "like CDM" pilot programme probably in Latin America. Little interest, except on pilot basis, on project based instruments.	North America, with pilot possibly in Latin America.	Purchased over 40 million tonnes CO <sub>2</sub> 1998 to present. Commitment to purchase 60 million tonnes GHG (2005)	Will become the largest carbon purchaser in 2002
<b>BC Hydro, Request for GHG Offset Proposals</b> <a href="http://www.bchydro.com/">http://www.bchydro.com/</a>	All gasses of the KP. Eligible are: emission reduction/ avoidance and geological sequestration. Biological sequestration does not apply	Worldwide.	Purchase of emission reductions	Request for proposal by January, 2002 on 5,5 mt GHG offsets

Table 1: Summary of Existing &amp; New Carbon Purchasers (from CDM CAPSSA 2003)

### 3.4.1 Initiatives form multilaterals

#### 3.4.1.1 European Community Emission Allowance Trading Scheme

In October 2001, the Commission made a proposal for a Directive establishing an Emission Allowance Trading Scheme within the Community, covering carbon dioxide emissions from large stationary sources including power and heat generators, oil refineries, ferrous metals, cement, lime, glass and ceramic materials, and pulp and paper. National authorities will issue site-specific greenhouse gas emission permits to installations setting requirements for monitoring and reporting emissions of greenhouse gases. Member States will allocate EU emission allowances to installations, based on a national allocation plan developed in accordance with common criteria. Holdings of allowances will be recorded in a registry in each Member State, and four months after the end of each year, operators will be required to hand over allowances equivalent to the installation's emissions during the preceding year to the national authority.

The Council adopted a Common Position on this Directive on 18 March 2003, for the EU-wide emissions trading to start in 2005. It is envisaged that the EC emissions trading scheme will apply to the EEA and Acceding countries, and can be linked with other domestic emission trading schemes in third countries that have ratified the Kyoto Protocol.

As reaffirmed by the Commission in the Common Position it has been published by the first half of 2003 a Directive for linking project based mechanisms including JI and CDM with the EC ETS (23.07.03). The proposed Directive is set to become an amendment to the Directive on emissions trading agreed upon by the EU Parliament 2 July and approved by the EU Council 22 July.

Linking JI and the CDM to the Community scheme implies the creation of a bridge between two different frameworks. JI and the CDM are project-specific, based on a baseline and credit approach with an ex-post verification of emissions reductions achieved, while the Community scheme is a "cap and trade" programme for the reduction of greenhouse gas emissions based on ex-ante allocation of emission allowances to covered installations. This proposal reflects the fact that these two frameworks differ in many aspects (different institutions involved for the issue of emission allowances and credits, different timing for the implementation, different units of account).

The starting point is that JI and CDM credits are recognised as being equivalent to EU emission allowances from an environmental and economic point of view. Consequently, the proposal does not modify the project cycles through which JI and CDM credits are issued. It means that the proposal is based on trust vis-à-vis the Kyoto system and the competent institutions, in particular the CDM Executive Board and the Article 6 Supervisory Committee.

A remaining crucial aspect of EU ETS implementation is last not least the approach to manage new entrants. The member countries must decide between allocating allowances to new entrants free of charge from a reserve pool (free entry) and requiring new entrants to cover their emissions on the market (paid entry). Attention to the selection of method is crucial, as inconsistent treatment of new entrants will result in competition distortions and could influence which parts of Europe experience livelier industrial and economic growth.

#### 3.4.1.2 Prototype Carbon Fund

### Background

A pioneer in establishing a vibrant market for carbon credits within the Kyoto Protocol framework, the Prototype Carbon Fund (PCF) remains a leader in identifying and providing potential Clean Development Mechanism (CDM) and Joint Implementation (JI) projects with financial and technical assistance. The Fund was established in 1999 by the Executive of the World Bank with the aim of stemming climate change impacts upon its clients in the developing world. The Fund is supported with contributions from Annex 1 countries, mainly from the European Union, which are interested in pooling resources for investing in CDM/JI projects. The main strengths of the PCF include initiating a “learning-by-doing” process among its stakeholders, and building strong public and private partnerships. The World Bank also recently created the PCF*plus* program whose activities mainly include training, provision of technical assistance to host countries, and research.

## Status

According to the PCF Fund Manager, Mr Ken Newcombe, PCF carbon market transaction volumes have grown in excess of 200 million tonnes of CO<sub>2</sub> equivalent over a three year period, with the steepest increases happening after the Marrakesh Accords were adopted in 2001. Between September 2001 and September 2002, PCF developed 26 carbon purchase transactions all over the world, with expectations of tripling this figure in subsequent years. PCF is still going strong in its carbon credit purchase program, made possible by the participants’ decision in 2002 to increase capital to US\$180m. This is expected to boost performance and extend the Fund’s activities until 2004. Mr Newcombe said that during 2002-2003, PCF is aiming to increase carbon purchases in Asia in a bid to balance the Fund’s portfolio geographically.

## Projects

During 2002 PCF had 14 of its projects independently validated both in terms of having the baselines approved and in securing agreement on the emissions reductions. PCF also successfully negotiated terms of purchase for carbon credits with various African, Asian, and Latin American countries. On top of that, the Fund also prepared 26 project proposals for emissions reduction (ER) purchases by the PCF Participants Committee, with the number of potential host countries CDM/JI projects jumping from 7 to 20 in that year. The total value of the projects is estimated at US\$106 million.

Following a boost in its funding in 2002, PCF expects to purchase emission reductions from about 40 projects by 2012, with most of the transactions being approved by mid-2004. Of the 240 Project Idea Notes (PINs) received by August 2002, PCF prepared Project Concept Notes for 34 of them, of which 8 are either on hold or were dropped. 26 projects made it to the project preparation stage, of which 14 are being considered for the PCF project cycle. The project cycle includes a Project Design Document (PDD), a baseline, a monitoring verification plan, validation, and an Emission Reductions Purchase Agreement (ERPA). The Chacabuco Hydroelectric project in Chile is said to be the first PCF project to generate certified emission reductions. A summary of the PCF projects is contained in the table below.

PROJECTS CLEARED BY THE PCF FUND MANAGEMENT COMMITTEE AND THE PARTICIPANTS COMMITTEE				
COUNTRY/ PROJECT NAME	PROJECT DESCRIPTION	PCF CONTRACT (in million us\$)	PCF ERPA ERs tCO <sub>2</sub> e	TOTAL ER FOR PROJECT tCO <sub>2</sub> e
<b>PDD/VALIDATION AND AGREED TERM SHEET FOR ERPA</b>				
<b>LATVIA:</b> Liepaja Solid Waste Management	Methane capture from waste management and CO <sub>2</sub> reduction from power generation	2.5	368,101	368,101
<b>CHILE:</b> Chacabuquito Small Hydro	26 MW run-of-river hydro to replace coal or gas in the grid	6.7	1,750,000	2,597,400
<b>UGANDA:</b> West Nile Small Hydro	1.5 and 5.1 MW small hydro to replace a number of diesel generator sets in West Nile region	3.9	1,300,000	1,884,102
<b>BRAZIL:</b> Plantar Sequestration and Biomass Use	Charcoal produced from sustainably harvested plantation replacing coke for pig iron manufacture	5.3	1,514,286	12,885,986
<b>ROMANIA:</b> Afforestation	Afforestation of 6,728 ha of public land	3.7	1,018,000	1,018,159
<b>COSTA RICA:</b> Chorotega Wind Farm	8.4 MW wind farm to displace thermal power capacity addition	0.9	262,660	302,800
<b>COSTA RICA:</b> Vara Blanca Wind Farm	9.6 MW wind farm to displace thermal power generating units in the provinces of Heredia and Alajuela	1.0	284,660	329,100
<b>COSTA RICA:</b> Cote Small Hydro	6.3 MW hydro to replace thermal power generation	0.6	172,120	173,700
<b>COLOMBIA:</b> Jeprachi Wind Farm	19.5 MW wind farm in the northern part of Colombia to displace a mix of coal- and gas-based power generation.	3.2	800,000	1,168,247
<b>NICARAGUA:</b> Rice Husk	1.43 MW capacity power plant utilizing rice husk waste to supply power to the Chinandega rice and flour mill	0.5	141,600	212,395
<b>CZECH REPUBLIC:</b> CEA Energy Efficiency	Energy efficiency measures and renewables through the Czech Energy Agency (CEA)	2.6	650,000	650,000
<b>CZECH REPUBLIC:</b> SEF Energy Efficiency	Energy efficiency measure and renewables through the State Environmental Fund (SEF)	2.6	650,000	650,000
<b>POLAND:</b> Stargard Geothermal	District heating system to utilize geothermal energy to replace coal in the city of Stargard	1.1	364,553	364,553
<b>POLAND:</b> Pisz Biomass	Plywood industry to meet part of its energy need using biomass waste. Local district heating system to utilize part of the heat	0.6	190,630	190,630
<b>SUB-TOTAL</b>		<b>35.1</b>	<b>9,466,610</b>	<b>22,795,173</b>
<b>PCNS CLEARED BY FMC &amp; PC</b>				
<b>GUATEMALA:</b> El Canada Small Hydro	49 MW peaking run-of-river hydroelectric plant in the west coast of Guatemala to displace thermal power plants	7.5	2,000,000	2,100,000
<b>SOUTH AFRICA:</b> Durban Municipal Solid Waste	10 MW gas-fired generator to produce electricity from landfill-collected methane	10.0	3,350,000	6,790,000
<b>BULGARIA:</b> District Heating	District heating system upgrades for the cities of Sofia and Pernik	8.2	2,774,973	2,774,973
<b>BULGARIA:</b> Svilosa Biomass	13.4 MW biomass-based boiler to utilize wood waste produced at the Svilosa pulp and cellulose plant to replace coal-fired boiler	2.7	897,293	897,293
<b>POLAND:</b> Kolo Geothermal	Geothermal-based heating system to replace coal-fired system in the city of Kolo	0.6	208,971	208,971
<b>POLAND:</b> Paper Mill CHP	164 MW Circulated Fluidized Bed (CFB) boiler to replace coal boiler to supply electricity and heat to pulp and paper mill in Northern Poland	3.5	1,000,000	1,485,000
<b>THAILAND:</b> Mitr Phol Biomass Waste Cogen	40 MW bagasse cogeneration at the facility of Mitr Phol	8.3	2,770,000	2,770,000
<b>UZBEKISTAN:</b> Andijan Heating	District heating system replacement and upgrade in the city of Andijan	1.0	330,000	1,240,000
<b>INDIA:</b> Solid Waste Management	14.85 MW of electricity generation utilizing municipal solid waste in Chennai	10.5	3,513,015	3,513,015
<b>HONDURAS:</b> Wind Farm	60 MW wind power plants to displace thermal plants in Francisco Morazan Province	4.8	1,374,480	2,886,408
<b>MAURITIUS:</b> Solid Waste Incineration	11.2 MW waste incineration plant to manage municipal waste and generate electricity	3.5	1,000,000	1,080,095
<b>MOROCCO:</b> Tangiers Wind	140-200 MW wind farms along the northern coast of Morocco to displace thermal generation sources	10.0	3,300,000	5,818,000
<b>SUB-TOTAL</b>		<b>70.7</b>	<b>22,518,732</b>	<b>31,563,755</b>
<b>TOTAL</b>		<b>105.8</b>	<b>31,985,342</b>	<b>54,358,928</b>

Table 2: Prototype Carbon Fund Portfolio (Source PCF)

### 3.4.1.3 Community Development Carbon Fund (CDCF)

#### **Background**

The Community Development Carbon Fund (CDCF) is a US\$100m infant that was launched in September 2002 at the World Summit on Sustainable Development which took place in Johannesburg. The CDCF is another initiative of the World Bank, and will be administered in co-operation with the International Emissions Trading Association (IETA) with the aim of providing carbon finance to small-scale projects in developing countries especially those in remote rural communities. CDCF is more specifically focused on projects in renewable energy, methane capture, energy efficiency, and agro-forestry. The idea is to ensure communities benefit as much as possible from CDM projects, both in terms of income and other accompanying benefits such as improved access to health and education services. CDCF could help reverse the current trend of events where carbon finance is reaching only the larger developing economies such as Brazil and India even though they are already attracting large private capital flows.

#### **Status**

The CDCF received its first major boost in May 2003 when the Italian government signed an agreement with the World Bank, and contributed US\$7.7m in return for certified emissions reductions (CERs) from small projects in developing countries. Earlier, the Canadian government had pledged its support for CDCF with a US\$2.5m contribution. A technical arm of the Fund codenamed CDCFplus was also launched to build local capacity in developing and preparing potential CDM projects.

#### **Projects**

The CDCF is currently open for submissions of project information. Several project proposals from across the developing world have already been submitted to the Bank, and these are under consideration.

CDCF projects will mainly be implemented through co-operative societies, non-governmental organisations and micro-credit institutions in the hope that this might reduce the transaction costs of CDM projects in small developing countries, one of the major barriers to their participation in the carbon market. The table below illustrates the type of CDCF projects expected to be financed.



Project Type (examples only, many other options feasible)	Scale of energy service	Typical Total Project Financing	Typical Carbon Purchases over 10-14 years, nominal terms
Mini-Hydropower	1-15MW	\$1 – 30m	\$100,000 - \$2.0m
Micro-hydropower	100w -1MW	\$100,000 –\$2mm	\$100,00-150,000
Wind power	400W -15MW	\$200,000-\$15mm	\$5000 - \$2.0mm
Wood Waste Heat and Power in Wood Processing	1-15 MW	\$500,000 - \$10 mm	\$100,000 - \$5.0mm
MSW to Energy	500W-15MW	\$500,000 - \$20 mm	\$100,000 - \$10 mm
Sugar Cane Bagasse Power and Heat	5MW-15MW	\$2mm - \$15 mm	\$ 200,000 - \$5mm
Crop Residue to Power (Rice and Coffee Husks etc)	1MW - 15MW	\$1mm - \$10 mm	\$100,000 - \$5 mm
Agroforestry	1000 - 5000 ha	\$100,000 - \$1 mm	\$100,000 - \$2 mm
Reforestation	500 - 5000ha	\$50,000 - \$5 m	\$50,000 - \$5mm

**Table 5: Proposed projects for funding under the CDCF (Source: CDCF)**

#### 3.4.1.4 Bio Carbon Fund

The World Bank intends to create a new fund to provide carbon finance to demonstrate projects that sequester or conserve carbon in forest and agro-ecosystems. The BioCarbon Fund will aim to deliver cost-effective emission reductions (ERs), while alleviating poverty and promoting biodiversity conservation.

Contributors to the Fund will receive verified ERs that have the potential to be recognised under emerging international, national and regional emission trading programs. The Fund will have two windows: one for land use, land-use change and forestry (LULUCF) activities potentially eligible for credit under the Kyoto Protocol; the other for diverse carbon sequestration and conservation projects that produce verified emission reductions, potentially eligible under emerging carbon management programs.

The BioCarbon Fund will be a public-private initiative established as a trust fund administered by the World Bank, similar to the Prototype Carbon Fund (PCF). The target size of the Fund is US\$100 million. The minimum contribution is provisionally set at \$2.5 million, with a modest annual draw-down schedule. Contracted prices for ERs are expected to be comparable to those in the PCF (\$3,50-\$6,00 per ton of CO<sub>2</sub> equivalent).

A Technical Advisory Group will assist the World Bank to design the Fund. Fund management will endeavour to mobilise parallel resources from donors to support technical assistance and project preparation.

Next steps:

The BioCarbon Fund was publicly launched on November 5, 2002 at the Katoomba Group forestry meeting in Tokyo. Potential Participants have been invited to sign a non-binding Memorandum of Understanding (MoU) to indicate their interest in discussing the Fund's design and operational features. The Fund is expected to be operational in mid-2003.

#### 3.4.1.5 LDC Trust Fund for Climate Change

As of March 31, 2003, agreements have been concluded between six donors (Canada, Finland, Ireland, Norway, Spain and Sweden) and the International Bank for Reconstruction and Development

(the World Bank), as Trustee of the LDC Fund (Least Developed Countries Fund), with respect to administration of donors' contributions to the LDC Fund (the Trust Administration Agreements). The LDC Fund is a multi-donor trust fund.

By the end of March 2003, total contributions received amount to US\$ 8,70 million. Pledges in the further amount of US\$ 6,1 million are outstanding.

As the Council was informed in May 2002, the GEF Secretariat carried out extensive consultations with experts from the LDCs, other experts, the UNFCCC Secretariat and the Implementing Agencies to prepare "Operational guidelines for expedited funding for the preparation of national adaptation programs of action by least developed countries." The guidelines were issued in April 2002, and allow projects of up to \$200.000 per country to be approved through expedited procedures. By the end of March 2003, projects were approved for 8 countries while 9 other projects were at an advanced stage of consideration.<sup>4</sup>

The LDC fund was created for the limited purpose of providing least developing countries with the capacity to prepare adaptation plans and programs, and under current convention decisions has no relationship to the CDM other than perhaps to put these countries in a position to prepare projects that may be eligible for funding from the adaptation fund at such time as it has resources available.

#### *3.4.1.6 Latin America Carbon Program (PLAC), CAF*

The Corporación Andina de Fomento, or CAF, was established to foster and promote economic development within the Andean Community. CAF is a multilateral financial institution whose specific mission is to support sustainable development and economic integration in the Andean and Latin American regions by helping diversify the economies of its member countries and making them more competitive and responsive to social needs. CAF's primary operations are project and corporate lending and trade finance. It provides financing for public and private sector projects – especially in the areas of infrastructure - and, through trade finance, promotes access to world markets for public and private companies in the region. The principal shareholders are the current member countries of the Andean Community – the Republics of Bolivia, Colombia, Ecuador, Peru and Venezuela, which collectively account for 96,2% of the nominal value of the paid-in capital. Brazil, Chile, Jamaica, Mexico, Panama, Paraguay and Trinidad and Tobago are non-regional shareholders, which collectively account for 3,7% of the nominal value of the paid-in capital. The shares are also held by 22 financial institutions based in the Andean Community countries, which collectively account for 0,1% of the nominal value of the paid-in capital. CAF commenced operations in 1970.

In 1995, CAF created its Sustainable Development Department with objective of reducing environmental and social risk of all direct investments, improve management of natural assets of its shareholder countries, promote social participation and values, support research and training, and develop environmental business opportunities. In March 1999, CAF's Sustainable Development Department with the Centre for Sustainable Development for the Americas (CSDA) as an strategic partner, launched with the support of the five Andean Presidents, the Latin American Carbon Program, (PLAC). The objective of PLAC is (i) to support and engage both governments and private sector in every aspect of the development of the carbon market, and (ii) to provide risk financing for the carbon component of mitigation projects in the region. PLAC affirms to have a pipeline of over two dozen projects with an average CER per project of 120.000 Tons CO<sub>2</sub> per year.

#### Projects of interest for PLAC:

- Energy: Fuel switching, renewable energy generation, energy efficiency improvements in infrastructure, electricity grids, gas pipelines.
- Transportation: Fuel switching, public transportation systems, energy efficiency, improvements in infrastructure.

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<sup>4</sup> Approvals have been given for Cambodia, Eritrea, Haiti, Lesotho, Mauritania, Samoa, Tuvalu and Yemen. Proposals for Bangladesh, Comoros, Ethiopia, Gambia, Malawi, Mozambique, Sudan, Tanzania and Vanuatu are at an advanced stage of consideration.

- Industry: Fuel switching, energy efficiency improvements in industrial process.

Land use / forestry: While negotiations by the Conference of the Parties (COPs) regarding land use and forestry projects continue to define the parameters and regulations of the opportunity, PLAC's role will be limited to the review and some support of selected projects.

#### Current projects:

- La Sierra: Expansion of natural gas cogeneration facility owned by Empresas Publicas de Medellin, Colombia

Reductions generated from displacement of existing bus system & traffic reduction the in centre of the city. PLAC's role is that of project developer of the carbon component

The first operation PLAC closed, was an expansion of natural gas cogeneration facility named *La Sierra* in Colombia, owned by *Empresas Públicas de Medellín (EE.PP.MM)*. This project involved a significant efficiency improvement of a natural gas fuelled generation plant. It involved a total investment of US\$ 124,6 MM, where CAF syndicated a loan for US\$ 92,2 MM, co-structured with Citibank NA and other international banks. *La Sierra* changed from single to combined cycle, increasing efficiency from 35 to 56,5% as well as capacity from 381 MW to 481 MW, without increase in fuel consumption. This improvement reduced heat rate from 9.780 to 6.033 BTU/kWh, and CO<sub>2</sub> emissions from 642 to 405 tons of CO<sub>2</sub> per GWh. This project not only has directly employed over 2.300 people contributing to sustainable development in Colombia, but it has the potential to reduce 3,3 MM tons of CO<sub>2</sub> in the 15 years of useful life of the project. *La Sierra* has been recognised by USIJI as a project fulfilling all the requirements to qualify under the CDM, and it is now in the final stages of development the monitoring protocol, to be able to generate and verify the first CERs by the end of this year.

- CAMETRO: New line metro system in Caracas, Venezuela

#### Other projects in advanced review:

- Energy projects - Bolivia
- Energy projects – Ecuador: Small hydro plant

PLAC's role is that of project developer for the carbon component. PLAC is also taking a role in supporting development of market mechanisms in emerging power trading market.

- Methane Capture Project – Argentina: Increasing efficiency of gas pipeline

PLAC's role is that of project developer for the carbon component. PLAC is taking a role in improving overall efficiency, technology & know-how transfer

- Energy & Efficiency projects – Colombia
- Transportation projects – Venezuela

## **3.4.2 Initiatives from bilaterals**

### *3.4.2.1 The Dutch government programs (CERUPT, ERUPT, IFC, IBRD)*

#### **Background**

The Netherlands Government created carboncredits.nl in 2000, and split it into four carbon purchase facilities including ERUPT (specifically facilitates Joint Implementation (JI) projects), CERUPT, IBRD and IFC, all of which are committed to the CDM projects. These are used to identify, verify and invest in projects with potential for generating a sizeable amount of CERs.

## Status

Billed as the first country in the world to have employed the CDM/JI instrument in efforts to achieve its emissions reduction quota, the Netherlands has identified 26 projects to date, eight of which are Joint Implementation Projects.

The ERUPT program is also very active, with government inviting 17 Expressions of Interest to submit a formal proposal under the third ERUPT tender for Joint Implementation. The Netherlands government currently finances only those projects with a minimum of 250,000 ton CO<sub>2</sub>e, and whose delivery will be in the period of 2008-2012. At present, the Netherlands appears to be more interested in funding JI projects than CDM projects.

## Projects

In March 2003, the Netherlands government approved 18 CDM projects under the CERUPT facility. The projects will be exclusively hosted by Asian, Latin American and Caribbean countries. These have been under consideration since 2001 (as is indicated in the table below). The projects fall into 7 types including wind (5), biomass (3), hydro (4), landfill (2), geothermal (2), energy efficiency (1), and gas turbine (1). The projects have a total emissions reduction capacity of 16.5 megatons.

	Project	Country	Supplier	Amount CERs
1	CER01/05	Brazil	USINA CATANDUVA	195.984
2	CER01/11	Jamaica	RENEWABLE ENERGY SYSTEMS LIMITED	457.200
3	CER01/14	Panama	EMPRESA DE GENERACIÓN ELÉCTRICA FORTUNA, S.A.	224.800
4	CER01/17	India	SUZLON ENERGY LIMITED	340.000
5	CER01/19	India	VESTAS RRB INDIA LTD.	272.000
6	CER01/26	Bolivia	AyP ENERGIA SA	327.083
7	CER01/29	El Salvador	SHELL EL SALVADOR	100.000
8	CER01/30	Panama	AES PANAMA S.A.	3.397.129
9	CER01/33	China	INNER MONGOLIA WIND POWER CORPORATION	606.476
10	CER01/39	Indonesia	MAGMA NUSANTARA LTD. (MNL)	5.432.000
11	CER01/41	Panama	AES PANAMA S.A.	330.806
12	CER01/45	Costa Rica	INDUSTRIA NACIONAL DE CEMENTO S.A. (INCSA)	491.000
13	CER01/48	Costa Rica	SARET CORPORATE GROUP	947.971
14	CER01/50	Costa Rica	INSTITUTO COSTARRICENSE DE ELECTRICIDAD (ICE)	806.800
15	CER01/53	India	ENERCON (INDIA) LTD.	475.607
16	CER01/59	India	IND-BARATH ENERGIES LTD.	300.000
17	CER01/65	India	KALPA TARU ENERGY VENTURE PRIVATE LIMITED (KEVPL)	1.150.000
18	CER01/69	Brazil	ONYX	695.880
			<b>Total</b>	<b>16.550.736</b>

**Table 3: Dutch CERUPT CDM projects for 2001. Source: Dutch government website**

However, civil society organisations have condemned all the 18 projects that have been developed under the CERUPT program, arguing that they are all business-as-usual projects which would have happened even without having to be registered under the clean development mechanism.

International Rivers Network and CDM Watch argued that the large hydro projects that the Dutch government is planning to finance under the CERUPT program could undermine the effectiveness and credibility of the Kyoto Protocol since most of them were non-additional or merely business-as-usual. They observed that none of the 18 CERUPT projects are additional, and that four of the projects (all of which are hydro) represent nearly a third of the total credits claimed.

The two organisations however commended a decision by the Dutch government in February 2003 to reject the Bujagali Hydropower Project in Uganda.

#### *3.4.2.2 The Swedish International Climate Program (SICLIP-CDM)*

##### **Background**

The SICLIP-CDM program is administered by the Swedish Energy Agency (STEM). SICLIP-CDM is Sweden's program for identifying and implementing Clean Development Mechanism (CDM) and Joint Implementation (JI) projects. It is a relatively small program which is being used to gain experience in handling CDM/JI projects.

##### **Status**

SICLIP-CDM is currently working in five countries which include, Brazil, Ghana, India, and Malaysia. It is also sponsoring a project which is under the joint implementation of Zambia and Tanzania.

##### **Projects**

The SICLIP-CDM projects have a total capacity of 3.1 million CER. Three of these projects are located in Brazil. Although the program is mostly focuses on financing projects in the renewable energy sector, it is also involved in a combined heat and power production project whose main raw material is industrial waste.

#### *3.4.2.3 Finnish CDM/JI Programme*

##### **Background**

The pilot Finnish CDM/JI programme was launched in 1999, with an initial capital of 20 million euros. Apart from being intended to gather experience, the project will also be used to build capacity within the Finnish government for possible extensive participation in the future. It will also enable the government to determine if it is a cheaper alternative for reducing greenhouse gas emissions.

##### **Status**

The Finnish government is mostly investing in small scale projects on pilot basis. Transaction costs are therefore very high, and are reflected in the estimated price of the carbon credits that they will produce.

##### **Projects**

The amount of credits that will accrue from the pilot CDM/JI projects is estimated at between 1.0 and 1.4 tCO<sub>2</sub>e, at an estimated price of 2.5-2.6 euros. There are 6 on-going CDM projects located in Vietnam (gas), Honduras (hydropower), Zambia (mini-hydropower), El Salvador, Costa Rica (biogas) and India (biomass). There are also 6 on-going JI projects, with one project located in Poland (combined heat and power (CHP)), and five in Estonia (heating (2), bio- energy, wind and small hydropower).

Title	Phase	PIN	PDD	Validation
Parpikala Mini Hydel Scheme, India	PDD on-going	Available upon request		
Landfill closure and gas recovery and utilization in Thuong Ly, Haiphong, Vietnam (CDM)	PDD on-going	Not available		
15 Biomass Gasifier Power Plants, Bangalore, India (CDM)	PDD on-going	Available upon request		
D&O Biogas Project, Costa Rica (CDM)	PDD on-going	Available upon request		
AHPPER Hydro Power Projects, Honduras (CDM)	PDD on-going	Available upon request		
Empresa Electrica Del Norte, El Salvador (CDM)	PDD on-going	Available		
Development of a Mini-hydro Electricity Power Station In Mwinilinga, Northwestern Province, Zambia (CDM)	Feasibility study on-going	Available		
Tamsalu District Heating Project (JI)	Validation completed	Available	Available	Available
Kadrina District Heating Project (JI)	Validation completed	Available	Available as hardcopy upon request	Available
Paide Bioenergy Project (JI)	Validation completed	Available	Available	Available
Pakri Wind Farm Project (JI)	Validation completed	Available	Available	Available
Sindi Small Hydro Plant (JI)	PDD on-going	Available		

**Table 4 : The different projects with their actual phase**

#### 3.4.2.4 Danish Carbon Fund

In end of August 2003 Denmark announced plans for public investments of DKK 200M (€27M) annually in the period 2004-7 in CDM and JI, of which about half will be spent on acquiring certified emissions reductions (CERs; the CDM trading unit). Investments are to be divided evenly between investments in international funds and a portfolio managed directly by the Danes.

#### 3.4.2.5 Spanish Carbon Fund

CO2e.com, CO2 Spain and Baker & MacKenzie are launching a new Spanish Carbon Fund. The fund will concentrate on CDM and JI projects, and invest in energy efficiency and fuel substitution, renewable energy projects, methane capture and other emission reducing technologies.

The first phase will be to structure the fund in consultation with initial participants, including public and private companies in Spain that expect to be involved in the European Emissions Trading Scheme.

#### 3.4.2.6 Carbon Credit Finance Fund, Japan

The Economic, Trade and Industry Ministry plans to establish within the year 2003 a fund with the Development Bank of Japan and other financial institutions to finance Japanese companies that carry out projects abroad to cut carbon dioxide (CO<sub>2</sub>) emissions. The fund for the Kyoto mechanism will provide financial assistance to projects designed by electric power plants to renovate thermal power plants in underdeveloped countries to reduce CO<sub>2</sub> emissions. It will not offer funds in the form of loans or investments, but will finance such projects through a partial purchase of CO<sub>2</sub> credits companies will acquire via reduction projects. The fund will be capitalised in the billions of yen. In addition to the Development Bank of Japan, the ministry will also invite private companies and financial institutions to contribute to the fund. Fund providers will be given CO<sub>2</sub> credits proportionate to the amount of their contributions. They can use the credits to meet requirements of CO<sub>2</sub> reductions imposed on them or sell them on the market. The Kyoto Protocol requires Japan to reduce greenhouse-effect gases, including CO<sub>2</sub> emissions, by an average of 6 percent of 1990 levels between 2008 and 2012. However, as Japan will have difficulty reducing global warming gases by such a high percentage, it will need to acquire approximately 1,6 percent of its CO<sub>2</sub> credits through overseas reduction projects.

#### 3.4.2.7 Singapore-ASEAN Carbon Fund

The Singapore-ASEAN Carbon Fund has been established in 2003 and is to be administered through Electric Eye Pte Ltd in Singapore. It is an independent initiative that seeks to kick-start CDM projects under the Kyoto Protocol. The fund will be a 5-year closed-end investment fund, with a target capitalisation of US\$120 million. It will target energy efficiency and renewable energy in the ASEAN countries, and aims at 200.000 tCO<sub>2</sub>-eq in carbon credits per year. If successful it will function as model for a larger Asian carbon fund.

#### 3.4.2.8 New Zealand Climate Change Program

The Government of New Zealand is providing an incentive through a tender for new projects that will reduce greenhouse gas emissions over the first commitment period of the Kyoto Protocol (2008 – 2012). The objective is to reduce New Zealand's greenhouse gas emissions by supporting projects that:

- ⇒ Provide emission reductions in the Kyoto Protocol first commitment period (2008 - 2012) beyond the reductions that would have occurred without the project.
- ⇒ Are not viable without the tender incentive.

Four million units are available for the first tender round.

The first tender round is planned to take place in September and October 2003.

### 3.4.3 Example of a private fund : SHELL

Shell realised different activities relative to the climate change issue:

- 1999: Developed a pilot CDM screening process and used it to identify potential CDM projects within the Shell Group.
- 2000: Designed and implemented a pilot cap and trade emissions trading system (STEPS), which operates in a number of Shell facilities in Kyoto Annex 1 countries. The system operated until the end of 2002 with a target to reduce emissions by 2% across the facilities.

Six business units contributing to about a third of Shell's total emissions participated in the system. The overall goal set is a reduction by 2 % in 2002 compared to the base year 1998. Permits have been allocated to the participating units in proportion to the units 1998 baseline emissions for the three-year period and resembling 98 % of the 1998 emissions. A permit has a value of 100 tCO<sub>2</sub>-eq. Each company is free to determine its individual strategy for compliance, whether through abatement projects or through trade. The trade is done through the web and is handled by Shell Energy.

The objectives of the STEP programme are to:

- gain experience with the Kyoto mechanisms,
  - identify least cost options within Shell for greenhouse gas emission reduction,
  - assess the costs in Shell for abatement of greenhouse gas emission,
  - demonstrate the feasibility and merits of international emission trading as a low-cost way to reduce greenhouse gas emissions.
- 2001: Created an Environmental Products Trading Team within the Shell Trading organisation. The team, led by an experienced emissions trader, has global responsibility for the Shell Group's use of the Kyoto mechanisms.
  - 2002: Shell UK has entered into the voluntary UK Emissions Trading System. Key Shell UK upstream production facilities now have a greenhouse gas emissions cap on them as a result of entry into this system. The new trading business is also actively exploring CDM opportunities for the Group, such as those available through the Netherlands Government CERUPT programme and similar early schemes.
  - In February 2003 Shell Trading and Nuon Energy Trade and Wholesale completed the trade of carbon dioxide emissions allowances to be allocated by governments within the European Union Emissions Trading Scheme (ETS). The trade marks the beginning of potentially the largest market in government-devolved property rights for emissions of greenhouse gases.

Shell Trading agreed to sell a significant volume of first compliance year EU allowances to Nuon on a forward basis. The ETS is currently undergoing a second reading by the European Parliament, with the first compliance year currently scheduled as 2005. Should the ETS not proceed, the terms of the trade between Shell Trading and Nuon will be renegotiated.

Shell and Nuon each have facilities around Europe which would face compliance targets under the proposed EU scheme. Nuon has recently acquired Reliant Europe, including 3500 megawatts of installed power generating capacity. Both companies have active global environmental products trading operations.

NB : Shell is only one example as there are many other institutional investors (insurance companies, pension funds, corporates, ... who are actively becoming investors in one or the other carbon purchase funds currently being prepared (eg led by Swill Re, KfW, ...).



## **4 FINANCING OF EMISSIONS REDUCTION PROJECTS**

An emerging financial sector is now offering a variety of products in renewable and sustainable energy projects. International cooperation agencies (multi and bilateral), specialised environmental funds, commercial banks within and outside the host country, insurance and reinsurance providers have shown much interest for these types of projects, their risks and difficulties in reaching closure have been much analysed and written about. Many are of the view that without a specific motivation of the funding community for these types of projects which offer specific environmental and development benefits, to be taken into account in the appraisal criteria, closure cannot be reached. Concessional financing or national policy frameworks which imply financial incentives will still be required for some time to come

With the emerging of CDM, the question which arises can be put as follows. The CDM process as described above implies selecting a specific subset of “clean projects” – specific boundaries, measurable and verifiable emissions reductions, sound baselines – and given the difficulty of “normal” clean projects, a pipeline offering the above characteristics is difficult and costly to develop. In exchange for these additional constraints, carbon credits are bought at a price currently between 3 and 5 \$/T of CO<sup>2</sup>. The incentive offered at this price (increment in IRR) is often hardly sufficient to cover the additional development costs, leaving aside offering additional incentives for undertaking clean projects.

Hence the importance of considering globally the full project cycle: project preparation, project financing and the contribution carbon finance can make to closure.

### **4.1 Commercial loans, export credits and development programmes**

At present, bilateral finance and export credit agencies (ECAs) as well as multilateral and bilateral cooperation agencies play a limited role in financing environmentally beneficial projects, even there is an obvious and visible effort to mainstream environmental issues in their portfolios. ECAs operating in OECD nations are required to service non-commercially viable and higher risk projects in developing countries and CEITs, rather than focusing on conventional low-risk activities. As such, ECAs could become a more predominant source of finance for CDM emission reduction projects. They typically have energy sector experience, which is very relevant for emission reductions projects.

Interestingly, commercial banks, both in developing and industrialised countries are showing a rising interest for these types of projects, are opening specific departments with experts having the technical expertise to appraise clean energy projects, and mitigate risks through financial engineering, a portfolio approach and in some instance, accepting a higher level of risk due to a corporate vision and mandate. A few banks with this type of outlook can be mentioned: Crédit Lyonnais, Deutsche Bank, Infrastructure Development Finance Corporation – India, Power Trading Corporation – India, Banque Marocaine du Commerce Extérieur.

Follows an illustration through the German Example in box.b

## 4.2 Insurance and re-insurance agencies

Insurance and re-insurance agencies are at the forefront of bearing the costs of climate change: a number of climate related disasters over the past few years have been (at least subconsciously) related to global warming – and they have had a very high cost for insurance companies. A quick look at the existing carbon funds or those under preparation shows the very high presence of the insurance companies as investors – Swiss Re, COFACE or ING being two of the leaders. Thought is also being given to include carbon risk products in their service portfolio though what this would cover still remains to be clearly defined.

Another avenue, though not specific to insurance companies but also a merchant banking approach is the development of mutual funds and securitisation of a portfolio of projects.

## 4.3 Funds for the global and local environment

**Specialised bilateral and multilateral funds for the environment** (such as the GEF, the French FFEM, Dutch funds such as MILIEF) provide grants both as stand alone projects and as a co financing source mixed with ODA or other financing. They have played an essential role for climate change projects and in main streaming environment issues in infrastructure finance. A key issue to be addressed is how to combine these funds – which are (broadly) supposed to cover the “incremental costs” of projects and the revenues from the sale of carbon certificates, which are supposed to be “additional”.

### Global Environment Facility

The Global Environment Facility (GEF) is a financial mechanism that provides grants to recipient countries for projects and activities that aim to protect the global environment. GEF resources are available for projects and other activities that address climate change, biological diversity, international waters, and depletion of the ozone layer. Countries can obtain GEF funds if they are eligible to borrow from the World Bank (IBRD and/or IDA) or receive technical assistance grants from UNDP through a country program.

From 1991 to 1999, GEF allocated \$884 million to 227 climate change projects and enabling activities, which was matched by more than \$4,7 billion in co-financing.

German Federal Ministry for Economic Co-operation and Development (BMZ) The Federal Ministry for Economic Co-operation and Development (BMZ) is responsible for planning and implementing the German government's development policy. Its mission relates mainly to the following areas:

- contributing to the design of the global framework
- developing bilateral and multilateral support strategies, and supporting our partner countries' development programs and projects
- supporting development co-operation programs of non-governmental organisations
- aid evaluation and monitoring of the use of funds

BMZ does not implement the individual development co-operation projects and programs itself. Implementation is the task of independent organisations working on behalf of BMZ (under which the German Technical Co-operation GTZ and the KfW, see chapters below).

#### Kreditanstalt für Wiederaufbau (KfW), Germany

In the framework of credit programs, export and project financing (total amount of sponsoring 5,1 Billion € in 2001) KfW gives 1,1 bn € for climate and environment related projects in developing countries. KfW is actually participating in a regional pilot project for emissions trading. This project, the Hamburg Competition for cost effective carbon reduction, offers companies the opportunity to get first experience with the instruments of ET. KfW jointly with HEW, Umweltbehörde Hamburg and BP Germany buys ERUs from climate investments in Hamburg. The participants of this competition have to calculate how many carbon has been economised by their additional investment and set a price on which they desire to sell these reductions. The winners can sell their ERUs to the organiser of the pilot project, the ERUs will be divided up between the organisers. Only certificates generated until 2004 will be taken into account avoiding the crossing with the EC-ETS. Per project 500 up to 10.000 t CO<sub>2</sub> will be accepted. For the preparation of the proposal the applicant will get a scientific assistance particularly for the baseline study.

The KfW is preparing a roadshow to solicit investments for its 50 million € carbon fund. A public presentation of its concept will be done at the Asia Pacific Weeks in Berlin on Sept. 19. Currently, company interest is subdued as companies are waiting for the decision on the national allocation plan for emissions allowances. Current planning is to have the fund operational in the first half of 2004. As KfW itself emits CO<sub>2</sub> in the primary field of transportation of staff during the divers projects it is thinking about how to acquire the needed emission reductions to cover the KfW induced production of 20.000 t CO<sub>2</sub> equivalent (estimated value). Therefore it would be possible to add a 10 MW part to the scheduled 60 MW in Essaouira to get the emission reduction units by this way. This project would be carried out on its own behalf and with its own financing, and not via the German financial co-operation.

#### German Agency for Technical Co-operation, GTZ

The German Agency for Technical Co-operation (GTZ) GmbH is a government-owned corporation for international co-operation with world-wide operations. GTZ's aim is to positively shape the political, economic, ecological and social development in partner countries, thereby improving people's living conditions and prospects. Through the services it provides, GTZ supports complex development and reform processes and contributes to global sustainable development.

GTZ has a large portfolio of CDM related activities:

- project implementation in the field of energy switch, renewables, energy efficiency, and transportation which could be eligible themselves to CDM.
- Evaluation and feasibility studies for CDM projects
- Climate Protection Program for developing countries (CaPP)

The Climate Protection Programme for developing countries (CaPP) was conceived immediately after the Earth Summit in Rio at the end of 1992 and was then launched in October 1993. The CaPP project makes a contribution to enabling developing countries to meet their obligations arising from the Framework Convention on Climate Change. The specific promotion of individual measures supports sustainable development in the partner countries and reinforces their ability to adapt to climate change. The measures focus mainly on the energy sector, while other important areas are transport, waste management and industry.

In the CaPP context the following four examples of renewable energy projects were evaluated and assessed with regard to their eligibility as CDM projects: Wind park Tanger (140 MW) and Tarfaya (60 MW), Hydropower stations El Borj and Tanafnit, Biogas plant from waste water in Agadir, Use of biogas/landfill gas from a dump site at Marrakech

Hessen Tender

The „Joint Initiative of the German Federal State of Hessen to purchase CO<sub>2</sub>- emission reduction credits for the implementation of flexible Kyotomechanisms in the context of a pilot and demonstration project“ (Hessen-Tender) was aimed at the advancement and operationalisation of economical instruments within the climate protection policy, particularly in view of the future EU-wide emissions trading scheme. Furthermore, it should prepare German companies for the future implementation of such instruments, as well as contribute to climate protection in the state of Hessen. The Hessen-Tender was a joint initiative of the Ministry of the Environment, Agriculture and Forestry of Hessen and the project partners Deutsche Telekom, Dresdner Bank, Infraserb Höchst, and xlaunch. The Deutsche Ausgleichsbank (DtA) acted as the trustee of the pilot project.

<i>Current project</i>	<i>Description</i>	<i>Allocation amount in Mio. US\$</i>
India	Energy efficiency	5
Morocco	Repowering of power plant	6
India	alternate Energy	26
India	Development of High Rate BioMethanation Processes as Means of Reducing Greenhouse Gas Emissions	5,5
India	Optimizing Development of Small Hydel Resources in Hilly Areas	7,5
Morocco	Market Development for Solar Water Heaters	2,965
India	Cost-Effective Options for Limiting Greenhouse Gas Emissions	1,5
India	Solar Thermal-Electric	49

**Table 6: Some selected programs of the GEF in Morocco and India** (source: GEF)

#### 4.4 Purchasers of carbon credits

The institutional purchasers of carbon credits – see above - are leading the way in financing emission reduction projects and are playing an essential role in going down the learning curve and making information and transaction know how available. Through the purchase of credits, they provide a revenue stream to projects, which may be included in project financing.

Two of the main points in this additional revenue stream are:

- Its level of significance – at under 5\$/tonne, the impact on project profitability is motivating only for specific projects such as landfill gas;
- Time of availability: if the revenue is made available only at the time of production of the emissions reductions and their verification, this will be much less motivating than accepting the foreword buying (at a discount) of a few years emissions reductions. This requires specific risk appraisal to estimate the discount to offset the risk.

However, these institutions have limited funds and a temporary operational life. Hence, the main issue at hand is the emerging of a private transactions market. They have been detailed in the above section.

Name of Ethical Trust	Name of Fund or Financing Mechanism	Type of Projects	Location Preference	Terms	Comments
<b>Aon Global Risk Consultants Ltd</b>	NA	Renewable energy	Global	Case by case basis	Fortune 500 company; insurance brokering, risk management
<b>Beacon Group</b>	Beacon Group Energy Funds	Sustainable & renewable energy companies	NA	Equity investments between \$35–200 million.	NA
<b>C D C Capital Partners</b>	Power	Renewable energy	Caribbean/Latin America, Africa, South and South East Asia	Case by case	50 years of investing exp. Also interested in private sector power business.
<b>D&amp;B Capital</b>	Clean Energy Fund	Renewable energy & Clean Energy Retrofitting	Global	Project must yield minimum 18% ROI	Hydro, solar, tidal, geothermal, wind, biomass projects. Retrofitting existing fossil fuel plants
<b>E &amp; Co Energy Investment</b>	Enterprise Development Services	Renewable Energy	Emerging market countries, esp. Africa, Mexico, Latin America, Caribbean, Asia, E. Europe.	Early stage risk capital. Commercially viable, socially & environmentally beneficial. Max \$250,000	Takes higher investment risk by providing business services and seed capital in the early stages to committed local entrepreneurs.
<b>EIF</b>	Renewable Energy & Energy Efficiency Fund (REEF)	Renewable Energy & Energy Efficiency. Sectors	Emerging market countries, and esp. in Africa, Mexico, Latin America, Caribbean, Asia, Central & Eastern Europe	IRR 20–25%: in risky and 15–20% in less risky countries. <15% exceptionally. Funds limited to 70% of project costs	\$65 million REEF fund. Can draw upon GEF co-financing for PV related investments. Investments in the form of common & preferred stocks etc.
<b>ING</b>	Postbank Groenfond (Postbank Groenrente Certificaat)	Green, esp. renewable energy projects	Netherlands, Central & Eastern Europe (only climate change related) and developing countries	Low-risk projects with Green Certificate from Dutch Ministry of Environment	NA
<b>Merrill Lynch</b>	Mercury Selected Trust New Energy Fund	All renewables, enabling technologies, energy storage	Global	Commercial projects. Focus on companies with capitalisation of \$100m – 5bn	\$18.8 million fund size.
<b>OHRA</b>	OHRA Milieutechnologie-fonds	Environmental technology, renewable energy	Global	Stock exchange quoted companies	NA
<b>RABOBANK (Nederland)</b>		Sustainable energy projects	Global	Commercially viable projects only	NA
<b>Triodos</b>	Solar development Foundation (SDF) and Solar Development Capital (SDC)	Renewable energy, esp. solar energy	Developing countries	SDF: \$5,000–150,000 (grant or debt); SDC: \$0.1m –1.5 m (equity)	NA
<b>Triodos</b>	Triodos Groenfond	Green, esp. renewable energy projects	Netherlands, OECD countries	Low-risk projects with Green Certificate from Dutch Ministry of Environment	NA
<b>Vlaamse Milieuholding (VMH) Belgium</b>	Sustainable Energy Ventures (SEV)	Renewable energy projects	Global: focus on EU and Benelux	NA	NA

**Table 7: Extract from the UNEP Finance Initiative “Financing Sustainable Energy Directory” showing a variety of trust funds that are directed at sustainable energy projects of one form or another.** Source: UNEP Finance Initiative “Financing Sustainable Energy Directory” (<http://www.fse-directory.net>)

## 5 CDM FRAMEWORK AND PIPELINE IN MOROCCO

### 5.1 The institutional framework

Morocco signed the United Nations Framework Convention on Climate Change UNFCCC in 1992 and ratified it in 1995. Morocco also ratified the Kyoto Protocol in January 2002.

Since the Rio summit, many actions have been undertaken in Morocco in the area of climate change, in particular the development and presentation of the initial national communication to the Seventh Conference of the Parties to the UN Framework Convention on Climate Change (COP7) held in Marrakech, in November 2001, the creation of a national inventory of greenhouse gas emissions, carrying out a study on the vulnerability of Morocco to the impact of climate change, as well as a study on the reduction of GHG emissions, and organizing the COP7 in Marrakech from October 29th to November 9th, 2001.

As a result, Morocco is under a legal obligation to participate in the CDM process. Morocco has established a National Committee for Climate Change (NCCC, 1996), bringing together the representatives of the principal organizations that deal with the problems of climate change. A National Scientific and Technical Committee on Climatic Changes (NST-CC, 2000) made up of national experts and set up as a national model of the IPCC has been created, as well as a Center of Information on Sustainable Development and the Environment (CIEDE, 2000) whose mission is to ensure the implementation of article 6 of the UNFCCC, by making considerable effort to promote public awareness, access to information, education and training in the area of climate change.

Morocco has also created a "Climate Change Unit" (CCU, Unité des Changements Climatiques, in French) as a National Focal Point to oversee the secretariat in May 2000 as required by the Kyoto Protocol. The national focal point brings together 19 ministries including the Ministry of Energy and Mines and their subsidiaries (including the Center for Renewable Energies Development, the "Office National d' Electricité"-ONE), the Environmental Ministry and their subsidiaries, and meets twice per year to discuss how best to manage the CDM framework. The decisions of the Focal Point are to be implemented by the CCC, through its different sub-departments.

Other administrative bodies involved are:

- Council of Water and Climate (CSEC)
- National Council of Environment (CNE)
- Committee for Land Use Management (CIAT)
- National Meteorological Division (DMN)
- Royal Center for Space Tele-detection (CRTS),
- Moroccan Center for Clean Production (CMPP),

Since 2003 and with UNDP and UNEP support (CD CDM Project ), Morocco endowed itself with a strategy of promotion of investments in the CDM projects. This strategy which covers the period of 2003-2005 plans the setting up of the requisite institutional and structural bases to make operational this mechanism, to reinforce the national capacities in this domain and to promote the CDM potential of Morocco at the international level. The strategy articulates around the main axes:

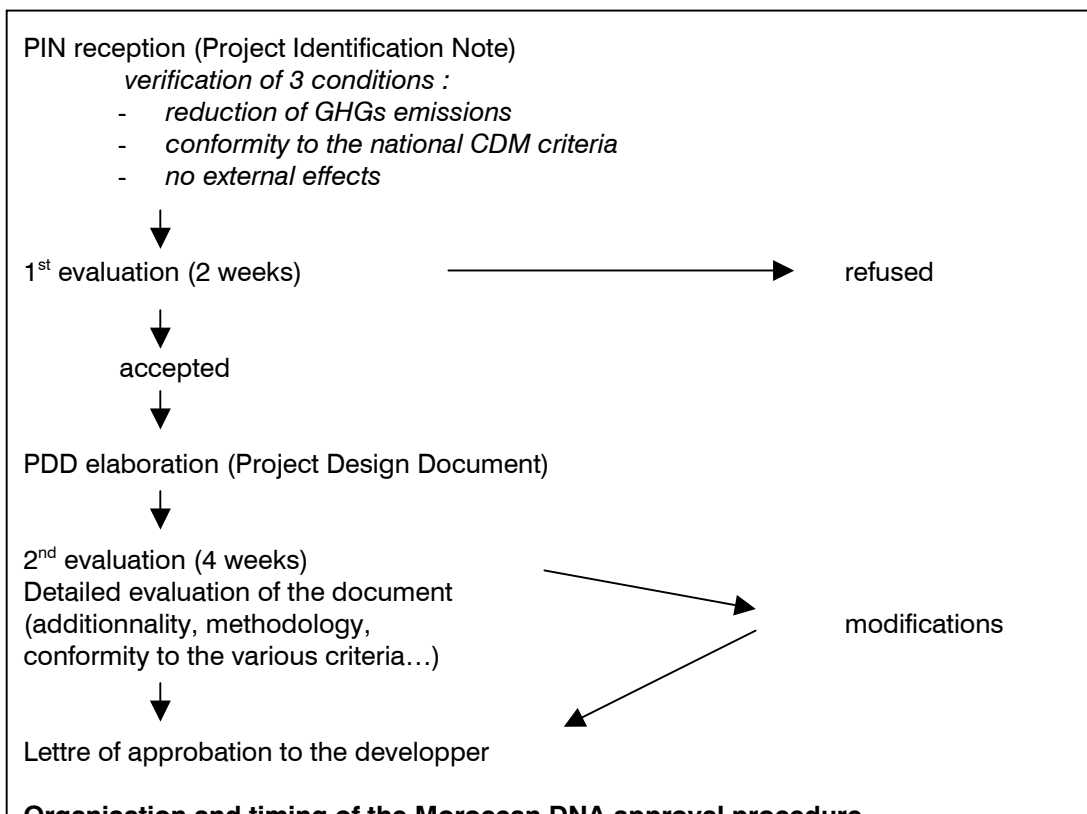
### National structures and procedures

- Implementation of the institutional setting for monitoring CDM activities in the country: CDM Designated National Authority (CDM DNA) encompassing the CDM National Council (CDM NC) and the Permanent Secretariat of the National Council (CDM PS); the CDM PS operates at the Climate Change Unit of the Secretary of State for the Environment.
- Development of national procedures to promote CDM activities in Morocco: procedures for investors, procedures for national economic operators, etc.

The CN MDP is represented by :

- Secrétariat d'État Chargé de l'Environnement;
- Ministère des Affaires Étrangères et de la Coopération;
- Ministère de l'Intérieur;
- Ministère des Finances et de la Privatisation;
- Ministère Délégué auprès du Premier Ministre chargé des Affaires Économiques, Générales et de la Mise à niveau de l'Économie;
- Ministère de l'Agriculture et du Développement Rural ;
- Ministère de l'Équipement et du Transport;
- Ministère de l'Énergie et des Mines;
- Département des Eaux et Forêts;
- La CGEM, le CMPE, le CDER, le CMPP;
- Le GERERE: ONG Spécialisée

The DNA approval procedure is described below :



**Organisation and timing of the Moroccan DNA approval procedure**

**Capacity building of economic operators**

- Awareness and information for operators interested in CDM opportunities and procedures, nationally and internationally;
- Creation of Strategic partnerships between the Secretary of State for the Environment and a number of CDM economic operators in Morocco;



- Development and contribution to the promotion of CDM projects portfolio with these operators;
- Assistance and accompaniment in several CDM pilot projects up to their certification.

#### **National Council (NC) capacity building**

- Training the CDM NC and CDM Permanent Secretariat (PS) members in CDM related fields;
- Training the national experts (private consultancy individuals and companies) on CDM project preparation: development of PDD;
- Enhancement of the capacities of NGOs on understanding CDM and on implementing actions directed towards Sustainable Development.

#### **Promoting CDM Morocco internationally**

- Contacts with potential CDM investors: carbon buying organizations and Annex I Parties investors;
- Contacts with organizations able to help economic operators in their CDM project development (CDM PDD);
- Presentation of CDM national organization and procedures: in particular through the website [www.mdpmaroc.com](http://www.mdpmaroc.com)
- Promotion of potential CDM projects in Morocco

#### **Monitoring CDM international negotiations**

- Follow up the activities of the CDM Executive Board and negotiations relating to CDM, as well as all the CDM-related issues discussed at the Conferences of Parties of the Convention and the KP meeting of Parties;
- Morocco's dynamic participation in different meetings and workshops organized in this field;
- Follow up international publications on CDM aspects.

During 2003, Moroccan CDM project Evaluation and Approval Procedures has been adopted by the CDM national council. A national CDM website has been launched by the UCC/SEE on June 2003: [www.mdpmaroc.com](http://www.mdpmaroc.com). All the information and precisions on CDM in Morocco, in particular it's strategy and procedures, can be download from this web site.

## **5.2 National criteria for sustainable development**

The project must fit the country main policies :

- The project should be conform with the various laws in the country and specifically regarding environmental protection. Environmental impact assessments should be performed as required by the National law.
- The project should participate to the energy potential reinforcement and/or diversification in terms of renewable energy sources.
- Technology used must be tried and tested and clean
- The project must have a positive impact on the local population : employment, richness creation, life quality improvement, capacity building
- The project could improve the country capacity to mitigate climate change impacts

### **5.3 Projects seeking DNA approval in Morocco**

The project portfolio described in the table below represents a strategic subset of a broader set of mitigation opportunities which encompass energy (renewable energy supply, fuel switching, supply side efficiency and demand side efficiency), waste, forestry and industrial processes.

## LISTE DES PROJETS DU PORTEFEUILLE MDP

N°	Intitulé	Type	Organisme	Date de démarrage	Investissement	Emissions évitées (kT CO <sub>2</sub> /an)	Observations
1	Utilisation de l'arganier et du cactus dans les reboisements des zones semi-arides	Forestation	Eaux et Forêts	2003	1MDh (100 ha)	40	Revenu 1,2 MDh/an à partir année 5. Atout social
2	Développement de l'utilisation des chauffe-eau solaire (1 million m <sup>2</sup> )	Solaire Thermique/GP	CDER	2004-2007	300 M \$ US	95,8	Projet d'envergure : 20 fois la capacité installée 600 GWh/an
3	Valorisation énergétique par biométhanisation - décharge de Marrakech	Déchets/GP	CDER	Etude en cours	~ 10 M \$ US	335	200 000 tonnes déchets/an
4	Diffusion des chaudières améliorées couplées à des systèmes solaires thermiques au niveau des hammams publics	Biomasse/GP	CDER	2004-2007	70 M \$ US	216	5000 Hammams 58% d'économie de bois de feu
5	Système de récupération de chaleur (HRS) sur les unités sulfuriques du complexe chimique de Safi	EE/GP	OCP	2004	390 M Dh	182	Augmenter le taux de réc. Chaleur de 60 à 75% et 60 000 d'économie de fuel/an
6	Système de récupération de chaleur (HRS) sur les unités sulfuriques du complexe chimique de Jorf Lasfar	EE/GP	OCP	2004	108 M Dh	100	Augmenter le taux de réc. Chaleur de 60 à 75% et production de 127000 MWh/an (16 MW)

N°	Intitulé	Type	Organisme	Date de démarrage	Investissement	Emissions évitées (kT CO <sub>2</sub> /an)	Observations
7	Utilisation du phosphate humide au lieu du phosphate sec pour la fabrication d'acide phosphorique à Jorf Lasfar	EE/GP	OCP	2005	120MDh	56	Augmentation de l'humidité des phosphates de 2% à 6% et EE. 3,25 Mt/an séché au lieu de 5 MT/an actuellement.
8	Substitution partielle du phosphate noir par le phosphate clair à Youssoufia	Procédé/EE/GP	OCP	ND	1 037 MDh	124	Economie d'énergie sur la calcination et évitement des émissions de CO <sub>2</sub> de décarbonatation
9	Installation d'une unité de cogénération à l'usine de séchage de Béni-Idir à Khouribga	EE/GP	OCP	ND	200 MDh	24	Unité de cogénération de 20 MW Utilisation des fumées pour séchage de phosphates
10	Remplacement de l'usine d'enrichissement à sec de Khouribga par une unité de lavage	EE/GP	OCP	2004	250 MDh	22	Substitution du lavage au lieu de l'enrichissement à sec
11	Réhabilitation des sites miniers en découverte à Khouribga	Foresterie	OCP	2002	97,5 MDh	16,5	3 000 hectares Plantations sur 3 ans
12	Substitution partielle du clinker par des cendres volantes des centrales thermiques/ procédé	SM/GP	APC	2003	90 MDh	375	Gain de clinker 375 000 T/an

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N°	Intitulé	Type	Organisme	Date de démarrage	Investissement	Emissions évitées (kT CO <sub>2</sub> /an)	Observations
13	Parc éolien à 10 MW à Tétouan	ER/PP	LAFARGE – MAROC	2004	108 MDh	32	Etude de faisabilité faite. Projet approuvé par le CA.
14	Parc éolien à Laâyoune	ER/GP	Ciments du Maroc	2004-2006	330 MDh	90	Etude de faisabilité en cours.
15	Reforestation de 10 000 ha dans la forêt de Maâmora	Forestation	ST - MICROELECTRONICS	2002	124 MDh	35	Impact social positif
16	Parc éolien 10 MW	ER/PP	ST - MICROELECTRONICS	2004	100 MDh	32	Etude technique réalisée
17	Réaménagement de l'atelier de cristallisation pour la production du sucre blanc	EE/GP	SUCRAFOR	2004	130 MDh	17	Suppression du raffinage et économie de 5 500 T fuel/an
18	Décharge de Médiouna	Biogaz/GP	Communauté Urbaine Casablanca	En cours d'étude	300 MDh	450	Devrait être confiée à un opérateur privé ; A/O en instance

N°	Intitulé	Type	Organisme	Date de démarrage	Investissement	Emissions évitées (kT CO <sub>2</sub> /an)	Observations
19	Parc éolien Abdelkhalek Torres 53,4 MW	Eolien/GP	Privé	2000	600 MDh	160	Parc en fonctionnement
20	Parc éolien d'Essaouira 60 MW	Eolien/GP	ONE	2005	500 MDh	175	Projet engagé Financement KfW
21	Parc éolien de Tanger 140 MW	Eolien/GP	ONE	2006	1150 MDh	450	A relancer avant fin 2004
22	Parc Eolien de Touahar (Taza) 10 MW	Eolien/PP	CDER	2004	110 MDh	35	Projet pilote Financement Belge obtenu
23	Parc éolien de Tarfaya 60 MW	Eolien/GP	ONE	2006	500 MDh	175	A relancer en 2004
24	Parc Eolien Tan Tan Dessalement 300 MW	Eolien/GP	CDER-ONEP	2007	2 650 MDh	910	Appel à expression d'intérêt avant fin 2003
25	Parc Eolien Dessalement Ciments du Maroc 10 MW	Eolien/PP	CIMAR	2004	115 MDh	32	Etude en cours

N°	Intitulé	Type	Organisme	Date de démarrage	Investissement	Emissions évitées (kT CO <sub>2</sub> /an)	Observations
26	Parc Eolien Couloir Taza 120 MW	Eolien/GP	CDER	2007	980 MDh	340	Extension du parc pilote de Touahar
27	Parc Eolien Essaouira 100 MW	Eolien/GP	CDER	2008	820 MDh	290	Données du site en cours de confirmation.
28	Parc Eolien de Dakhla 200 MW	Eolien/GP	CDER	2010	1500 MDh	605	Données du site en cours de confirmation.
29	Développement de forêts énergétiques 15.000	Forestation/PP	CDER	2004	5 MDh	55	Phase pilote en cours de réalisation.
30	Développement et diffusion de fours de poterie améliorés 1200 fours	Biomasse/GP	SEE-CDER	2004-2005	144 MDh	160	Etude en cours de finalisation
31	Electrification rurale décentralisée 300.000 foyers	Solaire Photovoltaïque/GP	ONE	2003-2010			
32	Centrale hydro de Tanafnit		ONE				



N°	Intitulé	Type	Organisme	Date de démarrage	Investissement	Emissions évitées (kT CO <sub>2</sub> /an)	Observations
33	Centrale hydro d'El Borj		ONE				
34	Centrale hydro de Dchar El Oued		ONE				
35	Centrale hydro de Ait Messoud		ONE				
36	Centrale à cycle combiné de Tahaddart		ONE				
37	Centrale Thermosolaire de Beni Mathar		ONE, CDER				
38	Amélioration des performances de la centrale de Mohammadia		ONE				
39	Introduction du GPL dans le transport	GPL/transport	CDER, SEE, Profession				

## **5.4 Moroccan CDM Experiences**

As specified in Article 6 of UNFCCC, Morocco makes every effort to elaborate and implement educational and public awareness programs on CC and their impacts. Thus, since 1996, all the projects on “energy” and “environment” include a capacity building and public awareness component. The Seventh Conference of the Parties convened in Marrakech from October 29 to November 9, 2001 offered Morocco an opportunity for a wide coverage of CC problems. The media coverage was able to reach a broad array of stakeholders such as: the public, decision makers, economic operators, academic and financial institutions, and NGO’s.

### **5.4.1 Capacity building project with GTZ**

In 2000/2001, a study related to the application of the CDM mechanism to renewable energy projects was conducted by the State Secretary of Environment (SEE) with the technical and financial support of the GTZ. This study has been carried out by CDER and DECON. The coordination of the study has been ensured by the CIEDE on behalf of the SEE. The general aim of the study was to support the Moroccan Government to develop a national strategy for the implementation of CDM projects and thus to facilitate the broader use of environmental sound energy sources.

### **5.4.2 CDM-ANVIMAR project**

Project CDM ANVIMAR was a co-operation initiative between Northern and Southern/Eastern Mediterranean countries focused on activities related to the implementation of the Kyoto Protocol flexibility mechanisms. In particular, the main objectives of the project was to analyze the possibility of intervention in the industrial sectors of energy and building in order to favor the reduction of gas emissions in the Mediterranean countries. The project’s aimed also at verifying the conditions of viability to activate the Clean Development Mechanisms between two EU Northern Shore countries (Italy and Spain) and five non-EU EUROMED partners in the Southern and Eastern Mediterranean (Lebanon, Morocco (CDER), Palestine, Tunisia and Turkey).

The project also promoted to Government authorities and Public bodies, economic and cultural institutions and the public opinion in general all over the Mediterranean area, the importance of and the opportunities offered by a co-operation of this kind between developed and developing countries to support them alike in a new path of sustainable development.

CDM ANVIMAR project tasks consisted of:

- Elaboration of a general inventory of the emissions generated in each of the above countries in order to evaluate their reduction
- Identification of critical locations (plants, buildings, etc) on which activities can be conducted.
- Performance of audits on critical locations in order to evaluate the potentialities of increasing their energy efficiency and the opportunities offered by low environmental impact best technologies already available on the market.
- Design of 5 Pilot-Project proposals,
- Organisation of a promotional event to meet supply and demand of clean technologies and CERs, and also providing the venue and opportunity for debating opportunities arising from the preceeding project phases

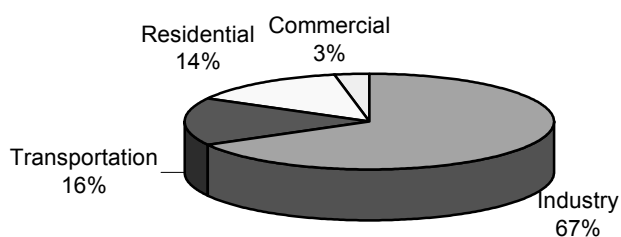
### **5.4.3 GEF Capacity Building Project**

The GEF Capacity Building Regional project, (RAB/94/G31), which started in 1996, has contributed to awareness raising and capacity building within public institutions and the private sector. Under this project, a portfolio of CDM projects were developed in a series of workshops between June 2001 through January 2002. Participants included private and public sector professionals.

## 6 CDM FRAMEWORK AND PIPELINE IN INDIA

### 6.1 Greenhouse gases emissions in India

India's carbon emissions have grown by over 60% in the last decade, despite the decline in carbon intensity recently reached. The emissions growth results primarily from energy use associated to economic development and heavy dependence on coal. The pie below shows the CO<sub>2</sub> emissions by sector, not including emissions from biomass consumption and agricultural uses (synthetic fertilisers, methane originating primarily from rice paddy cultivation and ruminant cattle) that is around a third of the GHG emissions. If these were taken into account in the pie, then the transport sector would contribute around 10% of the emissions against 16% without.



*Energy related carbon dioxide emissions*

Source : EIA, US Dept of Energy, 2002

Growth of energy related carbon dioxide emissions in India was reduced tremendously (111 million tonnes)<sup>5</sup> due to economic restructuring, local environment protection, and technological changes. These drivers have been mediated through economic reform, enforcement of existing clean air laws by the Nation's highest court, and renewable energy incentives and programmes funded by the GOI and foreign donors. In 2000 alone, energy policy initiatives reduced carbon emissions growth by 18 million tonnes – about 6% of India's gross energy-related carbon emissions.

### 6.2 The CDM context in India

India ratified the United Nation Framework Convention on Climate Change (UNFCCC) in 1993 and the Kyoto protocole in 2002.

The Ministry of Environment and Forests (MOEF), the DNA for India, is presently in charge of the formulation of CDM policies & guidelines and approval of CDM activities, and a person in

<sup>5</sup> Climate change mitigation in developing countries – Brazil, China, India, Mexico, South Africa, and Turkey, Pew Center, October 2002.

charge has been nominated in December 2003. Some estimate that India can capture 10 per cent share of the global carbon market and annual revenues to the country could be anywhere between US\$ 10 to 300 million.

CDM projects were developed in 2002 with the Dutch government tender CERUPT. The host country approval was given to 12 projects out of 17, through a committee formed by the MOEF including officials from the key concerned ministries such as MNES, MOP,... Five of these projects went through the approval procedure of the CERUPT and obtained Emissions Reduction Purchase Agreements (ERPA).

Government tenders are not the only route to CDM projects. The Prototype Carbon Fund (PCF) has entered into an MoU in October 2002 with the financial institution IDFC who prepares / assists project developers to obtain ERPAs from the PCF. The initial investment of 10 M EUR has been fixed.

### **6.3 The MoEF Approval criteria**

The following is the MoEFs Approval criteria for the CDM activities, as formulate by the Government of India.

#### **6.3.1 Eligibility**

The project proposal should establish the following in order to qualify for consideration as CDM project activity:

##### **Additionalities:**

- Emission Additionality: The project should lead to real, measurable and long term GHG mitigation. The additional GHG reductions are to be calculated with reference to a baseline.
- Financial Additionality: The funding for CDM project activity should not lead to diversion of official development assistance. The project participants may demonstrate how this is being achieved.
- Technological Additionality: The CDM project activities should lead to transfer of environmentally safe and sound technologies and know how.

*NOTE: The developers often complain that the MoEF is stressing too much on the technical additionality of the CDM activity. However they are hopeful that such issues will be resolved soon*

#### **6.3.2 Sustainable Development Indicators**

It is the prerogative of the host Party to confirm whether a clean development mechanism project activity assists it in achieving sustainable development. The CDM should also be oriented towards improving the quality of life of the very poor from the environmental standpoint.

Following aspects should be considered while designing CDM project activity:

1. Social well being: The CDM project activity should lead to alleviation of poverty by generating additional employment, removal of social disparities and contribution to provision of basic amenities to people leading to improvement in quality of life of people.
2. Economic well being: The CDM project activity should bring in additional investment consistent with the needs of the people.

3. Environmental well being: This should include a discussion of impact of the project activity on resource sustainability and resource degradation, if any, due to proposed activity; bio-diversity friendliness; impact on human health; reduction of levels of pollution in general;
4. Technological well being: The CDM project activity should lead to transfer of environmentally safe and sound technologies with a priority to the renewables sector or energy efficiency projects that are comparable to best practices in order to assist in upgradation of technological base.

### 6.3.3 Baselines

The project proposal must clearly and transparently describe methodology of determination of baseline. It should confirm to following:

- Baselines should be precise, transparent, comparable and workable;
- Should avoid overestimation;
- The methodology for determination of baseline should be homogeneous and reliable;
- Potential errors should be indicated;
- System boundaries of baselines should be established;
- Interval between updates of baselines should be clearly described;
- Role of externalities should be brought out (social, economic and environmental);
- Should include historic emission data-sets wherever available;
- Lifetime of project cycle should be clearly mentioned;

The baseline should be on project by project basis except for those categories that qualify for simplified procedures. The project proposal should indicate the formulae used for calculating GHG offsets in the project and baseline scenario. Leakage, if any, should be described. For the purpose of Project Idea Notes (PIN), default values may be used with justification. Determination of base project which would have come up in absence of proposed project should be clearly described in the project proposal.

### 6.3.4 Financial Indicators

The project participants should bring out the following aspects :

- Flow of additional investment
- Cost effectiveness of energy saving
- Internal Rate of Return (IRR) without accounting for CERs
- IRR with CERs
- Liquidity, N.P.V., cost/benefit analysis, cash flow etc establishing that the project has good probability of eventually being implemented
- Agreements reached with the Stakeholders, if any, including power purchase agreements, Memorandum of Understanding etc.

- Inclusion of indicative costs related to validation, approval, registration, monitoring and verification, certification, share of proceeds
- Proposal should indicate funding available, financing agency and also describe as to how financial closure is sought to be achieved

### **6.3.5 Technological Feasibility**

The proposal should include following elements:

- The proposed technology/process
- Product/technology/material supply chain
- Technical complexities, if any
- Preliminary designs, schematics for all major equipment needed, design requirement, manufacturers name and details, capital cost estimate
- Technological reliability
- Organizational and management plan for implementation, including timetable, personnel requirements, staff training, project engineering, CPM/PERT-Chart etc.

### **6.3.6 Risk Analysis**

The project proposal should clearly state risks associated with a project including apportionment of risks and liabilities; insurance and guarantees, if any.

### **6.3.7 Credentials**

The credentials of the project participants must be clearly described.

## **7 PROJECTS PRESENTED TO THE IRIS KYOTO CONSORTIUM AT WORKSHOPS IN INDIA AND MOROCCO**

The IRIS KYOTO partners from India (EEEC) and Morocco (CIEDE) organised a workshop in their respective country to present the consortium with the CDM context in their countries and some projects that could potentially be studied under the IRIS KYOTO project.

These projects are listed below.

A separate report will be prepared with the minutes of these workshops as well as the workshops held in Paris and Brussels. More complete information on projects to be further analysed will be provided, as well as a synthesis of project risks and summary findings of discussions with the financial community.



**PROJECTS under consideration by the IRIS KYOTO consortium**

	Sector	Power installed/ displaced	Energy saved / produced	Baseline (Quantitative and qualitative)	CERS	Project costs	Start date	Project developper	Status in the CDM procedure*	Funding / finance
		(MW)	(MWh)	(tCO2/MWh)	(tCO2e/year)	(MEUR)				
<b>MOROCCO</b>										
Fes Landfill gas recovery project								FES Municipality	0	
Tan Tan wind park desalination	RE	10						CDER	1	ONEP
Wind farm at Tetouan, Lafarge	RE	10,2			32 000	10,8		Lafarge	3	
Solar Thermal hot water systems for collective use (Promasol)	RE							ONE		ONEP
Sidi Bernoussi Industrial Park	EE							IZDIHAR		
Improve boiler EE in hammams and solar thermal (3000 hammams)	EE				216 000	70	2004			GTZ / FFEM / AFD
160,000 PV kits ?								ONE		
Thermal processes changes in a cement plant	EE							Association Professionnelle des Cimentiers (APC)		
Waste to heat use (tyres, domestic, industrial...) in the cement kilns (HOLCIM...)										
Urban transport management	Transport									
<b>INDIA</b>										
optimise the Agricultural Distribution System to minimise line-losses, improve supply quality and improve pump-set energy efficiency	EE		36 000	2,78 (incl. Nox?)	100 000	9,6	2004	EEEC/utility	1	GTZ
Industrial Solar thermal hot water systems	RE		15 400		12 252		2004	Tata BP Solar	1	
BERI Biomass E for rural India	RE	1,2				1,0526				Kanartaka Government
Mandigere mini hydel project	RE	2 X 1,75	15 800	0,81 kg/kWh	12 909	1,9 crores	2004	Bhoruka	1 and 2	
TATA-Power MWs PV plants	RE							Tata BP Solar		
Bangalore Light Rail Mass Transit	Transport									
Urban transport management	Transport									

\* Status of CDM procedure : 1- Concept ; 2- Project design ; 3- Negotiation on project financing ; 4- Negotiation on ERPA

**Table 9 : List of the projects considered by the consortium at the end of phase 1**

## 8 CONCLUSIONS

Risks associated with the CDM have mostly been responsible for slowing the rate of engagement of potential investors and project developers. But while this may hinder the Annex 1 countries from taking advantage of the cheapest option for meeting their emission reduction commitments, the developing countries are the biggest losers especially since they are the ones in most need for development capital. As indicated in this report, mitigation measures must be considered at a project level, which calls for multi-pronged proactive risk management approach. Several emerging issues of particular relevance are:

- **The risk environment is fast-changing and this requires close, regular assessment**

In the words of a Swiss Re manager, “the risk landscape is in a state of constant, rapid change which necessitates the on-going development of methods and processes to assess, quantify, classify, monitor and control risk.” Clearly, in such an environment, a relatively high level of effort is required in order to properly position CDM investment options

- **...but ongoing CDM Executive Board Decisions continue to clarify the rules for CDM**

The decisions of the CDM Executive Board have entered a crucial period. Decisions now taken to approve Baseline Methodologies are of great significance to some investment options and remove a level of uncertainty that has not been possible to date. With entry into force of the Protocol expected in 2003, the scene is set for accelerated participation in the mechanism.

- **Political and Country Economic Risks remain central to CDM investment decisions**

Although countries favoured for CDM investment vary considerably, some countries have moved much more quickly in clarifying national rules for project endorsement. This has increased confidence in those countries’ ability to deliver on CDM commitments. Other countries fall well behind in developing national CDM rules. Further, local economic indicators and trends are of equal concern to investors as they are in any conventional project investment.

- **The development of the actual pipeline of projects**

Clean energy projects are difficult enough to close. All need favourable policy environments and most specific financial incentives. The issue of corporate responsibility is now more and more talked about and environmental criteria are being to be mainstream in project appraisal criteria. Being aware of the importance of capacity building and of the difficulties of pipeline

development, parties involved in the CDM are allocating resources to these aspects, which are required for projects to close and emissions reductions to occur.

## References

Albrecht, J. (2002) "Instruments for Climate Policy: Limited versus Unlimited Flexibility". Edward Elgar Publishing Ltd, Cheltenham.

Bernow, S, Kartha, S, Lazarus, M, Page, T, (2003) "Free-Riders and the Clean Development Mechanism", Tellus Institute and the Stockholm Environment Institute, Boston Centre.

Blenkinsop Philip, "UN Climate Body Dampens Hopes as rejects projects, Reuters News Service, June 10<sup>th</sup> 2003.

Dutch Government, "CERUPT: 18 CDM projects to be contracted". March 2003 [WWW] <http://www.senter.nl/asp/page.asp>

Finland, Ministry for Foreign Affairs and Development Cooperation, "Finnish CDM/JI Pilot Program". [WWW] <http://global.finland.fi/english/projects/cdm/>

Greenpeace International, "Making the Clean Development Mechanism Clean and Green", Position paper for the Fourth Conference of the Parties to the UNFCCC, November, 1998, Buenos Aires, Argentina.

International Emissions Trading Association (IETA), "CDM Executive Board Decisions on Baseline and Monitoring Methodologies". IETA letter to the CDM Executive Board on rejected methodologies, July 2003.

International Rivers Network and the CDM Watch, (2002) "Damming the CDM: Why big hydro is ruining the Clean Development Mechanism".

Janssen Josef (2000), "Implementing the Kyoto Mechanisms: Potential Contributions by Banks and Insurance Companies". The Geneva Papers on Risk and Insurance, Vol. 25 No.4, October 2000, pp 602-618.

Lecocq, F, Capoor, F, (2002) "State and Trends of the Carbon Market". Report prepared for PCFplus Research., October 2002.

MMC Enterprise Risk and Global Energy & Environment Ltd, "Emissions Trading-Mapping the Risks". Report from workshop held in London, August 2001.

Prototype Carbon Fund: 2001 and 2002 Annual Reports

Prototype Carbon Fund, "Financial Risk Assessment and Mitigation: Risk-based structuring and pricing". PCF Implementation Note. Draft 6/5/02.

RIAN, "Russia to ratify Kyoto Protocol?", 16<sup>th</sup> July 2003 [WWW] [http://en.rian.ru/rian/index.cfm?prd\\_id=160&msg\\_id=3326539&startrow=1&date=2003-07-16&do\\_alert=0](http://en.rian.ru/rian/index.cfm?prd_id=160&msg_id=3326539&startrow=1&date=2003-07-16&do_alert=0)

Reuters, "Kyoto Protocol awaits nod from Russia's Putin", Story by Oliver Bullough, 7<sup>th</sup> July 2003 [WWW] <http://www.planetark.org/dailynewsstory.cfm/newsid/21416/story.htm>

Sokona Youba and Nanasta Djimingue (2000) "The Clean Development Mechanism: An African Delusion? Published in *Change*, No. 54, October – November, pp 8-11.

Springer Urs, (2002), "Can the Risks of the Kyoto Mechanisms be reduced through Portfolio Diversification? Evidence from the Swedish AIJ Program". IWOe Discussion Paper, No.97, February 2002.

Swedish Government Program (SICLIP –CDM), "Call for CDM Project Proposals" [WWW] <http://www.sida.se/Sida/articles/11500-11599/11518/>

Swiss Re, "An Overview of recent developments in Risk Management". Interview with Swiss Re Chief Risk Officer, Bruno Porro

The Community Development Carbon Fund, "Development + Carbon = Carbon with a human face". [WWW] <http://www.teriin.org/events/docs/cop830e.pdf>

Third World Network and CDM Watch, "CDM: Clean Development or Development Jeopardy?" [WWW] <http://www.twinside.org.sg/title/cop8a.doc>

Thomas et al (2003), "Final CDM CAPSSA Guidelines" available from <http://www.3e.uct.ac.za/cdm/>

UNFCCC Secretariat, "Kyoto Protocol: Executive Board Launches Process for Small-Scale CDM Projects". Press Release issued by the Secretariat in January 2003.

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