

A forestry CDM/VCS case study from Tanzania

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Green Resources is developing a VCS project in Mapanda/Uchindele, Tanzania and a CDM project in Idete, Tanzania. The VCS project because the first reforestation project in the world to be validated and registered according to the VCS standard. The PDD for the CDM project is about to be submitted. This study describes the project and some of the advantages, opportunities and pitfalls around reforestation projects. Reforestation is critical to the future of CDM in Africa and to the success of REDD and this is discussed in detail in the study.

Forest plantations account for a smaller share of the land area in Africa than any other place on Earth. Green Resources (www.greenresources.no) believes high quality reforestation creates development and combats climate change. Reforestation is also a fundamental requirement of any successful REDD project, which is explained at length in this article. We are proud of being the leading reforestation company in East and Southern Africa and want to set the record straight.

Green Resources started planting trees for carbon sequestration and wood material in Tanzania's Southern Highlands and Jinja, Uganda in 1997, just as the Kyoto protocol had been signed. We are a long term investor in East and Southern Africa and have established a company employing more than 3,000 people, managed primarily by East and Southern Africans. The company continues to invest in carbon and forestry projects, despite not being able to generate any return on the investment to the shareholders since we started up.

Since the start, Green Resources has planted more than 7,500 ha of new forest in Tanzania's Southern Highlands, sequestering over 500,000 tons of CO₂e to date. The company has in total planted 15,000 ha new forest in East and Southern Africa. We forecast that the Mapanda/Uchindile projects will create over 3.5mn VCUs over their lifetime while at Idete more than 1.8mn tCERs will have been generated by 2020. This is a significant contribution to the fight against climate change.

The operations in the Southern Highlands received certification as a carbon project based on a methodology developed by SGS in 2000. It was one of the four first projects in the world to receive this certification and we are immensely proud of this early achievement, by our own Tanzanian staff. Since then, we have obtained Forest Stewardship Council (FSC) certification, Voluntary Carbon Standard (VCS) certification and Carbon, Community and Biodiversity Association (CCBA) certification of the Uchindile and Mapanda Projects.

Green Resources exposes itself to independent certification by world leading professional companies using the worlds' leading standards. We have started a new business in one of Tanzania's least developed areas, and are faced with a lot of difficult issues. We are striving to steadily improve and to meet the most rigorous international standards for business practises, community and environmental management.

The costs of this work are high, partly because of the highly complicated carbon certification process. This process must be simplified in order to reduce costs and make it easier for the project developers. While there are large amounts of funding available for forestry and carbon activities, very little of this benefits private companies who are project implementers. Green Resources has used large amounts of private capital to accomplish our objectives. We estimate that private companies receive less than 2% of the public funding available for forestation, carbon and REDD activities, despite the fact that they are probably the most efficient implementers of such projects. In order to increase all the activity aimed at combating climate change, in particular in Africa, funding agencies should provide much increased grants to the private sector.

Carbon Revenues from 2010

In 2009, Mapanda/Uchindile, Tanzania was the first reforestation project in the world to be validated and registered according to the Voluntary Carbon Standard. We believe this is the most demanding carbon standard for voluntary carbon credits.

Furthermore, the Idete project which has been developed as a CDM project, signed a sales contract for the credits in 2009. It has been a time consuming and difficult task to develop the project and sell the carbon, with the first revenues arriving only 10 years after the project started.

The projects together are expected to raise USD 1.5 million of revenues in early 2010. 10% of this will go to community projects. 90% will be re-invested in further forest investments in the Southern Highlands of Tanzania. All revenues paid by the customers will be paid to Green Resources' operating company in Tanzania, and all proceeds from the sale will be ploughed back into the rural Tanzanian economy.

Forestry is a long term investment. Green Resources has invested USD 80 million in Africa since it made its first investment in East Africa in 1995. It has still not taken out dividends or received interest payments from the investment.

Large Climate and Social Benefits

Green Resources' Idete and Uchindele/Mapanda projects have sequestered 500,000 tCO₂ to date, and by 2020 the total amount of carbon dioxide that will be stored in the trees will be 6,353,786 tonnes, making a significant contribution to the global fight against climate change. We believe these to be the largest reforestation projects with the aim of mitigating climate change in Eastern Africa. Thus, these projects are key examples of how Africa can benefit from carbon finance in general and CDM in particular.

Green Resources employs close to 4,000 people in East Africa. One third of these are women. The company is often the only employer along with government organisations in the villages where we operate. The economic and social development in the villages has been large, with wages providing money for families to send their children to school, to replace straw roofs with corrugated iron sheets, and to purchase bicycles, radios, etc. Learn more about Green Resources' community activities in the Southern Highlands from [our online video](#).

Green Resources has undertaken major community development projects. In the villages where it operates in Tanzania, it has undertaken the building of significant social infrastructure investments, building schools, health stations and roads. In 2009, we implemented community projects in the Southern Highlands at a cost of USD 160,000. This does not include the cost of administering and managing such projects. The list of projects includes a number of new classrooms, dispensaries and bridges.

Using a Tanzanian organisation

Green Resources is proud of predominately being managed by African nationals. East Africa is producing excellent foresters from its colleges and universities, and the high quality of the foresters is a major reason for establishing new plantations in East Africa. These foresters are our managers, and we hire dozens of graduates every year. No other forest company in the region is run by local foresters to the same extent as Green Resources.

CDM has failed Africa

Africa has only received minor benefits from the Clean Development Mechanism (CDM) which was created by the UN climate organisations so that developing countries can participate in the combat against climate change. The CDM was anchored in the Kyoto protocol, and looked very promising but the management of the CDM system has been an unquestionable failure for Africa.

Less than 2% of registered CDM projects are located in Africa. Of this limited number of African projects, nearly half have been undertaken in South Africa, and more than a quarter in North Africa. Only 4 out of 2,022 registered CDM projects have been registered in Sub-Saharan Africa outside of South Africa despite the fact that the clean development mechanisms were put in place in order to facilitate carbon projects in developing countries. The financial benefits of the CDM projects in Africa are negligible. Thus, Africa has for all practical purposes had no benefits from CDM.

CDM has primarily been a carbon mechanism benefiting Asia, taking 75% of the projects, followed by Latin America, with 22% of the projects. If we look at the volumes of CDM carbon credits generated, the situation is even more skewed, with 85% of the volume in 2008 supplied by China. There are 28 East African projects in the CDM pipeline (of which 4 are Tanzanian), but the bureaucratic process of the CDM board makes it time consuming and difficult to push the projects through. Thus, it is unfortunate that some people in the climate and developing industry are hostile to the few new African CDM projects that are being developed. They make Africa stay even further behind in carbon development.

Forestry is Africa's main hope for Carbon Mitigation and Finance

Forestry is the one sector within the CDM mechanisms where Africa could become a major beneficiary of carbon finance. Forestry accounts for less than 0.5% of all CDM projects. The Afforestation /Reforestation CDM projects which have been approved are all small, insignificant overall and generally non-commercial. This limits their immediate reliability as they still remain dependent on philanthropic funds for implementation. In contrast Green Resources is developing projects which have a larger impact in terms of climate change mitigation, timber supply and social and economic development. We continue to believe our projects are economically viable, in spite of the fact that we have not had any return on investments during the first 14 years of our operation. Importantly, the projects are also replicable.

Forestation projects can bring large investments to Africa, with the principle benefits going to rural areas where new forests can be established. Forest investments have a unique developmental effect, benefiting the poorest areas of the countries because this is where new forests can be established. Often these are areas which have limited alternative opportunities in terms of employment and rural development/industrialization. The largest part of investments in forestry goes on wages and salaries, therefore benefiting local people.

REDD can only be successful with Forestation

Deforestation accounts for 17-20% of all greenhouse gas emission in the world, more than the whole transport sector combined. Deforestation has received significant focus in recent years, and was a main focus during the Copenhagen climate conference, but with modest results. It is difficult to deal with deforestation, but it is crucially important to halt deforestation because of its significant contribution to climate change and the negative effect on the environment. Below, we show that reforestation is the best way of fighting de-forestation, at least for the developing countries and the poorest parts of the population. It is actually a pre-requisite for successful reduction in emissions from deforestation and destruction (REDD).

Deforestation is a large problem in Tanzania, with 420,000 ha lost every year, according to a FAO publication (although this maybe exaggerated, but regardless, it remains a large number). TaTEDO, the Tanzanian renewable energy NGO claim that charcoal production lead to the loss of more than 100,000 ha forest every year, and that the number is increasing. The effects are devastating and this is witnessed by everybody who has been travelling around the country in recent decades. Most worrying, deforestation seems to have accelerated in areas in and around the highly valuable habitats of the Eastern Arc mountains areas during the last 3-5 years.

Charcoal burning and agricultural expansion drives deforestation. In Asia and Latin America it is mainly agriculture that causes deforestation. In Africa, charcoal burning is possibly as important as agriculture. Thus, it is particularly important to create new and alternative supplies of sustainable timber, fuel wood and charcoal in Africa that ensure precious native forest can be protected. Reforestation is the only way to do it.

Ways to stop deforestation

There are many ways to reduce the pressure on the natural forest and reduce the devastating effect of the deforestation. Moving agricultural practises away from slash and burn would probably have the largest effect on slowing deforestation in Africa and must be part of the

strategy to half deforestation. However, this is very difficult to accomplish. More efficient use of fuel wood, for example, better cooking stoves or gas stoves in the cities, represent interesting alternative opportunities.

A number of non-wood forest products (NWFP) receive a lot of attention as an alternative source of income for people living in and around the threatened forest, but the economic value of non-wood forest products are minor to most of the people depending on the forests and for the countries where the forests are located. Bushmeat, gum, honey, medicinal plants, nuts, oils, tourism, etc are interesting products of the forest, but have limited value in saving large areas of natural forests. Eco-tourism is exciting, but has still created little employment in the developing world.

Sustainable harvesting and management of natural forest is a more promising component of the measures that can be taken to create alternative livelihoods from the forest. However, even done correctly, we think it is difficult to make sustainably managed FSC certified natural forest profitable at today's low wood prices. What is more, sustainable natural forest harvests will often lead to less, rather than more employment and income, at least in the short run.

Forestation – the best solution

There are few effective ways to provide alternative livelihoods for the people depending on unsustainable exploitation of natural forest. Reforestation has high benefits at the inception of projects, because it creates lots of new employment. Reforestation is probably also the best long term solution in relation to abating deforestation because it provides alternative wood supply that can take the pressure off the natural forest.

The police, army and/or guards of various types may be able to protect the natural forest, but most people dependent on the fuel and building materials produced from the forest will descend further into poverty if they or their suppliers are prevented access to the forest. If and when the guards are set to protect the natural forest, many will lose their work, and the prices of the fuelwood on which so many are dependent, will increase, if it remains available at all.

Reforestation needed to make REDD successful

Millions of Africans depend on charcoal production and its distribution for their living, while 100s of million Africans depend on charcoal for cooking their food. The people engaged in this business, and those most dependent on charcoal for cooking their food, belong to the poorest parts of the population. Thus, if new forest is not established that can replace the harvest from the natural forest, the poorest people in Africa will suffer shortage of fuel and building material and become even poorer.

New forests must be established to create new biomass that can be used to replace the wood harvest from the natural forest that is leading to deforestation. The forests provide 90% of Tanzania's energy supplies, in the form of charcoal and firewood, according to Milledge et al (2007)

1. The forests provide 75% of all construction material used in Tanzania (Milledge).
2. Tanzania's National Strategy for Growth and Reduction of Poverty (Mkukuta) states that 90% of the population depends on biomass energy for cooking.
3. In urban areas, the poor spend 35% of their income on energy, according to TaTEDO, Tanzania's leading renewable energy NGO, and 80% of the urban population depends on charcoal for their cooking.
4. In rural areas, women spend up to six hours per day collecting firewood (TaTEDO).
5. Forests and woodlands supports the livelihood of 87% if the rural poor (Milledge).

Need for large scale plantations

Large scale forestation is required to provide the wood and charcoal to supply Africa's subsistence demand requirements, and to supply the charcoal market if REDD is to be

successful. Community forests, farmers and other small growers can play an important part in this effort. We are faced with a major problem, and must utilise all ways of building new forest. The advantage with industrial scale plantations is that they can make a major change quickly and that it is easier to control and measure their results.

Large scale forestation projects will have to play a key role if the main aim is to create more biomass for future use. Green Resources estimate that less than 100,000 ha of new forests have been established by private companies in East and Southern Africa during the last decade, and maybe 200,000 ha in all of Africa. This is a drop in the ocean, and 10 years of forestation by private companies in all of Africa represents only $\frac{1}{4}$ and $\frac{1}{2}$ of the annual loss of forest in Tanzania. For all practical purposes, there is very little reforestation or afforestation activity going on in Africa.

Africa could restore with forest cover millions of ha of heavily degraded land where forest cover was previously found, and which has been left largely redundant. Governments stopped expanding their forest plantations two decades ago as money for forestry projects dried up from supra national organisations. No major international forest, energy or paper and pulp companies are establishing new forest plantations in Africa at the moment. The only companies planting new forests in Africa are a dozen or so small, dedicated private companies focusing on reforestation, mostly in East Africa. Few of them have any revenues, and all have difficulties raising financing. Thus, carbon finance is vital to stimulate an expansion of the forestation activity in Africa.

Details about the Project

Given all the positive effects of our operations, we are surprised that some organizations are focusing on fighting reforestation project in general and the Idete project in Tanzania in particular. Below, a few address a few common misunderstandings about the project.

Norwegian participation

The Prime Minister of Norway did not participate in the launch of the project and has so far not visited any of Green Resources' projects. No Norwegian public funding has gone into the project to date. This is an entirely privately financed project and portraying this as a Norwegian Government intervention is wrong. Norway is a significant contributor to the Government forest sector in Tanzania, but not to Green Resources. Norway has signed an ERPA to purchase the CERs the Idete Project will generate, but payment for these credits will be on delivery, following verification. The first verification will not be until 2012.

Certification

Green Resources aims to achieve both FSC and CCBA certification for the Idete project as it does with all its other projects. This has already been achieved at the neighbouring Green Resources project in Tanzania. We subject ourselves to certification from leading international and well established organizations that work according to international standards.

Land rights

Regarding land rights and community consent, we would like to point out that mainland Tanzania is divided into 22 regions. Each region is administered under districts, responsible for developing a District Investment Profile, which is made available to investors. The District is in charge of managing the Wards and Villages within its district boundaries. All land that is owned by the villages is divided into two main categories: general land, which is land that can be transferred for investment and village land for their own use. Each village is required by the government to have its own Land Use Plan to ensure that all activities are allocated enough area and to ensure security of land tenure.

General Village Land can be given out to investors by the Villages, following subsequent approval of a large number of local and national entities. This is a long process that requires a land use plan and extensive consultation before a title is issued, as regulated by Tanzanian law. Under normal circumstances, not more than 33% of the total village land area can be allocated to

investment purposes, and only if the long term requirements of the village population can be assured from the remaining areas. The Idete forest and carbon project is located on general village land that was set aside by the village for investment purposes.

Land tenure

Regarding land tenure, the Idete project has been leased from the surrounding communities for a period of 99 years, according to Tanzanian law, but with the additional criteria that the project will bring employment and increased infrastructure, schools and health clinics in the area.

Long, not short term project

With the longevity of the project in mind, it is wrong to suggest that the project is a short-term project. Green Resources was established 14 years ago, and invested USD 80 million in Africa and has so far not received any dividend or interest payment from the operations. Forests are a long-term store of carbon. They covered vast areas of the Earth's surface for millennia and contain 60% of the carbon stored in terrestrial ecosystems. Their duration exceeds that of any industrial facility.

Villages are joint project participants

The company and the local villages are joint project participants in the carbon project. The local communities will receive 10% of any carbon revenues and the remaining revenues will be reinvested back into new forest projects in Tanzania. We believe the Idete project may be one of the very few carbon projects in the world where 100% of the gross carbon revenues will be reinvested into the local economy. We have not found any other projects reinvesting a similar amount into the local economy. All carbon revenues will be audited and publicly available on www.greenresources.no.

Stringent CDM rules

The CDM rules require project developers to document and analyze all the environmental impacts associated with a project (including A/R projects). Furthermore, project developers must undertake a detailed Environmental Impact Assessment if the environmental impacts are considered significant or required under national law by the government. The CDM rules also require stakeholder consultations. CDM A/R rules require project developers to follow carbon forestry "best practices," which in turn require sustainable development and provide for technology transfer. Environmental and Social Impact Assessments have been carried out at the Idete Project in-line with government requirements, and have received government approval. In addition GRAS commissioned its own ecological survey, carried out by a leading professor in ecology from a Tanzanian University to further its knowledge on the ecosystem at Idete.

Reforestation is misunderstood in the article, as is the CDM definition: "Reforestation is the direct human-induced conversion of non-forested land to forested land through planting, seeding and/or the human-induced promotion of natural seed sources, on land that was forested but that has been converted to non-forested land. For the first commitment period, reforestation activities will be limited to reforestation occurring on those lands that did not contain forest on 31 December 1989 (16/CMP.1, Annex, paragraph 1(c))." Consequently, areal maps of Idete – and of most of Africa- were not found prior to 1989, which is why the project is called a reforestation project. Furthermore, CDM methodology 5 for A/R defines that only areas of degraded grasslands can be accepted for reforestation. Thus, the soil is too poor for agricultural use.

CDM rules also require that changes in carbon stocks over time within the project boundary be accounted for in the project's monitoring system. As a result, credits can only be issued for ex-post verified carbon sequestration (after the carbon storage has been established) above an established baseline, based on scientifically accepted monitoring techniques. This is exactly what Green Resources are doing at the Idete Forest Project.

Global Timber demand and supply

Demand for fuelwood and charcoal is continuously increasing in Africa due to population growth and increased urbanization. The total global forest area in 2005 was estimated at 3.95 billion ha, just over 30% of the world's land area. Deforestation however, is concentrated in the world's poorest areas along the tropical and subtropical belts. Net forest annual loss globally 1990-2000 was estimated at 8.9 million hectares. Of this, South America and Africa have shown the largest loss so far on an annual basis of 4.3 and 4 million respectively. Although forest plantations are being established at an increasing rate, mainly in China, Russia and the U.S., current productive plantations stand at 109 million hectares or 2.8% of the world's forest area. Projected world demand of timber can for the near future only be partially met by plantation forests (mainly in the Northern hemisphere). The total size of new plantations established in Africa are insignificant, with the area of new forest in all of Africa during the last 10 years estimated to equal less than 0.1% of Tanzania land area. The new plantations in Tanzania themselves account for a very much smaller percentage of the country's land area. As a result of this, the timber demand, together with the increasing need for fuel wood on the whole of the African continent, will continue to be met by destruction of natural forests, unless forestry carbon projects such as Idete are incentivized.

Reforestation is a key weapon against climate change

On a more general note about carbon emission reductions, climate research has shown that to avoid catastrophic changes to the global climate and large-scale irreversible systemic disruption, temperatures must not increase past a threshold of 2 degrees Celsius above those in pre-industrial times. A stabilisation at around 450 ppm would imply a medium likelihood of staying below this threshold. Stabilizing atmospheric concentration at 450ppm would allow cumulative emissions of close to 2,100 Gt CO₂e between 2000 and 2100. Recent analysis has shown to get on track for long-term stabilization, by 2030, emissions should not exceed 32 Gt CO₂e/yr. To achieve this target it requires significant emission cuts against the business as usual scenario.

Reductions on this scale require the inclusion of emissions reductions from the forestry sector. Offsets from the forestry sector could account for a larger share of potential emissions abatement than any other sector, including potential reductions from the power sector. A McKinsey study examined potential abatement scenarios for achieving the necessary emission reductions at a cost below €40/tCO₂e. Forestry accounts for 25% of the additional reduction potential in emissions required to achieve this target. It is clear that to achieve stabilisation at 450 ppm by 2030, both avoided deforestation and reforestation are required. The potential 2030 abatement from reducing deforestation is ~3.3 Gt CO₂e /year, and from afforestation/reforestation a further 3.5 Gt CO₂e/year. Without the inclusion of forestry offsets, achieving these emissions reductions targets are considered impossible. In other words, the alternative to achieving forest based emissions abatement is the likely onset of irreversible climate change by 2030.