

Advancing REDD in the Kolo Hills Forests (ARKFor): progress, challenges, lessons and opportunities

Matilya, G.J.

ARKFor Project, African Wildlife Foundation

Abstract

ARKFor is a three-year project operating in Kondoa district and is one of pilot REDD readiness projects in Tanzania mainly funded by the people of Norway. The project is administered by the African Wildlife Foundation (AWF) as part of its integrated climate change mitigation program in Africa. While most of other pilot REDD projects in Tanzania are currently focusing merely on village land forest areas, ARKFor is targeting continuous village forest areas and government forest reserves (19,924 ha) hence suggesting additional work on devising a win-win benefit sharing agreement between the government and local communities. When these forests are combined with the reference and leakage belt, the total project area reaches 71,632 ha and 21 villages are involved. The project has a two-fold goal of mitigating climate change and improving livelihoods of forest-adjacent communities, while the purpose is to prepare the target communities to enter carbon trading successfully. Results so far include:- establishment of: present carbon stocks in the project area (1,596,903 tCO₂ of which 59.24% are in target forests and the rest are in reference and leakage belt); mean annual deforestation rate (0.46%) and forest degradation rate (5.2%); annual CO₂ emissions saved from avoided deforestation and forest degradation (12,500 tCO₂); completion of second editions of Project Documents (PDs) under Climate, Community and Biodiversity Standards (CCB) and Voluntary Carbon Standards (VCS); capacity building on REDD and land and forest management (135 men and 81 women trained); land use planning completed in 10 villages; 2nd edition of Joint Forest Management Plan (JFM) approved by target villages; 173 farmers each with one-acre demonstration farm trained on improved farming practices of which 60 farms were assessed and found to increase yield by eight times hence earning them extra US\$24,000; learning and networking promoted through participation in climate change forums and media. Some site specific challenges and lessons are: difficulties in understanding REDD concepts and mechanisms as they are new and too scientific or technical for many stakeholders to understand quickly; unexpected increase in project scope; lack of immediate feasible means and ways for poor forest depended communities to accommodate drivers of deforestation; uncertainties of future tangible benefits from REDD; weak enforcement of land tenure among rural communities; lack of benefit sharing mechanism under JFM arrangement; vertical communication within government need to be strengthened; and “bad” memories on impacts of past or on-going conservation projects or programs. Opportunities include: stabilizing food security; increased water for socio-economic activities in lowland area; diversification of livelihood activities in the area; improved land tenure and benefit sharing among poor communities.

1.0 Introduction

1.1 The project design

The Advancing REDD (*Reduced Emissions from Deforestation and forest Degradation*) in the Kolo Hills Forests (ARKFor) is a three-year co-benefit carbon project launched in January 2010. The project is designed to reduce unplanned human-induced conversion of forest land to non-forest land (deforestation) as well as to address human-induced reduction of carbon stocks

in forest but without converting the forest to non-forest land (forest degradation) in the project area. The project also delivers livelihood benefits to forest-adjacent communities. The main donor of the project is the Norwegian government and is implemented by the African Wildlife Foundation (AWF) in partnership with CAMCO, Kondoa District Council, Selian Agricultural Research Institute, and Professor Claude Mung'ong'o of the University of Dar Es Salaam. The project

is gender considerate in all aspects. The total project cost is US\$ 2,061,794

1.2 The project area

ARKFor project operates in Kondoa district, Dodoma region in central Tanzania. According to Mung'ong'o *et al* (2004), the district lies between latitudes 4⁰ 10'-5⁰ 44' South and longitudes 34⁰ 54'-36⁰ 28' East. There are four agro-ecological zones in the district namely the Mbulu Plateau, the *Sereri* in the so-called Maasai Steppe, the *Mbuga* Depressions, and the Mountain Complexes (KIRDEP 1992). The project focuses on the Kondoa Irangi Hills also known as Kolo Hills comprised of continuous open and closed canopy village land forest areas and government forest reserves covering some 19,924 hectares of which 10,114 are inside forest reserves. When the reference area and leakage belt are added to this, the total project area becomes 71,632 hectares of mixed land uses. The natural vegetation of the area is mainly miombo woodland dominated by *Brachystegia spp.*

The major ethnic groups in the district are *Rangi* who dominates in the northern part and *Sandawe* who dominates in the southern part. Other groups include the *Alagwa* (also known as *Aasi*), the *Burunge*, the *Gorowa* (or *Fyome*), the *Nyaturu* and the *Barabaig*. The last three are recent immigrants into the area usually intermingled with the former groups in the district. According to Mung'ong'o *et al* 2011, the main economic activities of the communities in the project area are crop cultivation (70.2%), agro-pastoralism (27.4%) and salaried employment (1.4%). There are almost no pure livestock keepers.

Kondoa has the history of severe land degradation that originates from various deforestation drivers. The remarkable deforestation events started with tsetse fly eradication campaigns from 1927 to 1940s which led to massive clearance of natural

vegetation. Other deforestation drivers in the area include shifting cultivation and overgrazing. The area also experienced some incidences of uncontrolled bush fires. The consequences of these environmentally unfriendly activities included prolonged reduced vegetation cover, soil erosion and general land degradation. This situation has made Kondoa district a typical example of severely degraded areas in Tanzania. In order to address this situation, in 1973, the Government of Tanzania launched a Land Rehabilitation Programme for Dodoma Region; abbreviated as HADO (*HADO* stands for a Swahili phrase *Hifadhi Ardhi Dodoma*). HADO activities included rehabilitation of degraded or eroded areas both by bunding and closure of grazing; tree planting (woodlots, agro-forestry, and homestead); training on soil and water conservation; and establishment of Village Environment Committees (Mbegu and Mlengi, 1983). Although good results were observed especially in forest regeneration and reduced soil erosion, the biggest weakness of HADO was its top-down, non-participatory approaches.

AWF selected the project area based on three criteria; firstly, AWF is committed to support the maintenance of Tarangire-Manyara Ecosystem (TME). The Kolo Hills Forests (or Kondoa Irangi Hills Forests) form an important component of TME by holding headwaters of the Tarangire River, the only reliable water source for wildlife in Tarangire National Park. If the Tarangire River dries out, there will be serious consequences to wildlife downstream including possible local extinctions of some species. Secondly, Kolo Hills Forests provide the basis of rural livelihoods as they generate water to livestock and irrigation to agricultural plots in some villages. Thirdly, Kolo Hills Forests have high potential for community-based tourism due to presence of historical rock paintings of the *Rangi*

people and was designated by UNESCO as a World Heritage Site.

The beneficiaries of the project are about 62,000 people in 21 villages living around the Kolo Hills Forests.

2.0 Objectives of the project

According to ARKFor Project Document, the development objective of the project is two-fold, that is, to contribute in climate change mitigation and poverty reduction. The purpose of the project is to prepare Kondoa stakeholders to enter the carbon trading successfully. The more specific results are described below:

- Improve the current knowledge and scientific understanding of the target forest by using available methodologies to quantify baseline carbon stock, current and prospective deforestation rates and their impact on carbon, and the biodiversity and community benefits of improved forest management.
- Build village-level, local government and civil society organisational capacity towards understanding REDD mechanisms in view of participating in future forest carbon trading and develop relevant indicators to monitor forest and carbon health.
- Work to halt and reduce deforestation and forest degradation and address the fundamental drivers of deforestation

through sustainable joint forestry management (JFM), Community-Based Forest Management (CBFM) and land use planning (LUP) and the development of alternative energy sources.

- Develop conservation-friendly micro-enterprises and sell community carbon certificates consistent with JFM and CBFM plans, to provide direct livelihood benefits and offset the costs of conservation, including through agro-forestry and sustainable agriculture activities.
- Promote effective REDD policies and practices through shared learning and networking between project and national stakeholders, enabling REDD to contribute to climate change mitigation and offsetting the costs of forest conservation.

3.1 Results so far

Result area 1: Improved knowledge and scientific understanding of the target forests

Carbon quantification: The project has measured carbon stocks currently present in the project area as summarized in Table 1.

Table 1: Summary carbon stocks in biomass in the project area

Strata	Strata hectares	Mean carbon tonnes per hectare	Total carbon stock per stratum	Total t-CO ₂ equivalent per stratum
Forest	9,962	18.9	188,282	690,367
Disturbed Open Forest	9,962	7	69,734	255,691
Bush	11,208	2.9	32,503	119,178
Crop Land	35,000	2.9	101,500	372,167
Grassland	5,000	8.7	43,500	159,500
Settlements	500	0	0	0
Total	71,632		435,519	1,596,903

Source: AWF field data 2010

Forecast or potential carbon benefits:

The estimated annual emissions saved from avoided deforestation and forest degradation is 12,500 tCO₂ or a total of 500,000 t CO₂ over the 40 year project period.

The land-use and land cover (LULC) change analysis: The LULC change

analysis showed much of the deforestation in early years to be in the lowland; but now deforestation is moving up the hills probably because most of forests in lowland have been cleared. The mean annual deforestation rates were calculated based on GIS and remote sensing techniques as summarized in Table 2

Table 2: Deforestation and forest degradation rates in the project area

Item	1988-1993	1993-2000	2000-2006	2006-2010	Mean
Mean annual deforestation rate	0.50%	0.20%	0.48%	0.44%	0.46%
Mean annual forest degradation rate (% of closed forest changing to open forest)	Not measured	Not measured	Not measured	5.20%	5.20%
<i>Source: AWF annual report 2011</i>					

Project Documents (PDs): ARKFor is getting prepared to advertize carbon using Climate, Community and Biodiversity Standards (CCB) and Voluntary Carbon Standards (VCS). Currently, the second versions of project documents under CCB and VCS have been compiled still awaiting a few inputs from some partners.

Result area 2: Enhanced REDD understanding and capacity building among stakeholders in Kondoa

Awareness raising and training: So far the focus has been on awareness rising in all 21 project villages and among other stakeholders; targeted trainings have been provided to selected groups of individuals totaling 135 men and 81 women as summarized in Table 3

Table 3: capacity building in the project area

Topic	Target groups	Number trained	
		Men	Women
Field based carbon measurement	District forest staff, villagers	5	2
REDD ToT training, concepts and mechanisms	ARKFor technical partners	14	2
Training on the use of GPS in forest assessment	District forest staff, villagers	4	1
Land use planning and REDD concepts	Village Land Use Planning Teams	50	50
JFM process and REDD concepts	Villages surrounding government forests	23	16
Forest law, REDD and law enforcement	Village Forest Scouts	18	3
ARKFor project and REDD concepts	District political and government leaders	21	7
Total		135	81

Source: ARKFor annual report 2011

Result area 3: Improved forest and land management to address fundamental drivers of deforestation

Improved forest management: The Joint Forest Management (JFM) process was followed as per Tanzania’s guidelines and Forest Law. So far, the second edition of JFM Plan for two government forest reserves of Salanga and Isabe has been

approved by target villages, and targeted community institutions were trained on JFM guidelines and implementation.

Land use planning: So far land use planning has been completed in 10 villages and near completion in four villages. The exercise is challenging in some villages and often retards the project progress.

Result area 4: Target communities benefit from diversified and sustainable livelihood options

Socio-economic baseline survey to establish reference scenario at the project start has been completed. Analysis of viable livelihood options in the project area was conducted and priorities recommended. The only tangible output so far is training of 173 farmers on sustainable agricultural practices. Each of these farmers was supported to establish and run a one-acre demonstration farm. So far sixty farmers have harvested and found average maize yield to increase eight-fold from about 300 to 400kg/acre to about 2,000 to 2,400 kgs/acre. The additional yield has earned each farmer an average of \$400/acre (about TZS 640,000/= per acre).

Result area 5: Learning and Networking Leading to Better Policies and Practice

ARKFor project partners have been participating in national and international climate change and REDD forums for sharing knowledge, experiences, challenges and lessons. Similarly, the project team contributes to media such as National REDD Newsletters and disseminates information through brochures and other means.

4.0 Challenges, lessons and opportunities

4.1 Challenges and lessons

- Newness of REDD, exacerbated by its scientific and technical concepts has made it difficult for many stakeholders to understand quickly. Consequently, more time and resources than initially planned are spent. Similarly, when the project was being designed, some important information on REDD criteria were missing among the design team, as a result, when feasibility study was conducted, it came out with a recommendation to increase project scope. The project area increased from about 18,000 ha to 71,632 ha and

project villages from 15 to 21. This was mainly a result of including the previously overlooked leakage belt in the project area.

- Lack of immediate feasible means and ways for poor forest depended communities to accommodate drivers of deforestation. This is mainly due to poverty and communities' heavy dependence on forest resources for earning their living. For instance, at the current situation, it is almost impossible for a poor household to switch energy use from firewood to biogas.
- Lack of clear and certain information about future of REDD and its benefits, for instance, prices and markets of carbon offsets are currently not certain hence community doubts to embark on REDD while other competing land uses (though unsustainable) are readily available.
- Past "bad" memories of conservation programmes or projects; for instance, the HADO project in Kondoa was top-down and it involved some relocation of people from Kondoa Eroded Areas (KEA) to more suitable areas. This situation did not please some people hence developed negative attitude towards conservation project like REDD.
- Weak enforcement of land tenure among rural communities as exemplified by the majority of villages lacking land use plans and land titles for their residents. This contributes to poverty and land insecurity among poor communities.
- Lack of benefit sharing mechanism under Joint Forest Management (JFM) arrangement. This retards the willingness and courage of local communities to support conservation of forests owned by the government.
- Challenges on information transfer across decision makers (especially vertical communication across government levels). In some occasions,

the decisions made at the national level are not communicated timely to lower levels for implementation. For instance, in one occasion, the Regional Catchment Forest Manager was unaware of REDD initiatives in the country hence delaying for over three months the permission to carry out carbon measurement in his area of operation.

Foreseen risks

- There is a risk that, cash benefits brought by a REDD project will not be sufficient to offset its opportunity cost or to meet the cost of conserving forests. For instance, transaction costs are very high, also, standards required in order to qualify for carbon trading are currently very difficult and costly to meet.
- Possibility of insufficient preparations for Tanzania to sustain REDD activities after donor support

4.2 Opportunities

- Food security: Improved conservation will ensure water flow for irrigation in some project villages as well as providing suitable weather for rain-fed agriculture. Training in sustainable agricultural practices contributes greatly to improved food security at the household level.
- Improved land tenure security: the project is facilitating land use planning and issuing of land titles among poor households in villages, this will increase the value of their land as important asset for their socio-economic development
- Increased economic opportunities: the project is facilitating diversification of sustainable alternative livelihood interventions including conservation agriculture and viable income-generating activities such as

beekeeping, energy saving technologies and eco-tourism. These will provide sustained employment, food security and increased income at community and household level.

- Fair benefit sharing arrangement: the project is facilitating a fair benefit sharing mechanism between the government and local communities under JFM arrangement.

5 Conclusions

The experience sharing among the current nine pilot REDD projects in Tanzania reveals that, the progress in REDD initiatives is promising though facing many challenges. Strong and well coordinated collaboration at different levels (local, national, global) and among stakeholders (local communities, politicians, governments, non-government institutions, carbon buyers and others) is crucial in addressing the current REDD challenges successfully.

Reference

- KIRDEP (1992). Kondo Integrated Rural Development Programme, a community based programme, Dodoma Region. Formulation report, 1992-1995. Dar Es Salaam/The Hague
- Mbegu A.C. and Mlengi W.C. (1983). Ten years of HADO, 1973-1983. Ministry of Natural Resources and Tourism, Dar es Salaam and RSCU/SIDA, Nairobi.
- Mung'ong'o C.G., Kikula I.S. and Mwalyosi R.B. (eds.) (2004). Geophysical and socio-political dynamics of environmental degradation and conservation in Kondo District, Central Tanzania. Dar es Salaam: Dar Es Salaam University Press
- Mung'ong'o, C.G., Lyamchai C., Kulaya I., Mushi P., Sayula G. and Semlowe M. (2011). Establishing baseline conditions in the Kolo Hills Forests and adjacent communities. Unpublished report produced for the Advancing REDD in the Kolo Hills Forests (ARKFor) Project under African Wildlife Foundation