

Climate Protection Programme

Unilateral CDM – Chances and Pitfalls

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Authors: Michael Jahn, Dr. Axel Michaelowa, HWWA
Stefan Raubenheimer, SouthSouthNorth, Cape Town/RSA
Holger Liptow, GTZ GmbH

Abstract

The Clean Development Mechanism (CDM) was originally seen as an instrument with a bilateral character where an entity from an industrialised country invests in a project in a developing country. Also, multilateral funds were envisaged that would bundle investments to spread project risks. The sluggish implementation of incentives for industrialised country companies to embark on CDM projects and low carbon prices led to a preference of just buying Certified Emission Reductions (CERs) instead of investing in projects. Thus a third option has gained prominence – the unilateral option where the project development is planned and financed within the developing country. We propose that a project should be called unilateral if it involves no foreign direct investment, only has the approval of the Designated National Authority (DNA) of the host country and sells its CERs after certification directly to an industrialised country or sells them not at all.

Unilateral projects can become attractive if the host country risk premium for foreign investors is high despite a high human capacity and domestic capital availability. Moreover, transaction costs can be reduced compared to foreign investments that have to overcome bureaucratic hurdles. On the other hand, technology transfer is likely to be lower, capacity building has to be done by the host country and all risks have to be carried by host country entities. However, many countries would not get any technology if they could not use the unilateral model. Technical assistance is an important vehicle to create the host country capacity necessary for any CDM strategy.

Key Words

Clean Development Mechanism, unilateral, institutions, project participants, financing, risk premium

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1. What is unilateral CDM?

1.1 Unilateralism in the international rules

Can Clean Development Mechanism (CDM) projects be developed and implemented by developing countries unilaterally and the resulting Certified Emission Reductions (CERs) be retained and sold without any involvement of industrialised countries? This question recently has gained prominence as industrialised countries hesitate to invest in CDM projects.

The CDM is defined by the Kyoto Protocol and the Marrakech Accords agreed at COP 7 (2001). In the run-up to COP 6, 2nd part, it was still discussed whether there should be an explicit reference as to whether or not unilateral CDM projects are permitted and three variants of text were proposed. It was clearly stated that “in the absence of a provision, unilateral projects would not be excluded” (UNFCCC 2001, p. 12). The decision at COP 7 (17/CP.7) on the CDM judiciously avoided any text that could be seen as embracing or excluding a specific institutional interpretation. The key clause in the Marrakech Accords reads as follows (Art. 40(a) of Decision 17.CP7): “Prior to the submission of the validation report to the executive board, have received from the *project participants* (our cursive) written approval of voluntary participation from the designated national authority of *each Party involved*, including confirmation by the host Party that the project activity assists it in achieving sustainable development.” The Executive Board’s template for the Project Design Document clearly refers to the possibility of there being only one project participant and one Party (see A3 in the template). In line with the interpretation given by UNFCCC (2001), this means that unilateral CDM projects are allowed. Still some governments maintain that this is not the case. Exact definitions of what exactly is a unilateral CDM project do not exist and the ongoing debate demands further analysis. We try to fill this gap.

1.2 The history of the debate on “unilateral CDM”

After the Kyoto Protocol had been agreed, three basic approaches for CDM design were discussed in the literature: bilateral, multilateral, and unilateral. They reflect the different basic conceptions about what the CDM is, how it works and the different motivations of participants (Baumert et al. 2000, p. 3ff). At that time the starting point of the discussion was that companies from industrialised countries listed in Annex B (Annex B countries¹) of the Kyoto Protocol would *invest* in CDM projects and not just buy CERs. Thus, the majority of policymakers and researchers saw the possibility for developing countries to carry out CDM projects on their own as an idea without much relevance. Nevertheless, many

developing countries (DCs), especially from South America argued early in the process to be able to invest in projects and sell the resulting CERs to Annex B countries (TERI 1999, IISD). Costa Rica pioneered this approach with the creation of “Certified Tradable Offsets” (CTOs, Roveda and Merenson 1999, p. 22 f). The advocates of unilateral CDM (Stewart et al. 1999, p. 28) argued that this approach could minimise transaction costs due to the fact that barriers are better known to the domestic actors than to foreign investors and can be overcome more easily by the former. A few countries attractive for foreign direct investment such as China opposed unilateral CDM (UNFCCC 2000, p. 49) because they are interested to benefit from technology transfer in the CDM context. On the other hand, South Korea, a country with a lot of foreign direct investment has been the most vocal supporter of unilateral CDM². Zhang (2001) assumes this is due to the fact that Korea wants to bank CERs for the future. While Greenpeace initially accepted all three models (Greenpeace 1999), it later became an opponent of unilateral CDM fearing that it could be used to get nuclear energy in the CDM. Moreover, it was felt that the risk of non-additional projects could be higher under unilateral CDM (Liu 2001).

Experience has shown that hardly any direct foreign investment has been channelled into the CDM by Annex B countries. Instead Annex B countries like the Netherlands and multilateral CDM funds such as the Prototype Carbon Fund of the World Bank have been seeking to purchase generated CERs by concluding forward agreements with project developers in CDM host countries. In addition there are also reasons why Southern project developers may not wish to go the bilateral route from the very beginning or altogether: An example is that a(n) (co-)investor from an Annex B country may be motivated by technology export incentives (as with Japanese CDM investors), whereas the local or host country developer may have home-grown technology. Bilateral project negotiations may also lead to CER prices that cannot be improved on through delayed selling by the local project developer. Small scale projects are also suited to the unilateral format through local bundling and clearing house activities. These factors all heavily promote a unilateral project design.

The next section discusses thresholds at which we can call a CDM project “unilateral”.

¹ Annex B countries under the Kyoto Protocol have quantified emissions limitation and reduction targets for the period 2008 to 2012.

² “Korea strongly believes it is necessary to allow developing countries to initiate their own host-generated unilateral CDM projects” (Kim 2000)

1.3 Triggers for unilateral CDM projects

1.3.1 Origin of Investment

Initially, analysts thought that the three basic CDM approaches are mutually exclusive (Baumert et al. 2000, p. 3). However, in effect there are links between the designs and there is a smooth transition from a locally developed CDM project – which may end up as a unilateral CDM project - to a bilateral or multilateral CDM project. We have observed that most (so called) bilateral or multilateral projects are maturing out of earlier locally developed projects initiatives. So far the unilateral design has been defined by analysts by the condition that the actors in the host country develop, implement and finance a project on their own (Baumert et al. 2000, p. 6). This definition is not sufficient to describe the characteristics of a unilateral CDM project and other aspects have to be considered such as the source of investment and the design of purchase agreements. We use the terms “local project developer” and “local project owner” for entities coming from a CDM host country. The term “investor” only refers to entities from Annex B countries. Companies or governments acquiring CERs without prior involvement in the projects are called “buyers”.

Investment here is defined as equity capital for the project which may either be

- only foreign direct investment(FDI),
- only domestic investment,
- Partly foreign, partly domestic investment (for example in the case of joint ventures, special purpose vehicles or syndicates).

Our starting definition of a unilateral CDM project would thus be that all equity is coming from the host country regardless what it does with the CERs. We will see whether this can remain so.

1.3.2 Purchase agreements

Now we assess the role of purchase agreements. A purchase agreement implies that the project owner having the first claim on generated CERs is willing to sell the CERs instead of banking them (Krey 2003, p. 26). The general options are:

- **Purchase agreement before the issuance of CERs**

Due to the lack of issued CERs all existing purchase agreements involve a forward transaction. Such contracts are called Emission Reduction Purchase Agreements (ERPAs), concluded between buyers from an Annex B country and host country project owners on project specific conditions, normally with a fixed carbon price. Such a structure

can no longer be called a unilateral project, since the ERPA may have strong influence of the financial closure of the project. We consider these projects as bilateral.

- **Purchase agreement after the issuance of CERs**

If the project owner in the host country does not sign an ERPA he can, after having successfully carried out the project, sell the issued CERs on an open market. Such a contract is called a Direct Purchase Agreement (DPA). This situation thus clearly is unilateral even if it finally leads to a bilateral transaction. It is unilateral, because the all necessary project cycle activities are under the host country developer's responsibility or initiated through him. Until the conclusion of the DPA, we consider the project to be unilateral. Whether it is a bilateral project thereafter is debatable.

- **No purchase agreement**

The host either wants to bank the credits for future sale or future commitment periods or has not found a buyer yet and wishes to wait. The banking may be most relevant for newly industrialised countries that expect commitments in the near future. The CERs not sold immediately to an Annex B country need to be registered somewhere. Public and private entities from a developing country can open an account in the CDM registry. A project that does not sell CERs clearly is a unilateral project as long as the project developer does not ask a designated national authority (DNA) of an Annex B country to approve it. This leads us to the next trigger.

Any project only approved by a host country DNA can clearly be seen as unilateral. The question is whether buyer countries' DNAs have to approve projects from which they buy CERs? This is currently unclear, especially in the case of multilateral funds such as the Prototype Carbon Fund (PCF).

In case of the PCF, financial resources flow from Annex B investors through a centralised investment fund of the World Bank and are channelled toward CDM project activities through ERPAs. Project owners can be either Annex B entities or host country entities or entities from both the host and Annex B countries. ERPA negotiations between project owners and the PCF are concluded before registration. The project preparation is carried out by the developers and the World Bank together. Finally the fund repays its investors by an amount proportional to their capital contributions. From this it could be stated that the PCF is promoting locally developed projects which become bilateral projects in the framework of a multilateral agreement design. Up to the present the PCF projects are without exception only approved by host countries' DNAs. The PCF has sought guidance from the UNFCCC secretariat asking for clarification on this issue (Prototype Carbon Fund 2003b). We list

possible options on how the DNA approval could be managed in a multilateral design in Box 1.

Box 1: DNA approval options for multilateral funds

1. Only host country approves

This option reflects the present situation. However it is not evident if buyer DNAs will have to approve the projects, even though the Marrakech Accords state that the DNAs of all “involved” countries have to give approval (**para 40a MA**).

2. Only one investor DNA approves

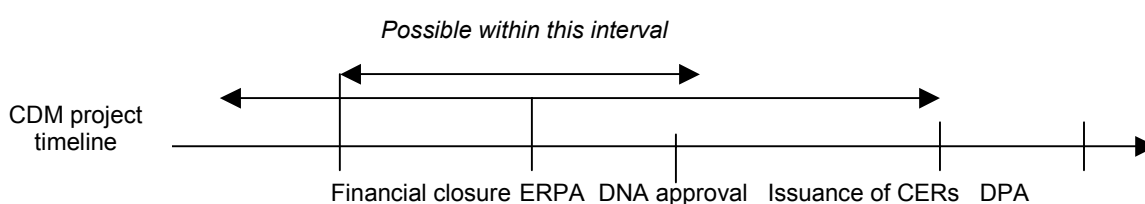
In this option the host DNA and one representative buyer DNA would approve the projects. This option seems to be reasonable, because it respects approval criteria of an investor country but at the same time keeps bureaucracy within a limit..

3. DNAs of all buyers have to approve

In this case the host DNA and all investor DNAs would have to approve the projects, which would without a doubt raise transaction costs, delay the whole approval procedure and increase bureaucracy.

During the period in which a project is developed and implemented until the first CERs are issued, crucial thresholds are thus financial closure, conclusion of an ERPA, DNA approval of involved parties, conclusion of a DPA and issuance of CERs. As shown in Figure 1, the financial closure can be done before or after conclusion of an ERPA and DNA approval while the ERPA can be concluded before or after DNA approval.

Figure 1: Possible points of involvement of an Annex B partner in the CDM project timeline



Taken our considerations above into account, we now propose the following definition: A unilateral CDM project activity is a project which involves no foreign direct investment, which has only the approval of the host country before registration and which sells its CERs through a DPA after certification and issuance or sells them not at all. All other forms of CDM project are, at least, not pure unilateral projects and may be called bilateral or multilateral CDM projects, depending on the foreign involvement.

2. Advantages of unilateral CDM projects

2.1 Lower risk perception by the host

Compared with domestic investors, foreign investors are faced with additional risks concerning the economic and political situation of the host country. These risks are known as country risk, which contains the risks of a “politically motivated embargo or boycott of a project, debt repayments or shipment of product, which may reflect the foreign policy of the [host] country” (Gonzales 2001, p. 36), and political risk, which is mainly the risk of expropriation due to political revolution and the peril of strikes, riots and civil unrest (Gonzales, *ibid*). Host country project participants might rate the political risk lower than foreigners do because they can better assess the political situation of their country. We describe below how the lower overall risk perception of national project developers has positive impacts on the mobilisation of capital for CDM and the geographical distribution of CDM projects.

2.1.1 Mobilising cheaper capital

Foreign investors prefer investing in countries with low country and political risks. They will only invest in high risk projects if they get a higher internal rate of return (IRR) compared to low risk investment options. For example, an investor building a power station will be content with an IRR of 5 % in Switzerland while he may ask for 30 % in India. Many CDM projects in high-risk countries probably will not be able to deliver a return that is high enough to compensate the high country risk. So the barriers to mobilise foreign capital for projects in countries with a high perceived country and political risk are huge. Host investors and financiers have a better knowledge of local risks, thus do not apply a discount for the uncertainty in risk assessment. Our power station investor from above asks for 30 % IRR in India because depending on a favourable and unfavourable risk assessment he sees the IRR in a corridor of 15 to 30 %. Being conservative, he chooses 30 % as a threshold. The local power plant developer has a much lower IRR “risk spread” of 18 to 22 % and thus applies 22 % as his threshold. Therefore local companies and banks are more likely to invest equity or to provide loans. We thus expect that the bulk of Annex B companies interested in CERs will just be interested in buying, which eliminates these risks.

2.1.2 Broader geographical distribution of CDM projects

The aversion of foreign financiers to invest in countries with a high perceived country risk would exclude a big number of countries from bi- and multilateral CDM projects. Locally developed CDM projects are a chance for those countries to participate in the CDM and to widen up the international distribution of projects. CDM projects with FDI only flowing to a

few participants countries would give rise to questions concerning equity and the purpose of CDM.

2.2 Reduction of transaction costs

Obviously project design options are very different and therefore impose different transaction costs (TAC). Krey (2003) presents a preliminary compilation of CDM transaction costs.

Table 1 Transaction Costs (Overview)

Market Transaction Costs	CDM Project Cycle Transaction Costs	
	Pre-implementation Phase Transaction Costs	Implementation Phase Transaction costs
Search costs	PDD Costs	Monitoring Costs
Negotiation Costs	Approval Costs	Verification Costs
	Validation Costs	Certification Costs
	Registration Costs	Adaptation Fee
		Administration Costs

2.2.1 Market transaction costs

Compared with unilateral projects selling their CERs through DPA, the search costs of PCF or CERUPT projects, for example, are likely to be much higher because they are charged with detailed documentation (project idea note, project concept note [only PCF], letter of endorsement, letter of intent) and because the management has to find viable projects amongst a great number of proposals. With growing maturity and standardisation of the carbon market, the CER transfer to Annex B countries is likely to be simple and not lead to major costs (Krey 2003, p. 46).

Negotiation costs are the costs that arise when the host and the Annex B buyer negotiate the purchase agreement for the CERs (see Krey 2003, p. 50), or if an Annex B entity directly invests in a project, the costs that accrue when Annex B investor and host participants negotiate how they can realize the project together. Unilateral projects' negotiation costs are likely to be lower as:

- Concluding a DPA, business partners only have to discuss price and quantity of CERs.
- An ERPA would further need stipulations for the case the project fails (see Krey 2003, p. 51).
- Negotiation costs for projects involving FDI would contain costs for the agreement on project financing, development, construction, sharing of benefits and the detailed obligations of the parties.

2.2.2 Project cycle transaction costs

These are costs that accrue from the project cycle activities listed in the table above. They are the same for unilateral projects as well as for other models, because project cycle activities are legally binding for all CDM projects. For validation, verification and certification, unilateral could make use of local DOEs, which might result in lower costs, provided that the respective host country has a DOE. This is most likely in countries with a high number of CDM project activities and the necessary human and organisational capacity.

2.3 More small scale projects

In many respects small scale projects are better suited to contribute towards sustainable development in the host country than large ones, but generate higher transaction costs and do not provide large financial returns (Tippman and Medina-Gómez 2003, p. 12). Developers of unilateral projects are faced with lower transaction costs as explained above than foreign developers. Therefore unilateral CDM can better integrate small scale projects. More small projects instead of one big project also enhance a well-balanced geographical distribution of projects inside a country.

2.4 Keeping CDM rent in host countries

In unilateral projects CERs and other returns accrue to the host country project owner, who can subsequently sell CERs on the carbon market. The CER rent which is the difference between the market price and the costs for generating CERs is kept by the project owner. Developers of unilateral projects may also be able to increase the sales price of CERs. Outside financing always results in a transfer of at least part of the benefits toward the joint venture partner. However, the rent will be squeezed by strong competition among sellers. This is currently the case due to a demand shortage. Of course this situation may change in the future.

3. Disadvantages of unilateral CDM projects

3.1 Higher Kyoto risk

If Kyoto fails, some domestic climate policy instruments such as the EU emissions trading system will still be implemented. It is likely that CERs generated by investors from the countries implementing these instruments can be used while CER import from unilateral projects will not find much support. The voluntary Chicago Climate Exchange trading scheme in the US uses such a system. The Chicago Climate Exchange accepts credits from projects developed in Brazil by member companies, but no project-based credits from other countries.

3.2 CER price risk

Downward price risk can be a significant problem for owners of unilateral projects. While foreign (co-)developers facing a domestic greenhouse gas constraint will always profit from any deal that is lower than their marginal abatement cost at home³, the unilateral seller will face the full brunt of the price decrease. Use of ERPA's that fix a low price has become the most popular measure of buyers and sellers to handle the price risk. Some more elaborate ones include an option to buy additional CERs at a higher price. This limits downward price risk and allows host country project owners to participate in upward price movements.

3.3 Capacity building costs to be borne by host country

Currently, we see several countries (Canada, Denmark, Japan, Netherlands) providing capacity building to countries from which they want to buy CERs. In a unilateral design the host country would take more responsibility in providing the necessary capacity building and thus be faced with higher costs. This is particularly true for the smaller, less developed countries not seen as attractive CDM suppliers, which results in a lack of capacity building activity by foreign donors. Only some multilateral donors (UNDP, UCCEE: CD4CDM (financed by the Netherlands)) and the Community Development Carbon Fund (CDCF) of the World Bank assists smaller host countries.

3.4 Less technology transfer

One strong criticism of unilateral CDM projects consists in the assertion of non-existing technology transfer from North to South (Liu 2001). This is true if there is no FDI or other forms of technical support provided by Annex B countries. However, for the local project developer there is still the possibility to buy foreign technology on a global market. Thus the problems deal principally with insufficient capital to purchase technology and with a lack of expertise in choosing, adapting and maintaining technology. Therefore local project developer are likely to deploy domestic technology in unilateral projects, even though they have to demonstrate the technological chance of their CDM project activity against the business as usual case (baseline). Contrary, in bilateral CDM projects with foreign direct investors technology transfer is more likely. This technology transfer may also provide technical support for adapting technology and maintaining it under local circumstances.

³ Assume that marginal abatement costs in an Annex B country are 50 €/t CO₂ for a large emitter. This emitter invests in a CDM project at costs of 7 €/t. Even if the price now falls to 3 €/t, the investor still has a cost savings of 43 €/t compared to opportunity costs of 4 €/t if he had invested at the lower price.

3.5 Delay of financial inflows

In the unilateral model the host country project developer has to bear the costs for project preparation and design, transaction costs and costs for marketing the CERs on his own. All these costs arise before the project owner receives any revenues. That means he may need to have access to financial markets to get sufficient additional capital for his CDM project activity. Being the only one in charge of the project, he runs the full financial risk. In case the project fails or does not generate the expected amount of CERs, the local project owner will be into serious financial difficulties.

4. When should host country project developers invest in CDM projects?

4.1 Mobilisation of domestic capital

Already, in many developing countries , like in several ASEAN countries and India, foreign sources, such as foreign bank loans or foreign direct investment (FDI), finance only a small share of gross capital formation. So it is obvious, that a large part of CDM projects will have to be financed by domestic sources, whereas FDI will play a minor role (Janssen 2002, p. 46).

The mobilisation of domestic capital for CDM requires:

- Joint action of financial institutions and establishment of financial standards.
- The capability to handle project risks .
- The development/use of financing tools, specific to the needs of CDM project participants and to the type of project.
- Capacity building for local developers and financing institutions.

4.1.1 Joint action of financial institutions and establishment of financial standards

In several DCs, the awareness of the CDM among financial institutions is growing, but a general practice and a concerted action for financing projects does not exist. For the case of India, financial institutions discuss to standardise the risk assessment procedures. Such standards would allow possible investors to rate and rank CDM projects and thus dismantle local investment barriers (Deodhar et al. 2003, p. 22).

4.1.2 Project risk management capability

Investing in a portfolio of locally developed projects reduces overall investment risks. If possible, the diversification should be “along the sectors and sources (energy; industrial processes; agriculture; sinks and waste)” and “the technology (energy-efficiency improvement; fuel switching; decarbonisation, CO₂ storage and sequestration and switching to renewable energy)” (Deodhar et al. 2003, p. 14). A diversification along host countries at first glance would not be possible in a unilateral design. However, CDM project developers in developing countries could also invest in projects in other developing countries, a possibility that has been mentioned in some debates in Korea. Finding a term for this type of projects is a challenge, maybe “bilateral developing country CDM project”.

Janssen (2001) sees baseline emissions risk, i.e. changes in the activity level [of a project] resulting from uncertain demand, technological under performance, business interruption as the only financial risk source that could be insurable in the future via a conventional business interruption insurance. Besides, insurance could cover technological and equipment failure risks. As insurance providers are not active in many of the less developed countries, host country project developers going for ERPAs or even DPA are likely to face a disadvantage compared to large multinationals with a big project portfolio. Unfortunately ERPAs have been signed to buyers requirements up to date, often introducing huge fines for the seller in the case of non-delivery and thus actually increasing baseline emissions risks. ERPAs with a simple possibility of termination reduce these risks but increase the risk that the buyer terminates the contract if he finds a cheaper deal.

Uninformed local project developers run a higher risk of baseline methodology or PDD rejection by validators or the EB compared to bilateral investors with high-quality consultants. But experience shows that the unilateral submissions to the CDM Executive Board were not generally worse than the bilateral ones.

4.1.3 Financing instruments

In many developing countries capital markets are underdeveloped and do not provide alternative financial instruments. In order to get local investors and lenders on the CDM track, financing tools, which suit best for financing locally developed CDM projects, have to be established.

Examples for project specific financing options for unilateral CDM are:

- National CDM Funds. They could provide soft loans for CDM projects or directly invest in the equity of a project (equity versus debt Fund) in return for the right to buy all or a portion of the CERs (Gonzales 2001, p. 45). Providing loans or equity to several projects would ensure financial risk diversification.
- CDM bonds. After a due diligence and risk assessment of CDM projects financial institutions might develop and issue specific CDM bonds and sell them on the capital market (Deodhar et al. 2003, p. 21).

4.1.4 Capacity building for local developers and financing institutions

Local project design requires the awareness of different financing options, an effective risk management and the establishment of financial standards. Otherwise host country investors and lenders will not recognise the CDM as a lucrative activity field and the scarce resources of DC economies will not be mobilised. Capacity building activities should target domestic financial institutions and developers and should aim at different goals:

- General understanding of the CDM process as a whole.
- Establishment of risk rating practices (Deodhar et al. 2003, p. 21) and accounting standards on the national level.
- Building the expertise on risk mitigation options.
- Successful integration of the CDM into project finance (Janssen 2002, p. 45).
- Building the expertise on different financing options and CDM specific insurance products.

4.2 Minimum human and institutional capacities

CDM projects developed and designed in the host country require a minimum of human and institutional capacities besides the availability of domestic capital whereas bilateral projects can be “parachuted” to some extent. Most of the projects are in need of highly qualified manpower like engineers and financial experts. Furthermore host country project development needs an adequate institutional framework motivating national stakeholders to take action on their projects. This requires:

- Close cooperation of project participants with the host country government
- Proactive DNA
- Advancement and networking of existing structures dealing with climate change policy and SD
- Practical decision-making procedures (see Capacity for Sustainable Development [CAP SD] 2003, p. 2)

5. Conclusion and recommendations

Many of the currently proposed CDM projects are designed locally, because foreign investors are reluctant to invest in projects with perceived high risks and transaction costs. Though locally developed CDM projects do usually not involve FDI and do not promote technology transfer, they are not necessarily at a disadvantage compared with the other designs. They may imply a reduction in transaction costs and be better integrated into a national sustainable development strategy. Even if projects are locally developed, Annex B investors or buyers might still enter until CERs accrue. Therefore technical assistance e.g. provided for by the GTZ on behalf of the German Government should help Non-Annex I countries to develop projects locally and at the same time help to cross the threshold that makes their projects attractive for Annex B investors or buyers. This requires a capacity building strategy according to the needs of locally developed CDM projects on the one hand, and a strategy to dismantle investment barriers for Annex B investors on the other hand.

Regarding locally developed CDM projects it is most important

- to develop effective DNAs and to evaluate and link existing institutional structures,
- to foster the understanding of financing mechanisms among the host country participants in order to mobilise domestic capital,
- to identify suitable host country project options,
- to motivate public and private entities to engage in locally developed projects
- to offer capacity building activities increasingly to countries that are so far excluded from bi- and multilateral CDM, project development but have sufficient domestic capacity to develop local projects.

In order to get more foreign investors on the CDM track, it might be useful

- to increase the awareness of the CDM in the Annex B private sector,
- to enable an objective risk assessment by providing detailed information on the economic and political situation of a host country
- to install an information platform, where host country project developers can contact potential Annex B investors.

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