Wuppertal Institute
for Climate, Environment
and Energy

GFA
ENVEST

Integrating Africa's Least Developed Countries into the Global Carbon Market

Summary of key outcomes

Final project report

Christof Arens
Martin Burian

Wuppertal / Hamburg, November 2012

Publishers Information

Published by: Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), Division E II 7 – European Climate and Energy Policy, New Market Mechanisms,
11055 Berlin, Germany
www.jiko-bmu.de

Subject editors: Wuppertal Institute for Climate, Environment and Energy, Wuppertal, and GFA Envest GmbH, Hamburg

Authors:
Christof Arens, Martin Burian

Corresponding author:
Christof Arens, Email: christof.arens@wupperinst.org

Photos (Title): Seifert / UNFCCC photo contest, Siemens Press Picture, Afovert, Chris Kirchhoff / mediaclubsouthafrica.com

Date: November 2012

1 BACKGROUND

In recent years, the Clean Development Mechanism (CDM) has successfully triggered investment primarily in emerging economies. In Africa, however, the CDM has had limited success, with only two percent of CDM projects carried out there. This is despite strong growth in demand for certified emission reductions (CERs), not least due to the EU giving preference to CERs from LDCs and to the simplified CDM procedures for micro-projects and for countries with fewer than ten registered CDM projects.

In light of this, the German Environment Ministry (BMU) commissioned a two-year research and development project in 2010 to explore options for better integrating African LDCs into the carbon market (*"Integrating Africa's Least Developed Countries into the Global Carbon Market",* project number/FKZ: UM 10 41 916). The work included a potential study, a barrier analysis, and an exploration of solutions that go beyond traditional capacity building.

This summary presents the main project outcomes and recommendations. The work was conducted by a consortium comprising the Wuppertal Institute for Climate, Environment and Energy, Wuppertal, and GFA ENVEST, Hamburg.

2 OUTCOMES

2.1 Assessment of potential

The potential study covered eleven sub-Saharan LDCs selected in consultation with the BMU: Burkina Faso, the Democratic Republic of the Congo (DRC), Ethiopia, Malawi, Mali, Mozambique, Rwanda, Senegal, Tanzania, Uganda, and Zambia. The potential for CDM was analysed from available literature and based on own calculations. The results by sector, expressed in CERs per year, are shown in Figure 1. The total technical reduction potential comes to 128.6 million CERs/a.

With regard to the country ranking, Ethiopia comes first at 32 million CERs/a in the sectors of energy from agricultural residues (11.6 million CERs/a), hydropower (8.2 million CERs/a), energy from forest residues, and efficient stoves. CDM potential by countries is shown in Figure 2.

The study is available at www.jiko-bmu.de/1000.

Figure 1: CDM potential by sector

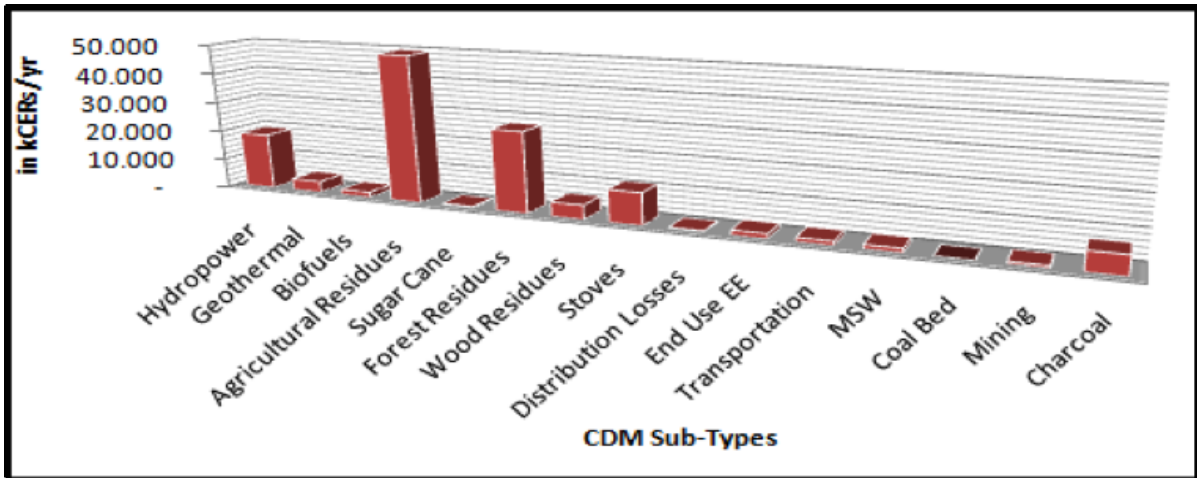
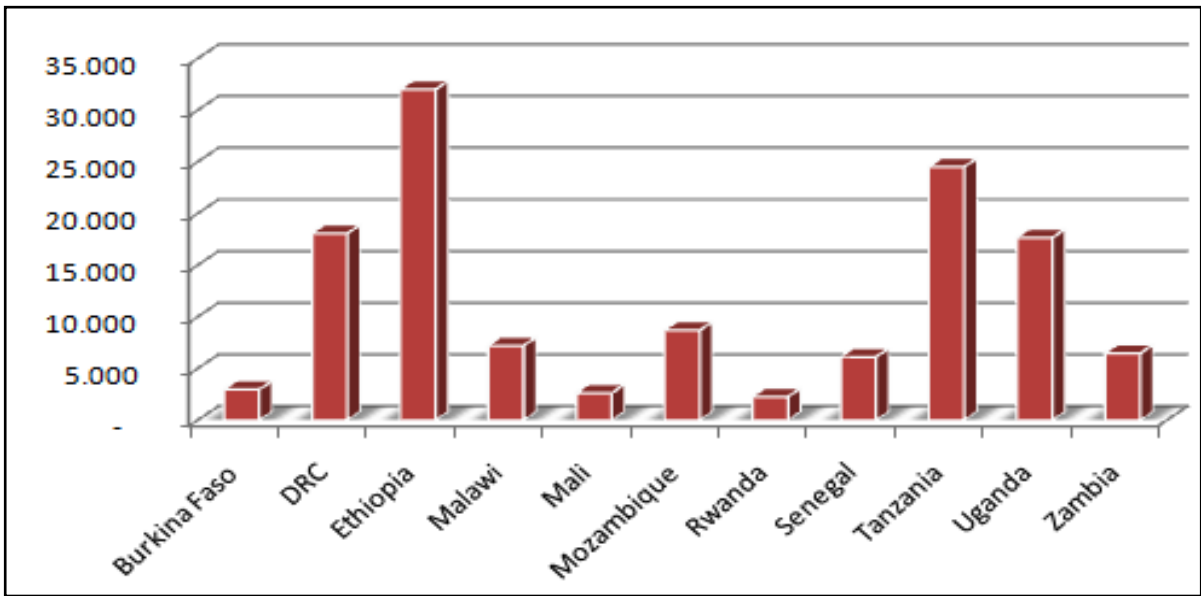


Figure 2: CDM potential by country



2.2 Barrier analysis

Barriers and obstacles were analysed based on ten criteria aggregated into five categories. These included the situation of CDM designated national authorities (DNAs), each country's climate change policy and the general investment climate. The analysis was also used to decide which countries were best suited for in-depth studies. It thus went beyond barrier analysis to include a detailed appraisal of strengths and weaknesses. For this reason, factors such as technical CDM potential were incorporated into the analysis.

Based on the results, the BMU selected Tanzania and Zambia for in-depth country studies, while energy from wood residues and power factor correction in Uganda were selected for sector studies. A further study was later added on the grid emission factor (GEF) in Senegal.

Details on this study are available at www.jiko-bmu.de/1112.

2.3 Comparative analysis of the support analysis of other international donors

In this work package, the activities of international donors such as the World Bank and the EU and capacity building activities by individual Annex I countries in the study region were collated and analysed to identify gaps in existing support for the CDM. Building on this, the project team analysed the general support needs in countries within the study region and compared those needs with the available capacity. The report ends with recommendations for future support projects. Areas covered by the recommendations comprise a reliable policy framework, simplified CDM methodologies suitable for use in Africa, the development of grid emission factors, and support for local banks.

The report can be downloaded at www.jiko-bmu.de/1113.

2.4 Zambia country study

The Zambia country study investigated the possibilities and limits of the CDM in Zambia. Regarding national climate change policy, the study showed such policy still to be heavily under development. A large number of basic documents and strategies are currently at the consultation stage. The DNA is structurally weak, although staff are highly dedicated and motivated. It nonetheless labours under typical capacity and budget shortfalls.

Private sector CDM expertise is limited, comprising only a handful of parties, of which one institution stands out with project development and CDM experience. The country has moderate CDM potential, with efficient charcoal production the most promising sector. A standardised CDM baseline exists for this sector (currently pending approval from the CDM Executive Board), and the country has excellent academic expertise in the sector. There is further potential for projects in the sectors of efficient stoves and energy from wood residues. So far, just one CDM project is registered and further CDM programmes of activities (PoAs) are in preparation.

The report's recommendations include supporting the development of lighthouse CDM projects and PoAs by local experts, where possible in conjunction with coaching for promising national consultants lacking CDM expertise. A suitable sector is efficient charcoal production. Consideration should also be given to securing the national CDM expertise for the future by deploying CDM 'scouts'. These would advise the new local experts on new project opportunities and take a mentoring role in the event of implementation difficulties. Finally, there is a need for capacity building for the DNA.

One possibility here is to promote regional exchange. Use can be made here of the services of the Uganda-based Carbon Foundation for East Africa.

2.5 Tanzania country study

This country study takes a different approach to the Zambia study due to the circumstances in Tanzania. Following the host country's needs, the study explores a new financing structure for the operations of the DNA. So far, the DNA has established its operational procedures and defined its fee structure, but the financing scheme is not effective.

This study proposes a new financing structure comprising two components, a CER fee indexed to a CER spot market price featuring a floor price and a small lump sum fee for evaluation (i.e. approval or rejection) of the project by the DNA.

2.6 Uganda sector studies

These studies investigated sectoral potential in the sectors of energy from wood residues and industrial power factor correction in Uganda.

The **sawmill residue** sector was selected as the potential analysis had identified significant reduction potential (1.4 million t CO_2/a). However, local studies in cooperation with the National Forestry Authority and forest-based industry showed that most processing is done in mobile sawmills, which makes the use of sawmill residues for energy unattractive.

Instead, it was decided to analyse the potential for generating power using thinning residues from commercial timber plantations. A total of 25,000 hectares had been replanted with timber by 2011, with a target of 40,000 ha by 2013. The potential for electricity generation on this basis comes to 25.3 GWh/a, resulting in 18,000 CERs/a. A preliminary financial analysis shows an internal rate of return (IRR) of 30 percent and a net present value of US$ 5.62 billion (at a 13.5 percent lending rate).

Power factor correction projects in energy-intensive industrial facilities cut power consumption, costs and greenhouse gas emissions. The sectoral potential was calculated in cooperation EiL Ltd., which plans to establish an energy service company (ESCO) in Uganda.

The local utility provider supplied electricity consumption data for all industrial consumers with a consumption above 100 kVA. The results showed a potential of 306.6 GWh/a or 268,000 CERs/a. Substantial energy savings can be triggered with the ESCO approach:

- The aggregated demand for energy efficiency equipment allows the ESCO to obtain an attractive wholesale price that makes the individual energy interventions financially viable.
- The aggregated size of the energy savings through the ESCO makes it possible to develop a CDM financing strategy. A single activity on its own would not be achievable under the CDM because of the scale-independent transaction costs.

Establishing an ESCO would provide a model for replication in Uganda and across Africa. Following successful implementation, other LDCs can be expected to take on the approach. The study recommends supporting EiL in implementing a small model project.

2.7 Grid emission factor in Senegal

The grid emission factor (GEF) is central to the CDM because it is needed for grid-connected renewable energy and energy efficiency projects. The GEF states the greenhouse gas intensity of a CDM host country's current electricity system. It thus determines the quantity of certified emission reductions (CERs) that a renewable energy or energy efficiency project can generate for feeding a given amount of electrical energy into the grid.

The work was conducted in cooperation with the Senegalese DNA. The necessary data was not readily available and was therefore collected from the national power utility and other sources. From this data, the GEF was computed to be 0.6517 tCO_2/MWh. An automatically calculated Excel worksheet was created and the DNA instructed in its use. A French-language data collection template was also developed and a brief manual produced on updating the data.

2.8 Short studies

Two short studies were additionally carried out as part of the research. The first investigated the potential of standardised baselines (SBLs) for LDCs. Unlike in the 'traditional' CDM context, a standardised baseline is calculated using a general, standardised estimation of the GHG emissions that would occur if the project was not implemented. Standardised baselines aim to speed project approval, reduce system complexity and remove regulatory uncertainty. SBLs are also intended to help increase the use of the CDM in so-far underrepresented regions. The study shows the potential for SBLs in LDCs based on selected sectors and describes obstacles to widespread adoption of SBLs. These include an unresolved free-rider problem concerning the cost of developing SBLs and the many new responsibilities created for host country DNAs; as LDC DNAs in particular are already overstretched, this is considered a major barrier to widespread adoption of SBLs.

A second short study outlines a carbon renewable energy feed-in tariff (carbon REFIT) based on the standardised baseline for the Southern African Power Pool. The starting point is the idea of creating an instrument to promote renewable energy in the region that is independent of fluctuating CER prices.

The study first calculated the appropriate price for a potential REFIT. This was developed on the basis of a price for emission reductions and the carbon intensity of the Southern African Power Pool.

Building on this, the study then went on to address a number of issues as follows:

- Monitoring, reporting and verification of the emission reductions
- Environmental integrity/additionality of the emission reductions
- Institutional issues and institutional establishment of a carbon REFIT.

With regard to financing such an instrument, ideas discussed include support for nationally appropriate mitigation actions (NAMAs) or a new carbon market mechanism pilot project. Both cases would involve transfers of funds from industrialised to developing countries, possibly in part by way of carbon credit approaches.

In summary, the concept of a carbon REFIT represents a promising means of promoting renewable energy in the region.

The two studies are available at www.jiko-bmu.de/993.

3 RECOMMENDATIONS FOR FUTURE BMU INTERVENTION

The general conditions for CDM projects have drastically deteriorated in the two-year duration of the project. At the time of writing – early November 2012 – CER prices are a little over €1 per CER. It is questionable whether new, additional CDM projects can be developed on these market terms. It would thus be prudent to examine closely which sectors may still come into question for possible BMU activities.

The project team therefore recommends promoting existing structures rather than developing new sectors for CDM. Numerous recommendations have been developed in this regard as part of the outcomes from the various work packages. These include:

- Supporting regional cooperation among DNAs, for example with common sustainability criteria, regional dialogue events, knowledge management, and a fellowship programme for LDC climate experts.
- Substantive development of local CDM expertise, for example by training project developers and advisers for known and promising CDM areas. One activity of this kind has been developed in the Zambia study. A sector that suggests itself in Zambia is efficient charcoal production because this would allow the first application of a standardised baseline to be tried out at the same time. This sort of intervention requires medium to long-term commitment, however. It takes about two years to establish lasting CDM expertise, and continuous presence of a trainer can scarcely be avoided. Also, real projects should be worked on to avoid engaging in theoretical exercises for the sake of it. This could be implemented in the form of coaching by experienced experts (a suitable institution in Zambia being the Centre for Energy).
- Local DNAs should additionally be supported in establishing sound and transparent financing structures. The Tanzania study provides an example; local DNAs would need technical support in implementation, however. A similar study would be very helpful for, say, the Senegal DNA.

Until CER prices recover, it may make sense to concentrate support activities on ones that are not price-dependent. The carbon REFIT study provides a promising approach in this regard. Similarly, existing NAMA approaches should be encouraged, for example the NAMA proposals put forward by Ethiopia. A possibility here consists of ‘embedded’ approaches that initially promote NAMA development but at a later stage

allow the introduction of ‘tradable’ components within NAMAs that can then be traded on carbon markets.

Finally, it became clear during the analysis of donor activities that the great majority of activities need in-depth analysis. Consideration should be given to examining the data in further detail, e.g. within the Nairobi Framework, with a view to highlighting best practices and avoiding duplication of effort. The purpose of the Nairobi Framework is to coordinate donor activities in climate change policy in Africa. A debate should be initiated under the Framework on successful interventions that have had sustainable long-term effects. Open exchange on success factors and also on activities that have failed would be helpful in particular because, as it became clear during the research, while evaluations of donor activities exist (albeit in small numbers), they are not usually publicly available. A forum for exchange of this kind could also serve as a platform for better coordination and consultation with and among international donors.

CDM in African LDCs - The Project

The German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) commissioned Wuppertal Institute and GFA Envest a research project on suitable supporting activities that contribute to the enhancement of CDM in sub-Saharan African least developed countries. The main aim of the research was to assist BMU in developing its strategy for climate change mitigation activities on the African continent. The two-year project ended in October 2012.

The results and findings of the research project were published and circulated to all project developers, political decision makers, companies, financial institutions and everyone else interested in finding ways of how to best approach the CDM in Africa.

More information on the project, publications and further resources can be found at www.jiko-bmu.de/996

The Project Consortium

Wuppertal Institute for Climate,
Environment and Energy
P.O. Box 100480
42004 Wuppertal
GERMANY
www.wupperinst.org

Wuppertal Institute
for Climate, Environment
and Energy

GFA Envest
Eulenkrugstraße 82
22359 Hamburg
GERMANY
www.gfa-envest.com

GFA
ENVEST

Federal Ministry for the
Environment, Nature Conservation
and Nuclear Safety

This study was commissioned by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. www.bmu.de