

RESEARCH ARTICLE

Developing institutions for the clean development mechanism (CDM): African perspectives

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Abstract

The clean development mechanism (CDM) requires developing countries to set up designated national authorities (DNAs). The DNA should be designed to both attract investment and to establish an effective regulatory framework for project approval – including assessment to ensure that CDM projects contribute to national sustainable development objectives. Since CDM investment flows to Africa are uncertain, however, countries cannot risk large investments in institutional infrastructure and need to build on existing institutions. This article examines the critical functions that a DNA has to fulfil, and outlines several institutional models. It concludes that models that minimize institutional cost by drawing on existing institutions for environmental impact assessment and promotion of foreign direct investment are likely to be the best starting-point for DNAs in many African countries.

Keywords: Clean development mechanism; Institutional policy; Capacity building; Africa

1. Introduction

The clean development mechanism (CDM) is a project-based mechanism that allows industrialized countries to meet part of their emission reduction targets by investing in developing countries. The Marrakech Accords (UNFCCC, 2001) launched the CDM in principle, with the Kyoto Protocol entering into force on 16 February 2005. CDM rules require developing countries to set up a designated national authority (DNA) (UNFCCC, 2001: para 29). CDM offices (as the DNAs are also known) must approve projects in the host country, including ascertaining that they meet national sustainable development objectives. Various institutional models for CDM offices are explored in this article. Given the resource constraints of most host countries, it is critical that DNAs are created in a cost-effective manner.

This article outlines the broad objectives of instituting a CDM programme, including necessary elements for CDM institutions and key outputs. It proposes that institutional models must be appropriate to the context of developing countries, and examines several institutional models. For African countries, a central issue is the amount of investment that CDM can attract.

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2. How much can Africa expect from the CDM?

The CDM as defined in the Kyoto Protocol (UNFCCC, 1997: Article 12) has two objectives, namely sustainable development and reducing GHG (greenhouse gases) emissions. Much of the attention in outlining the modalities and procedures for the CDM (UNFCCC, 2001) has focused on emission reductions, however, with much less effort being directed towards operationalizing the commitment to sustainable development. The only relevant intervention is the letter of approval which ‘host countries’ must issue after considering whether a proposed CDM project meets their national sustainable development objectives.

The institutional effort required is likely to be proportional to the size of the task, and the scale of benefits expected. A fundamental issue of equity relating to climate change and Africa is that those least responsible for the problem of global climate change are most vulnerable to its impacts. Africa has contributed little to GHG emissions. Considering CO₂ emissions from fuel combustion, Africa only contributed 2.9% of the global total in 2000 (IEA, 2002). Taking cumulative historical CO₂ emissions over the whole of the 20th century into account, the share is 2.5% (WRI, 2001). GHG emissions in Africa are largely based on meeting basic needs, such as food, clothes, shelter and sanitation – so-called ‘survival emissions’ (Mwandosya, 2000). Mitigation efforts should start with sustainable development, taking into account the current status of African countries. African countries are unlikely to set up large institutional infrastructures for emission reductions alone, given that the volume of emissions to mitigate is comparatively low.

These general inequities regarding climate change are reflected in the CDM process as well. Only if sufficient investment is generated will it be worthwhile to invest in setting up an institution primarily for the CDM. Similarly, in assessing the state of DNAs in South and Central America, a constraint identified was that the number of approved projects in 2003 was only 2.7 per country and the low price of certified emissions reductions (CERs) (Morera et al., 2003). Both historical experience with foreign direct investment (FDI) in Africa and modelling of the potential size and distribution of CDM projects suggest that relatively little of total CDM investment might flow to Africa. The experience of activities implemented jointly (AIJs) was that initially no projects were implemented in Africa at all (Hirst and Spalding-Fecher, 1998). The uneven distribution of projects first became apparent at the Fifth Conference of the Parties (COP-5), where it was agreed that the issue of geographical imbalance, in particular the lack of projects in Africa and small-island developing states, should be addressed. Of 150 AIJ projects reported by March 2002, only four were in African countries – two in South Africa, one in Zimbabwe and one in Mali (UNFCCC, 2002).

Modelling results suggest that much of any CDM investment is expected to flow to China, India and Brazil; with China alone accounting for about half of the potential (Jotzo and Michaelowa, 2002; Chen, 2003). Initial expectations were that total investment would be in the order of billions to tens of billions of dollars ([Q2]WRI, 2000; Vrolijk, 1999, 2001[Q3]). However, since the withdrawal of the USA (which accounts for more than one-third of the emissions capped by the Protocol), from the process, these have dropped significantly to a range from hundreds of millions to single billions ([Q4]Halsnaes, 2002; [Q5]Jotzo, 2002; Chen, 2003). Of these reduced flows, Africa cannot expect to receive a large share. If CDM funding follows the same patterns as FDI, sub-Saharan Africa would only receive 4% of investment to low- and middle-income countries (based on data in [Q6]World Bank, 2003). In addition, the price of the certified emissions reductions (the CDM carbon credits) is low, with early investors offering only US\$2–5/tCO₂, largely based on existing carbon trading efforts, although this had risen somewhat by 2005 to €5–7/tCO₂.

If African countries cannot rely on large flows of investment, a strategy of building on existing institutions is a good approach to managing risk. Building capacity to attract investment, using existing investment centres and attracting climate-friendly development projects, should be central to Africa's approach. Given limited financial resources, ministries of finance are unlikely to approve budgets for new institutions unless there are certain returns. Should the CDM investment flows be larger than expected, new institutions could be created to meet demand.

3. Key elements and functions of a CDM office

Setting up a CDM programme, whether through a new office or existing institutions, aims to meet several objectives (see Figure 1[Q7]). One is to market the country as a destination for CDM projects and investment. Another is to ensure effectiveness, in particular minimizing the time between the first approach from an investor and the final approval of the project. Related to this is efficiency, which is aided by having a single point of contact in government, and avoiding sending project developers through several departments. Good governance requires that there is adequate accountability for the decisions to approve projects. Finally, equity requires that a process that is fair for all stakeholders.

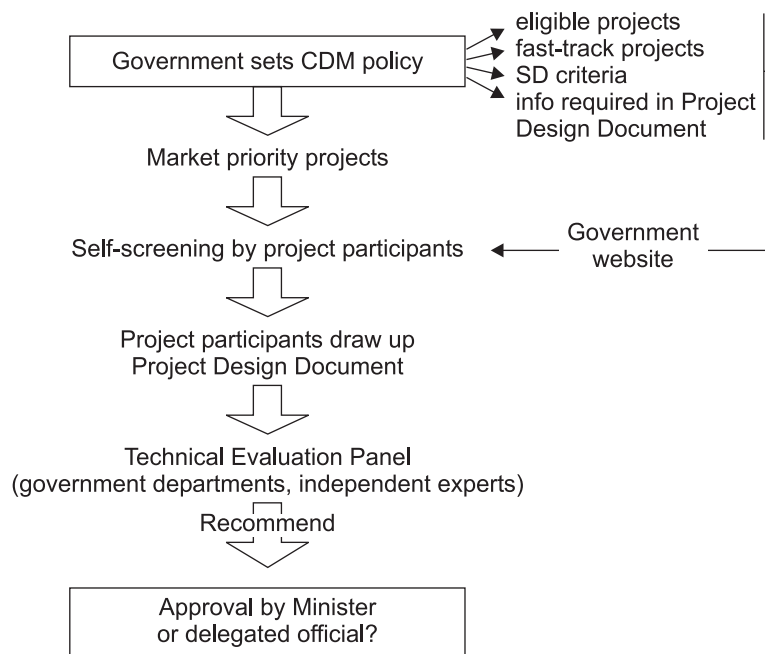


Figure 1. Possible host government process.

3.1. Elements that an institutional model must incorporate

Regardless of institutional model, a CDM office requires some key elements, as listed below.

Identifying clear roles for different role-players

The role of the national focal point for climate change should be clarified. In some cases, this will overlap with the CDM office, but if not, roles need to be kept clearly separate. In a broader sense,

effective cooperation between government departments will be necessary for many projects, as line-function departments (such as those for energy and water) will need to be consulted. Stakeholders outside of government should be included at clearly defined points for their input. In some developing countries, stakeholder advisory bodies for climate change already exist and can be of assistance in facilitating input.

Creating an efficient link to project developers

Governments are not likely to take on the role of project development in many cases. For projects outside of the public sector, government should encourage the use of other resources (private sector, development bank, NGO) to facilitate project development. An efficient link between private project developers and the CDM office is essential.

Identifying who makes decisions

The term ‘host country approval’ makes clear that the decision on approval or rejection of proposed projects must rest with government. However, this does not preclude government from using independent expertise to provide technical assessments. Project developers cannot have a direct role in approving projects, due to their vested interests.

Resourcing the office

Financial sustainability is critical to the success of any institution. A CDM office must have independent, long-term funding, capable staff, a clear regulatory framework, and flexibility to do its work. The use of existing institutions, where possible, will cut down on costs.

3.2. Functions of a CDM office

Given the elements outlined above, what are the key functions of a CDM office? Three levels can be distinguished: the policy decisions relating to the regulatory framework, investment promotion, and administrative functions.¹

Creating a regulatory framework for CDM projects is the responsibility of the DNA. This function involves setting clear criteria for host country approval, including whether the CDM project meets sustainable development criteria. While defining sustainable development criteria is the prerogative of each host country, useful tools have emerged that can assist in the process, for example the SouthSouthNorth matrix ([Q8]Thorne and La Rovere, 1999) and a tool called MATA CDM (Sutter, 2003). Existing government policy on sustainable development will inform the criteria eventually chosen by each country.

Investment promotion is a distinct function, whose aim is not regulatory but is more akin to marketing. Institutional mechanisms need to be set up, possibly within the framework of existing agencies already dealing with FDI (see Section 4.2[Q9]). Investment policy may include decisions to encourage investment in particular project types.

Administrative support from a secretariat is required to provide information to the outside world on the host country approval process, sustainable development criteria, and possibly benchmarks for projects in sectors that allow standardization. Figures (2002) notes that it will also be important to review and establish a national legal framework. Governments will need to keep records of CDM

projects in their country and possibly track progress. For project developers, links to resources such as the format of project design documents, monitoring plans, and operational entities could be provided.

4. Institutional models for a CDM office

Various institutional models have been considered in the context of developing capacity in Africa for the CDM. Some initial thinking (EDRC/SSN, 2001) in the South African context for the Department of Environmental Affairs and Tourism is reflected in Figure 4[Q10]. Further elaboration of these models and some others outlined below were presented by the UNEP Collaborating Centre on Energy and Environment (UCCEE) as part of a project on ‘Capacity development for the clean development mechanism’. The project was conducted in collaboration with government officials from Mozambique, Uganda and Côte d’Ivoire, with technical assistance from EDRC, ENDA and UCCEE. Efforts in Africa could also draw on lessons learned in Latin America (see Figueres, 2002).

4.1. The environmental impact assessment model

The institutions used to create CDM offices need to be appropriate to the context of different developing countries. The environmental impact assessment (EIA) model is particularly useful for small countries and least-developed countries. As shown in Figure 2, least-developed countries typically have lower GHG emissions per capita, but also lower economic output (measured in GDP) per person. Developing countries may be further along these curves, but not at the level of developed or industrialized countries.

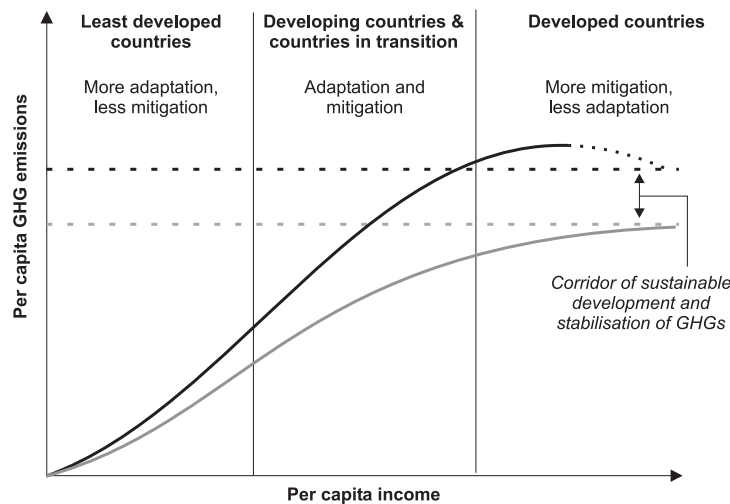


Figure 2. Different stages in development imply different institutions.

For least-developed countries, it makes little sense to set up separate institutions. For these countries, and perhaps other developing countries which are uncertain about how much investment will materialize, it would be a better strategy to use EIA procedures. The functions of a CDM office could be taken up by existing institutions without diverting scarce resources towards setting

up new ones. Such an approach saves costs and avoids duplication of assessment of sustainable development. It is also a useful risk-management strategy, committing fewer resources to the CDM upfront. Should large investments materialize, e.g. when a country moves into the second stage shown in Figure 2, the option of setting up a dedicated office will still remain open.

The EIA process is already designed to establish the impacts of projects on local sustainable development. Generic basic steps involve a baseline study, impact prediction, and project implementation, followed by monitoring and auditing (ADB, 1996). A more detailed framework for a typical set of factors already considered for EIA processes is shown in Figure 3.

- 1. Ecosystem**
 - Terrestrial
 - Aquatic
 - Human / animal pathways
- 2. Resource**
 - Mineral
 - Energy
 - Natural (and/water)
- 3. Physical environment**
 - Air quality
 - Water quality
 - Water disposal
 - Electromagnetic interference
 - Electromagnetic radiation
 - Noise pollution
 - Aesthetic degradation
 - Greenhouse gas emissions
- 4. Health**
 - Occupational
 - Public
- 5. Safety**
 - Occupational
 - Public
- 6. Socio-economic**
 - Social
 - Economic
 - Institutional

Source: ADB (1996).

Figure 3. Environmental impact taxonomy.

Adding GHG emissions to the list of impacts on the physical environment would be a minor addition to the list. Establishing whether a CDM project meets the sustainable development objectives of the host country, as required for host country approval, could be based on the EIA assessment. An added advantage of this approach is that it links the CDM project into a process that monitors the impacts on local sustainable development – something that is not built into the CDM rules, which only require approval of the project's contribution to sustainable development upfront, not monitoring of the *local* impacts after implementation.

4.2. FDI-piggyback model

Most African countries have institutions dealing with FDI. Such national investment centres may set policy frameworks and promote investment. These institutions receive projects from foreign investors and by applying policy criteria, evaluate and approve projects. The criteria usually reflect national development objectives. The FDI framework could be adapted to also approve CDM projects. In this model, proposed by Wamukonya (2002), the investment aspects of the CDM would be highlighted. An advantage of the model is that it reduces costs by piggybacking on existing institutions.

Given the technical requirements for CDM projects of reducing emissions and contributing to sustainable development, the investment agencies are likely to require assistance from government agencies specializing in these aspects. In this model, the investment agency becomes the coordinator of technical inputs and carries out the secretariat functions.

Some African countries are considering this option seriously through the capacity development project (EDRC, 2003), while a final decision will be taken by the respective governments. The DNA will be a permanent forum for coordination of key stakeholders in the CDM network.

4.3. The two-unit model

In this model, the regulatory functions and promotion functions are separated. One department would evaluate projects and grant, if appropriate, host country approval. This function would best be placed in the department dealing with sustainable development, possibly the environment department. A different department would engage in investment promotion, developing a portfolio of CDM projects for marketing to investors, capacity building and outreach. This function might be more appropriate in the investment ministry. A two-unit DNA model is being considered by some southern African countries. The following example from Uganda considers a separate role for policy and administration of the CDM by a Board, with the Uganda Investment Authority fulfilling an investment promotion function. The DNA itself, however, is intended to be a single structure.

Uganda has held a national technical consultative workshop with stakeholders to discuss institutional framework and structure for implementing the UNFCCC and the Kyoto Protocol, taking into account the particular needs of implementation of the CDM. The proposed structure envisages a board, with individual members drawn from the public, civil society and private sectors ([Q11]UNT, 2004). The Board would report to the Minister of Water, Lands and Environment (MWLE) and approve CDM projects. It would also give policy advice to the Minister on the management of climate change issues. The Board may constitute an *ad hoc* technical committee to advise it on any technical issue. A secretariat is to be established to provide administrative support to the Board. The Uganda Investment Authority is mandated to promote and attract investment to Uganda and will therefore play an important role in promoting CDM investment. The proposed structure is awaiting finalization through a government decision.

4.4. Single government department model

In this model, one department of a ministry undertakes all the activities of the DNA. The department identified as the focal point for climate change would be an obvious choice, with other possibilities being the department dealing with trade and investment, and the department within whose

line-function most CDM projects are likely to fall (such as the Departments of Energy or Forestry). In South Africa, the initial decision was to establish the DNA in the Department of Environmental Affairs and Tourism (DEAT), but it will actually be located in the Department of Trade and Industry. This option is represented in the ‘government’ model shown in Figure 4.²

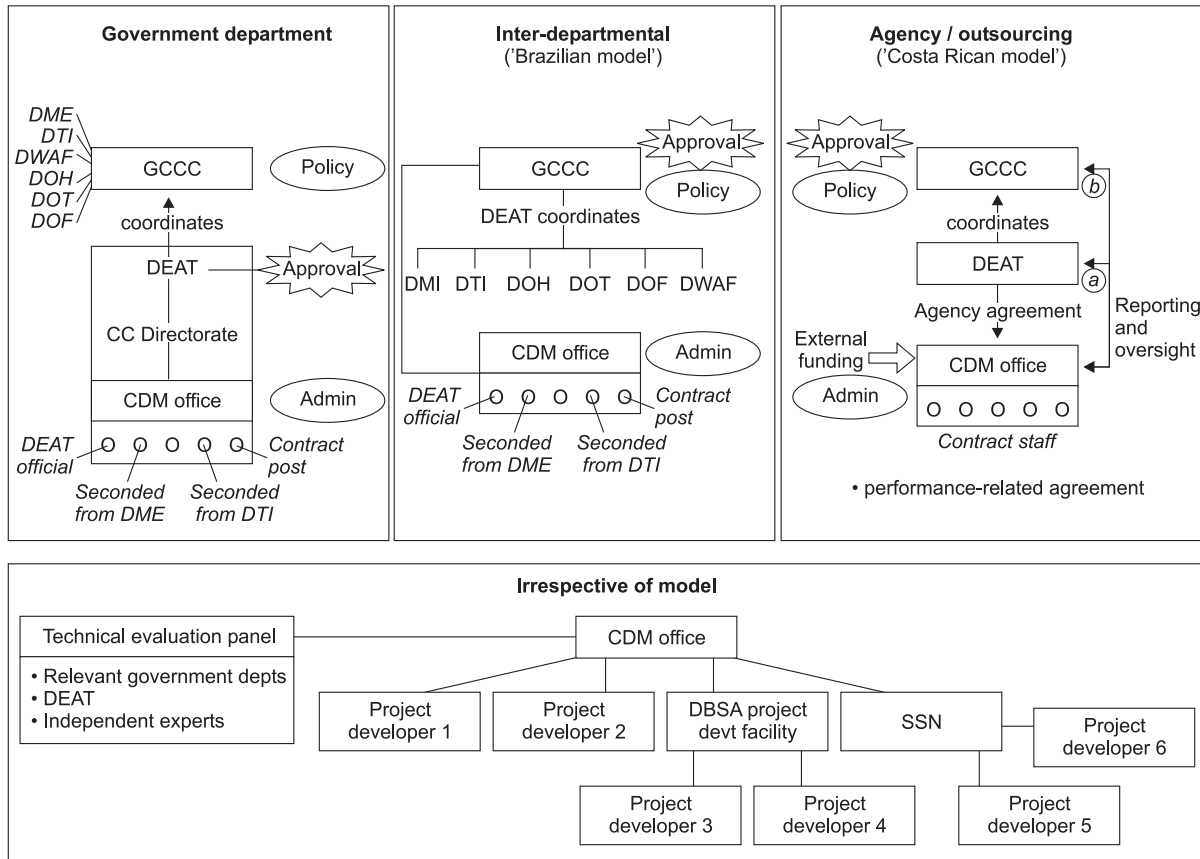


Figure 4. Options for institutional design of a DNA for South Africa.

In this model, the single department would draw expertise for considering approval of projects from technical experts in other departments, as in the Ugandan *ad hoc* ‘technical committee’. The department could act as a secretariat, and in some cases outsource technical input to consultants. Since host country approval requires an assessment of whether the project contributes to national sustainable development objectives, the environment department is likely to be involved here. In the single-department model, the function of investment promotion would also lie in the single department.

4.5. Inter-departmental government model

An inter-departmental committee, including relevant government departments, could be set up for approval of projects. However, it will still be necessary to identify one department to coordinate

the efforts of the committee and to carry out ‘secretariat’ functions. Coordination efforts may also incur costs, at least in the time of officials. A committee is unlikely to be efficient in administrative functions related to approving projects and communicating (based on agreement in committee) with the Executive Board and project participants. How this model might be implemented in South Africa is outlined in the middle section of Figure 4.

4.6. Outsourcing model

Host countries might choose to outsource some DNA functions to a private agency. This agency would evaluate projects and recommend on whether they should receive host country approval or not. The final letter of approval, however, would need to be issued by government. This model is outlined on the upper right of the three options in Figure 4. This option would have low set-up costs, but high costs for each CDM project, as the government would pay consultants per project handled.

4.7. Hybrid models

The institutional models are not mutually exclusive, and can be combined to form hybrid models. The example of Mozambique illustrates a ‘hybrid’ institutional design. After several meetings with different stakeholders, there was general consensus in Mozambique that the DNA leadership role should be played by the Ministry for Environmental Affairs Coordination (MICOA). A number of models were proposed, but after the National Workshop held on 5 February 2003 these models were discussed with all the stakeholders and only one was seen to fit well into the Mozambique circumstances in order to respond effectively to the national institutional framework for CDM (see Figure 5).

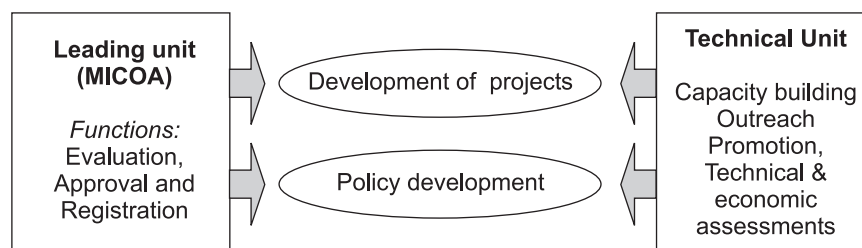


Figure 5. Proposed DNA institutional model for Mozambique.

The model proposed is a mix of the two-unit and inter-agency models. In this DNA institutional design, MICOA would take coordination role and host the Political and Leading Unit, a new entity in the Ministry. The leading unit would be responsible for CDM project evaluation and approval as well as communicating with the CDM Executive Board. There would be a second unit, the Technical Unit, which would deal exclusively with technical aspects of CDM, including capacity-building, outreach programmes, project promotion, technical and economical assessment, etc. The University of Eduardo Mondlane would be responsible for coordinating the Technical Unit. The Technical Unit would be multi-sectoral, drawing expertise from different stakeholders that could play roles in designing, evaluating and monitoring CDM projects

5. Policy implications

In designing the best possible CDM offices for Africa, lessons can be drawn both from the experience on the continent and other developing countries. The first insights from the African experience are considered below, but we also draw on experience documented in other parts of the world.

5.1. *Lessons from initial experiences in Africa*

Several models have been presented in this article for the institutional development of CDM offices. The severe financial constraints that African countries suffer, however, together with the low expectation of CDM investment, suggest that simple options are more likely to be chosen; those building on existing institutional capacity rather than requiring new structures.

The EIA model is particularly useful for African countries expecting few CDM projects. Given that relatively little CDM investment is likely to flow into Africa, and within Africa the investment may well focus on a few countries, developing a dedicated institutional infrastructure is not justified. Many African countries could make use of existing EIA capacity to assess projects in terms of their contribution to sustainable development.

Promoting countries as destinations for CDM investment can also be done by existing government institutions. For this function, the FDI-piggyback model suggests itself. The combination of the EIA and FDI-piggyback model suggests the two-unit model. For most small African countries, only a strengthened EIA linked with investment centres will be needed. In a few African countries, where somewhat more CDM investment may be expected, the other models may be chosen. A single government department will coordinate, but coordination will lead to some variation of the inter-departmental model. In the final analysis, African countries will choose the option that best fits their situation – and the available resources.

The different models may have different cost implications, although these costs are still not well defined (see also Morera et al., 2003). Much of the literature on costs has focused on transaction costs at the project level³, rather than the costs of setting up institutions and operating them. The institutional models outlined above suggest that single-department (in the EIA or piggyback models) might save costs. High levels of coordination between multiple government departments may impose costs in time and/or money. The outsourcing model, in part, is an attempt to keep the fixed institutional costs low; but, depending on consultants' rates, the ongoing costs per project may be high. Further work on the institutional costs in practical experience is needed.

Different approaches are taken to assessing local sustainable development benefits under various models. In the EIA model, the idea is to extend an existing process to include a new competency. With the piggyback model, locating CDM in an investment agency, this agency is not likely to have special expertise on sustainability; and it is likely that external assistance might be required – perhaps by outsourcing to experts on sustainable development. Conversely, if a single-department model defaults to the Environment Ministry, the competence in investment issues is likely to be limited. The two-unit model is an attempt to separate the two functions, with the department taking on the regulatory brief assessing sustainable development. Lessons on this issue can also be drawn from other developing regions.

5.2. Lessons from other developing regions

In assessing sustainable development criteria, the South and Central American experience showed that the majority of offices used this as their sole criterion; few looked at baselines, additionality or related issues. Yet few countries had defined concrete methods to carry this out (Morera et al., 2003), despite the availability of tools for assessment. This points to the advantage of institutional models that build on existing assessment processes, such as the EIA model. Certainly the competencies of such offices might need to be expanded to cover GHG emissions, but this seems to carry a lower institutional cost than setting up a new office. One country, Uruguay, was reported to be adapting a particular tool (MATA-CDM) to its local conditions (Sutter, 2003).

Cost has been experienced as a barrier for establishing CDM offices in other developing regions. While models based in government departments may in theory be able to draw on national budgets, they still have to persuade Treasuries to authorize expenditure. Morera et al. (2003) found that all offices in Central and South America were looking for additional financing. The possibility of charging for the services of project evaluation and approval services would be an interesting reversal of the outsourcing model, where government pays consultants.

Drawing lessons more broadly on the building of host-country institutions, Michaelowa (2003) concluded that the ‘optimum institution will be a CDM Office that is independent but has full approval powers. A second-best solution is a two-tiered system’ (Michaelowa, 2003), suggesting a preference for the outsourcing model, with the two-unit or hybrid institutional design being considered next best.

6. Conclusion

The African approach to climate change should focus more broadly on investment in sustainable development. Many such projects would avoid emissions compared with a business-as-usual development path. At the institutional level, models that include departments with competence in assessing sustainable development should be preferred over those that maximize investment. Institutional designs that minimize high ongoing institutional costs are also attractive. Another major focus should be capacity-building in project formulation, project development, management and investment promotion. The development of institutions for the CDM should be integrated into this broader approach. In particular, least-developed countries, most of which are in Africa, can ill afford to take the risks of investing in institutional infrastructure for what remain uncertain flows of money. Designing appropriate institutions will need to take into account both local sustainable development benefits and emission reductions.

Acknowledgements

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Notes

- 1 For a more detailed list of [Q12]function, see Michaelowa (2003): Information database and dissemination / training, policy development, project development support, Operational Entity support, credit sharing support, marketing.
- 2 The Ugandan example locates the DNA Board in a single ministry (Ministry of Water, Lands and Environment, MWLE).
- 3 A recent study of the transaction costs of unilateral, energy CDM projects in India found a range of US\$0.07–0.47/tCO₂ (Krey, 2005).

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Queries

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- Q1 I have added International dialling code (+27) for South Africa. Please check.
- Q2 WRI 2000 in text, WRI 2001 in References. Which is the correct date or are they different references?
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- Q5 Jotzo 2002 not in References. Should this be Jotzo and Michaelowa 2002 or is it another reference?
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