

CDM in sub-Saharan Africa and the prospects of the Nairobi Framework Initiative

ALFRED D. BYIGERO^{1*}, JOY CLANCY², MARGARET SKUTSCH²

¹ Rwanda Utilities Regulatory Agency (RURA), PO Box 7289, Kigali, Rwanda

² Department of Technology and Sustainable Development (TSD), Centre for Clean Technology and Environmental Policy (CSTM), The University of Twente, PO 217, 7500 AE Enschede, The Netherlands

To what extent can capacity-building activities under the Nairobi Framework (NF) Initiative overcome barriers to the Clean Development Mechanism (CDM) in sub-Saharan Africa and, in particular, the East African region? The level of CDM penetration into sub-Saharan Africa is compared with CDM market trends globally. The relatively low CDM penetration in sub-Saharan Africa and the East African Community (SSA/EAC) countries is a result of endogenous barriers, particularly the inadequate general investment climate, the low level of industrialization of many countries, and the lack of CDM capacity, particularly with regard to institutional infrastructure. To assess these barriers, case studies were conducted in Rwanda and Uganda, while South Africa was taken as a reference case since it has – in the context of sub-Saharan Africa – a relatively well-developed CDM business. The NF Initiative, which was developed to deal with the lack of CDM capacity in Africa, cannot address the general investment climate of host countries or their economic structure as these are beyond its scope. Nor does the NF address investors' perceptions of the investment climate, but instead focuses its capacity-building efforts on HRD (human resource development; i.e. training courses) rather than on institutional questions, thereby failing to address some of the real issues at stake.

Keywords: capacity-building; CDM; climate change; East African community; foreign direct investment; Nairobi Framework; sub-Saharan Africa

Dans quelle mesure les activités de renforcement des capacités incitées sous le Cadre de Nairobi « le Nairobi Framework, (NF) » peuvent-elles relever les obstacles au MDP en Afrique subsaharienne et notamment en Afrique de l'Est ? Le degré de pénétration du MDP en Afrique subsaharienne est comparé aux tendances du marché mondial pour le MDP. La pénétration relativement lente du MDP en Afrique subsaharienne et dans les pays de la Communauté d'Afrique de l'Est « Sub-Saharan Africa and the East African Community (SSA/EAC) » est la conséquence de barrières endogènes, en particulier du climat général d'investissement inadéquat, la faible industrialisation de beaucoup de pays et le manque de capacités pour le MDP, en particulier en ce qui concerne le cadre institutionnel. De manière à évaluer ces obstacles, des études de cas furent entreprises au Rwanda et en Ouganda, l'Afrique du Sud étant prise en tant que cas de référence vu sa position de pays relativement développé dans le contexte de l'Afrique subsaharienne. Le Cadre de Nairobi, établi pour relever le manque de capacité dans le MDP en Afrique, ne peut pas redresser le climat général d'investissement des pays hôtes ni leur structure économique, ceci allant bien au-delà de son domaine. Le Cadre de Nairobi ne peut pas non plus relever la perception des investisseurs face au climat d'investissement, mais se concentre sur les efforts de renforcement des capacités en ressources humaines par le biais de formations, plutôt que sur des questions institutionnelles, de ce fait négligeant de s'attaquer à certaines des véritables problématiques étant en jeu.

Mots clés: Afrique subsaharienne; changement climatique; communauté d'Afrique de l'Est; investissements directs à l'étranger; le Cadre de Nairobi; MDP; renforcement des capacités

■ *Corresponding author. E-mail: albyigero@yahoo.com, dusengalby@gmail.com

CLIMATE POLICY 10 (2010) 181–189

doi:10.3763/cpol.2009.0645 © 2010 Earthscan ISSN: 1469-3062 (print), 1752-7457 (online) www.climatepolicy.com



1. Introduction

The Clean Development Mechanism (CDM) is the only Kyoto Protocol (KP) flexible mechanism that involves both Annex I and non-Annex I countries. It was designed to be a market-based measure to mitigate climate change and global warming and has now become an international, dynamic and very competitive market in which Africa in general, and sub-Saharan Africa/East African Community (SSA/EAC) countries in particular, is found to be lagging behind both in terms of the number of CDM projects and in terms of transacted volumes of certified emission reductions (CERs). As of March 2009, Africa accounted for only 2.1% of the CDM projects in the pipeline, whereas Latin America, Asia and the Pacific hosted 96%. For volumes of CERs expected by 2012, Africa accounts for only 3.2% (Fenhann, 2009).

In order to decide what policy priorities and actions could be undertaken to boost the participation of SSA/EAC countries in CDM projects, it is important to understand the real issues at stake. For this study of CDM penetration, two SSA/EAC countries – Rwanda and Uganda – are compared with South Africa. South Africa is the continent's front-runner as far as CDM is concerned, with the other two countries lagging far behind. While it may be reasonable to assume that Rwanda's recent political instability can largely account for this situation, Uganda has made great strides in economic liberalization in recent years but evidently still finds it difficult to attract CDM investment. This article addresses the question of whether the capacity-building activities being promoted under the Nairobi Framework of Action are likely to be sufficient to overcome the barriers to CDM in countries such as Rwanda and Uganda.

The article begins with a brief discussion of the general investment climate and CDM investment attractiveness in the studied countries using a set of indicators (foreign direct investment, FDI; and the CDM investment climate index, ICI). It then discusses the importance and current status of institutional and human capacity developments to promote CDM in those countries. It describes and evaluates the Nairobi Framework (NF), an international initiative to support capacity-building for CDM in Africa, and critically assesses its prospects particularly with regard to its third objective, the promotion of investment opportunities. Finally the article summarizes the discussion and attempts to draw a conclusion regarding the linkage between CDM investment and the general investment climate, and the considerable difficulties involved in attaining the NF's goals in SSA/EAC countries under the existing market conditions in the region.

2. General investment climate and CDM investment attractiveness

The CDM is a market-based tool, and its use tends to presuppose that the infrastructure for markets is present, and in particular that the conditions in the host country are conducive to FDI. This is because the money expected from the sale of carbon credits in many cases constitutes only a small proportion of the total finance for CDM projects, meaning that equity or loans are also required, although this does vary with different technologies. A number of low-investment technologies have the potential to produce high CER returns and could, in principle, be financed locally rather than from outside (in so-called unilateral CDMs), selling the CERs on the carbon market directly. The costs of projects for the recovery and flaring of methane from landfill sites, for example, could in some cases be covered by the expected carbon credits, provided that local up-front finance was available (Ellis et al., 2007; Lee et al., 2007). Although for many energy technologies (e.g. geothermal, wind) this is far from the case, since the payback period is much longer.

One way of measuring the investment climate of a country is to consider the current level of FDI inflows. FDI refers primarily to investments in one country by firms owned in another country; the

total FDI level is usually a good indicator of the general investment climate of any given country. Africa's FDI index is low, and an investment attractiveness ranking made in 2007 by United Nations Conference on Trade and Development (UNCTAD) for developing countries highlights the dismal failure of EAC countries in particular to attract FDI (UNCTAD, 2007). Although the total FDI to Africa has increased fourfold since 1980 (Pfeifer, 2008), Africa's share in the global total dropped considerably over this period. According to an analysis of the overall FDI inflows for the period 2000–2005, FDI inflows in millions of US dollars as well as FDI inflows per capita were extremely low for Rwanda and very low for Uganda, although much higher for South Africa (see Table 1) (CIA, 2006). Many analysts have pointed out the correlation between the level of CDM and FDI flows (Fankhauser and Lavric, 2003; Niederberger and Saner, 2005; Ellis et al., 2007), meaning that the same factors that contribute to low inflows of FDI to sub-Saharan Africa (e.g. weak energy infrastructure, political instability, corruption) are likely to make Annex I companies reluctant to invest in CDM projects in the region. Yet the relationship is not simple. As Niederberger and Saner (2005) point out, potential investors are interested in three points of a triangle: in addition to the general business environment, they are also concerned with the range of opportunities that a country can offer for CDM including the scope for large-scale generation of CERs, and the local capacity to organize CDM projects. They report that there are countries that are outperforming their FDI rank in attracting CDM investment (Costa Rica, Mexico). On the other hand, the share of carbon finance going to Africa is, relatively speaking, only half its share of FDI (Pfeifer, 2008). This must therefore reflect the other two corners of the triangle: the presence (or absence) of good CDM opportunities and/or the local capacity to organize CDM projects, although Pfeifer also considers that investors may be being over-cautious, with new companies without much experience in Africa being particularly influenced by the poor reputation ascribed to Africa by the international media as well as a general under-reporting of business news from this continent. FDI is strongly affected by perceptions of risk that may be exaggerated.

TABLE 1 Total FDI inflows (US\$ million) and per capita (US\$) for the countries studied during 2000–2005

	2000	2001	2002	2003	2004	2005 ^a
South Africa						
FDI inflows (US\$ million)	888	6,789	757	734	799	6,379
FDI inflows per capita (US\$)	20.45	155.78	17.34	17.17	18.71	143.87
Uganda						
FDI inflows (US\$ million)	181	151	185	202	222	258
FDI inflows per capita (US\$)	7.76	6.30	7.58	7.88	8.41	9.46
Rwanda						
FDI inflows (US\$ million)	8	4	3	5	8	8
FDI inflows per capita (US\$)	1.11	0.55	0.41	0.64	1.01	0.95

^a The exceptionally high FDI inflows in 2001 and 2005 can mainly be attributed to the large number of mergers and acquisitions (M&A) that took place in those years. For 2005 especially, the soaring of FDI inflows was also due to the maturing and value of Black empowerment deals which were believed to be 'one of the biggest drivers of corporate activity in SA's economy' (Wei and Balasubramanyam, 2004) [see also www.southafrica.info/business/investing/fdi-m&a2006.htm].
Source: CIA (2006).

In the study summarized here (Byigero, 2007), an indication of the attractiveness of a country for CDM investment was first made by comparing the FDI inflows and the CDM ICI for the three study countries.

An alternative measure of the attractiveness of investing in CDM is provided by the CDM ICI, a calculation model developed by Kyoto-Coaching-Cologne (KCC) with a scale ranging from 0 to 100 to reflect 'bad' and 'good' conditions with respect to the attractiveness of CDM in a given host country (Ehlers, 2006). The CDM ICI model takes into account a number of parameters such as industrial development, transparency, political stability, good governance, and date of KP ratification. These and other indicators contribute to providing early confidence to foreign investors while also giving an indication of the investment climate and the efforts of a country in implementing CDM projects, including CDM projects already landed and CERs produced (Ehlers, 2006). The Africa regional classification (based on 52 African countries) shows South Africa in first place, well ahead of Uganda and Rwanda. A similar pattern is found with the CDM index values (79.4 for South Africa, 50 for Uganda (6th) and 34.8 for Rwanda (22nd)).

3. Institutional and human capacity developments to promote CDM

Institutional arrangements for the CDM in host countries and capacity development are frequently mentioned as crucial for the success of CDM projects (Figueres, 2002). The quality of the designated national authority (DNA) (e.g. structure, funding, staffing, definition of sustainability criteria, national approval procedures, CDM communication channels) is considered particularly important because this institution is the host country's body that evaluates potential CDM projects and provides written approval before the project can be registered. CDM capacity-building initiatives in Africa until now have mainly consisted of awareness workshops for public-sector and NGO staff (because the private sector was not considered a suitable target for donor-funded training); and these same groups also benefited from tailored training on CDM (Mwakasonda, 2006). But such training does not necessarily lead to a strong institutional base for CDM development. A survey on CDM capacity in Uganda and Rwanda, conducted as part of the research reported here, revealed that despite a number of well-informed and highly engaged senior staff, the status of the DNA is low in both countries, with insufficient staffing and funding; and therefore these countries do not have the appropriate institutional structure to be active in promoting CDM projects. This might stem from critical financial constraints but it may also reflect a lack of political will or understanding with regard to the potential of CDM. It has been suggested that some African countries' lack of interest in building a well-functioning DNA may be connected to a lack of certainty about carbon financing. These countries have small budgets and limited manpower, and cannot afford additional agencies when services could be provided by a number of existing ones (Winkler et al., 2005). There may also be competition between ministries and conflict over the powers that the agency is allowed (Michaelowa, 2003). However, a proactive approach by a clearly identifiable office with powers of approval could encourage commitment and ownership by both public and private stakeholders and may be necessary in order to spread information about CDM, identify potential projects, and provide training in project development. The few CDM capacity development activities that have taken place in Rwanda and Uganda were initiated and carried out by outside agencies, not by the DNAs.

In contrast to these two EAC countries, South Africa, an early ratifier of the KP (2002), has an officially established and well-staffed DNA (seven permanent staff), consistent funding from both domestic and external budgets, CDM communication channels (targeted workshops,

occasional TV programmes, brochures/newsletters) to showcase successful CDM projects and promote projects and sectors amenable to CDM investments, and a broad range of local and offshore stakeholders on board. In short, South Africa has an engaged and independent DNA which is actively promoting CDM projects. Moreover, South Africa has investment promotion agencies (IPAs) such as the Development Bank of Southern Africa, which work with municipalities and which was early engaged with the World Bank's carbon funds, acting as an intermediary in the identification of projects, and providing some capital, though not being responsible for technical assessment (Pfeifer, 2008). The presence of such agencies, which are not specialized in carbon but which are dedicated to creating a funding portfolio for projects, has undoubtedly been positive for South Africa's CDM growth.

All this, of course, partly reflects the fact that South Africa has a large coal-based economy which offers many immediate possibilities under CDM, and which were already being explored by the country in early experiences under the programme of activities implemented jointly (AIJ) in the 1990s. Indeed, the fact that South Africa has a strong manufacturing and industrial sector, while Rwanda and Uganda are heavily dependent on agriculture and agricultural processing, means that it has inherently more opportunities for profitable CDM investments (Uganda's single approved CDM project is a small hydro plant in the West Nile sub-region). But not all CDM projects are built on industrial processes. Landfill gas flaring is a case in point, and projects of this type are the second most common type of CDM application; South Africa has several at the municipal level. Afforestation and reforestation (A/R) activities are also eligible for the CDM, and might be more suited to countries like those of the EAC region, although global experience has shown that these kinds of projects have been very difficult to fund under the mechanism (with one in Guangxi Province in western China registered with the UNFCCC by March 2008, and a second in India in early 2009), despite the fact that a large number of methodologies have been approved and are available for use. Difficulties in designing A/R projects are often related to land tenure problems and a lack of clarity about who has rights to the land to be utilized; a problem which is particularly prominent in much of the EAC region.

It is clear that, for structural reasons, Rwanda and Uganda are in a much less favourable position regarding the range of investment opportunities compared with South Africa, as well as having a less favourable FDI position (two of the points on Niederberger and Saner's (2005) triangle). Therefore, it is no surprise that South Africa holds the continent's leadership in terms of CDM projects with (as of March 2009) 15 approved by the Executive Board, while Rwanda has none and Uganda has one. There are other projects in the pipeline however: as of March 2009, there were another 13 pending for South Africa, eight for Uganda and one for Rwanda (Fenhann, 2009). Of Uganda's eight, five are small-scale afforestation/reforestation projects, of which four have obtained offers of partial finance from the Italian Biocarbon Fund (thus not private sector) but, given the difficulty of getting A/R projects approved, the likelihood of these succeeding is small. The remaining three are energy projects, with no funding secured.

Two questions that can be posed are, firstly, whether well-functioning and effective CDM institutions with clear competences could be built up in countries like Rwanda and Uganda through capacity-building exercises under the NF Initiative and, secondly, whether this would be the key to gaining investor confidence, or whether countries with a perceived 'poor' investment climate will remain unattractive to host countries even if they build up a 'good' CDM institutional capacity. It has been suggested that there might even be cases where the costs of such capacity- and institution-building will never be justified in terms of future CDM inflows (Jung, 2006). To address these questions, a brief assessment of the NF will first be presented.

4. Brief assessment of the NF Initiative

African leaders and delegates at UNFCCC meetings have repeatedly called for increased capacity-building to enable their countries to participate more strongly in CDM. One result of this was the creation of the NF, which was launched during the Conference of the Parties serving as the Meeting of the Parties, or COP-12/MOP-2, in Nairobi in November 2006. The NF Initiative is geared towards building CDM capacity with a view to fostering better CDM penetration, particularly in Africa. It originally had a two-year timeframe (2007 and 2008), although it is now behind schedule. The Framework was championed by five international agencies: the World Bank, the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), the African Development Bank (AfDB) and the United Nations Framework Convention on Climate Change (UNFCCC).

The NF has five objectives:

1. to build and enhance the capacity of DNAs to become fully operational
2. to build capacity in developing CDM project activities;
3. to promote project investment opportunities
4. to improve information-sharing/outreach/exchange of views on activities/education and training
5. inter-agency coordination.

The Framework was triggered by observations among African delegates that CDM capacity-building efforts funded by donors in most countries in sub-Saharan Africa up to that time had been sporadic, ad hoc and unsystematic. This has been confirmed by a study in Rwanda and Uganda (Byigero, 2007; see Table 2), which indicate that, in these two countries at least, there was no inter-agency cooperation at all on CDM training courses, with donor competition resulting in a waste of resources and a lack of coordination, including a proliferation of workshops organized

TABLE 2 CDM workshops/projects by external interventions in Rwanda and Uganda, 2003–2006

Country	Date and duration	Sponsors
Rwanda	2003 – one-day workshop	UNDP – MDG Carbon Fund
	March 2007 – three-day workshop	IEPF
	March 2007 – one-day workshop	WB – Africa Assist Initiative
Uganda	2000–2002	EU-funded SUSAC Project
	2002–2004	UNCTAD/ Earth Council CMP
	2002–2005	UNEP-Risoe Centre CD4CDM (1st phase)
	2003–2006	WB – Africa Assist Initiative

Notes: UNDP, United Nations Development Programme; MDG, Millennium Development Goal; IEPF, Institut d'Énergie et de l'Environnement des Pays Francophones; WB, World Bank; SUSAC, Start-up CDM in ACP Countries; UNCTAD, United Nations Conference on Trade and Development; CMP, Cooperative Marketing Programme; UNEP-Risoe, UNEP Risoe Centre on Energy, Climate and Sustainable Development; CD4CDM, Capacity Development for the Clean Development Mechanism. *Source:* Author's compilation from a survey in EAC countries, 2007 (neither of these countries is included in UNDP's NF training programme from 2007 onwards).

by different donors using different methods in the same country. This is not to pass judgement on the quality of the individual courses offered, but instead to suggest that the lack of coordination potentially leads to gaps in national competences. The lack of a national strategy for capacity development means that the people who have been trained have no chance to put their skills into practice. Other authors have also questioned whether these kinds of courses have added any significant value to host countries (Michaelowa, 2003). As far as the African governments were concerned, an underlying idea behind the NF was that efforts should be consolidated and that capacity-building should be carried out in a much more systematic manner in Africa. An unspoken assumption was that by creating a solid framework, more funds for capacity-building would be forthcoming from the donor countries, which would speed up the readiness of countries to access CDM investments.

In practice, however, the NF does not propose a consolidated joint programme for all the NF sponsors, and although the UNDP has provided a series of training courses in six African countries under the NF umbrella, there is little evidence of consensus between the donors and the prospective African beneficiaries. It seems that the main multilateral and bilateral agencies supporting the NF at the UNFCCC level have not all endorsed it internally, and have not had time to plan their activities around it (ICF International, 2007). The NF could in fact be considered a political expedient to ensure that the first sub-Saharan COP/MOP meeting resulted in something of benefit to Africa. Olsen (2006) summarizes the problem succinctly as follows: ‘the goals and motivations of donors and beneficiaries are mistakenly assumed to be shared in partnerships and non-existing consensus’ (Olsen, 2006). Meanwhile, CDM capacity-building activities in a number of SSA/EAC countries continue under the sponsorship of various Annex I countries and other international agencies such as the United Nations Industrial Development Organization (UNIDO) and the Institut de l’Energie et de l’Environnement des Pays Francophones (IEPF), entirely outside the NF initiative. There has been no attempt so far to show how to avoid duplication and waste of valuable human and financial resources: in other words, Objective 5 has still not been realized.

However, a main concern in this article is how Objective 3 is to be met, since this depends on all the other objectives. The issue is the extent to which the NF has been, and will be, able to create a more attractive financial environment for potential CDM investors. Neither the NF nor the ICF reports refer directly to any innovative approach with regard to one of the major underlying or generic barriers – that is, the inadequate investment climate in SSA/EAC. They both simply touch on the need for the promotion of investments without going deeply into the essence of the problem. But this is scarcely surprising, since changing the investment climate as a general phenomenon would involve measures that are far beyond the scope of any such agreement.

Perhaps more important, however, would be to change potential investors’ *perceptions* of the business environment in these countries. Pfeifer notes that in Uganda, the Uganda Investment Authority (UIA) was involved as early as 2002 in developing a national CDM portfolio, and with the help of CD4CDM, a Netherlands-financed capacity-building programme, had prepared at least ten PINs (project idea notes; i.e. preliminary CDM proposals), which were presented at the 2005 Carbon Expo (Pfeifer, 2008). These included projects in energy, landfill and co-generation. However, despite initial interest at this conference, none of these were successful in attracting the necessary finance. A factor in this may well be investors’ perception of the risks in Uganda compared with South Africa, for instance, which is partly related to the fact that there are not many transnational companies operating in Uganda. On this understanding, the NF might better address itself, at least as far as Objective 3 is concerned, to promoting information on success stories in Africa and allaying investors’ fears, than to activities within Africa itself. On the other hand, the

failure of Uganda to find finance for its CDM proposals may also relate to the fact that the UIA, unlike the Development Bank of Southern Africa, is purely an investment promotion agency and does not have the mandate to actually finance projects (Pfeifer, 2008). This brings us back to internal institutional and political issues being at the heart of the matter.

Capacity-building, as provided under the NF, has largely been in the form of training and in technical assistance in the development of CDM proposals. However, what might be more important are well-functioning institutions, including – but not limited to – the DNA, with adequate mandates and powers to provide the financial and technical services that are necessary for the carbon market and which are, at least to some extent, present in South Africa. It is questionable whether the NF, which is simply an international inter-agency agreement to provide funding, is in a position to help countries make the political decisions that are necessary for such institutions to function well.

5. Conclusions

SSA/EAC countries lag behind in their CDM project portfolio due to three endogenous barriers. First, there is the inadequate general investment climate, as measured by FDI inflows and CDM index value, as widely acknowledged in the literature. Next, for the EAC countries at least, there is the absence of a strong industrial base, which reduces the range of CDM opportunities and particularly for large-scale carbon credit generation. This is one of South Africa's main advantages in creating CDM partnerships. Although forestry might have been an option for many countries with a more rural economy, the fact is that afforestation and reforestation projects have essentially had no role in CDM anywhere in the world, while policy on reducing emissions from deforestation and degradation (REDD) (Skutsch et al., 2006), which could be of value in countries such as Uganda and Rwanda, has not yet been agreed upon. The fact that other CDM opportunities, such as landfill projects, have not materialized even when proposed (e.g. in Uganda), relates partly to a lack of investor confidence and partly to the third barrier, the lack of CDM capacity, in particular the lack of an appropriate institutional infrastructure. NF initiatives have so far dealt primarily with human capacity (training) and have scarcely tackled these more politically sensitive issues which, in practice, lie outside its remit. In most SSA/EAC countries, with the exception of South Africa, and for a variety of reasons, the DNAs were established relatively late and hardly function, because of an absence of legal status, proper funding and staffing. The lack of independent IPAs with mandates to finance projects in most of these countries compounds the difficulties. This has resulted in insufficient information-sharing and outreach mechanisms among national stakeholders and has not been conducive to increasing investor confidence.

Generally, it appears that well-functioning institutional arrangements are found only within countries that already enjoy a more favourable investment climate, such as South Africa. There is certainly a 'chicken-and-egg' aspect to this problem. The basic problem of a lack of functioning institutions was entirely neglected in the NF initiative which, because of its reliance on donor funding for training, has put the focus strongly on human capacity-building, overlooking both the need to improve investors' perceptions concerning the general investment climate of African host countries, and the crucial importance of institutional infrastructure. For these reasons, it will be difficult for the NF to attain the goals that it had set itself, that is to say, triggering an increased participation of African countries in the highly competitive CDM market. Underlying the idea that all countries 'ought' to be able to benefit from CDM is a political choice imposed on a market system in which there will always be some players with a greater comparative advantage.

Acknowledgements

This article is based on the first author's thesis research as part of the requirements for the MBA in Environmental and Energy Management, University of Twente. A.D. Byigero wishes to acknowledge, with thanks, funding from the Netherlands Fellowship Programme.

References

- Byigero, A., 2007, 'Clean Development Mechanism in sub-Saharan Africa and the Nairobi Framework Initiative', Master's thesis, University of Twente, The Netherlands.
- CIA, 2006, *World Fact Book* [available at www.cia.gov/library/publications/the-world-factbook/index.html].
- Ehlers, C., 2006, *CDM-Market Brief. CDM Investment Climate Index: Regional Comparison – South Africa* [available at www.gtai.de/DE/Content/SharedDocs/Anlagen/PDF/CDM/cdm-markt-suedafrikaenglish,templateId=raw,property=publicationFile.pdf/cdm-markt-suedafrika-english?show=true].
- Ellis, J., Winkler, H., Corfee-Morlot, J., Gagnon-Lebrun, F., 2007, 'CDM: taking stock and looking forward', *Energy Policy* 35, 15–28.
- Fankhauser, S., Lavric, L., 2003, *The Investment Climate for Climate Investment: Joint Implementation in Transition Countries*, European Bank for Reconstruction and Development, Working Paper No 77.
- Fenhann, J., 2009, *CDM/JP Pipeline Analysis and Database*, UNEP Risoe Centre for Energy, Climate and Sustainable Development, Denmark [available at <http://cdmpipeline.org/cdm-projects-region.htm>].
- Figueres, C. (ed.), 2002, *Establishing National Authorities for the CDM: Guide to Developing Countries*, IISD, Washington, DC.
- ICF International, 2007, *Analysis of Activities Implemented Under the Nairobi Framework in Sub-Saharan Africa: Achievements, Challenges and Solutions*, Final Report 1, ICF, London.
- Jung, M., 2006, 'Host country attractiveness for CDM non-sink projects', *Energy Policy* 34(15), 2173–2184.
- Lee, C., Bogner, J., Toefy, A., 2007, 'Landfill gas CDM projects: current trends and future opportunities for developing countries', paper presented at the Sardinia Symposium [available at www.go-worldlee.com/resources/landfill_article.html].
- Michaelowa, A., 2003, 'CDM host country institution building', *Mitigation and Adaptation Strategies for Global Change* 8(3), 201–220.
- Mwakasonda, S., 2006, 'Africa is energizing itself', presentation to the 4th Global Forum on Sustainable Energy, Vienna, 29 November–1 December.
- Niederberger, A., Saner, R., 2005, 'Exploring the relationship between FDI flows and CDM potential', *Transnational Corporations* 14(1), 1–40.
- Olsen, K.H., 2006, 'National ownership in the implementation of global climate policy in Uganda', *Climate Policy* 5, 599–612.
- Pfeifer, G., 2008, 'New instruments for attracting FDI: carbon finance in Africa', in: A. Dufey, M. Greig-Gran, H. Ward (eds) *Responsible Enterprise, Foreign Direct Investment and Investment Promotion*, IIED, London.
- Skutsch, M.M., Bird, N., Trines, E., Dutschke, M., Frumhoff, P.C., de Jong, B., van Laake, P., Masera, O., Murdiyarto, D., 2006, 'Clearing the way for reducing emissions from tropical deforestation', *Environmental Science and Policy* 10(4), 322–334.
- UNCTAD, 2007, *World Investment Report 2006* [available at www.unctad.org/wir].
- Wei, Y., Balasubramanyam, V.N., 2004, *Foreign Direct Investment: Six Country Case Studies*, Edward Elgar Publishing, Cheltenham, UK.
- Winkler, H., Davidson, O., Mwakasonda, S., 2005, 'Developing institutions for CDM; an African perspective', *Climate Policy* 5, 207–218.