Rukinga
Ranching Co Ltd

The Kasigau Corridor REDD Project Phase I – Rukinga Sanctuary



Project Design Document (PDD)
For Validation Using the
Climate, Community and Biodiversity (CCB)
Project Design Standards Second Edition – December 2008

Technical Support Provided by;
Calcarbon Ltd

Forester's Co-Op
Professional Forestry and
Geographic Information (GIS) Services

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EXECUTIVE SUMMARY

This Project Design Document (PDD) is being submitted by Wildlife Works Carbon LLC, on behalf of Wildlife Works, Inc. the owners of the Carbon Credits derived from a Reduced Emissions from Deforestation and Degradation (REDD) project in SE Kenya in an area of wilderness known as Rukinga Sanctuary.

We believe you will see that in addition to meeting all of the CCB Standards for Approval, we have in addition demonstrated that the project meets two out of three of the optional additional criterion for GOLD Level approval under the CCB Standard, Second Edition, December 2008.

This project will also be submitted under the Voluntary Carbon Standard (VCS) REDD AUFDD Standard as soon as the VCS approves an applicable methodology for this type of project.

You will see that through a combination of Dryland Forest protection and extraordinary community sustainable development activities, this project is estimated to avoid the emission of over 3.5 Million metric tonnes of CO2e which would have been emitted due to slash and burn deforestation over the 20 year project life, or approximately 175,000 metric tonnes per year across the Carbon Pools of Above and Belowground Biomass, and Soil Carbon.

You will see that the Project Area is home to a fantastic diversity of mammals (over 50 species of large mammal, more than 20 species of bats), birds (over 300 species) and important populations of IUCN Red List species such as Grevy's zebra (*Equus grevyi*), Cheetah (*Acinonyx jubatus*), Lion (*Panthera leo*) as well as over 500 African elephants (*Loxidonta africana*) seasonally.

Finally you will see that our project is clearly additional (under the project financial additionality tool) and that the Baseline far from being hypothetical is an extension of actual deforestation that was occurring aggressively in this exact location at the time Wildlife Works came on the scene in 1998, and that can be demonstrated clearly from historic satellite images.

GENERAL SECTION

G1. Original Conditions in the Project Area

General Information

G1.1. Project Area Location and Physical Parameters

The Kasigau Corridor REDD Project is located in SE Kenya, approximately 150 kms NW of Mombasa a city of 3,000,000 inhabitants, in the Marungu Sublocation, Voi Division, Taita Taveta District, Coast Province, Kenya.

This Phase I design document covers all the land known as Rukinga Sanctuary which is all that 74,516 acres (30,168.66 ha) of land originally known as LR 12263, historically reduced by subdivisions 12263/1 and 12263/2 at dates prior to the start date of this project.

Rukinga is part of that land that forms a corridor of land (the Kasigau Wildlife Corridor) between the Tsavo East National Park and the Tsavo West National Parks to the East of the Marungu range. A map identifying the relevant area can be found in Annex 1. The land within the project boundary has been tropical dryland forest[1] for at least 20 years and has been a primary forest since recorded times[2].

The District of Taita Taveta has an estimated population of over 300,000 people.

There are estimated to be approximately 35,000 people within 5 kms of the project boundary.

Climate
The climate in this region of Kenya is semi-arid, with average annual rainfall in the 300-450mm range. There are no permanent water sources on the Project Land. Historically rains occurred seasonally twice a year, in December and April, known as the grass rains and the long rains respectively. However in the past ten years local climatic conditions appear much more irregular and there have been two periods of extended drought in the last ten years.

The project is located at 3° S of the equator, and receives strong sunshine most days of the year. The coolest month is August, the hottest February.

Soils
The dominant soil type within the Project Area is red laterite soil typical of this region of Kenya. There are small bands of black cotton soil that occur randomly within the project area but account for a tiny and we believe insignificant element from the standpoint of the Project Soils

[1] UN IPCC, Good Practice Guidance for LULUCF, Table 3A.1.8;
[2] Earliest record that has been located is dated 1895 which identifies the area as forested [Hobley 1895 – Upon a Visit to Tsavo and the Taita Highlands – The Geographical Journal 1895 Vol 5 No 6 pp 545-561]

pool. There are also areas within the Project Boundary where Gneiss Islands, or rocky outcrops penetrate the soils to form small rocky hills. These outcrops represent a tiny and we believe insignificant portion of the land and therefore were ignored from the standpoint of the Project Soils pool.

Geology
This area is dominated geologically by the remnants of the Eastern Arc Mountains, which include the Taita Hills, Mt. Kasigau, seen in this photo at the southern end of the Project area, and lesser hills such as Sagalla, and the Marungu Range that runs North-South down the Western boundary of the Project Area. These hills are home to remnant patches of montane or cloud forest, and to several endemic species of bird and flora.



G1.2. Types and Condition of Vegetation at the Project Area

The vegetation in the Project Area has been stratified into four strata roughly corresponding to different elevations that range within the Project Area from 1500-3500 feet above sea level.

1) Montane Forest

   On the slopes of the Marungu Range from 2000-3500 ft elevation, that forms the western boundary of the Project Area, there are still fragments of montane forest (1%), similar in composition to the much more well studied forest fragments of the Taita Hills that are located 50kms NW of the Project Area. The Taita Hills forest fragments in Southeast Kenya currently cover an area of only ca. 3 km^2. This reflects a 98% reduction in indigenous forest cover over the last 200 years, mainly due to clearance for agriculture (Myers et. al 1999, Newmark 2002). Despite the small size of the twelve remaining forest fragments (range 1-179 ha, 9 fragments < 10 ha) these remnants are

of global conservation importance because of their long list of rare and endemic species, both flora and fauna. The fragmentation of this strata occurred prior to our arrival as a result of illegal harvest for building poles and fuelwood by members of the communities adjacent to the Project Area in the years of early population colonization of the community lands located there. There are still some patches of primary forest in this area.

2) Dryland Forest

The majority of the Project Area (86%) is comprised of Acacia-Commiphora Dryland Forest, where the dominant species are drought specialists, possessing a number of strategies to find and preserve moisture in a semi-arid environment, including dropping or folding all foliage in dry periods to reduce moisture loss from transpiration, when they photosynthesize through their bark to survive. These include;

- Acacia tortilis,
- Acacia nilotica,
- Acacia bussei,
- Acacia hockii,
- Commiphora africana,
- Commiphora campestris,
- Commiphora confusa.

The average canopy height is between 5-7m with the maximum height being approximately 10m. There are occasional taller hardwood species such as;

- Terminalia spinosa,
- Melia volkensii,
- Boscia coriacea,
- Cassia abbreviata,
- Newtonia hildebrantii

In total 50 species of tree were encountered during the extensive plot sampling performed for this project. The great majority of this strata is in its historic condition, and although there have been anthropogenic activities on the Project for the past 35 years, such as cattle grazing, ecotourism, there has been no significant alteration to the forest. One unique characteristic of this project is the extent to which African elephants (Loxidonta africana) damage the trees in the dryland forest as they feed and in order some believe to open up the canopy to allow more grasses to grow. As a conservative measure we have chosen not to count fallen dead wood in our carbon stocks, although in some instances there is a significant amount due to elephant damage.

3) Savannah Grassland

At the lowest elevations of the Project Area (8%) and in a band that runs irregularly through the Project Area the thick Acacia-Commiphora Forest thins and eventually transitions to patches of grassland. The Grassland strata is comprised of indigenous savannah grasses and shrubs, with the occasion Acacia zanzibarica. Again this strata is in its historic condition, and provides significant support for the biodiversity within the

Project Area, feeding large ungulates such as Cape buffalo, Common and Grevy's zebra and Eland.

4) Agricultural Encroachment Area

Prior to our arrival in 1999, a portion of the Western boundary of the Project Area (4.7%) had been cleared by slash and burn agriculture and converted to annual maize production. After our arrival when the farms were abandoned, the strata is now recovering as native bush and grassland but is distinguished within this project from primary native Savannah Grasslands, as it is located on the slopes of the Marungu Range and therefore at one time would have been Montane Forest, and may develop a unique reforested species mix over time. Although this strata is not in its historic condition, it provides significant support for the biodiversity within the Project Area, feeding large ungulates such as Cape buffalo, Common and Grevy's zebra and Eland.

5) OUT Areas

Several areas of the Project Area were identified as unrepresentative of the primary forested strata in which they fell, and it was determined that should a randomly located sample plot fall within those areas of little or no vegetation, they would unfairly bias the data, inaccurately reducing the overall carbon inventory of the forest. Therefore these "anomalies" were stratified out of the Project Area, and strict unbiased rules were devised to relocate any randomly located sample plots that fell within those "out" areas. The "Out" areas are defined as follows:

Bomas:

Bomas are circular areas, larger than 30m radius that are anthropogenic clearings for cattle stock enclosures made by previous land owners/users in historic times long before the project start date. As a result of the high numbers of cattle kept over long periods of time in these Bomas, the soil content is severely compromised so that only basic grasses will grow there. It is difficult to tell exactly how old they are, as this soil condition can persist for hundreds of years. Bomas were generally located close to the roads and vehicle tracks that traverse the Project Area, and have been identified by GPS, radius measured, and stratified out of the Project Area. As we are able to locate Most but possibly not All of these Bomas, and stratify them as OUT areas, removed from the overall Project Area, this removes the possibility of disproportionate influence of these out areas on the carbon inventory, as they are no longer present in the Project Area and therefore not reflective of a valid condition within the Project Area. After carbon funds are available, we plan to purchase high resolution imagery of the Project Area, and will be better able to identify any Bomas that have not already been found by our inventory teams, if any, and we will adjust the size of this OUT area accordingly prior to our first annual audit period. However the total OUT area for all Bomas located to date is less than 50 hectares so even if we only found 50% of the Bomas we believe this area not to be material to the total GHG emissions reductions in this project.

Dam/Waterholes:

Dams and Waterholes are naturally formed depressions or pans that fill with water during the rainy season providing seasonal water for the wild animals of the Project Area. Some of these pans have been enhanced in historic times by man to hold more water by deepening the pans, or adding dam walls to contain more water. Because of the presence of the seasonal water and the attraction that provides to wildlife, especially

elephants, there is little or no vegetation either within the pan or in the immediate surrounding area, so inclusion of a plot randomly located within one of these waterholes would inaccurately bias the carbon inventory down. As we are able to locate ALL of these waterholes, and stratify them as OUT areas, removed from the overall Project Area, this removes the possibility of disproportionate influence of these out areas on the carbon inventory, as they are no longer present in the Project Area and therefore not reflective of a valid condition within the Project Area.

Roads:

There are several access roads that pass through the project area, that are all unpaved but that represent unforested areas unrepresentative of the conditions in the Project Area. These roads have been buffered out to a width of 15m either side of the centerline of the road using ArcMap GIS, and the area encompassed by these road buffers was placed in the OUT strata and deducted from the project vegetation strata for carbon inventory purposes. It was suggested by the CCB Auditors that the difference between the 15m road buffer and the 100m plot anomaly should be stratified out of the four main Project Strata through which they pass, and separately sampled to prevent exaggeration of the carbon values of that strip relative to the main strata. Only 4 plots out of 115 were relocated due to proximity to Roads alone, and the carbon values beyond the 15m buffer either side of the road are not dramatically lower than in the deeper Forest, so we do not believe this biased the Carbon Inventory in any material way, but before our first verification audit we will look into creating a separate strata for Road Buffer, and also look at whether sampling the original plot locations and including them instead of the data from the 4 revised plots would provide the most accurate estimate of the carbon in that vegetation type.

Airstrips:

There are two airstrips in the Project Area, that are bush strips, that is to say they are dirt, but they have been artificially cleared of vegetation, so inclusion of a plot randomly located within one of these airstrips would inaccurately bias the carbon inventory down. As it happens there was no plot originally located in either of these airstrips. The airstrips are necessary to provide prompt access to the Rukinga Sanctuary for tourists and other VIP guests and to provide air evacuation for anyone who might ever become seriously injured on Rukinga although this has never happened during our ownership and management of Rukinga. These two airstrips have now been located on the GIS and have been stratified as OUT areas, removed from the overall Project Area, thus removing the possibility of disproportionate influence of these out areas on the carbon inventory, as they are no longer present in the Project Area and therefore not reflective of a valid condition within the Project Area. The area of the 5-5 Airstrip is 4.5 hectares, while that of the Camp Kenya strip is 4 hectares, so they are not material to the Project Area.

G1.3. Project Boundaries of the Project Area and the Project Zone

The Project Area boundary is the boundary of that piece of land known as LR 12263 or Rukinga Sanctuary(See Project Area Map Annex 1). This land is privately owned under leasehold ownership from the Government of Kenya by Rukinga Ranching Co. Ltd, with the

majority shareholder of Rukinga Ranching Co Ltd being BenBo International, an offshore trust established by one of Wildlife Works principal investors.

The Project Zone includes the land that falls between Tsavo East National Park and Tsavo West National Park south and east of Voi town, and includes the communities of Maungu, Itinyi, Buguta, Marungu, Kale, Mwakasinyi, Sasenyi and the privately held group ranches of Kasigau, Taita, Amaka, Maungu, Mgeno, Kambanga, Wangala and Buchuma which are owned by various local community members, in some cases with 50 shareholders, in others with as many as 2500. See Map of Project Zone in Annex 1. Note that for financial reasons this projec could not be pursued in a single Phase, so the Project Zone map shows the approximate split of the overall project zone into Phase I and II.

Climate Information

G1.4. Carbon Stocks within the Project Area

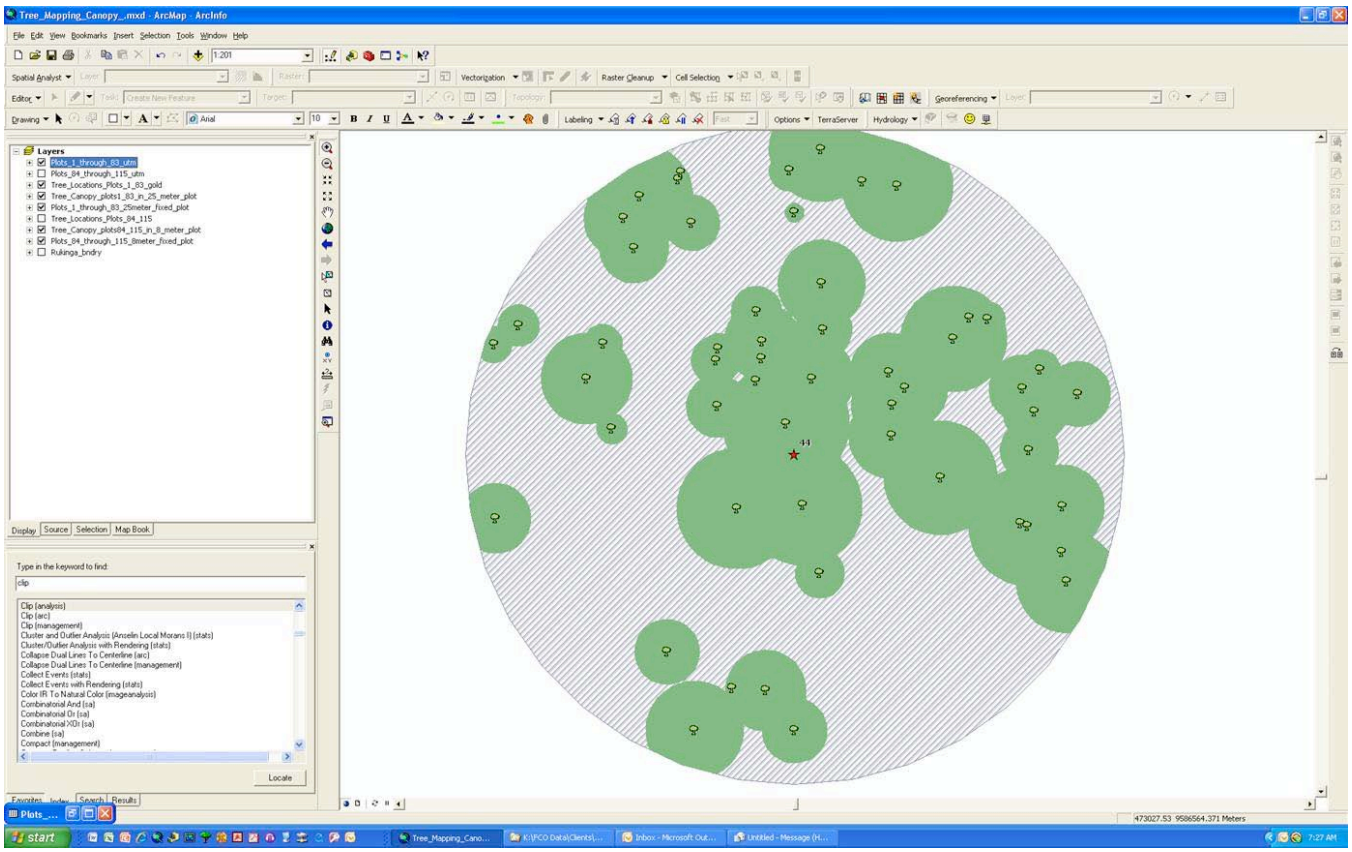
This Project's approach to estimating the existing carbon stocks was to follow the AD Partners Methodology as submitted in May 2009 to the Voluntary Carbon Standard (VCS). We chose this approach as we plan to have our project validated and verified against the VCS in addition to achieving CCB validation.

Because we have a solid team of Wildlife Works personnel on the ground at the Project Area, and because we always focus on local job creation and training whenever possible, we chose to conduct our Carbon Forest Inventory using fixed permanent plot sampling, covering the entire 30,166 hectares with statistically representative numbers of plots. Our plot sampling methodology is included in Annex 2, together with the review of that methodology conducted for us by an Independent third party forestry consultancy, Forester's Co-Op.

In total 115 plots were sampled covering the four strata included in the Project Area. The original plot cards are being kept at the Project office at Rukinga Kenya, but they were transcribed to excel and the excel file with all tree and shrub plot data is available for review at any time. That data was then scrubbed in an access database, and any transcription errors such as tree species spelling errors, missing data (dbh) etc. were referred back to the Rukinga project team for clarification or in some cases the teams had to revisit the plot to record a dbh that was missed in the initial plot cards.

The first thing we need to demonstrate is that the forest meets the criteria of forest under the UN IPCC guidelines. We measured the distance from center of plot and the angle from north as well as the canopy diameter for all of the trees sampled and that allowed us to plot the location of every tree in the Arc Map GIS system (see image example below), and from these plots, the GIS calculated the canopy cover for each plot. This results are summarized in the table below.

Plots	***Fixed Radius Plot Size***	***Plot Area (Hectares)***	***Canopy Area within Plot (Hectares)***	***% Canopy Cover***
Plots 1 - 83	25 Meter	14.26	5.33	37.38%
Plots 84-115	8 Meter	0.64	0.13	20.31%
Average		14.9	5.46	36.64%
Dry_Land_Forest_Plots 1_83	25 Meters	12.5	4.96	39.68%
Dry Land_Forest_Plots_84_115	8 Meters	0.14	0.03	21.43%
Average	N/A	12.64	4.99	39.48%



Next we chose the following carbon pools for our Project;

Aboveground Biomass – trees

Aboveground Biomass – shrubs and grasses

Belowground Biomass – trees

Belowground Biomass – shrubs and grasses

Soil Carbon

We chose not to include;

Fallen Dead Wood

Leaf Litter

As they are relatively small pools and their exclusion would lead to a conservative estimate of carbon stocks.

We chose not to include;

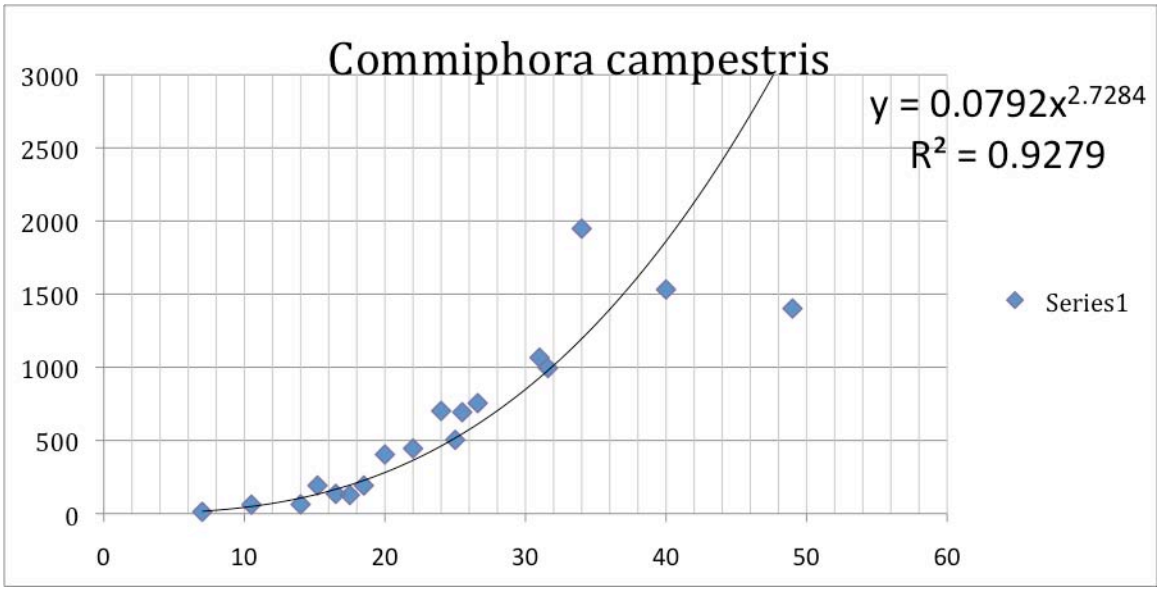
Wood Products, as we do not permit any harvesting of wood from the Project Area so this pool would be null.

Aboveground Biomass – trees

The next decision was the basis for estimating carbon stocks within these pools. We examined the best available literature referenced in the UN IPCC 2006 GL for AFOLU but found that none of the literature was produced in our type of dryland tropical forest, and as a result, the average biomass and the allometric equations presented in the UN literature would have lead to significant over counting of the carbon in our forest. Commiphora's are not dense woods and therefore are relatively light for a given diameter. None of the tree species on Rukinga are of commercial value as timber and therefore very little scientific data exists for them.

As a result we chose to use a destructive harvest technique to cut and weigh a range of trees at varying dbh and plotted the results of dbh to dry weight to create our own allometric equations by species for the dominant species. For the low appearance species, with little statistical importance to the biomass estimates, we used an average equation derived from the total of all destructive harvest of all species.

For example, for the most numerous species of tree in the Project Area, Commiphora campestris, the plot of tree weight to dbh is;



and the allometric equation generated that best describes the data was;

$$y = 0.0792x^{2.7284}$$

for dbh <= 35 cm.

For trees > 35cm dbh this equation overestimates weight, so we used an average of all species plot for all trees >35cm dbh which yielded more conservative results in line with the actual weight of larger trees sampled.

The results for all of the remaining species found during plot are in Annex 3.

These allometric equations were used to calculate Aboveground Biomass for each species in each plot in each strata using the AD Partners VCS formula;

$$C_{AB_tree,j,sp,i,t=0} = \sum_{l=1}^{N_{j,sp,i,t}=0} f_j(DBH, H) * CF_j \quad (3)$$

Where:

$C_{AB_tree,j,sp,i,t=0}$	Carbon stock in aboveground biomass of trees of species *j* in plot *sp* in stratum *i* at time *t=0*; t C
CFj	Carbon fraction of biomass for tree species *j*; t C t^{-1} d.m.
$f_j(DBH,H)$	Allometric equation for species *j* linking diameter at breast height (*DBH*) and possibly total height (*H*) to aboveground biomass of trees; t. d.m. $tree^{-1}$
i	*1, 2, 3, …M* strata
j	*1, 2, 3 … S* tree species
l	*1, 2, 3, …* $N_{j,sp,i,t}$ sequence number of individual trees of species *j* in sample plot *sp* in stratum *i* at time *t*
t=0	*0* years elapsed since start of the project activity

A Carbon fraction for all species of 50% used as per the UNIPCC 2006 GL AFOLU Chapter 3.2.

The results of these calculations can be found in the table titled Equation 3 in Annex 4.

The next step was to sum the Aboveground biomass for all species within the plot, following AD Partners step 4 formula;

$$C_{AB_tree,sp,i,t=0} = \sum_{j=1}^{S} C_{AB_tree,j,sp,i,t=0} \quad (4)$$

Where:

$C_{AB_tree,sp,i,t=0}$	Aboveground biomass carbon stock of trees in sample plot *sp* of stratum *i* at time *t=0*, t C
$C_{AB_tree,,j,sp,i,t=0}$	Carbon stock in aboveground biomass of trees of species *j* in sample plot *sp* in stratum *i* at time *t=0*; t C
i	*1, 2, 3, …M* strata
j	*1, 2, 3 … S* tree species
t=0	*0* years elapsed since the start of the project activity

The results of this calculation are presented in the table of Equation 4 in Annex 4. For ease of presentation and because the Belowground Biomass was calculated using an expansion factor

of 0.28 as per the UNIPCC 2006 GL AFOLU Chapter 3.2. both Above and Belowground biomass are presented in table 4.

Finally, in Step 5 from the AD Partners VCS methodology, the sum of all plots within a strata was performed giving a total Aboveground and Belowground biomass number now stated in metric tonnes of GHG, following the formula;

$$C_{AB_tree,i,t=0} = \frac{1}{Asp_i} * \sum_{sp=1}^{P_i} C_{AB_tree,sp,i,t=0} * \frac{44}{12} \quad (5)$$

Where:

$C_{AB_tree,i,t=0}$	Mean aboveground biomass carbon stock in stratum *i* at time *t=0*; t CO_2-e ha^{-1}
$C_{AB_tree,sp,i,t=0}$	Aboveground biomass carbon stock of trees in sample plot *sp* of stratum *i* at time *t=0*, t C
Asp_i	Total area of all sample plots in stratum *i*; ha
sp	*1, 2, 3 … Pi* sample plots in stratum *i*
i	*1, 2, 3 … M* strata
t=0	*0* years elapsed since the start of the project activity
44/12	Ratio of molecular weight of CO_2 to carbon, t CO_2-e t C^{-1}

The results of the above are as follows;

Equation 5

Strata	Strata Hectares	Mean Carbon Stock per Stratum (metric tonnes per Ha)	Total Carbon tons per Strata (metric tonnes)	Total t-CO2 Equivalent per Strata
Ag Encroachment	1392.265	4.684899	6522.622	23916.5
Dry Land Forest	25550.23	35.00765	894453.6	3279693
Montane Forest	316.024	55.76484	17623.03	64618.36
Savannah Grassland	2340.102	2.815579	6588.742	24158.94
			925,187.95	3,392,386.79

Aboveground Biomass – Shrubs

See Annex 2 for the plot sampling methodology used to capture the data from the field to use the VCS AD Partners methodology to calculate the Shrub Carbon Pool. The summary result of the 5 step process follows.

Equation 5 - Shrubs

Strata	Shrub Carbon (Metric Tonnes)	Shrub CO2 Equivalent (Metric Tonnes)
Ag Encroachment	6353.236	23295.41
Dry Land Forest	54689.29	200529.2
Montane Forest	645.1248	2365.479
Savannah Grassland	933.3239	3422.219
Strata Sums:	62,620.97	229,612.33

Aboveground Biomass – Grasses

See Annex 2 for the plot sampling methodology used to capture the data from the field. The VCS AD Partners methodology does not cover shrubs and grasses but the process for calculating herbaceous material biomass is very simple. We harvested grasses from four 1m square plots in quadrants within each of the Fixed Tree Sampling Plots. We dried the grasses and weighed the bundles to obtain sample plot grass weights then used the area expansion factor to calculate plot and strata total Carbon biomass in metric tonnes per hectare, then we multiplied by 44/12 to obtain CO2 e inventory.

Soil Carbon

The methodology used to calculate Soil carbon is the AD Partners VCS methodology module 6 CP-S. The sampling methodology used is outlined in Annex 2. Soil samples were taken from 28 locations around Rukinga, although one sample location ended up being in the Agricultural Encroachment Area, and therefore was excluded from the sample sets used to calculate starting Soil Carbon value within the Dryland Forest, as the assumption here is that the land previously cleared prior to Wildlife Works arrival had already lost soil carbon, and therefore there would be no avoided emissions from soils for that strata in the with project scenario.

The equation used to calculate the carbon stock in soil was;

$$C_{SOCsp,i,t=0} = C_{SOCsample,sp,i,t=0} * BD_{sample,sp,i,t=0} * Dep_{sample,sp,i,t=0} * 100 \quad (1)$$

where:

$C_{SOCsp,i,t=0}$	Carbon stock in soil organic carbon for sample plot *sp*, stratum *i*, at time *t=0*; t C ha^{-1}
$C_{SOCsample,sp,i,t=0}$	Soil organic carbon of the sample in sample plot *sp*, stratum *i*, at time *t=0*; determined in the laboratory in g C/100 g soil (fine fraction <2 mm)
$BD_{sample,sp,i,t=0}$	Bulk density of fine (<2 mm) fraction of mineral soil in sample plot *sp*, stratum *i*, at time *t* =0; determined in the laboratory in g fine fraction cm^{-3} total sample volume
$Dep_{sample,sp,i,t=0}$	Depth to which soil sample is collected in sample plot *sp* in stratum *i* at time *t=0*; cm
sp	*1, 2, 3 … P_i* sample plots in stratum *i*
i	*1, 2, 3 … M* strata
t=0	*0* years elapsed since the start of the project activity

A scientifically recognized standard factor of 1.724 (58% SOM=SOC) [3] was used to convert soil organic matter (SOM) as measured in our plot samples by the independent testing laboratory Crop Nutrition Laboratory Services to soil organic carbon (SOC). Bulk density was also measured by the lab.

Finally to convert the results of equation 1 above to GHG in carbon dioxide equivalents the results were multiplied by 44/12.

The results obtained from Rukinga for Soil Carbon are included in Annex 4 and illustrated in the following table.

Rukinga REDD Project – Soil Carbon Pool					
Sample Location	*Hectares*	*Total Tonnes of GHG*	*Tonnes of GHG per Ha*	*%Standard Error @ 90%CI*	*Number of Samples*
Rukinga – Forest Land	28,206.39	3,775,989.43	133.87	11.08%	27
Rukinga - Agricuture Land	1,392.27	Not Used	N/A	N/A	1 – Plot 8

Total of all Carbon Stocks in the Project Area at the beginning of the project crediting period (note that inventory was taken in February through June 2009 and as a result it is certain that some biomass gain had undoubtedly already occurred between the beginning of the project crediting period and the sampling period, but as we are not claiming any net biomass increase during our project crediting period these inventory numbers represent a conservative estimate of beginning project inventory).

[3] Bohn, McNeal, O'Connor. 1979. Soil Chemistry. Wiley – Interscience publication.

Pool	Total GHG
Aboveground and Belowground Biomass (trees)	3,392,387
Soils - hectares excludes Ag encroachment strata	3,751,398
Aboveground and Belowground Biomass (shrubs)	229,612
Aboveground and Belowground Biomass (grasses)	25,000
Total	7,143,785

Community Information

G1.5. Community Information

The community in the Project Zone is essentially two communities.

Taita

There are the traditional Taita peoples who have lived in this District since historic times, although who were moved out of the Project Zone in the early 20th century as a result of activities that took place in the First World War, and who began to return to the project zone mid 20th century. The population throughout the 20th century was mostly restricted to the higher elevations of the Eastern Arc Mountains and the slopes of Mt Kasigau, where higher rainfall and cooler climates made agriculture easier. Towards the late 1980s and early 1990s the Taita population on the main Taita Hills at the center of the District became too large to support the traditional practice of subdividing land and passing on plots to the next generation, and so Taita families began to descend to the lower elevations where the climate was much hotter and drier. In the 1980s a German Government Agricultural scheme acquired 5000 acres of what was then Rukinga Ranch and began a Jojoba growing scheme that brought lots of people to the area, but subsequently failed after completely clearing approximately 4000 acres of Dryland Forest. This land is no longer part of the Project Area, as it was legally excised from Rukinga and is now owned by a Nariobi businessman, but it is in the Project Zone, and is now being restored by Wildlife Works as wildlife habitat, although it falls outside the scope of this Carbon project.

The Mombasa highway was in such a shocking state of disrepair during the 1990s that trucks were forced to make many stops on the road from Voi to Mombasa, for repairs, and as a result roadside villages in the lower elevations began to prosper. Maungu, which is one of the main villages in the Project Zone began to grow in the mid to late 1990s, with prostitution and bars to serve the trucking community. As a result Maungu has one of the highest HIV rates in the world as reported by the WHO. As the population grew rapidly in the 1990s, colonization took place from Maungu South along the unpaved public road towards Mt. Kasigau that runs parallel to the Western boundary of the Project Area. The Taita are subsistence agriculturalists, so they cleared the dryland forest and planted maize, with little success. However 1998 was an El Nino year with abundant rainfall, and that further accelerated deforestation and immigration.

There are no formal employers other than Wildlife Works in the Project Zone, other than service business, small shops, bars etc. and there were very few schools and no medical clinics when the Project began.

Duruma

The other community within the Project Zone is largely made up of Duruma peoples, from the Coast of Kenya. The Duruma are one of the poorest tribes in Kenya, a circumstance that some attribute to an unhappy accident that their tribal lands fall right on the National boundary between Kenya and Tanzania that was drawn on a paper map by Queen Victoria in the late 19th century, but never clearly marked on the ground, which has lead to the Duruma being ignored by both Kenya and Tanzania over the years. Local lore has it that they first came to

the Project Zone in the early 1990s when they were promised land by a local Taita politician who had taken a Duruma wife in return for their votes in local elections. The only problem was he promised them land he did not own that is within the Project Zone. The Duruma are polygamists, and therefore the common practice was for a husband to bring his second or third wives to the Project Zone to establish agricultural plots. The husband would leave them in the bush with their small children and return to the Coast where they would spend most of the time with the family of the first wife. The husband would then return at harvest and claim a large portion of the crop should there actually have been a crop, and would take it back to the Coast family. These single parent families were rarely successful at agriculture, but continued to clear land aggressively hoping they would find the perfect location where the tragically localized rainfall patterns would find their land. In the interim the teenage males would snare for food, the Duruma being much more comfortable in the bush than the Taita farmers.

The Project Area was never inhabited historically, as there is no permanent water sources and it is remote from the hills that formed the traditional location of the Taita populations. The Project Area was gazetted in the 1970s as a Private Group Ranch for grazing land for certain members of the Taita communities then resident over 50 kms away on the Taita Hills. However they never had significant herds of cattle and therefore although they formed legal entities such as the Rukinga Ranching Co. Ltd.(RRC) to hold title in the land granted by the post independence Government, the local population never made use of the Project Area. Over the years local shareholders sold their shares to outsiders, and eventually a majority of the shares were held by a small group of white Kenyan cattle ranchers who did attempt to operate a cattle ranch on the Project Area for a number of years prior to our arrival.

Wildlife Works initiated a conservation project at Rukinga Ranch in May 1998 by leasing 20,000 acres of the Land from the then owners of RRC, in order to establish a privately owned wildlife sanctuary (Rukinga Project). The then owners decided to sell the land in 1999, to a non-biodiversity friendly buyer so one of WW's investors stepped in and purchased the Land in January 2000, by majority acquisition of shares in RRC. The Land has been protected by Wildlife Works as a forest habitat since this time but on a loss-making basis. Wildlife Works has been approached several times since 1999 by various entities who suggested that WW activities on the Rukinga Project should be eligible for some form of carbon finance to support its work. However, on every occasion prior to November 2008 when Wildlife Works management looked into the possibility of using carbon finance it was clear that there was no mechanism for avoided deforestation conservation projects to receive carbon finance. When the Voluntary Carbon Standard (VCS) implemented their program for making REDD projects eligible to generate VCUs in November 2008, WW sought financing to initiate a REDD project for the Rukinga Project. After finding the necessary financing through a joint venture called Wildlife Works Carbon LLC, this project was launched. All documentation relating to this sequence of events will be made available to the Validator, if, and when required.

G1.6. Current Land Use

Legal title to most land in Kenya was originally held by the "Crown" during the colonial period, and then reverted to the Government of Kenya post independence (1963). Over the years the Government has issued leasehold title deeds to land in the Project Zone, but only for large blocks of land known as Group Ranches, such as the Project Area, Rukinga Ranch. Until recently the villages and communities maintained a traditional community trust land system in the land areas outside of the Group Ranches, where the Chief (which is the highest appointed

administrative officer at the Location level) can allocate land to a family for farming, but the family has no formal legal rights on the land. This system was largely ignored by the immigrant Duruma who just began to clear and occupy land initially within the community land zone, then when that ran short, in the Project Area.

We believe that the allocation of clear title to land being farmed by a family can have a significant impact on the health of the land, as the family is much more likely to implement soil conservation measures and plant for the long term if they have legal security on the land. As a result in 2001 we implemented a Co-Operative land scheme, in which we sold 5,000 acres of Rukinga (that had already been slashed and burnt prior to our arrival in 1998) to a Co-op of local farmers, in which for $10 per acre they could gain legal title to a 5-10 acre plot. This land is known as the Sasenyi Valley Land Cooperative, and has a local Board of Directors and now operates totally independently of Wildlife Works or Rukinga Ranching Co. Ltd.



The government has just decided to begin rural land schemes in which community trust lands are being subdivided into legal plots and title given to the families currently occupying them, but this process is very slow and fraught with nepotism and implementation difficulties. In this case, we believe that allocation of individual title to currently forested community land can be very damaging to the environment as while the community as a whole has been able to maintain the forest cover, and understands the land is poor agricultural land, when a poor individual is given the title to land they immediately clear it to farm as that is all they know.

For the time being the majority of the land in the Project Zone is part of legally allocated group ranches in which Public companies, such as Rukinga Ranching Co. Ltd hold the title. Some of these group ranches have 50 shareholders, some have 2500. None of these group ranches operate their own cattle ranching, in most cases there are no economic activities on the land at all, and these lands have been badly hit in the past fifteen years by the illegal charcoal trade which turns the best hardwood trees into bags of charcoal for a few dollars each. There has also been rampant bush meat poaching over the years especially in the more remote Group Ranches. The balance of the land in the Project Zone is still community trust land although much of it is in the process of being subdivided for farming plots.

Biodiversity Information

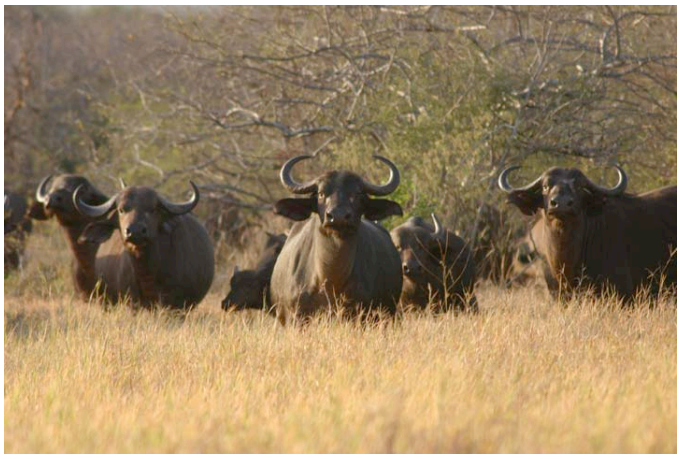
G1.7. Current Biodiversity

The Project Area, Rukinga Ranch, now known as Rukinga Wildlife Sanctuary is part of the greater Tsavo ecosystem, a semi-arid area of Dryland Forest interspersed with Savannah Grasslands that spreads north to the Tana River and South into Tanzania. It is an ecosystem with incredible species diversity of large mammals and birds, the vast majority of the area falls with Tsavo East and Tsavo West National Parks. It is part of one of Conservation International's Global Hotspots, The Eastern Arc Mountains hot spot. The Project Zone forms a corridor of land between the two National Parks and as such almost all of the species present in the National Parks are also present on Rukinga. See Annex 5 for species lists found on Rukinga. This list was generated by actual observations of Rangers and staff of the Rukinga Sanctuary and the previous tourism operation that operated on Rukinga, and is excerpted from the Taita Discovery Center Guide, published by the Taita Discovery Center, a copy of which was provided to the Validator. The best sources for full descriptions of the birds and mammals of this part of Africa are:

Birds of Kenya and Northern Tanzania. Dale Zimmerman, Donald Turner and David Pearson. 1996. Russel Friedman Books, Halfway House, South Africa.

The Kingdon Field Guide to African Mammals. Jonathan Kingdon. 1997. Academic Press, London.

Rukinga provides a home and area of relative safety to several key species of interest, including an average population of African elephants (*Loxodonta africana*) estimated between 200 and 300. A few other notable species present on Rukinga are lion (*Panthera leo*), leopard (*Panthera pardus*), cheetah (*Acinonyx jubatus*), serval cat (*Felis serval*), spotted hyena (*Crocuta crocuta*), African hunting dog (*Lycaon pictus*) and about 12 species of ungulates, such as eland (*Taurotragus oryx*), Cape buffalo (*Syncerus caffer*) and the highly endangered Grevy's zebra (*Equus grevyi*). A wide range of other species is included in the area's wildlife population, among them various carnivores, primates, rodents, reptiles, amphibians, and over 300 avian species. In addition to animal species, Rukinga is home to thousands of species of plants indigenous to the Tsavo ecosystem. All photos of wildlife in this document were taken on Rukinga Sanctuary.



Cape buffalo

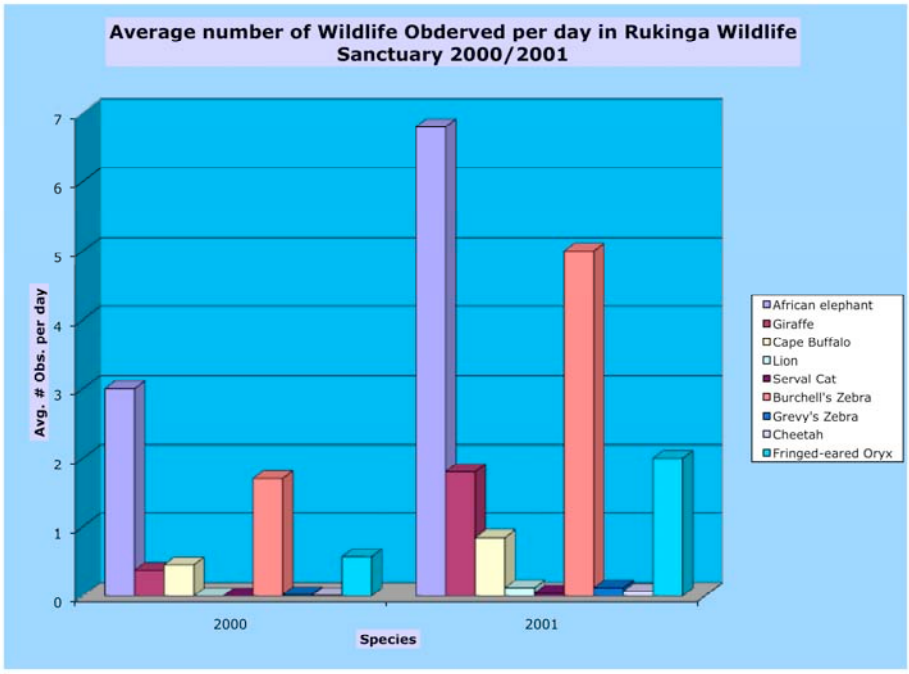
African elephant





Grevy's zebra

Rukinga has been studied by many internationally renowned wildlife researchers over the years, including Bruce Patterson from the Chicago Field Museum who has been conducting important lion research on Rukinga for years, Dr. Barbara McKnight who studied Rukinga as a dispersal area and corridor for African elephants moving between the two National Parks, Kim Medley from Miami University of Ohio who has studied the trees in the ecosystem extensively and many others(see references below). Wildlife Works has employed unarmed Rangers since the beginning of our project to prevent illegal access to the Sanctuary and to monitor wildlife populations and ecosystem health. Those Rangers have been making daily reports of wildlife sightings for the past ten



years which have been captured in an Access database. Our team lead by Rob Dodson also played a significant role in assisting the Kenya Wildlife Service with the recent publication of the Tsavo Conservation Area Management Plan. The TCAMP is a far reaching analysis of the Tsavo ecosystem including the role of the Private Ranches in the Kasigau Corridor. A copy has been provided to the Validator.

At one time the other Group Ranches in the area were also full of wildlife but the bushmeat trade has greatly reduced the wildlife populations outside of the Parks. This was also true on Rukinga prior to the arrival of Wildlife Works, but a report we produced in 2001 with data collected by Dr. Barbara McKnight and her Earthwatch researchers demonstrated dramatic recovery of populations on Rukinga between 1999 and 2001, the first two years that we were working with the community around Rukinga and preventing illegal bushmeat access to Rukinga. Annex 5 – Wildlife Distribution in Rukinga Sanctuary, summarized in the chart above.

Refs: Patterson, B.D., 2007. *Annual Accomplishment Report for 2007 – Lions of* Tsavo – copy provided to Validator.

Patterson, Bruce D. (2004). *The Lions of Tsavo : Exploring the Legacy of Africa's Notorious Man-Eaters*. McGraw-Hill

Patterson, B.D., S.M. Kasiki, E. Selempo & R.W. Kays. 2004. *Livestock predation by lions (Panthera leo) and other carnivores on ranches neighboring Tsavo National Parks, Kenya*. Biological Conservation 119 (4):507-516

Patterson, B.D., R.W. Kays, S.M. Kasiki & V.M. Sebestyen. 2006. *Developmental effects of climate on the mane of the lion (Panthera leo)*. Journal of Mammalogy 87(2):193-200.

Medley, Kim*. Mt. Kasigau Biodiversity Report*. Miami University of Ohio – copy provided to Validator

McKnight, Dr. Barbara. *Tsavo Elephant Research 2001-2009.* Earthwatch, - Sample report from 2006-7 provided to Validator

Tsavo Conservation Area Management Plan – Kenya Wildlife Service 2009

Kenya Trees, Shrubs and Lianas. 1994. Henk Beentje. National Museums of Kenya, Nairobi.

G1.8. High Conservation Values Evaluation

Rukinga Sanctuary clearly qualifies as an area of High Conservation Values under the following qualifying attributes;

8.1 b – Rukinga is home to five species of mammal that are considered endangered, vulnerable or threatened under the IUCN guidelines, African elephant, cheetah, lion, African hunting dog, and a globally significant population of grevy's zebra.

8.1 d – Rukinga forms an important corridor for migration and dispersal of large mammals, and supports a significant concentration of African elephants with as many as 1500 using the corridor either as a dispersal and feeding area or to move between the two National Parks seasonally.

8.2 – Rukinga is home to a complete dryland ecosystem including all of the species that would be found in this ecosystem except for rhino that were all hunted out long ago, and have been reintroduced into the National Park on a trial basis but have not yet dispersed as far as Rukinga.

8.3, 8.4, 8.5, 8.6 – Mount Kasigau – Mount Kasigau, which falls within the Project Zone is an area of High Conservation Value, based on a number of criteria;

- it is home to several endemic species, and a rare and threatened cloud forest
- it provides critical hydrological services to five villages located at the base of the mountain
- it provides fuelwood, building materials, traditional medicines for the local community
- it has strong cultural value to the local community

Please see attached reports, Mt. Kasigau Biodiversity Report by Kim Medley of Miami University of Ohio, and Mt. Kasigau Area Biodiversity Survey Report, 2006, by our own Rob Dodson for details on this HCV.

G2. Baseline Projections

G2.1 – Most Likely Land Use

Unlike many REDD projects, it was not difficult to identify the baseline scenario for this project which is rapid deforestation due to unplanned slash and burn agricultural expansion by subsistence immigrants at the frontier of human expansion, as all the conditions of the baseline were in place before the arrival of Wildlife Works and in fact the Project Area was already beginning to be cleared as shown in the chronosequence of satellite images in G2.3 below. There is little need for speculation as to what would happen in the absence of our project if we ceased to protect the Project Area and ceased to provide alternative livelihoods for the community, the pattern of deforestation would pick up right where it left off, but now accelerated by a much larger population base than was present when we arrived.



Looking back towards Rukinga from deforested area in Project Zone

The Project Area has previously been used for grazing of cattle and for ecotourism. Both activities failed due to lack of funds, and cattle ranching is difficult due to a fragile ecosystem and lack of water, which lead to the sale of the land to the current owners. Afforestation of plantation species and agricultural activities cannot profitably be carried out in this sort of area due to a lack of water and a fragile ecosystem. Therefore we believe that we have demonstrated through our activities to attempt many different economic activities and the activities that preceded us that there are no credible alternative economic uses for this land that could compete with the Project financially, or provide financial sustainability that would protect it from slash and burn use by the community.



G2.2 – Additionality

Protecting this 30,166 hectare piece of dryland forest has cost the Project proponents a significant amount of money over the last ten years. There are no significant sources of income from the land to offset those protection costs, and therefore this project would eventually fail financially if Carbon funding were not made available. In the absence of active protection, both physical and that created by partnering with the communities to create economic alternatives, it is clear the land in the Project Area would be cleared aggressively for subsistence agriculture, as that was in fact what was already happening prior to our arrival.

The local agents of deforestation in our project area are Taita people who have traditionally farmed the fertile cloud forested hills of the Eastern Arc Mountains, Kasigau, and the Taita Hills. As their population exceeded the carrying capacity of the land on the hills they moved down into the dryland acacia-commiphora forest that dominates the lower elevations of the district. However here their traditional farming practices did not work, due to extremely low average rainfall, so after colonizing all the land with permanent water sources they began to clear any available unprotected land. The larger blocks of remaining land in the area outside of communally owned land protected by local administrations were privately held group ranches designated as cattle carrying areas for the communities of the hills back in the 1970s. However due to the remoteness of these areas and the lack of permanent water sources, they had never been developed as cattle ranches, and remained natural forest over the years, until the mid 1990s when rainfall patterns initiated a population boom in the area facilitated by the improvement of the main Mombasa highway and a local arterial road that runs right along the edge of the Rukinga project area.

The immigrant agents of deforestation in our project area are Duruma from over one hundred kilometers away in Coast province, a very poor tribe that has historically opportunistically and illegally sought farm land that was unprotected throughout Kenya. These people were first introduced to our district in the early 1990s brought in by a corrupt politician who promised them land (not owned by him) in return for votes...once they realized they could find unprotected land in the district, more and more families came.

Both these populations began aggressively converting land in the late 1990s just prior to our arrival on the scene in 1999. As soon as we made it impossible to take free land, the immigration stopped, and in fact many families returned to the Coast.

G2.3 – Carbon Stock Changes

The carbon stock change analysis approach used in this project is one based on actual historical deforestation of the Project Zone and even the Project Area, that was quantified by Manual Expert Analysis of Landsat Remote Sensing imagery.

This is the process followed by the GIS expert from Forester's Co-Op.

Historic Digitization Deforestation Methodology

Utilizing LandSat Imagery from 1995 and 1999 Forester's Co-Op manually digitized historic conversion of forest land to non-forest land use.

1995: Landsat 5, Path 167, Row 62 & 63, Year 1995, March 28th

L5167063_06319950328

A multiband composited raster image was created from the 8 bands of .tif images downloaded through the USGS online Global Visualization Viewer. Cloud Cover was approximately 55% for the two tiles with excellent visibility around the project area. The raster image utilized all 8 bands, with a 30 x 30 meter resolution and Red, Green, Blue configuration of Band 7, 4, and 1 respectively. While manually digitizing historic deforestation around Rukinga the largest scale utilized was 1:24,000 scale with the smallest scale for reference of 1:150,000.

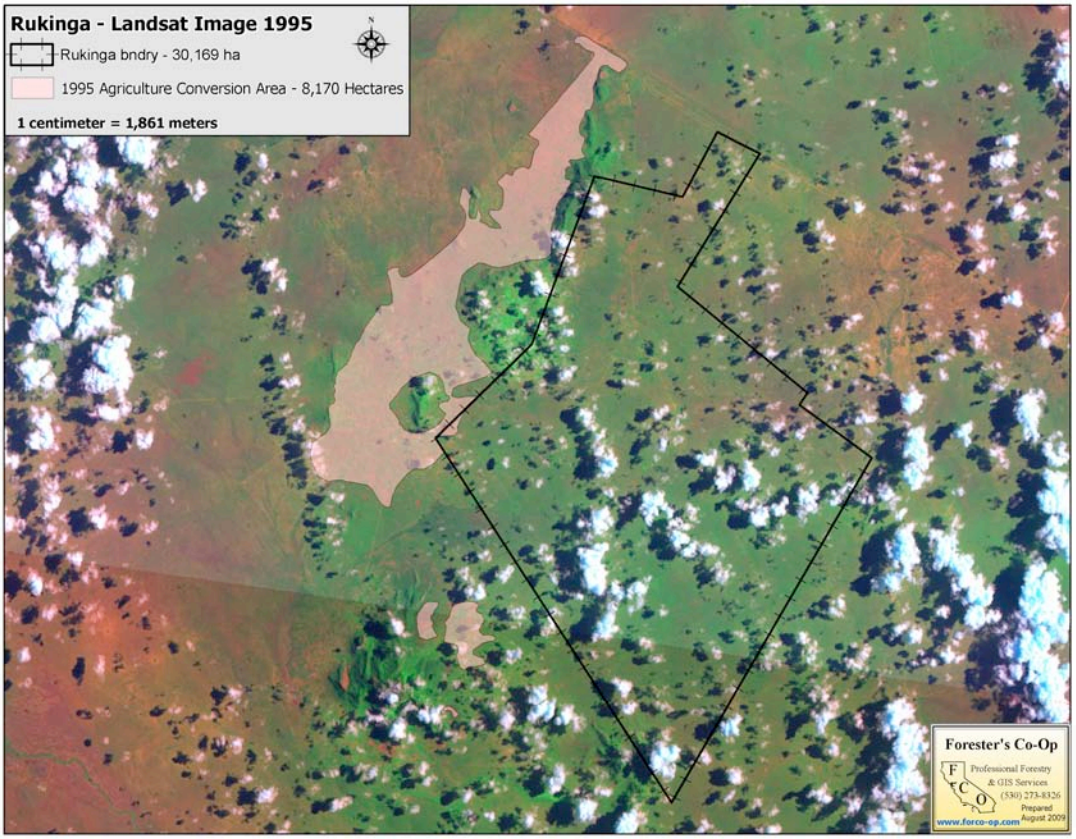
1999: Landsat 7, Path 167, Row 62 & 63, Year 1999, November 25th

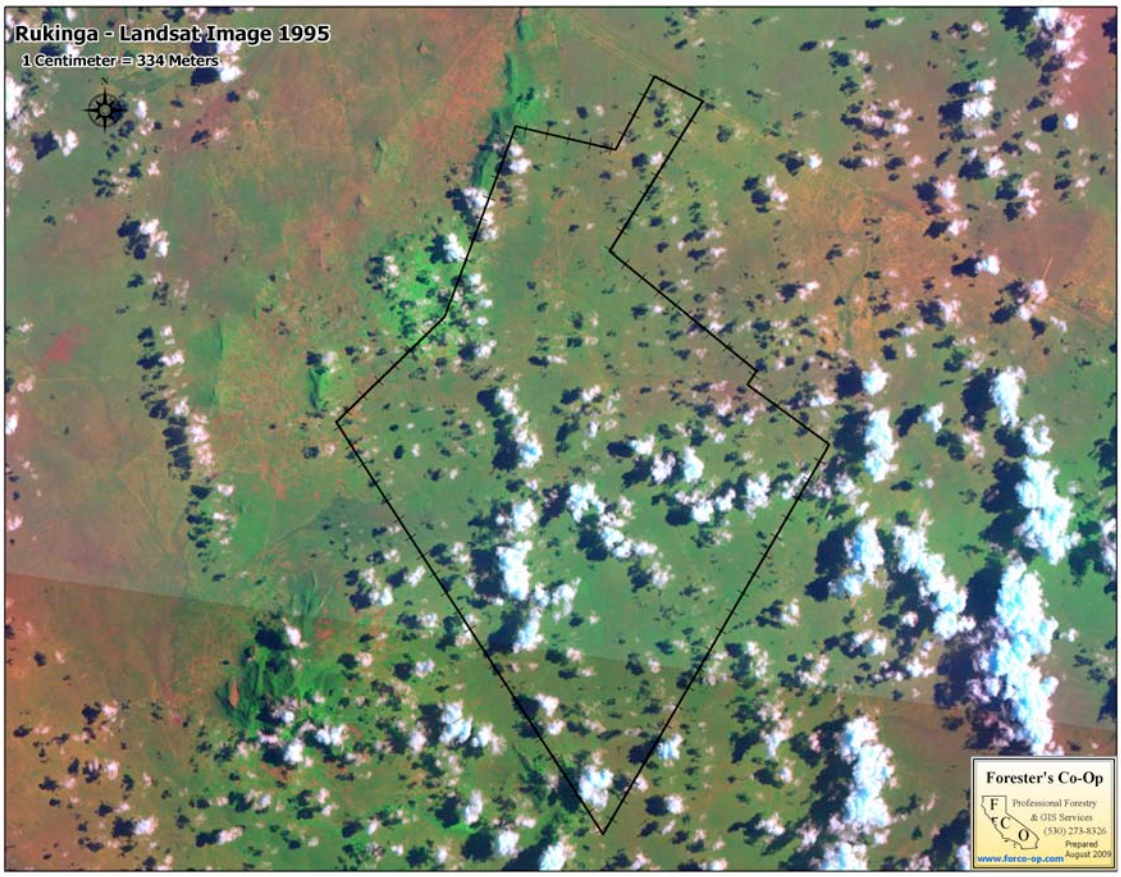
L71167062_06219991025

A multiband composited raster image was created from the 8 bands of .tif images downloaded through the USGS online Global Visualization Viewer. Cloud Cover was approximately 1% for the two tiles with excellent visibility around the project area. The raster image utilized all 8 bands, with a 30 x 30 meter resolution and Red, Green, Blue configuration of Band 8, 4, and 1 respectively. While manually digitizing historic deforestation around Rukinga the largest scale utilized was 1:24,000 scale with the smallest scale for reference of 1:150,000.

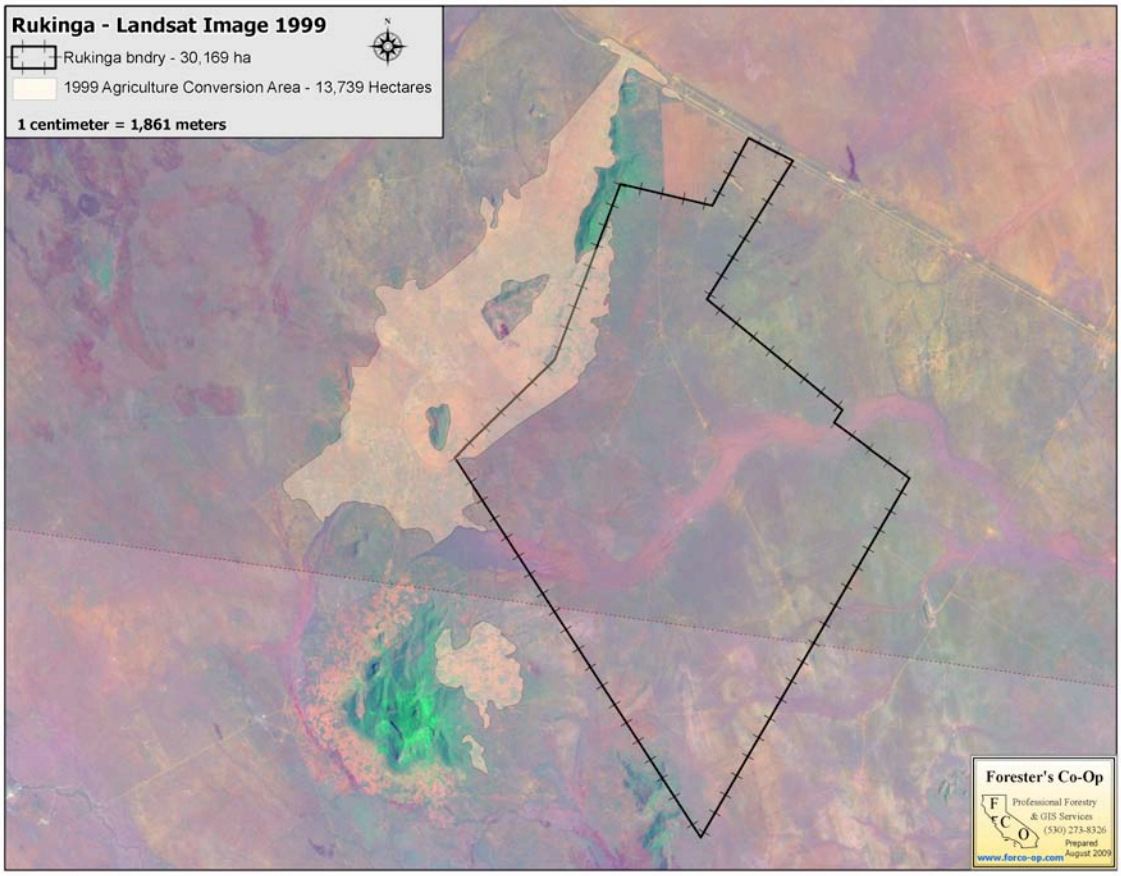
Contact:
Ryan Willis
Forester's Co-Op (530) 273-8326
GIS Administrator

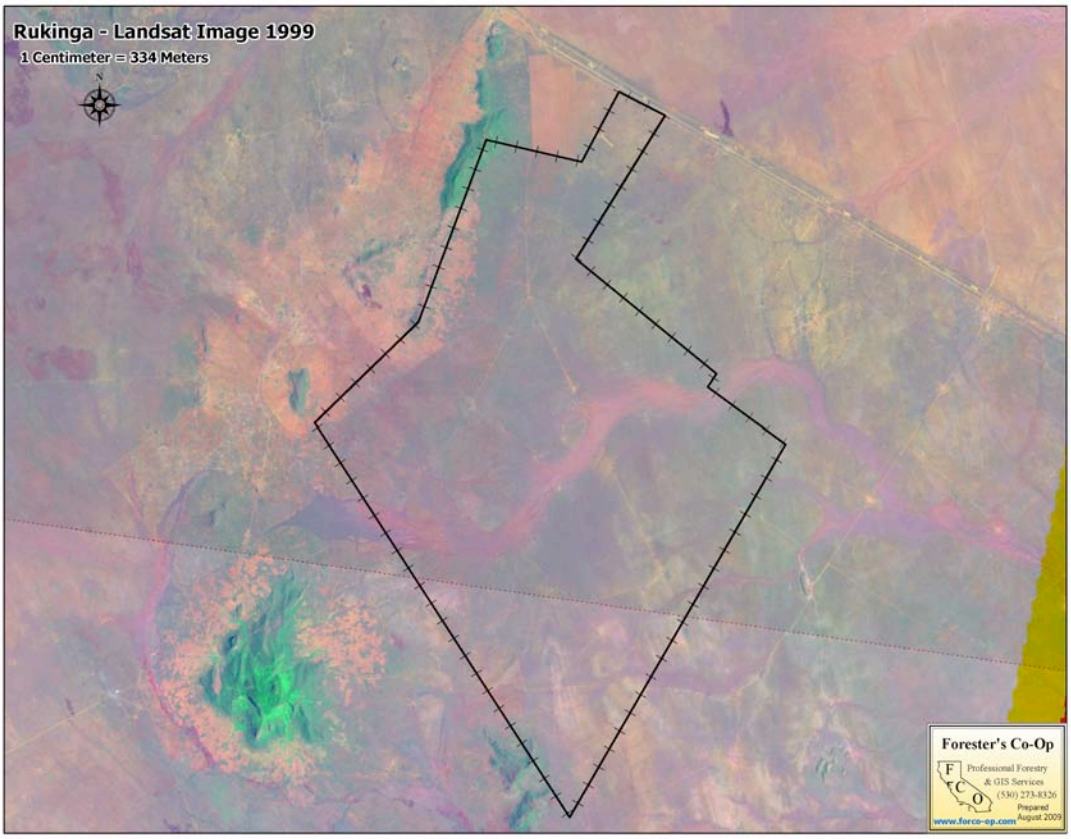
1995 images – with and without deforestation area overlay



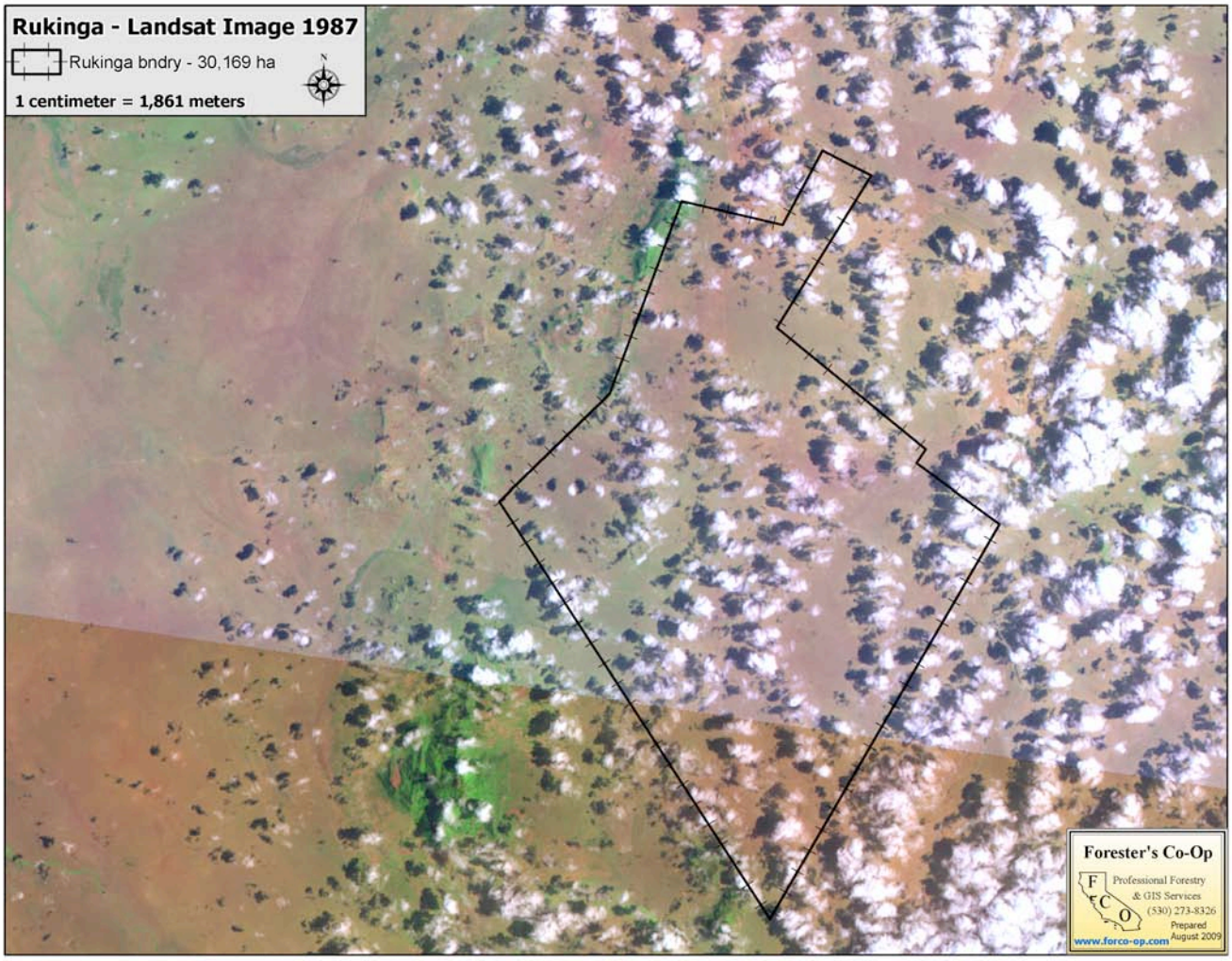


1999 images – with and without deforestation area overlay





In addition to the above, an image from 1987 was reviewed in which almost no deforestation was visible in the Project Zone, and none in the Project Area.



The deforestation rate per year in hectares was then calculated by subtracting the deforested area in 1995 from that in 1999. It is clear from the images above that the 1995 deforestation polygon encompasses patches of what appear to be remnant forest and given the process of clearing still evident within the Project Zone, this is almost certainly the case, as deforestation progresses through patchy clearing by individual families striking out into the bush to an area not closely watched, then eventually when it is too late to save the forest, other immigrants clear the patches linking the early cleared patches until the deforested area becomes uniform and total. This means that using the polygons as drawn manually by the GIS expert will overestimate the deforestation in 1995, and therefore underestimate the net change in deforested land in the Project Zone by 1999, leading to a conservative estimate of the historical deforestation rate. It is for this reason, and because we were on the ground since 1998 and have a very clear historical perspective on the location and pattern of the deforestation that we are comfortable submitting these projections without the support of a high resolution satellite image to “truth” the deforested areas. It is however our intention to acquire such high resolution imagery to “truth” the deforestation estimates prior to seeking verification of our credits under the VCS.

The second variable used in our deforestation rate model was population as the main and only driver of deforestation in the Project Zone is subsistence farmers looking for land to farm. We were able to obtain Kenya Census bureau data for 1979, 1989 and 1999 (2009 census has not been completed yet).

To obtain population data for 1995 we took a straight line extrapolation from 1989 to 1999. We were then able to get a total for new people in the Project Zone over that four year period, and from that an average rate of deforestation per new person on the landscape per hectare per year (D).

We then took the average population growth rate over the 10 year period from 1989-1999 that census data was available, and projected forwards from the 1999 actual population to get to a population estimate for 2006 and 2026, the project beginning and ending crediting periods.

[We feel that the population growth estimates in the without project scenario are justified, as 1) this was the historically accurate rate in the period of time most relevant to the without project scenario, i.e. Just prior to the project beginning, and 2) the average population growth rate for Kenya as a whole during that period was well over 3 % and the availability of unprotected land is a magnet for migration from other districts, and the population of the source districts of historical immigration to the Project Zone, being the Coast province and the Taita Hills respectively runs into the millions, so there is no constraint on the potential growth in the without project scenario. In addition during our time in the Project Zone there was a serious exploration by the Government of Kenya to resettle 30,000 post election violence displaced internal refugees from a totally different area of Kenya into underutilized land on adjacent group ranches, and it is fairly likely that had we not been present, e.g. in the without project scenario, they might well have proceeded to settle those people in the Project Area.]

The difference between the 2006 and 2026 populations gave us the total new persons on the landscape in the Project Zone from start to end of Crediting period, which when multiplied by the per head per year deforestation rate (D) gave us a total deforested hectares over the Project crediting period. We then overlaid those deforested hectares on Rukinga to determine what percentage of the Project Area would have been deforested in the Baseline or “without project” case.

Again we believe this is conservative as the presence of our project between 1999 and 2006 prevented 7 years of deforestation that we are not claiming within this project crediting period. Furthermore we believe that had we been able to locate a 1997 or 1998 satellite image, we would have seen almost the same amount of deforestation as in 1999, as we came on the scene in May 1998 and immediately began reducing and then eliminating deforestation within the Project Area. This would have the effect of increasing the rate of deforestation in the historical reference period.

Year	*Converted Hectares (Historic_Landsat_ Data)*	*Population*	*Annual numbers of Hectares Converted per New Person on Landscape*
1995	8170	14471	
1999	13739	18317	0.3620
Population Projected 2026 at 6.07% growth (ave. rate 1989-1999)			89921
Number of New People on Landscape from 2006 to 2026 (Projected)			62251

	Total Hectares Converted by 2026 Projected	**Rate of Hectares Converted/Year**
1995 - 1999 Scenario	22535	835

The loss of carbon in the baseline for above and belowground biomass trees, shrubs and grasses was then taken as 100% of the starting inventory for the deforested area, as allowed under UNIPCC because the likely scenario in the post deforestation baseline is annual crops. Therefore the GHG emission reductions under the project for Above and Belowground trees shrubs and grasses is;

Total CO2e Inventory Trees, Shrubs and Grasses at project start

X

Total hectares deforested during crediting period

÷

Total Project Area available to be deforested at project crediting start date

(e.g. excluding Agricultural Encroachment Area already deforested prior to Project start)

= (3,392,387 + 229,612 + 25,000) X 22535/29598

= **2,776,712**

For soil carbon we must take a different approach as there is not 100% loss of soil carbon in the without project scenario. We followed the methodology detailed in the AD Partners VCS

module 6-CP_S for sol carbon, and we had the opportunity to measure the soil carbon in a number of Proxy sites immediately adjacent to the Project Area, on farm land with identical soil, rainfall and climate, that in all cases had been forest less than 20 years before. The sampling methodology was identical to that used for the soil carbon estimates within the Project Area, 30cm pits dug and samples from each of three 10cm layers were mixed together bagged and sent to an independent soils testing lab for bulk density and organic matter analysis.

The results obtained are included in Annex 4 and are summarized as;

Rukinga REDD Project – Soil Carbon Pool					
Sample Location	*Hectares*	*Total Tonnes of GHG*	*Tonnes of GHG per Ha*	*%Standard Error @ 90%CI*	*Number of Samples*
Agriculture Land – Outside Rukinga	N/A	N/A	100.104	16.96%	20

This yielded a difference in soil carbon between the with project and without project of 33 tonnes GHG per Ha converted to farm land under annual crops.

This give the total emissions reductions in metric tonnes CO2e in the with project scenario for soil carbon as;

= 33.77 X 22,535 = 761,007

And summarizing for all pools the GHG loss in Baseline is;

Pool	Total GHG	Total Hectares	Loss in Baseline
Aboveground and Belowground Biomass (trees)	3,392,387	29,598*	2,710,325
Soils - hectares excludes Ag encroachment strata	3,751,398	28,206**	761,007
Aboveground and Belowground Biomass (shrubs)	229,612		174,819
Aboveground and Belowground Biomass (grasses)	25,000		19,034
Total	7,143,785		3,537,719
Annual loss over twenty years			176,886

* 30,166 – out areas
** 30,166 – out areas – ag encroachment areas

G2.4 – How Would Baseline Effect Communities

In such an arid ecosystem it is hard to imagine that deforestation would lead to serious further deterioration of climate, in terms of even lower rainfall and/or increased mean temperature, but soil erosion, soil carbon and fertility losses would definitely increase. What is more, we have demonstrated over the past ten years that our direct employment of community members who

make up 90% of our Kenyan staff of over 100 has had a direct benefit to the economic wellbeing of the community. In addition we have brought other income generating ecofriendly activities to the Project Zone, such as ecotourism, we have built schools, trained local people in better dryland farming techniques and provided resources to health clinics and plan to bring other such benefits with the additional financing that the Carbon project will provide.

G2.5 – How Would Baseline Effect Biodiversity

It is much more obvious how the Baseline or without project scenario would effect biodiversity. When we arrived at the Project Area most of the wildlife had been poached out for bushmeat. It has returned to Rukinga over the past ten years and we now have a vibrant balanced ecosystem once again, but in the Baseline there would likely be no wildlife whatsoever in the Project Zone outside of the National Parks. Furthermore, our general conservation influence on the community has lead to community based conservation initiatives in community trust lands, and community supported desnaring activities in the National Parks themselves, as well as less violent means of dealing with wildlife conflict. We do still catch bushmeat poachers regularly, who are commercial hunters often from outside the Project Zone coming to harvest bushmeat for transport back to the cities. (Gruesome photos of desnaring and antipoaching activities available on request). The Dryland Acacia-Commiphora forests grow very slowly and it is likely that the conditions to recreate a forest like this do not exist given the ever increasing temperatures in the area, so once lost under the baseline it might never come back.

G3. Project Design and Goals

G3.1 - Major Climate, Community and Biodiversity Objectives

The Kasigau Corridor REDD Project aims to leverage the financial support of the global carbon marketplace to;

- prevent the emission of almost 3,000,000 tonnes of CO2e over the twenty year crediting period of the project by preventing any further deforestation of the Project Area and surrounding area
- add financial sustainability to the existing world class conservation project that has been protecting biodiversity, avoiding deforestation on Rukinga Sanctuary and providing substantial community development benefits in the Project Zone for the past ten years, so that we may continue through the project crediting period and hopefully well beyond to protect the area's magnificent biodiversity
- prevent the loss of spectacular biodiversity and protect the area as a wildlife corridor for important indigenous species such as African elephant (Loxidonta africana), Cheetah (Acinonyx jubatus), Grevy's zebra (Equus grevyi), African hunting dog (Lycaon pictus), Lion (Panther leo) and 50 other large mammal species both by direct protection of our Rangers within the Project Area and through our influence, in the Project Zone
- expand the influence of Wildlife Works into the surrounding Dryland Forests within the Kasigau Corridor that are under similar threat to Rukinga and that are community owned, and not currently in a position to make the investments that Wildlife Works has made in biodiversity protection by co-venturing with those community landowners in Phase II of the Kasigau Corridor project
- Manage the protection of over 500,000 acres of Dryland Forest in the Kasigau Corridor to maximize biodiversity values, and provide substantial co-benefits to community members who in some cases have never received any financial income from their forested lands
- Invest the proceeds of the carbon project back into alternative livelihood creation for people in the surrounding areas so that pressure on the forest is removed
- to ensure long term community support for the conservation of the Forests and wildlife through educational outreach in issues such as alternatives to slash and burn etc.
- Expand our organic greenhouse to implement community based nurseries to provide agricultural and fuelwood growing alternatives that remove the need of the local people to deforest the Land and surrounding areas

G3.2 - Major Project Activities

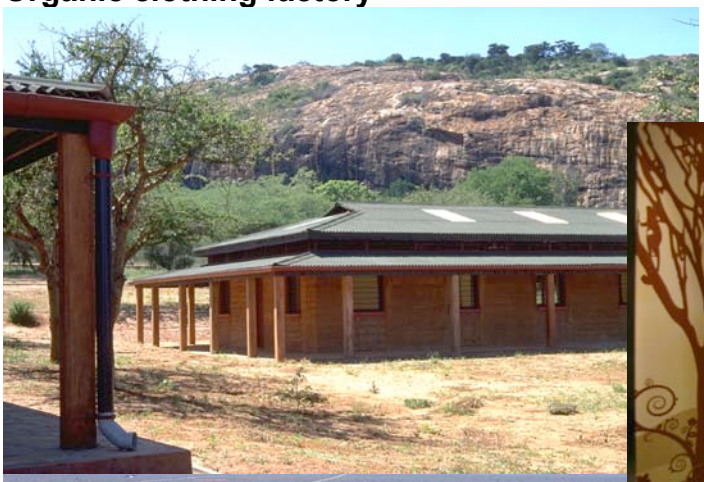
Wildlife Works has been engaged in this project for almost ten years and unlike NGOs that set up projects then leave and pay infrequent visits to see how things are going, Wildlife Works has had a hands on approach since the very beginning. We employ over 100 local people in a range of activities that we will continue and in some cases expand with carbon financing. Such activities include;

Wildlife Works Sustainable Development Initiatives

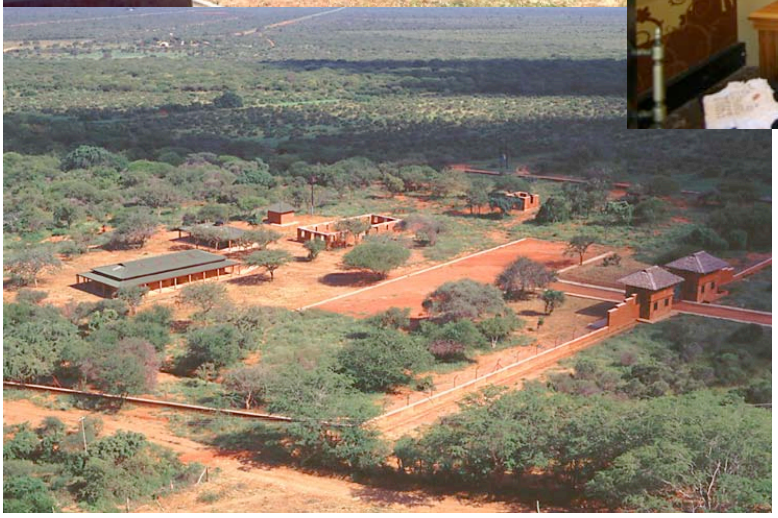
Wildlife Works has implemented a wide range of sustainable development initiatives at Rukinga over the past ten years, and is committing to continue with a new range of innovative

co-benefits for the communities that are in the Project Zone once the funding for the Carbon project begins. These initiatives collectively form the basis of our carbon offset leakage avoidance strategy, and an Implementation schedule for these Project Activities, with timelines and budgets was shared with the project Validator.

Organic clothing factory







Our core project, was the construction of the Ecofactory, where we employed over 150 people from the community in the construction phase and then trained and employ young women from the community sewing organic cotton clothing which we export to the US and Europe for sale on the internet and in fashion boutiques. First and foremost we plan to continue the level of investment we have been making for the past ten years in this ecofactory.
In addition, going forward we have several new Project Activities in this area;

- Adding capacity – we plan to immediately rehire ten women previously trained by Wildlife Works but let go due to lack of funding
- Factory Expansion – we plan to complete a second production cell, capable of dyeing and screen printing fabric so that we can manufacture finished goods completely within our complex without having to send out for dye and print. We believe this will make our production capability much more attractive to a wider range of customers, and reduce our production costs. The walls for this production cell were built back when the first sewing cell was built, but it needs roofing, flooring, electrification and importation of the dye and screen print equipment acquired by Wildlife Works in the US. A full budget for

this factory expansion was provided to the Validator.

- Increase Fabric Inventory and Produce 2010 Collection – we have been unable to produce a new fashion collection from Rukinga for the past two years due to lack of funding, so we plan to initiate a new Collection immediately in 2010, once carbon funding is received. This new collection will be sold online and will relaunch our brand into the international marketplace, now with 100% of production being done in Rukinga. This is critical to our long term strategy to wean local people away from agricultural employment that conflicts with wildlife, and to introduce elements of sustainability to our model for post carbon finance in 20 years.

Organic Greenhouse

We established an organic greenhouse to grow citrus trees which we sell at a discount to local farmers so that they can plant a tree for shade that will also earn them income. We use the funds from the citrus sales to fund the growth and distribution of free agroforestry species such as Neem and Moringa oliefera to local farmers, to meet their medicinal, nutrition and fuelwood needs. With the financing from the Carbon project we will initiate a number of new Project Activities in this area;

- we will expand our core Greenhouse at Rukinga HQ to add a second Shade house and double our capacity adding two additional greenhouse workers from the local community. A full budget for this activity has been provided to the Validator.




- we will establish 5 nurseries in the villages surrounding the Eastern and Southern boundary of the Project Area and Kasigau Wildlife Corridor, which are Maungu, Itinyi, Sasenyi, Buguta, Makwasinyi. Each nursery will use the same template and budget as for our own Shade house (see above), and each nursery will employ an additional 2 members of the local community, 10 new employees in all. Each nursery will be responsible for working with their immediate community to plan and implement a cash crop, fuelwood and construction pole strategy for that community, using the same combination of tree species currently being grown in our own greenhouse. Once again, for the foreseeable future the nurseries will provide agroforestry species and native hardwood seedlings for free, while selling cash crop trees to contribute to the budget. We will provide training in organic agroforestry and our Organic Project Team Leader Joseph Mwanganda will manage these new nurseries.
- We will continue a project activity through which we provide relatively small amounts of elephant dung from the Rukinga Sanctuary to a local women's group called the Imani Women's Group periodically at their request so that they can use the dung as a growing medium for their commercial mushroom farm, which is housed in a small shed within

the women's group compound and provides a good income to the group with no negative impact on biodiversity or land use.

- We will restart a 3 year reforestation project on the slopes of Mt. Kasigau, working closely with the Kasigau Conservation Trust (KCT) to plant 20,000 indigenous hardwood trees over the next three years in one of the Project Zone's HCV areas, to replace trees taken out for charcoal or construction over the past years. We will be using the nursery built at Makwasinyi and Sasenyi (see above) as the base for propagating the seedlings of the indigenous trees in the first year, until Phase II of this project when we plan to add an additional 4 nurseries on the South and East sides of Mt. Kasigau. We will be providing financial rewards to community members who outplant those trees and protect them through two full years – budget below. We are confident that this project will go a long way in restoring the habitat and conserving the endemic species in this region. Its model might hopefully be emulated in other parts of the country so as to stop the loss of forests in Kenya. We have involved the community in all facets of the project, from the formulation of this proposal, the monitoring and as indicated in its implementation. This has ensured that the community has taken it up as its own initiative and will see it through even in the absence of Wildlife Works, thus ensuring sustainability.

Kasigau Tree Planting Rewards

Item	**No. of Trees**	**Unit Cost**	**Amount (Ksh)**	**Amount (USD)**
1st year planting tree seedlings	36,000	20.00	720,000.00	9,600.00
2nd year for every surviving tree	36,000	5.00	180,000.00	2,400.00
3rd year for every surviving tree	36,000	5.00	180,000.00	2,400.00
TOTAL			**1,080,000.00**	**14,400.00**

Kasigau Full Budget over 3 yrs

Year One

ITEMS	**AMOUNT (KSH)**	**AMOUNT (USD)**
Species and Habitat Monitoring	163,100.00	2174.67
Nurseries Equipment	619,881.00	8265.08
Trees Planting	720,000.00	9600.00
Training	61,380.00	818.40
Pegging Nurseries(for 3 days)	10,200.00	136.00
Digging of Holes and manure application (4 months)	30,400.00	405.33
Planting(Period of one month)	30,400.00	405.33
Counting (Monitoring) trees	38,000.00	506.67

Follow up and Spot Checks	34,800.00	464.00
Total	**1,708,161.00**	**22,775.48**

Year Two

ITEMS	**AMOUNT (KSH)**	**AMOUNT (USD)**
Species and Habitat Monitoring	56,000.00	746.67
Tree Surviving	180,000.00	2,400.00
Counting (Monitoring) trees	38,000.00	506.67
Follow up and Spot Checks	34,800.00	464.00
Total	**308,800.00**	**4,117.33**

Year Three

ITEMS	**AMOUNT (KSH)**	**AMOUNT (USD)**
Species and Habitat Monitoring	56,000.00	746.67
Trees Surviving	180,000.00	2,400.00
Counting (Monitoring) trees	38,000.00	506.67
Follow up and Spot Checks	34,800.00	464.00
Total	**308,800.00**	**4,117.33**

Grand Total	**2,325,761.00**	**31,010.15**

The indigenous tree species to be planted are:

1. Mkwachu	Tarmarindus indica
2. Moringa	*Moringa oleifera*
3. Kirumbutu	*Melia Volkensii*
4. Mchemeri	*Acacia nilotica* (Egyptian Thorn)
5. Acacia Robusta	
6. Kiburabura (swa)	*Prunus africana*
7. Mshogoreka	*Terminalia brownii*
8. Iti	*Acacia tortilis*
9. Chariso	*Boscia coriacea*
10. Mzwana	*Berchemia discolor*
11. Mbokoi	*Melita Oblata*
12. Mwarara(swa)	*Acacia brevispica (Wait a bit)*
13. Kikwata	*Acacia melifera*
14. Gum arabica	*Acacia arabica*
15. Mwasina	*Kigelia africana*
16. Umbrella Thorn	*Acacia abyssinica*
17. Mshigha	*Lannea schweinfurthii*
18. Mhina	*Lawsonia inermis*
19. Mlamba	Adansonia digitata

Dryland Farming scheme

Our most recent project is working with the Kenyan Agricultural Research Institute (KARI) to cultivate a climate appropriate plant called jojoba (Simmondsia chinensis) that provides a cash crop through its seeds and is extremely drought tolerant, non invasive and has the added critically important benefit that it is not eaten by any wildlife, birds or even insects, so it is the ultimate non-conflict crop. We are studying the impact of various levels of plant maintenance and irrigation on plant seed and oil productivity, with the idea that we can provide local farmers root stock to establish their own plants, and they can know how much they can likely make if they are willing to put a certain level of effort into the plant maintenance. There are three specific Project Activities associated with this scheme, and covered in the Project Activity Implementation Schedule;

- Complete our involvement in Phase I of the joint Research Project, taking place on the Jojoba fields at our HQ which will end in 2010
- Develop full business plan for how to create a self sustaining venture to outplant jojoba in the surrounding community farmland to provide the local farmers with a drought tolerant and non-conflict crop
- Source private funding to implement the Jojoba outplanting business plan, either from donors, private investors, Government of Kenya, or some combination.

Wildlife Works REDD Forest and Biodiversity monitoring

There are a number of specific Project Activities in this area that we will be completing according to the Project Implementation Schedule provided to the Validator;

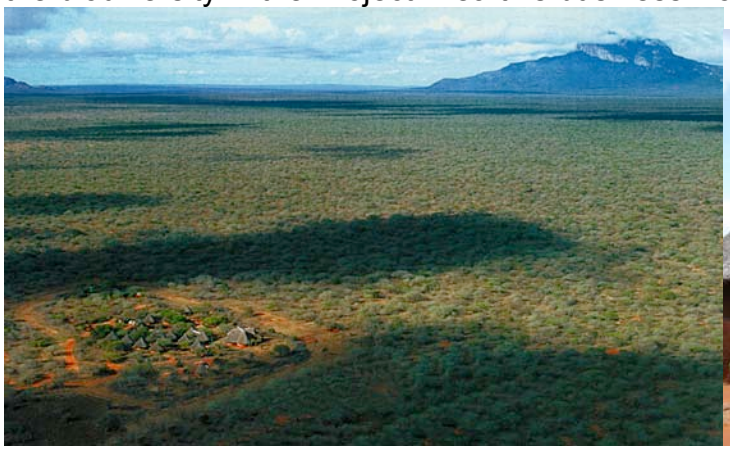
- Continue daily Ranger Patrols to monitor of the health and vitality of the Project Zone – we have been performing daily patrols for almost ten years, and our rangers are very skilled at identifying potential threats to the biodiversity of the Sanctuary.
- With the carbon finance we plan to add a new permanent Ranger Station at the SE end of the Project Zone, furthest from our HQ, and a full new section of 8 Wildlife Works Rangers, recruited and trained from the local community with a new Team Leader promoted from within our existing Ranger force. This would be primarily to prevent incursions of illegal cattle from that direction, and to make patrolling the far boundary easier, and to develop closer working relationships with the Makwasinyi community.
- We plan to make a significant investment in modernizing our patrol fleet to reduce the carbon emissions from our patrol vehicles, and reduce the cost of operating and maintaining them, and perhaps most importantly ensuring we have a reliable fleet to ensure constant patrol support. We will retire the oldest patrol vehicle which is a 1980 Toyota Land Cruiser – HJ45 Diesel.
- We plan to improve our ability to monitor the HCV species in Rukinga by adding a dedicated Ranger Patrol, the HCV Ranger Team, which will be responsible for constant tracking and monitoring of the HCV species, unlike the general Ranger Teams that are patrolling geographic sectors of the Project Zone. This dedicated team will be recruited from the existing Ranger Patrols based on tracking ability and biodiversity knowledge, and the 4 members of the patrol will be backfilled in the geographic Ranger teams by hiring new rangers from within the community.



- Additionally to improve our monitoring of HCV species, we plan to establish a GIS center of excellence at Rukinga HQ, for which we will hire one full time Kenyan GIS expert, and set up a state of the art GIS computer station. This individual will be responsible for liaising closely with the HCV Ranger Team, with the Ecotourism partner in the Project Zone, and with all WW Ranger Patrols to maintain daily sighting logs of the HCV species in addition to those other species of ecotourism value, such as Elephant, Buffalo, Giraffe, Common Zebra that are being recorded on the WW Standard Daily Ranger Patrol Sheets. All data will be input into an Access database. They will also be responsible for maintaining our REDD project GIS database.
- We will begin annual monitoring of our carbon inventory by revisiting 20% of our permanent fixed plots each year to resample the trees, shrubs and grasses, to look for degradation or improvement in existing stocks. In addition we plan to acquire remote sensed imagery to support the absence of large scale deforestation or boundary changes. Also in this category in 2011 will be an investment in replacement parts for the microlight flown by Rob Dodson to perform aerial monitoring of the Project Area and Project Zone, to extend the life of the microlight for another few years until it can be replaced.
- We will be investing in outside auditors coming to verify the project carbon inventory every five years.

Ecotourism

Wildlife Works located an ecotourism provider who operates a safari camp in the center of the Rukinga Sanctuary. This provides employment for safari guides and other service jobs, and a market for local produce. Without the REDD Project here funding our continued protection of the biodiversity in the Project Area this business would collapse.





The primary ecotourism tenant is called Camp Kenya and they bring groups of young people to the camp mostly from the UK, and these young people stay at the camp, but spend their days in the communities of the Project Zone implementing community projects, a significant benefit to the communities. We then negotiated for a second player called EcoTraining to come to Rukinga and they are a South African Safari Guide Training company, and they have agreed to allow us to put local youth into their program on a space available basis to be trained as Safari Guides at a very high quality level. As a Project Activity, we plan to provide funding for two local youth per year to go through their program and be trained as Safari Guides.

Finally we plan to explore a second high end ecotourism retreat on Rukinga, to bring yet more jobs and income to the Project. This will have to be self funded by outside investment partners as it represents a significant capital expenditure.

School Construction and Bursary Scheme
When we arrived in this area, there were almost no schoolrooms, and no books, no desks, none of the infrastructure needed for children to have a hope of a decent education. We began with a school building program, and over the years we have partnered with the community and various donors we have identified, to build 18 classrooms throughout the district. We also build desks and our original Kenyan manager Alice Ndiga launched a school bursary program, which she administers, that has sent dozens of local children through private high school, and several on to college.




Old Kale School – no floor, no desks, one mud room New School block built by Wildlife Works

Once the Project Carbon funds start to come in we pan on two specific Project Activities in this scheme, as outlined in the Project Implementation Schedule provided to the Validator;

- provide Wildlife Works direct funding to send 5 new students through four year secondary schools program and on to three or four year College/University should they qualify – this is an annual commitment of $2000 in the first four years of Secondary School fees and between $5000 and $10000 a year in college/university fees.
- Establish a Wildlife Works School Construction and Maintenance fund, by hiring a dedicated staff person to manage the fund with project management skills and ability to write grant proposals, and provide $10,000 per year in Wildlife Works funding above and beyond the compensation of the fund manager to seed school construction and maintenance projects in the Project Zone. The Fund Manager will work closely with the local District Education Officer, and the existing school boards in the area to determine

which projects should receive funding each year.

Note that these are minimum levels of financial commitment to these Project Activities and funding levels will be revisited as project financing becomes clearer based on carbon credit sales every year.

Wildlife Works REDD Project Phase II Preparation – Carbon Project Leakage Mitigation





We began our REDD project on the 74490 acre Rukinga Sanctuary as the ownership of the land is clear and clean. We trained some of our staff to perform the tree inventory, and recruited local tree experts from the surrounding communities, who could tell the difference between all the Commiphora and Acacia species present on the sanctuary. Our statistically valid tree sampling protocol determined that there are over 6 Million trees on Rukinga Sanctuary, at a canopy cover of >30%, more than enough to qualify as forest under the UN IPCC AFOLU guidelines.

As part of our approach to preventing Leakage in the Project Zone, we are working with the surrounding landowners that have similar Dryland Forest to that found in the Project Area, to enter into Conservation Easements on their land so we can assist them in accessing the carbon market, to put the entire forested Kasigau Corridor under conservation protection. In the photo above we are signing Kenya's first Conservation Easements to market a neighboring Community Ranch's Carbon. This ranch (Kasigau Ranch) has 2500 members, all of whom will benefit from access to the Global Carbon Market.

The Project Activities related to this, are to sign up local threatened Dryland Forest landowners, and to perform the detailed REDD Carbon Inventory, PDD creation and CCB and VCS validation and verification for these additional areas, to prevent any illegal slash and burn activities from moving onto their lands.

Wildlife Works/Tsavo Soap Factory

We helped one of our management team to establish an independent Organic Handmade Soap Factory on the Rukinga HQ premises, to demonstrate a higher value use of the jojoba oil being produced in our Dryland Farming Scheme. The soaps are ery popular but production is very limited. With the project carbon funds we will expand the operations of that Factory to produce a wider range of soaps and to better market the products.

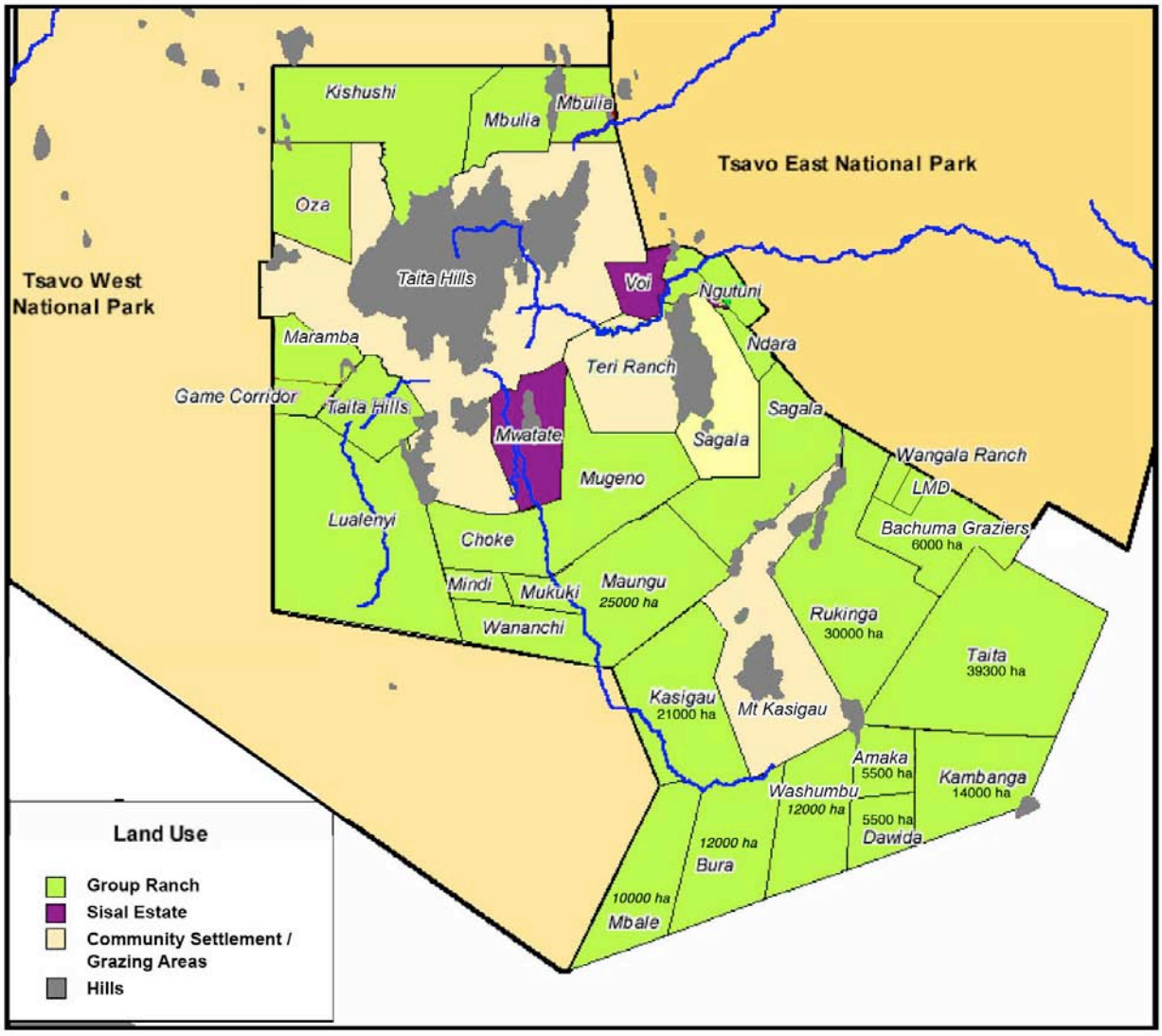
Wildlife Works REDD Project Product Sales and Marketing

Another Project Activity for us that will be funded by the carbon funds will be to hire a full time dedicated individual who will be responsible for the sales and marketing of any and all products produced in any of our Project Activities, e.g. fashion apparel from our ecofactory, soaps from our Soap Factory, jojoba oil etc. This individual would market regionally and

nationally, attending any relevant craft fairs to market our products. They would also be responsible for liaising with Wildlife Works Inc. US personnel over international sales of apparel and other products, and would be a resource for local community crafts to be marketed at trade fairs that would otherwise be out of the reach of local communities within the Project Zone.

G3.3 – Location of Project Activities

Figure x: Land Use in the "Taita enclave"



The Project Zone for the Kasigau Corridor REDD project Phase I and II is illustrated in Annex 1 and the corresponding group ranch identities are shown above. Remaining Dryland Forested areas within the scope of the project include;
Rukinga – Phase I

<u>Phase II</u>
Taita
Amaka
Kasigau
Kambanga
Bachuma
Wangala
Maungu

Mugeno
The communities impacted by phase 1 of the project are in the cream colored area surrounding Mt Kasigau.
The communities impacted by Phase II of the project will be those of Phase I plus the Southern population of Mt Kasigau, and the populations of Teri Ranch, Mwatate and the populations of McKinnon Road along the Mombasa highway towards the National Park.

See GIS data base for all other relevant maps

G3.4 – Time Frame and Project Accounting

The project began in 1998 and has no planned end date, assuming the carbon project generates adequate funding for sustainability. The project crediting period was selected to be 20 years which is the minimum allowed under the VCS REDD standard, but which provides a balance of financial return and permanence of GHG reductions as the threat to this area is intense today but will likely have passed in 20 years.

The Land has been protected by Wildlife Works as a forest habitat since 1998 but on a loss-making basis. Wildlife Works has been approached several times since 1999 by various entities who suggested that WW activities on the Rukinga Project should be eligible for some form of carbon finance to support its work. However, on every occasion prior to November 2008 when Wildlife Works management looked into the possibility of using carbon finance it was clear that there was no mechanism for avoided deforestation conservation projects to receive carbon finance. When the Voluntary Carbon Standard (VCS) implemented their program for making REDD projects eligible to generate VCUs in November 2008, WW sought financing to initiate a REDD project for the Rukinga Project. After finding the necessary financing through a joint venture called Wildlife Works Carbon LLC, this project was launched. All documentation relating to this sequence of events was made available to the Validator.

We understand from 5.2.1 (Project Start Date) of VCS 2007.1 that: “AFOLU projects starting on or after 1 January 2002 are not required to complete validation within a specific timeframe. The earliest Project Crediting period Start date under the VCS 2007.1 shall be .... 1 January 2002 for AFOLU projects.”

WW has elected a Project Start Date of 1 January 2006 with a project crediting period of 20 years. Project crediting end date is therefore December 31st, 2025.

Throughout the crediting period there will be periodic certifications performed by an accredited CCB certifying organization. These certifications will verify that the carbon remaining in the Project is in keeping with the values expected at the start of the Project. These certifications will be performed after obtaining the initial validation and every five years thereafter.

We have provided the Validator with a Project Activity Implementation Schedule which outlines all the project activities along with start and end dates and investments required both in terms of capital expense and operating expense.

G3.5 – Project Risks and Mitigation Measures

The major risks that could have an impact on the project are:

- Change in legislation – government expropriating the Land through compulsory purchase for development scheme; as the Government of Kenya is very supportive of our project and has no recent history of expropriation of private conservation lands this risk is very low. We will continue to seek international press for our project as keeping it in the spotlight lessens ensures the Government remains aware of the values it is providing to the country
- Income - Risk that carbon market revenues do not eventuate or are less than adequate to sustain the project financially; our financial sustainability was modeled at very conservative Carbon offset sale values, and we have a very well known project with high potential value in the marketplace so the likelihood of this occurring is small
- Crop Failure - substantial and repeated crop failure in surrounding communities could lead to increased poaching and use of trees for financial benefit; this is very likely and all of our alternative economic development efforts are aimed at mitigating this risk.
- Invasion of cattle grazers due to famine in adjacent communities, or lack of grazing elsewhere. However any influx of cattle only affects quantity of grass on Project Area and leads to no significant change in carbon stock. Again this is possible especially as the Somalis have used land in this area to feed and water their cattle over the years, sometimes with permission sometimes without, however the increasing aridity in the area we believe will force the Somali's to look elsewhere for rangelands. We will be using funds from the Carbon project to increase Ranger patrolling to better protect the Project Area and Zone from illegal incursions.
- Drought – drought is an increasing reality in this part of Kenya and we anticipate that with Climate Change it will only worsen in the years covering the project crediting period. Drought introduces two additional risks;
    - Wildlife – drought obviously places a lot of stress on wildlife in the Project Area, and Project Zone. However many of the species living in this ecosystem are extraordinarily drought adapted, and have no problem surviving in extended drought. For those that aren't we plan to continue to provide emergency water sources at Rukinga as we have for the past ten years. This issue is dealt with in much more detail in Section GL1.2 below
    - Cash crops – drought will make the survival of cash crops, such as jojoba, citrus trees etc. more difficult but these high value cash crops will be planted sparingly and need much less water than an entire field of maize, and are able to survive higher temperatures, provided they receive some water, which the farmers will be in a position to provide to preserve the financial value of the crop
- Fire – grass fires are common in the region due to the intense heat and dry conditions, although naturally occurring fires are extremely rare, so our strategy is to continue to educate the local population especially the youth about the dangers of burning fallows to improve grazing for their animals. Fires tend to burn the grasses and shrubs but move quickly and rarely kill the trees which have become tolerant of grass fires.

G3.6. Maintenance of High Conservation Values

Wildlife Works entire project is designed to maintain the high conservation values of the Project Area. We have permanent Ranger patrols to prevent illegal encroachment physically

into the forest, and we have extensive community outreach to ensure their support. Specifically the following Project Activities as described in G3.2 above are specifically designed to maintain the HCVs located within the Project Zone;

- improve our ability to monitor the HCV species in Rukinga by adding a dedicated Ranger Patrol, the HCV Ranger Team
- improve monitoring of HCV species, by establishing a GIS center of excellence at Rukinga HQ,
- 3 year reforestation and monitoring project on the slopes of HCV Mt. Kasigau (see document Mt. Kasigau Reforestation Plan submitted to Validator)

G3.7. Measures Taken to Enhance CCB Benefits Beyond Project Lifetime

The Kasigau Corridor REDD project is a component of the overall conservation project being undertaken by Wildlife Works since 1998, and it is our intention to utilize the carbon funding provided by the REDD project to make the necessary investments in job creation and income generation activities within the Project Area to ensure the financial sustainability of the project into the future. The project has executed a Carbon Easement on the Project Area, so that the owners of the land must take into consideration the carbon values and it is our intention to get the easement registered against the title deed of the land, although there is no mechanism as of yet for that in Kenyan law. Our approach to knowledge transfer, our assistance in creating conservation institutions within the community, all speak to our efforts to ensure the CCB benefits extend into the future.

G3.8. Stakeholder Involvement

Wildlife Works has over ten years of close working relationship with the communities in the Project Zone. Before we began our project in 1998 we sought the permission of the local community and local authorities and even though we were a private business operating our conservation project on private land, and were told in those early meetings by the local administration that we did not need their permission, we have made every effort to seek their permission, and that of the immediate communities, at every step of our project. We know very well how critical it is to have local community support and buy in for any conservation or development project, and we wanted to be a trusted partner within the community, and we believe we have achieved that and more. To document every meeting we have had with the communities in the Project Zone over the past ten years would be impossible, but there have been literally thousands, on a wide range of subjects from project initiation to school needs, to conservation of community lands, to establishment of a local Environment Clean Up Day and community waste handling facility.

Specifically as it relates to Carbon, as discussed in Section G5.3 below, the idea for a REDD project at Rukinga only became possible late 2008 when the Voluntary Carbon Standard (VCS) announced support for Avoided Deforestation with their REDD standard. It is our policy not to introduce new ideas to the community until we are sure that we can implement them, as we believe that managing expectations in impoverished communities is critically important to good long term relations. Therefore we waited until we had located a private investor to finance Phase I of the Kasigau Corridor REDD project prior to introducing the idea to the community. That funding arrived in late January 2009, and we were then under significant time pressure to

begin the REDD project, as we had a finite financial resource from the investor and had to complete the REDD project before the dollars ran out, so we commenced documenting the Forest Carbon Inventory February 1st. At this time we held training sessions for the forest inventory team members, all of whom were either existing employees of Wildlife Works, or members of the immediate community with forestry experience. We then arranged an AGM for the Shareholders of Rukinga to be appariased of the details of the REDD project as they are the most directly involved. That AGM was held on February 13th, 2009 at Rukinga. The local minority shareholders of Rukinga Ranching Co Ltd. of whom there are many were informed of the new carbon project at the AGM at the beginning of the year and were trained in the meaning of the carbon market and what it would mean to Rukinga. A copy of the presentation made to the Shareholders has been provided to the Validator.

Some of the Rukinga shareholders are shareholders in other group ranches in the area, and they requested that we consider including their ranches in the REDD project, so we contacted the Boards of Directors of these surrounding ranches.

We then held a number of training sessions within the community to inform the local community ranch shareholders of what benefits they can achieve through the carbon markets. A copy of the presentation used was provided for the Validator. These sessions were held as follows;

- Taita and Amaka Ranch Board of Directors – April 2 2009, location Taita Ranch HQ,
- Kasigau, Maungu, Mgeno, Washumbu, Kambanga Boards of Directors – Group meeting, Voi, April 2009

The standard for Section G3.8 footnote 27 allows for exactly the circumstances of our REDD project initiation, and we believe that the community meetings held during the CCB Audit by Scientific Certification Systems, at the Grand Tsavo Hotel, Maungu on October 15th 2009 at which 89 members of the community voluntarily came out in support of our project, together with the over 1 dozen strongly positive community public comments posted to the CCBA website during the public comment period are a strong indication that we have the support of the community in this project.

For some of the proposed Project Activities, we have held formal meetings in the past, during the design phase, for example the Mt. Kasigau Reforestation project, which we first attempted to initiate in 2005, and for which there was a public meeting held on June 23, 2005 at which we received significant suggestions which were later integrated into the plan, as recorded in the Mt. Kasigau Reforestation Plan previously provided to the Validator.

In another example, there were a series of meetings held in the summer of 2006 with the predominantly Duruma community at Sasenyi Valley, to discuss how to achieve their support for the conservation activities on Rukinga as they have been the majority of the poaching and illegal fuelwood and grazing problem on Rukinga over the years, and the end result of the final meeting held August 10th 2006 was a positive outcome (Copy provided to the Validator) and the relations with that community have been significantly better in the years since.

However we have always had an open door policy at Wildlife Works and members of the community interested in learning more, or with questions, suggestions and/or grievances can come to see us at any time. We have initiated a formal Community Contact process outlined in

G3.10 below, and will track any suggestions made and the resolution within the project implementation plan going forward.

Furthermore, given the speed at which this project has been initiated, and given the general lack of education in the community about Carbon and REDD projects, we will commit to holding regular 6 monthly meetings within the community, alternating the location between the five main villages to ensure we capture feedback from both Taita and Duruma Stakeholders, and soliciting feedback against the specific objectives of the Project Activities as well as general feedback. We will record attendance at these meetings, document suggestions made, and resolution of whether or not any amendments to the Project Implementation Plan were made. The results of these meetings will be posted locally in prominent places as well as on the internet, as we did with the PDD itself, and with the notification of public comment period below, to ensure the community remained informed of the resolution of their ideas. Laurian Lenjo, our Office, Personnel and Community Relations Manager, who himself is from the local community will be responsible for this process.

G3.9. Publicization of Public Comment Period

We will be posting our project on the CCBA website (http://www.climate-standards.org) and it will be open to comments from the public. The document will be also available to the public in hard copy during the public comment period, at our offices in Rukinga affording local stakeholders an opportunity to raise and address any issues.

8:30 am to 4:45 pm Monday through Friday

G3.10. Conflict Resolution

Our Conflict Resolution Process has been formalized in a document called the Wildlife Works Community Conflict Process which has been provided to the Validators, but basically, any comments that are raised that require adjustment of the Document will be addressed promptly, and for the life of the project we will continue our open door policy relating to members of the community visiting our project management on site at any time day or night. All comments and conflicts will be documented for the life of the project together with their resolution, which will typically involve mediation by the local administrative Chief, a process we are familiar with after ten years in the community. We commit to providing written responses within 30 days.

G3.11. Project Financial Support

Wildlife Works is responsible for project implementation and support with funding provided initially by Wildlife Works Carbon, LLC a joint venture of Wildlife Works, Inc. and Colin Wiel Enterprises LLC. This is a project that has been running for almost ten years, at significant cost to the investors in Wildlife Works, and full financials are available both look back historic financials and forecasts that include the carbon revenues. This information is commercially sensitive and will be shared with the Validator at the site visit. All costs associated with carbon inventory and project design document have already been met by Wildlife Works Carbon LLC. We have also sent the Project Validators a detailed spreadsheet of the first two years cash flow for the project, indicating there will be a large surplus of funds at the end of year 2, and showing the steady state finances for a full year of the project from 2011 and onwards. The

revenues in the cash flow are based on an actual transaction to sell precertified carbon credits that is in the final stages and will close before end November 2009, so there is very little speculation about this cash flow.
This cash flow matches the Project Activity Implementation Schedule also provided to the Validator and referenced in Section G3.4 above, and to support this cash flow document, we have also sent the Validator the following documents which will demonstrate that we have extremely detailed knowledge of what the cap ex costs are to accomplish the various project activities we are committing to in the implementation schedule;
1) Factory Addition Cell 2 Cost - EcoFactory Expansion Costing for Dye and Screen Print House
2) WW Shade House Costing – Provides cost of building additional shade house at Rukinga and also cost of each of the 5 community nurseries we will build in the Villages
3) Bungule Guard Post Costing – provides the cost of adding a new Ranger Station to monitor the SE boundary of the Project Area
4) Typical Classroom Budget – budget indicating that our $10K a year school construction maintenance budget would be adequate to build a new classroom every year if that is what the community wanted.

G4. Management Capacity and Best Practices

G4.1. Project Proponent

Wildlife Works is the project proponent. Specific responsibility within Wildlife Works lies with Mike Korchinsky, the President and CEO of Wildlife Works. In addition Wildlife Works hired two outside consulting groups to assist in the detailed preparation of the carbon accounting and of this design document.
Calcarbon – Christine Lancaster – New Mills UK
Forester's Co-Op – Tom Amesbury – Grass Valley CA, USA

Funding for the project is provided by Wildlife Works Carbon LLC, and employment in country for the carbon project is provided by Wildlife Works, a Kenyan limited liability company.

Other key job descriptions related to our Project Activities are;

Kenyan Site Manager

General Description:
Overall manager of Wildlife Works operations in Kenya.

Role Specific Responsibilities:
The Site Manager is responsible for overseeing the management of the EPZ sewing factory, Rukinga Wildlife Sanctuary, the Greenhouse/Jojoba Projects and all Community Development Initiatives. This is an extremely important role within our enterprise, as this is the senior position responsible for all day-to-day operations.

Functional Responsibilities:
Managing the Ranger force responsible for the protection of Rukinga Wildlife Sanctuary. Overseeing the management and welfare of all Wildlife Works staff.

Managing the running of Wildlife Works EPZ Eco-factory.
Managing the Tsavo Soap Company.
Managing the Organic greenhouse and Jojoba Projects.
Collaborating with the community on development projects.
Financial Responsibility for all Kenya country operations.

Job Skill Requirements:
This role requires excellent interpersonal and communication skills, man-management skills and a fluency in both English and Kiswahili. It also requires extensive knowledge of;

- wildlife management including all aspects of managing a large African wildlife sanctuary from road and water point maintenance to biodiversity monitoring and interventions
- human wildlife conflict resolution
- office management, personnel and administration
- accounting
- marketing
- apparel production process
- all round knowledge of construction methods and mechanical engineering

Job Reporting:
Reports to Mike Korchinsky, Wildlife Works CEO

Head Ranger

General Description:
The Wildlife Works Head Ranger is in charge of the Rangers that patrol Rukinga Wildlife Sanctuary and also the day and night watchmen that guard Wildlife Works.

Role Specific Responsibilities:
The Head Ranger organizes patrol schedules and placements for the rangers throughout Rukinga Wildlife Sanctuary so that the Rangers' presence is an effective deterrent to wildlife poaching activities and human-wildlife conflict problems. It is his responsibility to maintain discipline amongst the Rangers and Watchmen, to ensure that they are presentable and professional whilst carrying out their duties.

Functional Responsibilities:
Managing the Wildlife Works rangers and watchmen teams.
Maintaining discipline amongst the security staff.
Planning patrols and camp staffing requirements.
Tracking/finding poachers or other wrongdoers and arresting them.
Maintaining Rukinga as a natural environment in which wildlife will thrive.

Job Skill Requirements:
The Head Ranger must possess exceptional interpersonal skills in order to get the most out of his staff, he must command respect and also lead by example. He must be a competent driver both on and off the road and have a good working knowledge of vehicle mechanics. The role requires an excellent knowledge of Rukinga's biodiversity and ecosystem, especially large mammal behaviour, seasonal wildlife movements and threats to this natural environment. The

Head Ranger must be able to foster and maintain a good relationship with the communities that border Rukinga and also with the District Administration and Kenya Wildlife Service.
Role must be fluent in English and Swahili, both written and oral, and have adequate knowledge of the languages and cultures of the people that live around Rukinga.

Job Reporting:
Reports to Rob Dodson, Rukinga Site Manager.

Sewing Factory Supervisor

General Description:
This is a full time role at Wildlife Works, EPZ Ltd. and is an extremely important role within our enterprise, as this is the senior position responsible for all day-to-day operations of the EPZ Eco-factory, where Wildlife Works and other apparel products are produced.

Role Specific Responsibilities:
This role has responsibility for all aspects of day to day management of the sewing factory, including training and supervising all factory workers, assisting in the development of new apparel styles, the sampling of customer orders, the management of production orders from fabric ordering through cutting, sewing, send-out for dye and print if required and finally finishing and packing in the factory. This role is also responsible for ensuring an environment conducive to high productivity in the factory while maintaining a pleasant and aspirational workplace for all sewing factory employees.

Functional Responsibilities:
Factory Raw Material Purchasing
Factory Inventory Management
Customer Sampling and Development
Factory Production
Factory Workforce Training
Factory Workforce Safety
Factory Asset Protection

Job Skill Requirements:
Role requires specific experience in all aspects of day to day management of the Wildlife Works EcoFactory including knowledge of how all types of garments are constructed, how to set up production lines to produce many different types of garments or other sewn products, how to lay and cut fabric, and how to operate a sewing machine etc.
Role also requires strong interpersonal and people management skills to keep the sewing factory employees trained, motivated and enthusiastic about their work to ensure high productivity and low turnover.
Role must be fluent in English and Swahili, both written and oral, and have adequate mathematical skills to maintain inventory, schedule production etc.

Job Reporting:
Reports to Rob Dodson, Rukinga Site Manager

Office Manager/Personnel and Community Relations

General Description:
This is a full time position at Wildlife Works, EPZ Ltd and is very much a multi functional role. The Office Manager is primarily responsible for administration and personnel matters but also plays an important role in community with cultural interactions.

Role Specific Responsibilities:
The Office Manager is responsible for the day-to-day management of the Wildlife Works office, answering telephones and messages and relaying information between the different company departments. The Office Manager keeps the companies files in order and up to date and deals with personnel grievances, general enquiries, job applications, sickness claims and other matters. The Office Manager also oversees the stores and workshops and is responsible for purchasing and stock control and maintaining the rangers patrol report database. This role also involves liasing with our community partners during project implementation and conflict resolution.

Functional Responsibilities:
Maintaining all companies files and records and general administration.
Managing the office, dealing with visitors and handling office correspondence.
Dealing with personnel matters.
Overseeing directly the stores, workshop and housekeeping departments.

Job Skill Requirements:
This role requires excellent interpersonal skills and fluency in English, Kiswahili and Kitaita. It requires a good knowledge of computer word processing, email and accounts packages and good letter writing and telephone skills. In order to fulfill the community relation's role, this person must be a well-respected member of the community and must have excellent knowledge of the ecosystem and the companies place in it alongside the community.

Job Reporting:
Reports to Rob Dodson, Rukinga Site Manager

Greenhouse, Nurseries and Jojoba Project Manager.

General Description:
The Greenhouse, Nurseries and Jojoba Project Manager is in charge of propagating indigenous and agro-forestry tree and plant species that fall under the Wildlife Works Organic Project.

Role Specific Responsibilities:
The primary responsibility of a watchman is to look after the property of the company so that it things don't go missing or are not broken and to either apprehend or report people who they suspect of wrongdoing.

Functional Responsibilities:
To oversee the propagation of root stock, grafted and budded seedlings.
Write proposals and run specific projects that enhance the overall project.
Keep stock of seedlings and greenhouse equipment.

Market the fruit seedlings to bring in revenue for the project.
Train and monitor the other greenhouse staffs' performance.
Keep abreast of new methods and developments in organic propagation.

Job Skill Requirements:
The Organic Project Manager must have an extensive knowledge of organic greenhouse practices including organic fertilization and pest control, budding and grafting techniques. The manager should have good written and spoken English and Kiswahili skills and be able to keep accurate accounts of his operations. They should be able to distribute the greenhouse products and be able to work with and educate communities on best planting practices and then advise on irrigation and fertilization techniques.

Job Reporting:
Reports to Rob Dodson, Rukinga Site Manager.

Company Accountant

General Description:
This is a full time role at Wildlife Works, EPZ Ltd. The company Accountant is responsible for keeping the companies accounts up to date.

Role Specific Responsibilities:
This role has responsibility for all aspects of the day-to-day management of the companies accounts and payroll. The accountant keeps accurate records of the income and expenditure of the company and is responsible for reporting this to the management and the authorities as required. The Company Accountant files the annual returns and makes sure that the company complies with all Government of Kenya taxes and payments and reporting schedules. He is also responsible for obtaining the licenses that the company requires in order to operate legally.

Functional Responsibilities:
Keeping company balance sheets accurate and up to date.
Renewing licenses as required.
Reporting accounts to company management and directors.
Submitting returns to Government departments as required by law.
Payment of statutory Government taxes and levies
Maintaining the company payroll sheets.
Company asset stocktaking and protection.
Invoicing and receipting creditors and debtors.
Collaborating with auditors as required.

Job Skill Requirements:
This role requires an education and qualification in accountancy and a good working knowledge of current practices and laws. The Company Accountant must be fully conversant with both ledger and computer based accountancy methods and office packages and must be able to invoice and receive payments and converse with clients and suppliers by mail, email

and on the telephone. The Accountant must posess excellent written and spoken English and Kiswahili.

Job Reporting:
Reports to Rob Dodson, Rukinga Site Manager

G4.2. Technical and Management Expertise

Wildlife Works is managed by Mike Korchinsky a serial entrepreneur with significant large company management expertise. Mike is supported by Colin Wiel who is a successful entrepreneur in his own right and who is the founder of the San Francisco chapter of the Keiretsu Forum, a world class angel investor forum.

Key personnel in this project include Mike Korchinsky, who has been a large scale land owner of conservation lands for almost 15 years, in Africa and Canada, and who had a very successful business career prior to being the founder of Wildlife Works. He has experience managing multi-million dollar projects all over the world, some of those projects had as many as 5,000 team members, and he has had to operate with profit and loss responsibility for all of those projects in addition to the experience of being a member of a US Public company executive team. Mike founded Wildlife Works in 1997 and it has come to be respected by many of the leading conservation groups in the world as a model for community based conservation. Mike and his team on the ground in Kenya have successfully steered Rukinga Ranch through many challenges over the years, to create the vibrant biodiversity sanctuary that it is today.

Kenyan Site Manager - Rob Dodson has more than 15 years of experience in managing various aspects of development projects in Africa, from building schools, tourism resorts and production facilities to managing over 100 staff and interfacing directly with hundreds of community members on a regular basis. He speaks Swahili fluently and has gained the respect of administration officials at all levels of local and regional government in Kenya. In fact he is so well respected he was recently elected Chairman of the Board of the brand new Secondary School, the first of its kind in the community. For the last 8 years, Rob has been responsible directly for all aspects of land management of the 74,490 acre Rukinga Ranch, the entire Project Area, plus additional lands totaling another 5,000 acres that Wildlife Works manages for conservation for the owners of those lands. He has extensive knowledge of local and regional biodiversity, is an honorary warden with the Kenya Wildlife Service, has a great appreciation for the needs of local peoples, having lived among them in the small rural village of Maungu for over 10 years, and has the experience of managing ecotourism both within the Project Area, and before joining Wildlife Works, in the world famous Maasai Mara. He is a world class auto mechanic, critical to being able to keep a fleet of aging patrol vehicles in operation, and he is a qualified and highly experienced microlight pilot, an invaluable skill for aerial survey and monitoring of the Project Area and Zone.

Other key Management Roles to ensure successful continuation of all Project Activities include the following;

1) Company Accountant – Paschal Mulonzya

Paschal is a qualified accountant having received a Bachelor's and Masters Degree in Commerce, Accounting Option, from Rani Durgavati Vishwavidyalaya University in India. He has been working in Kenya as Chief Accountant for a number of firms prior to joining Wildlife Works in 2005. Paschal is a Kenyan citizen, from the Kamba tribe his home located to the northwest of the Project Zone. He is responsible for all bookkeeping and accounting task with Wildlife Works including interfacing with the external auditors who produce our audited financials annually. It was not possible for us to find someone with his skill set in the local community.

2) Sewing Factory Manager – Daniel Munyao

Daniel is a Kenyan citizen and like Paschal is a Kamba, and he is an experienced sewing factory supervisor having held positions at several large factories in Nairobi and Mombasa prior to joining Wildlife Works in October 2002. He began his career in 1982 as a machinist and worked his way up through the management ranks and his wide experience of all aspects of apparel production together with his personal attributes of being an excellent team player, a positive reinforcement style manager, and needing little or no supervision on a day to day basis, make him an invaluable resource for us in managing our sewing factory in the bush.

3) Office Manager, Community Relations and Personnel, - Lenjo Laurian is Taita from the immediate community and was one of our first employees hired as a storekeeper and assistant to the then Site Manager Alice Ndiga in January 2001, and he was trained into the position he now holds – his skills include people management, cultural knowledge of local community norms, basic administration computer skills such as Word and Excel, excellent verbal and written communication skills with fluency in English and Swahili and conflict resolution

4) Greenhouse, Nurseries and Jojoba Project Manager - Joseph Mwanganda — Joseph is a consultant to Wildlife Works, in addition to his role as Agricultural Extension Officer for the District Agricultural Office of the Kenyan Government. He is a Taita from the Project Zone. Joseph has a wide range of Agricultural skills and experience, and has assisted us in setting up our own Organic Greenhouse, as well as trial nurseries within the villages of the Project Zone. He will play a key role in the extension of nurseries proposed as a project activity, as well as in the expansion of the Dryland Farming/Jojoba Project also proposed as a project activity.

5) Head Wildlife Ranger - Eric Sagwe

Eric is a perfect example of our policy to hire locally and to promote from within. Eric grew up less than 1 mile from our Project Headquarters, and was originally hired as a young man with no formal training to be a Wildlife Ranger in the Sanctuary, when his father passed away unexpectedly. At that time the Head Ranger was a Kenyan, Ekiru Mirimuk from a different region of Kenya, who had been brought in at the start of our Project because he had specific knowledge and experience of how to set up and manage a Ranger force in the Kenyan bush, to patrol, perform anti poaching and other activities. When Ekiru retired, Eric was promoted to Head Ranger. His skills include motivation and leadership by example, tracking, patrol design and supervision, wildlife recognition and bush awareness, conflict management,

G4.3. Capacity Building

Wildlife Works has always provided training for its employees in Kenya, right from the beginning when we built a factory and taught the women there how to sew from first principles. We have trained local wildlife rangers, factory workers and supervisors, organic greenhouse workers, personnel managers, and most recently we have taught many local people how to

perform a carbon inventory in the forest. We have provided the Validator with training programs for Rangers, Factory Workers and Greenhouse Workers.

G4.4. Community Employment Opportunities

Wildlife Works has already employed over 100 members of the local community. We only employ one ex-patriot in the entire project and a handful of technical specialists who are Kenyans from outside the community, as the skills were not available locally. We intend to continue this policy of local employment first.

G4.5. Employment Laws

Wildlife Works has been operating within all local and national employment laws for almost ten years in Kenya. Like any business we are subject to audit from time to time by the Government Employment Officer, and we have always passed any inspection, whether it be from local officials or International agencies such as Verite.

The laws that are relevant to this project are:

EMPLOYMENT LAWS.

- Export Processing Zone's Act (Cap. 547)
  As an Export Processing Zone Company we are exempted from the standard Labour Laws of Kenya, and instead must conform to those laws that that have been deemed applicable to (General Provisions of the Employment Act (Cap 226-229) or amended for EPZs as covered by the Export Processing Zone's Act (Cap. 547).

- National Health Insurance Fund.
  N.H.I.F was established on 12th July 1966 by an act of parliament Cap 255 of the Laws of Kenya, and become a state corporation on 15th February 1999 through an act of Parliament no.9 of 1998. The objective of its establishment is to enable majority of Kenyans to access healthcare services at supplemented costs. Contribution to the fund are compulsory for all persons whose income is Ksh.1000/= and above. We physically go to the NHIF offices in Voi monthly to submit our monthly payroll and have the NHIF amount calculated by them, we pay and they give us a receipt. We are also subject to random checks with the NHIF inspector visiting our facility without notice and inspecting our books. We have never been found in violation of this act.

- The National Social Security Fund act ,Cap 258, is a government fund established by the National Social Security Fund Act,1965 ,For the benefit of the Members. It is a compulsory savings scheme into which the employer pays a statutory contribution for every employee who is a member. We physically go to the NSSF offices in Voi monthly to submit our monthly payroll on a NSSF form, and we pay the monthly dues. We are subject to strict audit checks by the NSSF inspector who visits our facility every two months and on passing the audit

provides us with an official letter indicating we are in compliance. We have never been found in violation of this act.

- Pay As you Earn(P.A.Y.E)
  Section 37 of the Income Tax act.
  The "Pay As You EARN" method of deducting income tax from salaries and wages applies to weekly wages, Monthly salaries, annual salaries, bonuses, commissions, Directors fees (Whether the director is resident or non-resident). Monthly we are required to go to the bank (Kenya Commercial Bank = KCB) to pay the tax withheld from our employees wages and salaries, the bank takes one folio from our KRA receipt book, and stamps the other two folios, one of which we then take to the KRA office in Voi and give it to them.

- The Factories and Other Places of Work Act
  The Factories Act (Cap. 514) deals with the health, safety and welfare of an employee who works in a factory or other place of work. We have never been audited by this department in the Government as it is very small and covers the whole country, however we have good reason to believe we are in full compliance with this act as a result of a third party audit of our factory and operations performed by the independent NGO Verite,from the USA.

- The Work Injury Benefits Act (Cap. 236) provides for ways through which an employee who is injured when on duty may be compensated by the employer. We are required to maintain private insurance to cover our responsibility under this act.

- Regulation of Wages and Conditions of Employment Act (Cap. 229)
  This act sets the conditions of work and the minimum wage guidelines. The EPZ Act supersedes this act with regard to minimum wage and in fact the EPZ minimum wage guidelines are slightly higher than the National Employment Act guidelines.

- Labour Relations Act, 2007 (Acts No. 14)
  This is the new version of the old Trade Unions Act and the Trade Disputes Act, revised to harmonize the old Trade Acts with Kenya's recent ratification of many of the elements of the ILO Freedom of Association and Protection of the Right to Organize Convention, 1948 (No. 87). We are required to provide our workers with the freedom of association. We are required to honor a dispute process as laid out in the act. We currently have no collective bargaining agreement in place nor are we required to do so. To the best of our knowledge none of our employees belong to any Trade Unions, and it is our belief that our employees do not at this time feel that the benefits of membership outweigh the costs of dues which are born solely by them under the Act. We have never had a dispute with any employee that resulted in any collective action, lock out etc. and we have no disputes at all at this time, and we believe that we are in full compliance with this Act. To ensure that employees are aware of their rights under the Act, we have added the following language to all employment contracts issued by Wildlife Works;

"Wildlife Works, EPZ Ltd. acknowledges the importance of the recently enacted Labour Relations Act 2007, and therefore we wish to inform you that you are entitled to Freedom of Association, and specifically to join the Kenya Textile Workers Union(KTWU) should you so choose. Should you choose to join the KTWU, all membership dues and agency fees for the Union will be payable directly by you."

G4.6. Employee Safety

Wildlife Works Is committed to worker safety and has a very strong track record of safety. In the field of wildlife management it is impossible to remove all risks, as our Rangers walk every day in the bush that is now full of wild animals. We are proud to say that the training and supervision we provide them together with guidance on how to avoid conflict with armed poachers, or marauding elephants has lead to a clean record, of no on the job fatalities or even serious injuries in over ten years. We self insure our medical plan so employees and their families are fully covered for any illness or injury they incur whether on the job or not. Hazards associated with jobs performed are as follows;

Hazard	**Mitigation**
Sewing Factory Employees	All risks are identified in training manual provided to Validator along with how to avoid risk.
Needle sticking fingers	Finger guards are provided, sharps bin is provided for safe disposal of needles that are replaced
Inhalation of fibers	Face masks are provided
Fire	Fire exits clearly marked, no smoking in factory, fire fighting stations in factory, three doors out of facility
Greenhouse Employees	All risks are identified in training manual provided to Validator along with how to avoid risk.
Exposure to Chemicals	Only non-toxic chemical free organic materials used in Greenhouse therefore no toxic or caustic chemical exposure. Rubber gloves and protective eyegear provided if needed.
Inhalation Hazard	Only non-toxic chemical free organic materials used in Greenhouse therefore no toxic or caustic chemical exposure. Masks provided during

	spraying of organic pesticides.
Temperature Extremes	Frequent breaks and availability of water during hot conditions. Shade cloth covering of work area.
Slip, Trip and Fall	Ensure work are clear of all slip or trip hazards before work begins.
Lifting	Use proper lifting techniques, always get help for lifting heavy objects.
Cuts	Wear gloves, keep tools sharp and always be aware of the proximity of fingers to blades when making cuts.
Electric Shock	There is no electricity at all at the Organic Greenhouse.
Pinching and Crushing Points	Wear gloves, keep tools sharp and always be aware of the proximity of fingers to blades when making cuts.
Inclement/Adverse Weather	Organic Greenhouse located adjacent to Ranger station so employees can retreat indoors in adverse weather.
Snakes, animals	Keep greenhouse floor clear of organic debris for clear visibility, always be aware of the possibility for snakes, spiders, scorpions to be present, and do not approach or touch if seen.
<u>Wildlife Works Rangers</u>	All risks are identified in Ranger training manual provided to Validator along with how to avoid risk.
Elephants, Lions, Buffaloes, Snakes etc.	Training is given in how to approach, identify and stay a safe distance from potentially dangerous animals. First Aid training is provided in cuts, limb fractures, snake bites, dehydration and other possible health risks. Team design of 6 minimizes risk.
Poachers	Training is given in how to track, and peacefully apprehend poachers if possible and how to avoid confrontation with armed and aggressive poachers. Team design of

	6 minimizes risk.
Sun Exposure, thorns etc.	Rangers all provided with uniforms with long sleeves and long trousers and brimmed hats and boots. Lots of drinking water available at Ranger posts.
WW/Tsavo Soap Factory	All risks are identified in Soap Factory Safety training manual provided to Validator along with how to avoid risk.
Lye	Comprehensive instructions are given on how to mix lye safely, and goggles and gloves are provided for employees.
Oils, Gas heating	Vegetable oils are only heated to 50-55° C, so are only hand warm. Gas stove is simple self igniting LPG camp stove.

G4.7. Financial Health of the Implementing Organizations

Wildlife Works, Inc. is a US registered corporation and, as such, is governed by the corporation laws of California which ensure that, at all times, the company remain financially solvent and able to meet its liabilities.

The company is owned by independent shareholders of good standing and has a Board of Directors (4 at present but likely to increase in number). It is sufficiently capitalized through its JV with Wildlife Works Carbon LLC to ensure completion of the project.

See Section G3.11 for further details on Project Finance.

G5. Legal Status and Property Rights

G5.1. Local Laws and Regulations

It is our belief that Wildlife Works meets all local, National and International laws related to this project.

The laws that are relevant to this project are:

EMPLOYMENT LAWS.

- Export Processing Zone's Act (Cap. 547)
  As an Export Processing Zone Company we are exempted from the standard Labour Laws of Kenya, and instead must conform to those laws that that have been deemed applicable to (General Provisions of the Employment Act (Cap 226-229) or amended for EPZs as covered by the Export Processing Zone's Act (Cap. 547).

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- Pay As you Earn(P.A.Y.E)
  Section 37 of the Income Tax act.
  The "Pay As You EARN" method of deducting income tax from salaries and wages applies to weekly wages, Monthly salaries, annual salaries, bonuses, commissions, Directors fees (Whether the director is resident or non-resident). Monthly we are required to go to the bank (Kenya Commercial Bank = KCB) to pay the tax withheld from our employees wages and salaries, the bank takes one folio from our KRA receipt book, and stamps the other two folios, one of which we then take to the KRA office in Voi and give it to them.

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- The Work Injury Benefits Act (Cap. 236) provides for ways through which an employee who is injured when on duty may be compensated by the employer. We are required to maintain private insurance to cover our responsibility under this act.

- Regulation of Wages and Conditions of Employment Act (Cap. 229)
  This act sets the conditions of work and the minimum wage guidelines. The EPZ Act supersedes this act with regard to minimum wage and in fact the EPZ minimum wage guidelines are slightly higher than the National Employment Act guidelines.

- Labour Relations Act, 2007 (Acts No. 14)
  This is the new version of the old Trade Unions Act and the Trade Disputes Act, revised to harmonize the old Trade Acts with Kenya's recent ratification of many of the elements of the ILO Freedom of Association and Protection of the Right to Organize Convention, 1948 (No. 87). We are required to provide our workers with the freedom of association. We are required to honor a dispute process as laid out in the act. We currently have no collective bargaining agreement in place nor are we required to do so. To the best of our knowledge none of our employees belong to any Trade Unions, and it is our belief that our employees do not at this time feel that the benefits of membership outweigh the costs of dues which are born solely by them under the Act. We have never had a dispute with any employee that resulted in any collective action, lock out etc. and we have no disputes at all at this time, and we believe that we are in full compliance with this Act. To ensure that employees are aware of their rights under the Act, we have added the following language to all employment contracts issued by Wildlife Works;
  "Wildlife Works, EPZ Ltd. acknowledges the importance of the recently enacted Labour Relations Act 2007, and therefore we wish to inform you that you are entitled to Freedom of Association, and specifically to join the Kenya Textile Workers Union(KTWU) should you so choose. Should you choose to join the KTWU, all membership dues and agency fees for the Union will be payable directly by you."

CORPORATE LAWS.

- Companies Act, (Law of Kenya Cap. 486);
  We must remain a company in good standing, and are required to maintain our Corporate records with The Registrar of Companies in Nairobi annually.

- Bankruptcy Act (Cap. 53);
  Lets hope this never applies to us.

LAND and ENVIRONMENT LAWS.

- Environmental Management and Coordination Act (Act 8, 1999)
  We were required to undergo an environmental audit by the National Environmental Management Authority. We passed.

- Registration of Titles Act:
  The terms of the Title Deed by which Rukinga Ranching Company Ltd is the owner of Rukinga Ranch are governed by this Act.

LOCAL DISTRICT LAWS.

- County Council of Taita Taveta Rates are paid at the rate determined under the local By-Laws of our District.

It is confirmed that:

- the project is in compliance with all national laws and license requirements relating to conservation projects in Kenya; and
- there is no law mandating that the Land is a conservation area. It is noted that no category of land use relating to conservation exists under Kenyan law. The current land use category for the Rukinga Sanctuary project and other privately owned conservation projects is classified as agriculture.

G5.2. Documentation of Legal Approval

Wildlife Works warrants that all actions and documentation for the project establishment as a carbon sequestration project have and will be met. When we launched the project we put out a joint press release with the Kenya Forest Service which indicated strong support for our project. Should the KFS develop requirements as they progress to develop a National strategy for REDD, we will be well positioned to continue to receive the approvals necessary for our project. See Annex 6 – KFS press release

G5.3. Free, Prior, and Informed Consent

Rukinga Ranching Company Ltd., which is the holder of the legal Title to all the land known as Rukinga Wildilfe Sanctuary which is all that land constituting the Project Area has 46 shareholders. A list of the Shareholders has been provided to the Validator. As such it is de Facto considered a public company in Kenya and it is managed by a Board of Directors, elected by simple majority of the Shareholders at Annual General Meetings (AGMs) of the Shareholders. However the overwhelming majority of shares are owned by BenBo International, an offshore trust, which acquired them from the previous owners to preserve the conservation project on the land, as the land was to be sold to non conservation friendly buyers. When BenBo International purchased its shares in Rukinga in January 2000, the previous Board members who had sold their shares resigned and were replaced by new Directors elected by BenBo, as the majority shareholder. Those appointments were then subsequently ratified at the next AGM of the Company held in August 2001 at 11:30am.

Operational decisions made by the Company are then made by the Managing Director, who is appointed by the Board from the Directors. Mike Korchinsky has been Managing Director of Rukinga Ranching Co. Ltd. since the 2001 AGM, when his appointment by the Board on February 4th 2000, was unanimously approved by the Shareholders. Mike has full support of the Shareholders in his management responsibility for the Ranch. Mike was subsequently

elected Chairman of the Board of Directors when the previous Chairman Charles Mzera passed away.

This REDD project was first envisaged by Mike Korchinsky in November 2008 when the Voluntary Carbon Standard added support to REDD projects to its Second Edition Standard. Mike realized that this would provide a potential source of sustainability for all of Wildlife Works activities in the Project Zone, as well as income generating potential for the Shareholders of Rukinga Ranching Co. Ltd. in Phase I and potentially the Shareholders of the surrounding group ranches in Phase II. His first act was to locate an investor to finance the REDD project which he succeeded in doing by end of January 2009. At this time he convened an AGM of the Shareholders at Rukinga on February 13th 2009, at which AGM the Shareholders present were given an explanation of the potential of the Carbon project, a copy of which has been provided to the Validator, and following which the Shareholders unanimously approved the pursuit of this opportunity by the Managing Director.

At that time, Mike Korchinsky who was already the majority shareholder and President of Wildlife Works worked with legal experts in the UK and Kenya in the field of environmental law, and developed the Carbon Easement which was signed by both Rukinga Ranching Company Ltd and Wildlife Works on February 15th 2009 and which transfers the carbon and biodiversity rights of the Project Area to Wildlife Works, Inc.

The agreement also sets out the obligations and responsibilities placed on the landowners for the duration of the project. A copy of the Easement will be made available to the Validator.

As the majority shareholder of Rukinga Ranching Co. Ltd is also a major investor in Wildlife Works, it is unlikely that this easement will be challenged.

G5.4. Involuntary Relocations

No one currently or historically lives on the Project Area, so the project does not involve the relocation of any people. Prior to the project start date members of the community and/or immigrants had illegally cleared almost 4,000 hectares of the Project Area for farmland but those involved had returned to their home province or voluntarily relocated to the newly formed Sasenyi Valley land Cooperative prior to the project start date.

G5.5. Illegal Activities

The illegal activities that may be conducted from time to time on the Project land and in the Project Zone include bushmeat snaring or torch and horn poaching of wild animals; chopping of hardwood trees either for building poles or for charcoal production.

Wildlife Works has a long and successful track record of monitoring the Project Area, catching poachers and charcoal burners before they can do significant damage to the ecosystem, and dealing with the offenders in a non-violent way working closely with the Kenya government authorities. Neither the project nor members of the community related to the project benefit in any way from these illegal activities.

G5.6. Carbon Rights

See G5.3 above. At present it is not common practice to register a Carbon Easement against title in Kenya although the Environment Act did envisage such a concept, but not explicitly. Wildlife Works has committed written approval from the landowners that should such a possibility exist they would cooperate fully with Wildlife Works in ensuring the successful registration.

CLIMATE SECTION

CL1 Net Positive Climate Impacts

CL1.1. Net Change in Carbon Stocks

For a detailed description of loss of carbon stocks due to slash and burn agriculture in the Baseline scenario see G2, above. Wildlife Works has been committed for ten years to the protection of this Dryland Forest and the wildlife that calls it home, and with the addition of the carbon finance we intend to continue our effective protection and expand our activities within the community.

Pool	Total GHG	Total Hectares	Loss in Baseline
Aboveground and Belowground Biomass (trees)	3,392,387	29,598*	2,710,325
Soils - hectares excludes Ag encroachment strata	3,751,398	28,206**	761,007
Aboveground and Belowground Biomass (shrubs)	229,612		174,819
Aboveground and Belowground Biomass (grasses)	25,000		19,034
Total	7,143,785		3,537,719
Annual loss over twenty years			176,886

* 30,166 – out areas
** 30,166 – out areas – ag encroachment areas

CL1.2. Net Change in non CO2 emissions

There are no significant (>5%) other GHGs estimated in either the with or without project scenarios. In the with project scenario a small amount of emissions result from the burning of diesel in patrol vehicles, however in the without project scenario this would be more than offset in our opinion by the emission from the agricultural practices which would follow conversion of the forest, in which there would be fertilizer, and annual emissions from burning of the agricultural waste.

CL1.3. Other non CO2 emissions from Project Activities

In the with project scenario a small amount of emissions result from the burning of diesel in patrol vehicles, however in the without project scenario this would be more than offset in our opinion by the emission from the agricultural practices which would follow conversion of the forest, in which there would be fertilizer, and annual emissions from burning of the agricultural

waste.

As a result of comments from the CCB Auditors we are providing a full Carbon Footprint analysis of the with project scenario.

See table below.

Wildlife Works Kasigau Corridor REDD Project Carbon Footprint

Kenyan Power Generation

	%	kg CO2e per kWh*
Fossil fuels	60%	0.86
Non Fossil Fuels(Hydroelectric,Geothermal)	40%	0
Average		0.52
* from US DOE statistics - no Kenyan stats avaliable		

Kenyan Water Supply

We are 100% gravity fed from Mzima Springs Pipeline Footprint of pumping on site for our purposes included in electric power and generator fuel use footprint	0	0

EcoFactory	**Units of consumption/yr**	**m.t. CO2e/year**
Power use (kWh)	9600	4.97
Organic Cotton Products(est. 100,000 units / year) 6kg per 12oz garment during total lifecycle Estimated 75% post consumer purchase Therefore 25% crop to retail = 1.5kg Organic Cotton footprint 68% conventional (Sustainable Cotton Project) = 1.02kg	100000	102
Carnegie Mellon Economic Lifecycle Analysis Tier 3 GHG Footpring for Cut and Sew Mfg. Carnegie Mellon University Green Design Institute. (2009) Economic Input-Output Life Cycle Assessment (EIO-LCA) US 1997 (491) model [Internet], Available from: <http://www.eiolca.net/> [Accessed 31 Oct, 2009] Note this includes 114 mt for power generation which we have accounted for primary consumption elsewhere Also includes 14 m.t. for non cellulosic materials (e.g. synthetics which we do not use) in addition to 5.9 m.t for organic cotton which we do use	$500,000	344

While we believe there are many flaws in the Carnegie Mellon example where it relates to our Project, e.g. organic cotton use, very low power generation at primary business activities as demonstrated by actual power usage used in this table etc. we will choose that method for calculating the footprint of the factory over the Sustainable Cotton Project method above as it yields a more conservative number. We have provided the Validator the full Carnegie Mellon analysis spreadsheet.

	Units of consumption/yr	**m.t. CO2e/year**
Wildlife Sanctuary		
Ranger Support Petrol/Diesel use (Ltrs/year)	15000	40.04
(note we use some petrol and more diesel so to be conservative we will assume 100% diesel as petrol has lower CO2e 2.7 kg/ltr diesel vs 2.3 petrol)		
CO2e lbs per gallon diesel (US EPA/UNIPCC 2006)	22.2	
CO2e kgs per ltr diesel (US EPA/UNIPCC 2006)	2.7	
Organic Greenhouse and Jojoba Project		
Organic Fertilizer for 7 Greenhouses proposed	21000	0.1456
3000 fruit tree seedlings per year use 200kgs manure*		
500 jojoba bushes on our experimental 10 acres use 200kgs manure per year. If we assume jojoba outplanting on 1000 acres that gives 100x manure use	20000	2.08
We use no fertilizer on the indigenous tree seedlings		
.104 kgs CO2e per kg manure (UNIPCC 2006 at 1.5% Carbon conversion to methane)		
*Note that we make compost tea in sealed container, we do not apply manure directly to crops, so our footprint would be lower		
Also note that the CCB methodology only requires calculation of GHG footprint for use of synthetic fertilizers of which we use none.		
Eco tourism		
Guest house electricity(kWh)	2912	1.51
Water Pump House Electricity (kWh)	2389	1.24
Camp Water Pump Diesel included in Ranger Fuel use		
Misc		
Management Housing Electricity (kWh)	8681	4.50
Management Airline Flights	10	25
2500kgs CO2 e per round trip SFO to Nairobi		
Total		423.49
Percent of Project GHG emissions reductions		0.25%

Offsetting these GHG emissions from other Project Activities are positive emissions reductions associated with the trees we will be planting.

Table 4.9 of the UNIPCC 2006 Good Practice Guidance for LULUCF gives a net annual biomass increment for natural forests in tropical dryland forest types<= 20 years old as 2.4 tonnes d.m. per ha per year.

Based on the density of Rukinga's forest, with an estimated 6,000,000 trees covering 30,166 hectares, there are approximately 200 trees per hectare. Assuming this approximate density in the reforestation project on Mt. Kasigau, the 20,000 trees we will plant in the first three years of the Project Activities represent 100 hectares of forest area, which equates to 2400 tonnes d.m per year. Using the variable 0.47 for the carbon fraction (Table 4.3 of the UNIPCC 2006 Good Practice Guidance for LULUCF – Tropical and Subtropical Forests), and 44/12 to convert to CO2e, this yields 4,136 m.t. Co2e per year sequestered by the indigenous trees to be planted under the Mt. Kasigau Reforestation project. That is already 10x the emissions calculated in the table above for the entire carbon footprint from project related activities. Then add to that the sequestration benefits of planting out 20000 jojoba bushes and the 20,000 fruit trees whose fertilizer use was calculated above in negative emissions, and I think it is abundantly clear that our Project Activities carry substantial positive net climate impact.

CL1.4. Net Climate Impact

We estimate this project would avoid an estimated 3.5M tonnes of CO2e over the twenty year life of the project, and therefore has an overwhelmingly positive climate impact. In CL2.3 below you will see we have an aggressive strategy to prevent leakage from project activities and as a result we feel it is unnecessary for us to take any deductions due to Leakage, as in fact our Leakage strategy will result in more net positive climate impacts that we are not claiming in the climate impact of the with project scenario. See CL1.3 above.

CL1.5. Avoid Double Counting

Kenya at the present time has no emissions cap and it is likely that as a poor country with very low historic emissions, that it will not be subject to any significant emissions cap in the near future. We are in close contact with the Kenya Forest Service, the focal point for REDD within the Kenyan Government and we expect no issues with double counting even when and if Kenya formalizes an emissions regime on a national basis.

CL2 Offsite Climate Impacts

CL2.1. Types of Leakage

The obvious categories of leakage for this project are;

- Activity shifting
    - farm land for the increasing local population and/or immigrant populations that would have migrated here
    - fuelwood for the local community that might have been using the Project Area to harvest fuelwood, when it was a free resource
    - grazing for local cattle
- Market effects – as none of the tree species in the Project Area are commercial in nature, and as the fuelwood use was for local household consumption, this type of leakage is not relevant to the project
- Increased investment In the Project Zone – we believe that as a result of our presence here there has been in increase in the investment made by other NGOs in the area, all of which will have a net positive effect on Leakage, such as;
    - increased investment in schools, which will increase likelihood of further education and non subsistence agricultural jobs for future generations,
    - increased investment in water resources, with a pipeline being provided from the main Mzima Springs pipeline down through some of the villages in the Project Zone, and with successful boreholes providing access to fresh water, we believe that agricultural productivity will improve and pressure on new agricultural land will reduce over time

Activity shifting Leakage is an interesting question in the context of private land where the baseline activity of illegal clearing of private land for farming represented illegal activity even under local laws, and where there are no "indigenous peoples rights" issues, because the owners of the private ranch lands and those people clearing forest to farm are from the same ethnic group. That said we feel we have an excellent Leakage strategy as evidenced by our ability to shut down what was previously extremely aggressive deforestation since we initiated our project activities.

To understand Leakage you must first understand the reasons for deforestation in the first place.

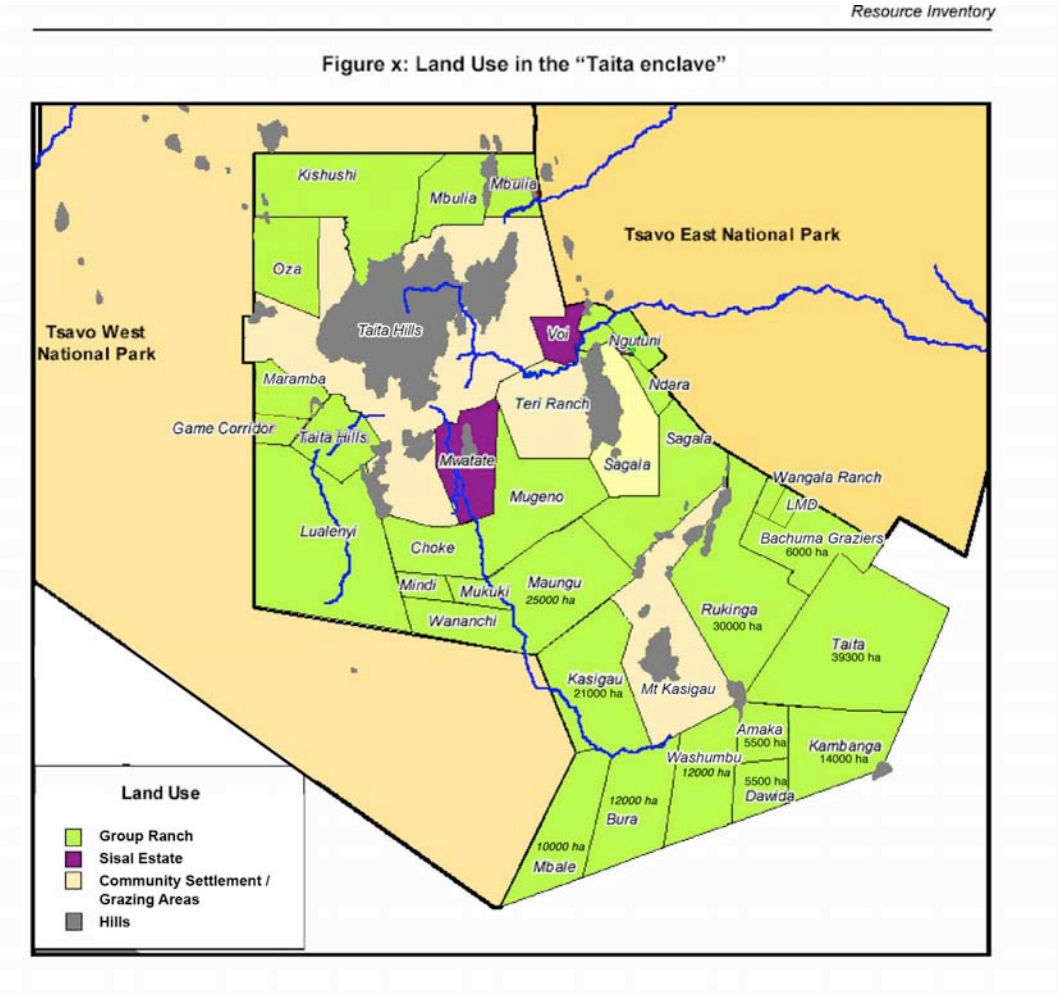
The local agents of deforestation in our project area are Taita people who have traditionally farmed the fertile cloud forested hills of the Eastern Arc Mountains, Kasigau, and the Taita Hills. As their population exceeded the carrying capacity of the land on the hills they moved down into the dryland acacia-commiphora forest that dominates the lower elevations of the district. However here their traditional farming practices did not work, due to extremely low average rainfall, so after colonizing all the land with permanent water sources they began to clear any available unprotected land. The larger blocks of remaining land in the area outside of communally owned land protected by local administrations were privately held group ranches designated as cattle carrying areas for the communities of the hills back in the 1970s. However due to the remoteness of these areas and the lack of permanent water sources, they had never been developed as cattle ranches, and remained natural forest over the years, until the mid 1990s when rainfall patterns initiated a population boom in the area facilitated by the improvement of the main Mombasa highway and a local arterial road that runs right along the edge of the Rukinga project area.

The immigrant agents of deforestation in our project area are Duruma from over one hundred kilometers away in Coast province, a very poor tribe that has historically opportunistically and

illegally sought farm land that was unprotected throughout Kenya. These people were first introduced to our district in the early 1990s brought in by a corrupt politician who promised them land (not owned by him) in return for votes...once they realized they could find unprotected land in the district, more and more families came.

Both these populations began aggressively converting land in the mid to late 1990s just prior to our arrival on the scene in 1998. As soon as we made it impossible to take free land, the immigration stopped, and in fact many families returned to the Coast.

The likely location of Activity Shifting Leakage would be the other privately held group ranches within the Project Zone, that still have Dryland Forest, Taita Ranch, Kasigau Ranch, Maungu Ranch, Mgeno Ranch, Amaka Ranch, Washumbu Ranch, Buchuma Graziers and Wangala Ranch. These are lands not controlled by the government and community institutions and therefore not benefiting from the protection and or regulation that those institutions afford, so it is left to the private group ranch shareholders, who are specific members of the local community to find ways to protect their own lands from deforestation. This is the equivalent situation to Rukinga prior to our arrival, and therefore the focus of our Leakage mitigation efforts are to prevent these other private Dryland Forests from being deforested as a result of our protection of Rukinga. The area of these other Dryland Forests on group ranch lands is approximately 4 times the Project Area, or 300,000 acres.



We do not consider the clearing of agricultural land within the community trust lands (see cream colored areas of the map) to be activity shifting as a result of our project, as those lands have long been designated by the Government of Kenya for development as farmland, and in

fact the government is strongly encouraging the local community to clear and farm that land, and is in the process of a subdivision scheme to grant title deeds to individual community members to facilitate that process. That said many of our mitigation activities are aimed at the farmers in the community trust lands to allow them to mitigate the negative climate impacts of the increased farming in that belt. At the time of our Project start date in 2006, we estimate that there were approximately 8,000 acres remaining in this community trust land that had not been converted to farmland.

CL2.2. Mitigation of Leakage

Leakage under VCS must address both local and immigrant deforestation agents unless there is a national REDD plan in place in which case only local agents need be addressed. There is a provision for taking a 10% buffer in the case where a national program is in development. Kenya is in the process of developing a national REDD strategy so we would be well within the VCS rules to adopt a 10% leakage strictly following the buffering approach. However as our actual efforts in Kenya over the past ten years have been focused directly on removing the local communities' need for more disastrously poor agricultural land, and physically protecting the forest from immigrant agents trying their luck at finding unprotected land to farm for income, we believe we would be doing ourselves a disservice to take the 10% route.

So our Activity Shifting leakage strategy has the following components;

1) Farm land
    - The local Duruma population's need for farm land was addressed by the establishment of a land cooperative on 5000 acres of what was still at that time Rukinga Ranch. This Sasenyi Valley land cooperative on land that had been cleared of forest prior to our arrival gave the community area to expand into without having to clear more forest. They were able to receive legal title for their farms, a first in this area of Kenya. The issue of what the prospective immigrant Duruma populations are doing now they have been denied illegal access to private farmlands is addressed in Section CM2.2 below.
    - exclusion of the broader community both local and immigrant from the project area. Rukinga is private property so we have every right to exclude local and immigrant populations from the project area - unlike most REDD projects Wildlife Works employs our own Rangers to protect the forest from illegal incursions, deforestation and even damage to biodiversity and we have a 10 year track record since 1999 of physically protecting the land from all potential deforestation agents. Our success where many other projects have failed in this regard is we believe due to our providing economic alternatives to the community to prevent them from needing to clear more forest for agriculture which creates a partnering relationship with the community and allows our Rangers to be effective even though they are not armed, as they can draw heavily on support from the influential members of the local community. We believe that our presence in daily protection of the forest has significantly reduced if not completely eliminated the threat of immigrant populations from non forested areas of the Coast province in Kenya coming to the area in search of unprotected land for slash and burn agriculture, and therefore in addition to stopping the specific deforestation of the project area is also reducing the population pressure that would have been seen under the Baseline/without project scenario.
    - providing economic alternatives to the slash and burn agricultural practices that have

devastated so much of sub saharan Africa.

a) We built a factory on the edge of our project area and trained the local women how to sew, and have employed many local people over the years producing organic cotton fashion which we sell locally and internationally - the pact with the community is that if they value the jobs they must stop clearing the forest and killing biodiversity or we won't be able to sell our products and their jobs will go away – this factory uses a small amount of electricity generated from the National Grid, which in Kenya is 40% hydroelectric. We believe the emissions created by this power use are more than offset by the reduction in emissions gained form our greenhouse and tree nurseries and replanting schemes below.

b) we established an organic greenhouse and nursery program to grow a variety of trees to provide fuelwood, cash crops and medicinal/agroforestry species to the community. Increasing their agricultural productivity on the existing land they already farm is the best way to stop them looking for more or different land to farm. We plan to expand this activity to sponsor nurseries in each of the main villages surrounding our project once the carbon funds begin to flow into the project. We already initiated a reforestation activity of native hardwoods grown in our nursery and outplanted into previously deforested areas of the community lands. We are claiming no additional carbon emissions credits for this activity it is just an element of our Leakage strategy.

c) we have been working with the Kenyan Agricultural Research Institute (KARI) to explore the potential of growing jojoba as a dryland cash crop that can withstand drought and poor agricultural practices and still generate a cash crop on a high value per hectare basis, again to improve food security by increasing agricultural productivity on existing ag lands to reduce conversion pressure.

- exclusion of deforestation agents from the Project Zone leakage belt. We plan to implement a second phase of our project in which we will extend our monitoring and protection to ALL of the remaining dryland forest in this region of Kenya, the 300,000 acres mentioned in CL2.1 above, to prevent slash and burn agriculture from moving into any of the adjacent forested lands that are privately owned by members of the community. We are entering into Carbon Easements with the neighboring community land owners to execute this component of the strategy and will being protection of their forests immediately we begin to receive carbon revenues.

2) Fuelwood
   - We are establishing 5 organic greenhouse extensions within the Project Zone to produce fuelwood and other agriforestry species for the local community so they can become self sufficient in fuelwood without having to degrade any of the Project Area or other private Dryland Forest in the Project Zone.
   - A study carried out by Matthew Owen of the University of North Carolina, “Adaptation to Rural Domestic Fuelwood Scarcity in Embu District, Kenya showed that when fuelwood is an abundant and free resource it is used at a level far above necessity, and that when it becomes a constrained resource, consumption can drop by as much as 50% without loss of function to the community. This indicates that the amount of wood being harvested for fuelwood from Rukinga prior to our arrival can be replaced with far less fuelwood grown in woodlots and community farms.
   - The without project scenario would have seen the Project Area cleared completely for farm land so the wood resource the community might have been using from the Project

Area would have been transient at best.

3) Grazing for local cattle
    - This issue has been treated at great length in Section CM2.2 below, but as cattle are only grazers and as grasses play such an insignificant role in our carbon pools(<0.4%) there is no climate impact from this activity leakage.

CL2.3. Unmitigated Negative Offsite Climate Impacts

As described above we strongly believe that our project has and will continue to create additional positive climate benefits within the community, that there are no sources of unmitigated negative offsite climate impacts, provided that we fulfill the mitigation strategies identified above.

CL2.4. Unmitigated Negative Offsite Non CO2 Climate Impacts

See Section CL1.1 for a complete analysis of GHG emissions both CO2 and non CO2. Non-CO2 gases account for far less than 5% of emissions, and are easily offset by mitigation activities described in CL1.1.

CL3 Climate Impact Monitoring

CL3.1. Carbon Pools to be Monitored

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The purpose of our monitoring plan is to ensure;

- that the project has protected the Rukinga Forest from any unplanned GHG emissions during the project crediting period, and
- that no identifiable leakage has occurred that can be attributed to this project.

Our emissions reductions were based on two sets of data, the first being the current carbon inventory of the Land, which was conducted using a fixed permanent plot methodology, accepted by all as a more accurate method for forest inventory than remote sensing, and the second being the use of Landsat satellite imagery for the past 15 years prior to the beginning of the project, which clearly demonstrates the rate of deforestation in the project area.

For the first set of data, it is our intention to carry out annual resampling of 20% of the total number of permanent plots originally created for the forest inventory, on the anniversary of the initial inventory, to ensure minimum seasonal variability in carbon stocks, which in this part of Kenya can be considerable. We plan to remeasure dbh, height, and status of all the trees originally included in the inventory for each plot. The annual resampling will be rotated so that every five years we have performed a complete resampling of the forest. We will also fund the external auditors of our project to revisit our permanent sample plots on a 5 year timetable.

We have no specific plan for monitoring of the Soil Carbon Pool, as we will make the assumption that loss of soil carbon during the project within the Project Area would automatically follow unplanned deforestation in the Project Area, therefore as long as we are monitoring the aboveground biomass pools, we will be able to calculate the net climate impact of deforestation on the belowground and Soil carbon pools.

For the second set of data it is our intention to continue to use satellite imagery to monitor the presence or absence of further deforestation in the project area, the project zone and the leakage belt. Because the type of deforestation occurring in this project area is total removal of tree cover for slash and burn agriculture, it is very easy to observe changes made using satellite imagery. We plan to acquire affordable high resolution imagery to support our monitoring on an annual basis.

CL3.2. Commitment to Monitoring Plan

Wildlife Works commits to expanding on the above to create a full detailed monitoring plan within twelve months of validation against the Standards and to make that plan available to the public on the internet. We will also communicate the plan to local community groups for dissemination to the wider community, as has been our approach to all communication

throughout the project lifetime.

COMMUNITY SECTION

CM1 Net Positive Community Impacts

CM1.1. Estimate Impacts on Communities

From the beginning of our project over ten years ago, Wildlife Works has focused on how to get the local communities to benefit from the conservation of natural resources, both Forest and Biodiversity. Our measures of success within the community are both traditional. E.g. number of employees, dollars invested in the community, socio-economic improvement within the communities, and non –traditional, e.g. presence or absence of significant poaching by local community members, presence or absence of land pressure on the boundaries of Rukinga. We have every reason to state that by all measures, traditional or non traditional, our project has had huge net positive impacts on the community. We ourselves are not a typical NGO, we are a conservation business, so we do not have the skills nor the impartiality to test this contention ourselves, but we have had numerous groups through Rukinga over the years looking at our model, and surveys have been conducted. Annex 7 contains the most comprehensive study conducted in August 2007, by an independent student researcher from the Netherlands, Marit Rietveld.

CM1.2. Demonstrate no Negative Impacts on High Conservation Values

There are on negative impacts by Wildlife Works project on HCVs. On the contrary I believe we have demonstrated that the project has had a positive impact on endangered species habitat and wildlife populations. Furthermore, as regards the community and the HCV of Mt. Kasigau which is certainly the most important HCV as far as they are concerned, we have a solid plan, provided to the Validator (the Mt. Kasigau Reforestation Plan) to reforest the slopes of Mt. Kasigau, working closely with community groups, who will receive financial rewards for planting and sustaining 20,000 trees over a 3 year period. We are confident that this plan which includes desnaring and biodiversity monitoring by a community based organization, the Kasigau Conservation Trust (KCT) supported by Wildlife Works Rangers and management will result in a significant improvement to the HCV of Mt. Kasigau. This is as described in the Kasigau Biodiversity Monitoring Plan, and Kasigau Biodiversity Survey Report, provided to the Validator.

CM2 Offsite Stakeholder Impacts

CM2.1. Identify any Potential Negative Impacts on Offsite Stakeholders

We believe strongly that there are no **net** negative impacts on offsite stakeholders whatsoever, as there was no legal harvest of resources from the Project Area as the tree species are non commercial and only used in the local area by communities within the Project

Zone. On the contrary we believe that Wildlife Works has had a very positive impact on offsite stakeholders, both certainly regionally where we have encouraged the set aside of more threatened land for conservation, nationally where we are recognized within Kenya as an innovative approach to balancing the needs of communities with the needs of wildlife, and internationally as ours is a conservation project that has elevated the idea of community based sustainable conservation to a new level on the global stage, and has been copied by many of the large conservation organizations, as evidenced by the popularity of the Wildlife Friendly Enterprise network (www.wildlifefriendly.org) of which we were a founding member.

However based on feedback from local communities during the development of this document a few areas of potential negative impact were identified and need to be addressed. These are;

- A potential increase in human-wildlife conflict as the wildlife populations return to Rukinga
- An exclusive dependence on Wildlife Works for livelihood
- A need for grazing within the community now that community cattle are excluded from grazing in Rukinga Sanctuary
- A need for alternative farmland for those members of the Duruma community at the Coast of Kenya that are no longer migrating to Rukinga because there is no longer un secured land for them to squat on.

CM2.2. Plans to Mitigate Negative Impacts on Offsite Stakeholders

1) Potential increase in human-wildlife conflict

While there has certainly been a substantial increase in the amount of biodiversity on Rukinga Sanctuary since our arrival we believe that it has not resulted in a negative impact on the community for the following reasons;

- Prior to our arrival, even though the permanent population of wildlife on Rukinga was much lower than today, there was always human-wildlife conflict, as elephants could not use Rukinga as safe habitat, so were forced into the communities to graze and raid crops. Furthermore elephants often went into the communities to the water points used by the communities, and would damage or destroy pipes and taps to get at the water there.
- Wildlife Works has actively mitigated the potential negative impact of increased wildlife populations in several ways;
    1. First and foremost, the fact that Rukinga is now safe habitat for wildlife, and that we protect the natural resources there for wildlife, such as grazing and that we provide water for the elephants during the dry season means that the wildlife has less reason to go into the communities in the first place.
    2. Our Rangers patrol the community boundary during those nights when the likelihood of elephant crop raiding is high, e.g. when crops are close to ready for harvest. They are on call to assist the community at any other time of year as needed. They use “thunderflashes” to scare the elephants from the boundary farms, back into Rukinga. This positive activity was acknowledged during the community surveys conducted by Marit Rietveld, and independent Dutch researcher in 2007.
    3. We have provided the community with literally tens of thousands of free

chili pepper bushes, grown in our organic greenhouse that provide the farmers a cash crop that is repellent to elephants for planting as a barrier at the edge of their farms. This is based in research performed by Dr. Loki Osborn of ElePepper in Zambia, and is an effective deterrent provided the farmers maintain the chili pepper bushes.

4. We are planning to introduce another non-conflict cash crop, jojoba, into the communities along our boundary during the first five years of the project. Elephant, nor any other animals have any interest in eating jojoba, so it is the perfect cash crop for farmers in a potential conflict area.
5. Many members of the community are benefiting financially from the presence of wildlife on Rukinga through jobs in tourism and at Wildlife Works, and the income they are receiving provides them an alternative to subsistence farming of high conflict crops such as maize.

We believe that these mitigation activities have proven to be successful already over the years, and that with additional funding under the carbon program their effectiveness will only increase, and therefore we do not believe that our project will create a NET negative impact in human-wildlife conflict.

2) An exclusive dependence on Wildlife Works for livelihood
It is certainly true that Wildlife Works is the only significant employer in the community, but it is hard to see that as a net negative impact, as we have not displaced any other employers or forms of employment within the community. Furthermore we have only employed 100 people to date, and only plan to employ a maximum of 200 from a community of over 25,000. However we are aware of the issue, and we are constantly looking for ways to bring more jobs into the community, for example the leasing of Rukinga to Camp Kenya, the ecotourism providers diversifies the employment base within the community, the expansion of Organic Greenhouses to the community and the promotion of the jojoba farming scheme planned under our Project Activities, all of these are attempts to spread the employment to areas that reduce the dependence on Wildlife Works. Therefore we do not believe that our project will create a NET negative impact in over dependence on Wildlife Works for jobs.
3) need for grazing within the community – we believe that livestock is an unsustainable lifestyle in this dry country where there is no permanent water source, other than expensive piped water. We believe that the local community knows this, and these are not tribes with a strong cultural attachment to cattle, like the Maasai or Samburu, and as a result the local Taita and Duruma cattle herds are very small. Furthermore, the lack of grazing has far more to do with the constant presence of large and totally unsustainable herds of Somali cattle overgrazing all of the community land brought in by local community ranch owners who were desperate for income, but who had no resources to monitor the Somali herds to ensure they did not overstock the ranches and overgraze the resources. If we were not here, it is certain that these large herds of Somali cattle would also invade Rukinga in the short term so Rukinga's grazing would not be available to the community then either. In order to manage incursions onto our sanctuary from these illegal Somali cattle we have had to implement a uniform policy against grazing of any cattle in Rukinga, as the grass is not unused on Rukinga, it is critical to the presence of elephants and other species, which are the very wildlife on

whose presence the success of all of our activities depends. We are actively mitigating against the potential negative impacts of loss of grazing in the following ways;

a. by assisting the community to diversify away from cattle as an asset class that has proven to be a liability in times of drought time and time again in this area of extremely low rainfall
b. by bringing carbon revenues to the surrounding community ranch owners to allow them to wean themselves from the dependence on Somali cattle income, so that they can allow their own lands to heal, and have plenty of grazing for their well managed herds in the future, as small amounts of well managed grazing of local cattle is perfectly consistent with management of these surrounding ranch lands for REDD carbon revenues, and even for biodiversity and ecotourism provided sensible zoning is done to prevent cattle herds from competing with wildlife for resources, or damaging the tourism experience for international visitors who come thousands of miles to see wildlife, not cattle.
c. By assisting the local communities to legally expel the illegal Somali cattle herds that have severely degraded the community lands, using Ranger patrols and the courts to legally prohibit the continued exploitation of the local community by these large scale commercial Somali cattle operations.

We believe that these mitigation activities will prove to be successful in the coming years, and that with additional funding under the carbon program their effectiveness will only increase, and therefore we do not believe that our project will create a NET negative impact in reduction of cattle grazing.

4) A need for alternative farmland for the Duruma from the Coast

We confess we do feel this is rather a stretch, that we as a REDD project should be responsible for providing an alternative to a clearly illegal land grab practice perpetrated by a tribe that has no historical roots in the Project Zone, but we will address it seriously, although we have no doubt it is an unreasonable standard. The Duruma living in the Coastal community that provided the source of the illegal land squatters that preceded our project at Rukinga are from well outside our Project Zone and therefore we feel should not be considered Stakeholders. That said, they are looking for unprotected farmland anywhere they can find it. They have no particular attraction to the Dryland Forest of the Project Area, as they have to clear the bush before they can begin to farm. Therefore as they have stopped coming to Rukinga since we began protecting the land we can only assume they have descended on some other poor farming community much closer to their homeland that is unable to protect their land resource, and are farming previously cleared land elsewhere. As part of our leakage mitigation strategy we will prevent illegal occupation and clearing of the neighboring community owned ranches in Taita, which are the only remaining Dryland Forest in this area.

That said we DO consider the Duruma that were already here when our Project began to be Stakeholders, and they were assisted in participating in a new land cooperative, called the Sasenyi Valley Cooperative, where they could legally purchase ten acres of land for a very small price from a community managed cooperative on land subdivided from Rukinga for that purpose. Many chose to take up this opportunity. Some chose not to. We have also employed several Duruma as

Rangers, and Watchmen, even one sewing factory employee is Duruma. We have also assisted the Duruma by coordinating the funding and construction of two classes in a new Duruma primary school in Sasenyi Valley, as well as building four classrooms at Kale, and renovating four classrooms at Buguta, two previously existing schools with predominantly Duruma children. Lastly, with REDD project funding we plan to construct 2 of the 5 new Organic Greenhouses described in Major Project Activities above in Sasenyi and Buguta, two Duruma communities, which will provide employment and free trees to those communities who have deforested their land more aggressively than any of the Taita villages.
We believe that these mitigation activities will prove to be successful in the coming years, and that with additional funding under the carbon program their effectiveness will only increase, and therefore we do not believe that our project will create a NET negative impact within the Duruma Stakeholder community.

CM2.3. Demonstrate no NET Negative Impacts on other Stakeholder Groups

See CM 2.2 above in which plans for mitigation are laid out and a case is clearly made we believe that there are no NET negative impacts to any Stakeholder Groups as a result of our Project Activities. Also see CM 2.2.4 above which addresses the Duruma Stakeholder group, that was inadvertently left out of the prior version of the PDD.

CM3 Community Impact Monitoring

CM3.1. Develop Plan for Community Monitoring

Wildlife Works is a pretty unique REDD project in as far as we have seen in that we are a permanent presence in the community and therefore we receive feedback on a daily basis in the form of our staff's interactions with the communities, our Rangers monitoring the presence or absence of illegal activities in the Project Area, as well as our direct involvement in almost every aspect of community development from schools to clinics to job creation and community groups. We initiated the process of the independent audit of our community influence conducted by Marit Rietveld in August 2007 and with adequate financial support from the Carbon project we anticipate being able to develop a streamlined version of her comprehensive report that could be executed by an independent group on a regular basis.

The variables of importance can be identified from her report but would be expanded based on all Project Activities to include;
EcoFactory

- Number full time jobs
  - WW employees
    - Total
    - From Project Zone communities
  - Other
    - Total

        - From Project Zone communities
    - $ invested in capital expense
    - $ annual operating expenses
    - $ income generated

Organic Greenhouse Project

- Number full time jobs
    - WW employees
        - Total
        - From Project Zone communities
    - Other
        - Total
        - From Project Zone communities
- # new greenhouse locations implemented
- # trees propagated
    - total all species
    - fruit and agroforestry/fuelwood trees
    - indigenous trees for reforestation projects
- # indigenous trees successfully outplanted in Villages of Project Zone
    - # outplanted by species
- # indigenous trees successfully outplanted on Mt. Kasigau
    - # outplanted by species
    - # surviving to year 2 by species
    - # surviving to year 3 by species
- Volume of elephant dung provided to Emani Women's group
- $ invested in capital expense
- $ annual operating expenses
- $ income generated
    - # seedlings sold (species, qty, customer, date, price)
    - $ revenue
    - $ profits

Jojoba/Dryland Farming Project

- Number full time jobs
    - WW employees
        - Total
        - From Project Zone communities
    - Other
        - Total
        - From Project Zone communities
- $ invested in capital expense
- $ annual operating expenses
- $ income generated

Forest and Biodiversity Monitoring

- Number full time jobs
    - WW employees
        - Total
        - From Project Zone communities

        - Other
            - Total
            - From Project Zone communities
    - Species Population Statistics;
        - Sightings (date, GPS location, species, #male, #female, #young, seen by)
    - HCV Species Population Statistics;
        - Sightings (date, GPS location, species, #male, #female, #young, seen by)
    - Number of poaching incidents
        - Number of snares or traps found (GPS location, date, type, Qty)
        - Number of dead animals captured (GPS location, date, species, Qty)
        - Number of poaching arrests made (date, perpetrator name, arresting Ranger, offense)
    - Number of cattle grazing incursions
    - Number of charcoal, fuelwood or construction material incursions
    - Acres deforested in Project Area and Zone
    - Acres reforested in community land
    - Dryland Forest Acres protected by Wildlife Works Rangers
        - Covered by WW Carbon Easement
        - Under other form of agreement
    - $ invested in capital expense
    - $ annual operating expenses

Ecotourism in Project Area and Project Zone

- Number full time jobs
    - WW employees
        - Total
        - From Project Zone communities
    - Other, e.g. Camp Kenya
        - Total
        - From Project Zone communities
    - Number of local youth put through Ecotraining Guide Training (course date, name, age, address, successful completion y/n)
- $ invested in capital expense
- $ annual operating expenses

School Construction and Bursary Scheme

- Number bursaries for local children each year
    - paid by WW
    - paid by Kelimu, other
    - Student name, village, age, primary school, secondary school/college/university, results
- $ invested in school construction and maintenance
    - $ amount, date, where used, outcome
- # children in each school
    - total
    - average # kids per classroom
    - highest number kids per classroom
- grades of children in national exams and position in district by school

- # children getting places in secondary school from each school

Carbon Project Leakage Mitigation
- Dryland Forest Acres protected by Wildlife Works Rangers
  - Covered by WW Carbon Easement
- Total tonnes CO2e protected under Kasigau Corridor REDD Project Phase I & II
- Total annual tonnes CO2e validated and verified under Kasigau Corridor REDD Project Phase I & II
- Total annual tonnes CO2e sold by REDD project
- $ invested in documenting and validating/verifying
- $ paid to community land owners

Project Product Marketing and sales
- Number full time WW employees
  - Total
  - From Project Zone communities
- $ sales from Project Area and Zone products (non carbon offset)

Soap Factory Expansion
- Number full time jobs
  - WW employees
    - Total
    - From Project Zone communities
  - Other, e.g. Camp Kenya
    - Total
    - From Project Zone communities
- $ invested in capital expense
- $ annual operating expenses
- $ income generated

General Success Metrics
- Average household income – dry and wet season
- % community responding favorably to WW presence
- % community directly and indirectly benefiting from WW presence
- % community understanding link between environmental protection/wildlife and economic progress

CM3.2. Develop Plan for HCV Monitoring

As regards the community and the HCV of Mt. Kasigau which is certainly the most important HCV as far as they are concerned, we have a solid plan, provided to the Validator (the Mt. Kasigau Reforestation Plan) to reforest the slopes of Mt. Kasigau, working closely with community groups, who will receive financial rewards for planting and sustaining 20,000 trees over a 3 year period. We are confident that this plan which includes desnaring and biodiversity monitoring by a community based organization, the Kasigau Conservation Trust (KCT) supported by Wildlife Works Rangers and management will result in a significant improvement to the HCV of Mt. Kasigau. This is as described in the Kasigau Biodiversity Monitoring Plan, and Kasigau Biodiversity Survey Report, provided to the Validator.

CM3.3. Commit to Plan for HCV Monitoring

Wildlife Works commits to reviewing the above plan to create a full detailed monitoring plan within twelve months of validation against the Standards and to make that plan available to the public on the internet. We will also communicate the plan to local community groups again for dissemination to the wider community, as has been our approach to all communication throughout the project lifetime.

BIODIVERSITY SECTION

B1 Net Positive Biodiversity Impacts

B1.1. Estimate Impacts on Biodiversity

From the beginning of our project over ten years ago, Wildlife Works has focused on how to stop the rampant killing of wildlife in the Kasigau Corridor by bushmeat poachers, and protect the habitat for the wildlife to return. When we arrived at the Project Area over ten years ago there were very few large mammals left. Our Rangers used to say they say nothing larger than a dik dik, a very small antelope the size of a rabbit. After a year of protecting the habitat, the wildlife began to return, beginning with the elephants and as they cleared out the thick shrubs that had grown in their absence, the other species followed. We have been keeping a database of wildlife sightings since 1999 and I have included a report based on data independently collected by a well known researcher in Kenya by the name of Barbara McKnight. See Annex 5. It is obvious by observing the lack of wildlife in community lands and the low sightings on Rukinga in the first year we were there that in the "without project" scenario there would be practically no wildlife left on Rukinga. Now many years on Rukinga is a well balanced ecosystem, although being semi-arid the density of wildlife will always be relatively low. We would like to be able to financially support more formal repeating of the surveys done by Dr. McKnight and we will certainly explore that with her when we have carbon finance surplus funds.

However formal scientifically accurate wildlife counts are incredibly difficult anywhere in the world, especially in Forest. Usually biodiversity health is measured simply by presence or absence of species, and by evidence of obvious poaching. An official count of elephant in the Tsavo ecosystem is conducted every other year, by the Kenya Wildlife Service and Rukinga is included in this count and in fact Rob Dodson, our project manager is a key participant in the count itself. This count supports the fact that Rukinga is now a key area for elephant in the Tsavo ecosystem, and the Kasigau Corridor is a valuable dispersal area for the health of the ecosystem.

In addition, Wildlife Works has initiated many activities within the Project Zone to foster broader conservation efforts outside the Project Area, and there are endemic species of high conservation value on Mt. Kasigau and the Taita Hills. Many of these species, however, persist in small and highly isolated (sub) populations. Consequently, a high proportion are of immediate conservation concern as is reflected by the list of 34 Taita animal and plant species currently categorised as vulnerable, endangered or critically-endangered by IUCN Red List Criteria (Luc Lens et al, 2002).

just at the Southern end of the Project Area that are benefitting directly from increased conservation awareness, e.g. Klassen's aloe

B1.2. Demonstrate no HCVs Negatively Impacted

Once again protecting our HCVs are the core of our activities on the Project Area, so no none will be adversely effected by the project.

B1.3. Identify Species Used by Project

This is not applicable as we are a 100% conservation project with no offtake of any kind. Our Leakage mitigation reforestation efforts use only slow growing native hardwood species in wildlands, and agroforestry species are used only within the confines of the community, and are selected for their non-invasive characteristics(reference search engine at http://www.issg.org/database), and for having been present within the communities already, e.g. Neem, Moringa. Citrus. Detailed species lists of nursery projects follows;

The indigenous tree species to be planted are:

1.	Mkwachu	*Tamarindus indica*
2.	Kirumbutu	*Melia Volkensii*
3.	*Mchemeri*	*Acacia nilotica* (Egyptian Thorn)
4.	*Acacia Robusta*	
5.	*Kiburabura (swa)*	*Prunus africana*
6.	*Mshogoreka*	*Terminalia brownii*
7.	Iti	*Acacia tortilis*
8.	Chariso	*Boscia coriacea*
9.	Mzwana	*Berchemia discolor*
10.	*Mbokoi*	*Melita Oblata*
11.	*Mwarara(swa)*	*Acacia brevispica (Wait a bit)*
12.	Kikwata	*Acacia melifera*
13.	Gum arabica	*Acacia arabica*
14.	Mwasina	*Kigelia africana*
15.	Umbrella Thorn	*Acacia abyssinica*
16.	Mshigha	*Lannea schweinfurthii*
17.	Mhina	*Lawsonia inermis*
19.	Mlamba	Adansonia digitata

The non-native tree species used in the jojoba project are:

1. Simmondsia chinensis Jojoba

Jojoba is being grown for the valuable seeds to provide a cash crop for the local farmers. It is very slow growing, takes approximately 5-8 years to produce seed and the seedlings require a lot of support in the early growth phase, due to the dry climate at Rukinga so over the ten years we have been at Rukinga we have seen no examples of it self sowing. Jojoba is not eaten by any animals or birds due to the appetite suppression qualities of the seeds, so it carries no threat of natural seed dispersal. There are no native equivalents to Jojoba.

The non-native tree species used in the greenhouse project are:

1.	*Morabaini, Neem*	*Azadirachta indica*

Neem was introduced to East Africa from India a very long time ago and is widespread within Kenya, as it has many valuable uses so has been planted by farmers and communities for a long time. Its Swahili name means that it has 40 uses which include insect repellant, dietary supplement, medicinal tea etc. There are no native equivalents to Neem. Neem is non-invasive.

2. *Moringa* *Moringa oleifera*
   Moringa is considered native to Kenya but in fact was introduced to East Africa from India a very long time ago but is now widespread within Kenya, as they have many valuable uses so has been planted by farmers and communities for a long time. Moringa is non-invasive.

3. *chili-pepper* *Capsicum chinense*
4. *mango* *Mangifera Indica*
5. *orange(pixie, mineola, Washington navel etc.) Citrus sinensis var. grafted onto Citrus jambhiri Lush. (rough lemon) rootstock*
6. *Papaya* *Carica papaya*
7. *Passion Fruit* *Passiflora edulis SIMS*

We grow our greenhouse citrus fruit trees on native rough lemon rootstock, using grafting techniques. Rough lemon rootstock is drought resistant, termite resistant and deep rooted. They are then out planted in community farms as a cash crop, or in the case of the chili pepper, as a barrier to elephant crop raiding as well as a cash crop. The climate at Rukinga is too dry for any of these species to self sow in the wild, they all take quite a lot of maintenance in the early going to survive to out planting stage, and therefore they cannot be considered invasive. The citrus cannot survive drought at all so must be watered regularly by the farmer, but produces a valuable cash crop to justify the water costs. The chili-pepper is quite drought tolerant but very short lived, with bushes living no more than four years in this area. Both Mango and Citrus can be considered Naturalized, as there are records of the first sweet oranges known to the western world being given to Vasco da Gama in 1499 in Melindi at the Kenyan Coast. Mango trees have also been present in East Africa for hundreds of years. None of these species have any recorded entries in the global invasive species database (http://www.issg.org/database). Passion Fruit was introduced commercially to Kenya in 1933, but large plantations were devastated several times by easily spread diseases and pests. It became necessary to abandon them in favor of small and isolated plantings, which could be better protected. Papaya has been extensively grown for centuries in Kenya, probably arriving with Portuguese trading ships, and we plant the local varieties of these as well as Mango. There are no native equivalents to these valuable cash crops. While they do introduce potential human-wildlife conflict it is much easier for the community to defend a fruit tree, than a field of maize.

B1.4. Describe Invasive Species Used by Project

None. Ref. global invasive species database (http://www.issg.org/database).

B1.5. No GMO Guarantee

We guarantee that no GMOs are used ever in the course of Wildlife Works projects, and therefore would never be used to generate emissions reductions or removals.

B2 Offsite Biodiversity Impacts

B2.1. Identify Potential Negative Offsite Impacts on Biodiversity

None. As described earlier our project has had significant positive impact on any dimension you choose to analyze where biodiversity is concerned.

B2.2. Document How to Mitigate Potential Negative Offsite Impacts on Biodiversity

Not applicable.

B2.3. Evaluate Potential Negative Offsite Impacts on Biodiversity

Not applicable.

B3 Biodiversity Impact Monitoring

B3.1. Develop Plan for Biodiversity Monitoring

The important role of biodiversity monitoring for Wildlife Works project is well understood and we have our own permanent teams of Rangers who patrol on foot daily checking for presence of wildlife and also checking for evidence of illegal activities, such as snaring, wood harvesting, illegal grazing or charcoal production.
The variables that are of importance are;

- Species populations extrapolated from sighting logs
- Evidence of Illegal Activity damaging to biodiversity
  - Charcoal kilns
  - Felled trees for construction
  - Poached animals
  - Poaching arrests
  - Illegal grazing with number of head of cattle
- Instances of Wildlife human conflict e.g.
  - elephant crop raiding
  - livestock predation

B3.2. Develop Plan for HCV Monitoring

We are unlike most REDD project as Wildlife Works Rangers monitor the wildlife populations on Rukinga on a daily basis, and maintain a daily log of all wildlife sightings of key species so we can monitor the health of the Rukinga Ecosystem and the populations of the endangered

species. However with carbon finance we propose to expand on the reporting we have been able to do on this important collection of research data, in three ways, outlined above in G3.2 Major Project Activities;

- improve our ability to monitor the HCV species in Rukinga by adding a dedicated Ranger Patrol, the HCV Ranger Team
- improve monitoring of HCV species, by establishing a GIS center of excellence at Rukinga HQ to capture, process and report on wildlife data collected by the project,
- 3 year reforestation and monitoring project on the slopes of HCV Mt. Kasigau (see documents Mt. Kasigau Reforestation Plan, Kasigau Biodiversity Monitoring Plan, and Kasigau Biodiversity Survey Report submitted to Validator)

B3.3. Commit to Plan for Biodiversity Monitoring

Wildlife Works commits to expanding on the above to create a full detailed monitoring plan within twelve months of validation against the Standards and to make that plan available to the public on the internet. We will also communicate the plan to local community groups for dissemination to the wider community, as has been our approach to all communication throughout the project lifetime.

GOLD LEVEL SECTION

GL1. Climate Change Adaptation Benefits

GL1.1. Identify Likely Climate Change impacts

We believe there is overwhelming evidence in the literature that there will be significant negative climate change and climate variability impacts on the communities in the Project Zone, as they are heavily dependent traditionally on subsistence agriculture in an area which in the best of times was highly marginal for agriculture. In fact almost everyone in the community will tell you that the rains have failed far more frequently in recent years, and even when they have come they are unpredictable which leads to missed opportunities to plant at the right time in the season to ensure a harvest even in good rain seasons. We believe this problem will only increase with increasing likelihood of more severe climate change impacts in the future. The impact of poor food security is not to force people to leave the area though. It just means they keep moving, clearing more land in the hopes that they will find the perfect plot on which the variable and highly localized rains will fall, so in the Baseline scenario, we anticipate even higher deforestation rates in the future. The other impact of failed crops is that it triggers an increase in poaching on bushmeat, and even though native wildlife populations are drought specialists, they will already be further stressed by even lower rainfall and higher median temperatures in the future, and populations may be less able to withstand further stress from poaching.

Here is a partial list of publications addressing the impact of Climate Change on Kenya specifically, as recent as last year and going all the way back to 1991.

The Economic Impact of Climate Change on Kenyan Crop Agriculture: A Ricardian Approach
Fredrick K. Karanja University of Nairobi, Jane Kabubo-Mariara University of Nairobi, August 1, 2007
World Bank Policy Research Working Paper No. 4334

CLIMATE CHANGE AND AFRICAN AGRICULTURE
Policy Note No. 12, August 2006, CEEPA
Centre for Environmental Economics and Policy in Africa (CEEPA)

Omenda, T.O., J.G. Kariuki, and P.N. Mbuthi, 1998: *Vulnerability and Adaptation to Potential Impacts of Climate Change in Kenya: Summary for Policy Makers*. Kenya Country Study Project, Ministry of Research and Technology, Nairobi, Kenya

Okoth-Ogendo, W.H.O. and Ojwang, J.B. (ed.), A Climate for Development: Climate Change Policy Options for Africa. ACTS press, Nairobi, 1995, p. 264.

Ottichilo, W.K., Kinuthia, J.H., Ratego, P.O. and Nasubo, G., Weathering the storm: Climate Change and Investment in Kenya, ACTS Press, Nairobi, 1991, p. 91.

GL1.2. Identify Risks to Project's CCB Benefits from Climate Change

Climate change in this area of Kenya is very likely to increase average temperatures, to produce more frequent and prolonged drought, and to reduce the productivity of the traditional subsistence crops grown by local farmers who have low variability and diversity of crops, high reliance on subsistence agriculture due to low skills and knowledge of other income generating activities etc.. Lower food productivity if left unmitigated would put increased pressure on poaching of biodiversity. We are working hard to mitigate this risk by providing alternative livelihoods and diversification of income sources to those not dependent on agriculture, such as in our factory, in our Carbon project and by researching drought tolerant cash crops that the local farmers can intercrop with their maize to provide a cash crop even in drought, such as jojoba.

It is also possible that severe prolonged drought could lead to the degradation of natural food sources, such as grazing and forage for the wild animals, although most species in this area are already drought specialists, not requiring to drink water for months or in some cases ever, as they acquire their water for survival through the browse they eat (giraffe, kudu, oryx, gazelles) or through combination of browse and physiological design (gerenuk). The tree species present in the Dryland Forest are also drought specialists, with Commiphora,Spp. having the unique ability to photosynthesize through their bark, so they drop all their leaves during the dry season to prevent loss of water through transpiration. Acacia spp. drop 95% of their leaves for the same reason but as they cannot photosynthesize through their bark they must keep 5% of their leaves even during drought to stay alive, although the leaves that remain fold in on themselves at night again to minimize surface area for transpiration.

Predators generally maintain during drought by living off the blood of their prey, and though territorial have large territories and will follow their prey over large distances if necessary.

For those wildlife species that do require water during drought, such as elephant, buffalo, eland, common zebra the fact that we are providing a safe corridor for wildlife to migrate between Tsavo East and Tsavo West National Parks means that we are allowing for wildlife to move hundreds of kilometers to seek food in times of drought. We have also made the management decision to provide water at water points throughout the sanctuary, to make up for the fact that the permanent natural water points in the Project Zone have been monopolized by humans and wildlife is now excluded from use of these water points. The source of our water is the main water pipeline from Mzima Springs, which despite recent dry years is still flowing at record rates, enough to provide for the drinking water needs of the 1,000,000 inhabitants of the City of Mombasa with enough left over to keep the Tsavo River as a permanent river.

Availability of graze for those species that require it to eat could be further reduced during prolonged drought by the invasion of illegal cattle grazers, mostly Somali in search of grass for their cattle. This has been experienced from time to time historically on Rukinga, but this is an illegal act of trespass by tribes from outside the Project Zone, with no support from community

or administration and as such with adequate funding for patrolling, we believe we can mitigate this risk. Recent drought has dramatically reduced herd size for the Somali commercial cattlemen, making it more likely that they will be able to find adequate grazing for their herds elsewhere. There is also the possibility that the geopolitical situation in Somalia that lead to the original use of the Project Zone for fattening Somali cattle being walked from Somalia and Northern Kenya to be shipped from Mombasa to the Gulf will improve, allowing for the export of cattle from Somalia directly to the Gulf, removing the need for large herds to travel south through this part of Kenya.

As this is an Avoided Deforestation project, with no climate benefits being claimed for net carbon stock increase from year to year in the with project scenario, we do not anticipate any negative impacts on the emissions benefits of this Project. Afforestation and reforestation projects would definitely face the risk of lower carbon stock increases if rainfall levels were further reduced as climate change continues, but we do not believe that the levels of unpredictability will have a significant impact on the survival of the mature indigenous Dryland Forest that forms the basis of our Carbon project.

GL1.3. Demonstrate Current or Anticipated Climate Change impacts

Those climate change impacts mentioned above for the region are all equally applicable to the Project Area and Project Zone, so please see GL1.1 and GL 1.2 above.

GL1.4. Demonstrate that Project Activities Will Mitigate Climate Change impacts

Wildlife Works approach in the face of this threat has been since the beginning of our project to search for economic development opportunities that are sustainable and NOT dependent on the dry land forest. Our first initiative was to buld a factory and teach the local women how to sew, a radical departure from traditional conservation thinking, but an approach designed to wean the community off the dependence on slash and burn agriculture.

The expansion of our project to include carbon revenues from protection of the Dryland forest under this Project will increase the options for non land based job creation, allowing us to employ more community members in our non-agricultural activities.

In addition we intend to use carbon funding to expand our dryland farming scheme, where we are exploring the use of Jojoba and chili pepper and citrus trees as cash crops that can survive in very arid conditions with little or no watering and are much more productive per hectare than maize or annual crops traditionally grown by the community. As these crops require much less land, they can be realistically irrigated from the pipeline which the government has now extended down into the Project Zone villages in the event that natural rains fail for an extended period, and the income they provide will justify the farmers expense of irrigation. This cannot be said for Maize which is not a valuable enough crop to justify irrigation from the pipeline.

GL2. Exceptional Community Benefits

GL2.1. Demonstrate the Project Zone is in a Low Human Development Country

Kenya is surprisingly just above the threshold for Low Development Countries with an HDI of 5.21 vs. a < 5.0 limit for Low Human Development Countries.

As a result we will not make claim to Gold status on this criteria, although in all likelihood we are in a rural area that might qualify under the 50% below the poverty line clause.

GL3. Exceptional Biodiversity Benefits

GL3.1. Demonstrate the Project Zone Includes a site of High Biodiversity Conservation Priority

The Project Zone meets this criteria under the Vulnerability criteria for the following reasons;

- Rukinga has a resident population of Grevy's zebra (Equus grevyi) which is IUCN Red List – Endangered - in fact Rukinga may have 3% of the global population estimated at 750 in 2008
- Rukinga is part of the home range of a pack of African Hunting Dogs (Lycaon pictus) that have been photographed on the sanctuary - which is IUCN Red List - Endangered
- Rukinga has a significant resident population of both cheetah (Acinonyx jubatus) and lion (Panthera leo) that are IUCN Red List – Vulnerable and we believe are greater than 30 individuals, and if you include the Project Zone then the populations are definitely greater than 30.

The Project Zone is part of the Eastern Arc Mountain Global Hot Spot as defined by Conservation International, and in the Project Zone outside the Project Area are several other qualifying species such as;

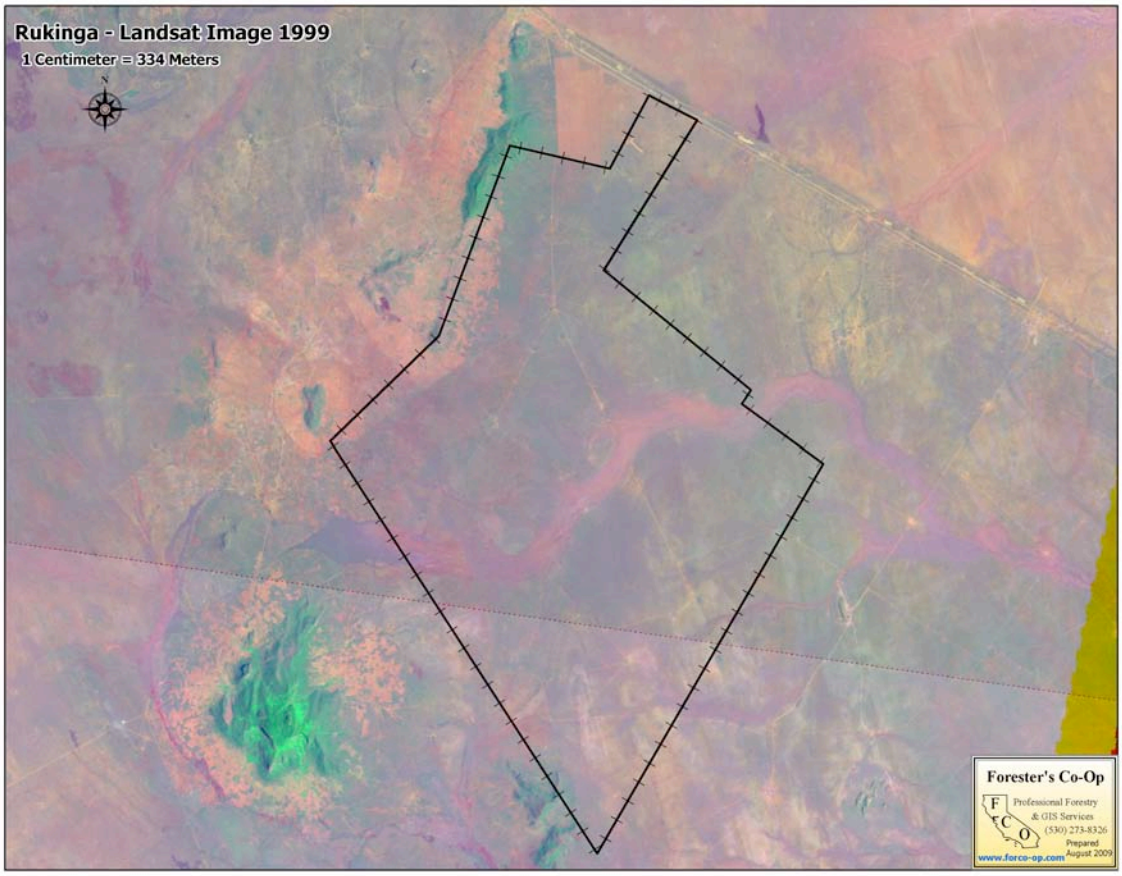
- Taita Apalis (Apalis fuscigularis) – IUCN Critically Endangered
- Taita Thrush (Turdus helleri) – IUCN Critically Endangered

ANNEXES

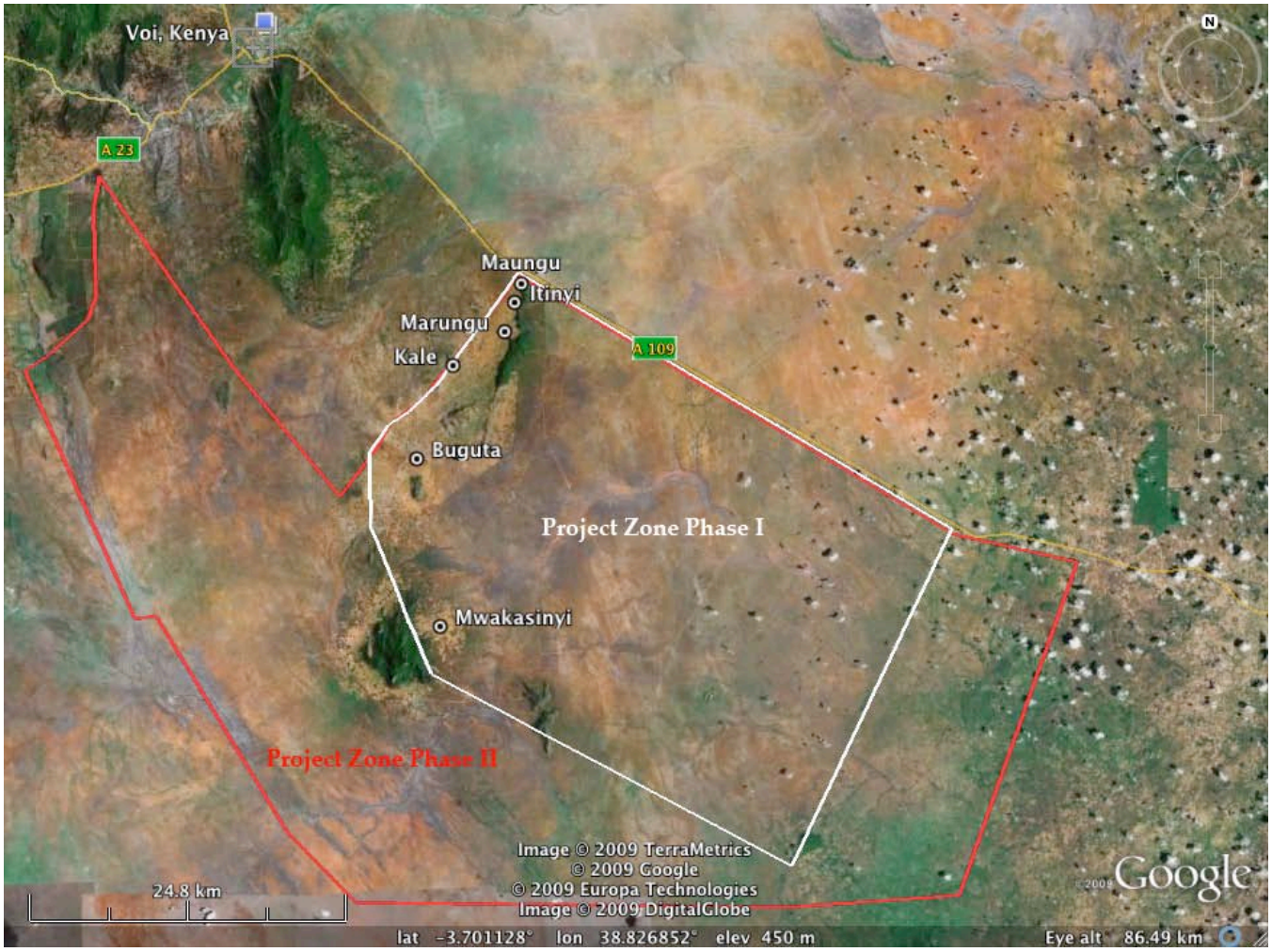
Annex 1
Maps of
Project Area







Project Area Boundary – Rukinga Sanctuary



Project Zone Boundary – Kasigau Corridor REDD Project Phase I and II

(Note alignment of Phase II Boundary approximate due to ongoing negotiations with Community Land Owners)

Annex 2
Plot Sampling Methodology

Rukinga is 30,166 hectares of varying density Acacia-Commiphora woodland/forest located in the SE of Kenya. Altitudes on the sanctuary range from approximately 450m to 1,000m and the ecosystem encompasses montane forest on the slopes of the higher elevations, through Acacia-Commiphora dryland forest at mid elevations and down to grassland dominated savannah at the lowest elevations. In order to most accurately estimate the biomass of the sanctuary, with reasonable time and expense we divided the sanctuary into three strata based on ecosystem type, as there is a high perceived variation in average biomass across the three strata, with larger trees in high density in the montane forest strata, medium to large trees and lots of shrubs in the dryland forest and scattered trees, very few shrubs and heavy grass cover in the savannah grassland.

It should be noted that this first survey was conducted in February and March 2009, which is the dry season in this area, so we believe this will yield a very conservative estimate of Aboveground Biomass, as the dominant tree species go into estervation to preserve moisture during the dry season and lose all of their leaf mass, and the perennial grasses are mostly dormant too.

In order to accurately estimate the biomass of the sanctuary, with reasonable time and expense we determined that a systematic random plot sampling technique would be best suited to our situation, due to the high degree of perceived variation of type and density of trees and shrubs located in the sanctuary. Our systematic sampling methodology was to lay a 2km x 2km grid over the sanctuary and select sample plot centers at the center point of each 2km square (see fig. 1 below).

We then obtained GPS coordinates from a calibrated map of the sanctuary at each of the sample plot centers and that became our target location for each sample plot.

For each sample plot we approached by track in a vehicle until we reached the closest point to that GPS coordinate accessible by vehicle, and at that point we made the following determination, to allow for safety in performing the plot sampling work, in a sanctuary with a significant population of dangerous wild animals, such as elephant, buffalo and lion;

1) In the event the exact plot center could be reached by vehicle, we would drive in and locate that plot center at the exact GPS coordinate.
2) In the event that the exact plot center was inaccessible by vehicle and was more than 200m from the nearest track, we would take a perpendicular line from the nearest track to the exact plot center and travel 200m along that line to locate the practical or revised plot center. We would bring the vehicle as close as possible to that revised plot center for safety reasons.
3) In the event that the exact plot center was inaccessible by vehicle and was between 100m and 200m from the nearest track, we would use the original plot center, and would bring the vehicle as close as possible to that original plot center for safety reasons

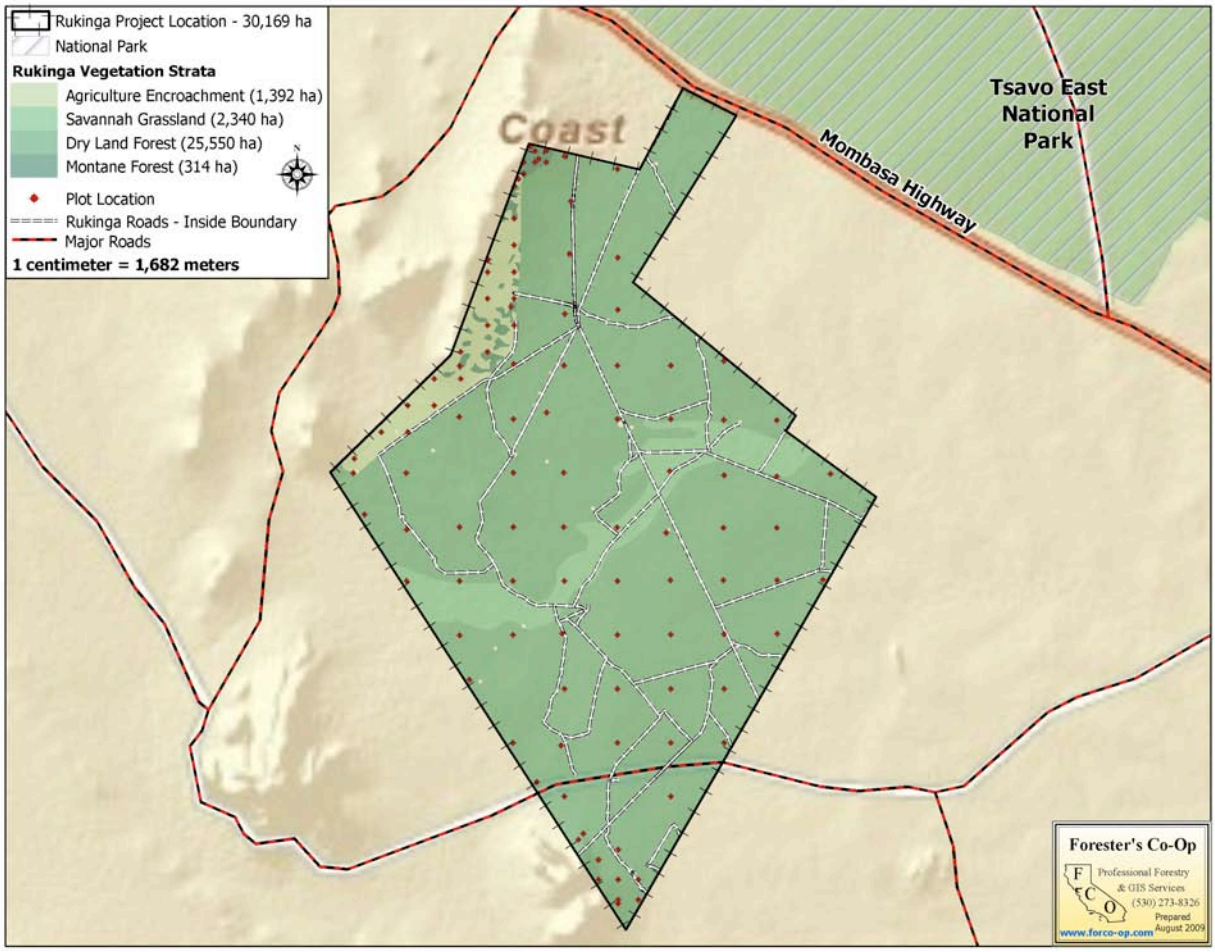


fig. 1

4) In the event the original plot center fell within 100m of a road, a disused cattle boma, or a water hole, pan or dam, (plot anomalies) we would relocate the plot center by walking to the edge of the plot anomaly closest to the original plot center, and then walking 100m directly away from the edge of the plot anomaly in the direction created by drawing a line from the original plot center to the closest edge of the plot anomaly. (see fig. 2) If while taking this line we intersected with another plot anomaly, we would continue walking in the same direction until we reached the far edge of the new plot anomaly and then begin counting 100m from the edge to locate the new revised plot center. We believe this methodology is justified due to the vastly disproportionate impact on vegetation by elephant along roads, tracks and around waterholes, and due to the fact that the total area represented by these anomalies is less than 1% of the total project/sanctuary area.

A Test Plot for tree counting was performed with a 30m radius. Over 60 trees were found within that radius on the Test Plot, so tree count vs. area of plot was reviewed for a range of radii, and it was observed that a radius of 25m would yield the best tree count to plot area ratio, giving the maximum variability with efficient effort and cost, so we determined that the Tree Sample Plots for tree counts would be 25m radius. As this is a mature forest the distribution of small and large trees is random, so it was decided not to use different radius for different tree dbh ranges. This is also because our method for tree inclusion was independent of dbh, e.g. any tree whose trunk

center fell within our 25m radius was considered in, provided that it's dbh was at least 5cm. Trees less than 5cm in dbh were excluded from our survey, as they represent a relatively small fraction of the overall tree population, they are very light, and this would yield a conservative outcome for tree biomass. The location of the trees in distance from center of plot and angle from north were also noted, together with the width of the canopy, as was the height of each tree, although height was not found to be an accurate determinant of weight (almost all trees were within 4-7m range regardless of dbh and weight) and therefore was not used in the allometric equations of biomass.

For shrubs a 15m radius plot was used, and all shrubs with stem centers within that radius were included in our survey.

Detailed carbon sink methodologies

Detailed methodologies were developed for the following pools of biomass to be included by this project

1) Aboveground Biomass (ABB)
    a. Trees
        i. Living Trees
        ii. Leaning Living Trees – Elephants routinely push over trees but leave them alive, and they remain alive for many years
        iii. Standing Dead – due to the very dry ecosystem, standing dead trees can survive for many years in a sound condition
        iv. Lying Dead – while there are many lying dead trees in the ecosystem, termites are very active and to provide a conservative estimate of total aboveground biomass from trees we have excluded this pool, although in some plots the weight of lying dead wood is significant as a result of elephant damage
    b. Shrubs
    c. Herbaceous material
2) Belowground Biomass (BBB)
   A belowground to aboveground biomass multiplier was then used to convert to total biomass, for trees, R= 0.28 was used, and for shrubs and herbaceous material R=0.40. (Ref UNIPCC AFOLU 2006 Table 4.4.) Note that Table 3A.1.8 in the LUCF Sector Good Practice Guidance would give a higher figure for shrubland and grasses, so we believe the UNIPCC number to be conservative.
3) Soil carbon

Living Trees

As this is the first project we have been able to find that is calculating aboveground biomass for the species of tree found in Acacia-Commiphora woodland, there are no regression equations available for calculating ABB from dbh. As a result we were forced to develop our own method to determine an appropriate regression equation.

Select trees from dominant species found in repeated plots were harvested from test areas outside of the project area, and cut into pieces and weighed, for a range of dbh equating to the dominant ranges of dbh found within the project area. This provided a wet weight total aboveground biomass for a range of tree sizes from 10cm to 50cm dbh.

A graph of dbh vs. wet weight was then plotted, as described elsewhere.

Shrubs

For dominant shrub species a test plot was created from which two separate methods were produced;

For shrubs/small trees that can become very large, e.g. Cordia, Acacia ruficiens etc. where the shrub is multi stemmed from the ground, with between 2 and 15 stems, average stem diameter was calculated for a range of shrub sizes, by measuring all the stem diameters on the shrub and dividing by number of stems, and then harvesting, bundling and weighing one representative stem of the average diameter from each size class of Small, Medium, and Large shrubs to provide a standard stem weight by shrub size class. The number of stems and size class for each shrub in the sample plot were then recorded, and a shrub total aboveground biomass determined from multiplying the number of stems by the stem weight for that class.

For Grewia, and others where the shrub has many stems, is non-uniform in distribution of biomass per stem etc. simple conservative weight averages were obtained for each size class by destructive harvesting, which could then be applied to live sample plots without destructive harvesting requirements. A green to dry weight ratio was then used to convert to dry weights.

Shrub Species	Size Class (S/M/L)	Crown Diameter Range	Crown Height Range	Average Stem Diameter (cm)	Standard Weight/Weight/stem (kg)
Cordia sinensis	S				3
Cordia sinensis	M				15
Cordia sinensis	L				33
Grewia sp.	S	<1m	<1m		1.5
Grewia sp.	M	>1m <2m	>1m <2m		4.3
Grewia sp.	L	>2m	>2m		9
Acacia ruficiens	S			5	23
Acacia ruficiens	M			9	43
Acacia ruficiens	L			12	131

Herbaceous material

1m x 1m sample plots were made in four quadrants of the Tree sample plot, by measuring 15m from center point N and S, and then measuring 5m out perpendicular from the tape in both directions. All of the herbaceous material was then harvested and bundled, dried and weighed.

This gave an average herbaceous biomass per m2 which was then used to calculate herbaceous biomass for that sample plot in total.

Soil Carbon

The method used for soil samples is described in Brown et al 2004. Soil samples were taken from a random selection of test plots both within the Project Area and in the adjacent deforested agricultural conversion area, to determine whether there was a significant loss of carbon after deforestation due to exposure of the soil to the hot equatorial sun, and to poor agricultural practices typical within the local community.

Each sample was taken as follows. A 1m x 1m square of soil was excavated in 10cm lifts, until 30cm depth was achieved. Then an equal amount of each depth sample was mixed together, bagged and labelled and sent to an Independent Testing laboratory , Crop Nutritional Services, in Nairobi, Kenya for oven drying and for calculation of the following soil parameters used in the biomass calculation for this pool.

1) soil bulk density
2) soil organic carbon content

Annex 3
Biomass Allometric Equations by Species

See file AllometricFormulas.xls for all graphs of dbh vs. wt.

Tree Species	Species Specific Green Wt Eq.	Genus Green Wt Eq.	GW Eq. Derived from all Species (used on Trees <=35cm)	GW Eq. Derived from all Species (used on Trees >35cm)
Acacia bussei	$y = 3.054x^{1.6692}$			$y = 0.574x^2 + 9.8184x - 73.186$
Acacia etbaica		$y = 2.0276x^{1.761}$		$y = 0.574x^2 + 9.8184x - 73.186$
Acacia hockii	$y = 1.7392x^{1.8478}$			$y = 0.574x^2 + 9.8184x - 73.186$
Acacia mellifera		$y = 2.0276x^{1.761}$		$y = 0.574x^2 + 9.8184x - 73.186$
Acacia nilotica	$y = 0.7075x^{2.1742}$			$y = 0.574x^2 + 9.8184x - 73.186$
Acacia senegal		$y = 2.0276x^{1.761}$		$y = 0.574x^2 + 9.8184x - 73.186$
Acacia tortilis	$y = 3.6225x^{1.4924}$			$y = 0.574x^2 + 9.8184x - 73.186$
Acacia zanzibarica			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x - 73.186$
Albizia anthelmintica			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x - 73.186$
Albizia harveyi			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x - 73.186$
Balanites aegyptiaca			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x - 73.186$
Balanites pedicellaris			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x - 73.186$
Boscia angustifolia			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x - 73.186$
Boscia coriacea	$y = 0.3641x^{2.1587}$			$y = 0.574x^2 + 9.8184x - 73.186$
Boswellia neglecta	$y = 0.1521x^{2.526}$			$y = 0.574x^2 + 9.8184x - 73.186$
Cassia abbreviata			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x - 73.186$
Cassia siamea			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x - 73.186$
Cassipourea celastroides			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x - 73.186$
Commiphora africana	$y = 0.5533x^{1.978}$			$y = 0.574x^2 + 9.8184x - 73.186$
Commiphora baluensis		y =		$y = 0.574x^2 + 9.8184x$

		$0.1661x^{2.4862}$		- 73.186
Commiphora campestris	$y = 0.0792x^{2.7284}$			$y = 0.574x^2 + 9.8184x$ - 73.186
Commiphora confusa	$y = 0.1987x^{2.461}$			$y = 0.574x^2 + 9.8184x$ - 73.186
Commiphora edulis		$y = 0.1661x^{2.4862}$		$y = 0.574x^2 + 9.8184x$ - 73.186
Commiphora eminii		$y = 0.1661x^{2.4862}$		$y = 0.574x^2 + 9.8184x$ - 73.186
Commiphora holtziana		$y = 0.1661x^{2.4862}$		$y = 0.574x^2 + 9.8184x$ - 73.186
Croton pseudopulchellus			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186
Delonix elata			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186
Diospyros consolatae			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186
Erythrina abyssinica			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186
Euphorbia bussei			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186
Euphorbia quinquecostata			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186
Euphorbia tirucalli			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186
Haplocoelum foliolosum			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186
Lannea alata	$y = 0.6561x^{2.0275}$			$y = 0.574x^2 + 9.8184x$ - 73.186
Lannea rivae	$y = 0.5053x^{2.1106}$			$y = 0.574x^2 + 9.8184x$ - 73.186
Lannea schweinfurthii		$y = 0.5898x^{2.0566}$		$y = 0.574x^2 + 9.8184x$ - 73.186
Manilkara mochisia			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186
Manilkara sulcata			$y = 0.5217x^{2.1394}$	$y = 0.574x^2 + 9.8184x$ - 73.187
Melia volkensii			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186
Melia volkensii			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186
Newtonia hildebrandtii			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186
Pittosporum viridiflorum			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186
Platycelyphium voense			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186
Salvadora persica			$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$

		- 73.186
Sterculia africana	$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186
Teclea divinorum	$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186
Terminalia prunoides	$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186
Terminalia spinosa	$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186
Vepris simplicifolia	$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186
Zanthoxyllum chalybeum	$y = 0.5217x^{2.1393}$	$y = 0.574x^2 + 9.8184x$ - 73.186

Annex 4
Biomass Equation Results

See files;

Aboveground and Belowground Biomass Trees
Equation_3_Table_8_25_2009.pdf
Equation_4_Table_8_27_2009.pdf
Equation_5_Table_8_27_2009.pdf

Aboveground and Belowground Biomass Shrubs
Equation_5_Shrubs_8_27_2009.pdf

Soil Carbon
Soil_Data_calculator_8-24-09.xls

Annex 5
Biodiversity Data

Mammals - see attached file 01_mammals_v1.pdf

Wildlife Works

RUKINGA WILDLIFE SANCTUARY MAMMALS

PRIMATES	LATIN NAME	STATUS	POPULATION (estimated)
Senegal Galago	*Galago Senegalensis*		Unknown
Vervet Monkey	*Cercopithecus aethiops*		300
Yellow Baboon	*Papio cynocephalus*		> 450
Short Tailed Galago	*Galago Senegalensis*		Unknown

CARNIVORA	LATIN NAME	STATUS	POPULATION (estimated)
Black Backed Jackal	*Canis Mesomelas*		40
Bat Eared Fox	*Otocyon megalotis*		50
Zorilla	*Ictonyx congica*		Unknown
Honey Badger	*Mellivora capensis*		30
African Civet	*Civettictis civetta*		40
Small Spotted Genet	*Genetta genetta*		Unknown
Slender Mongoose	*Herpestes sanguinea*		Unknown
Bushy Tailed Mongoose	*Bdeogale crossicouda*		Unknown
Dwarf Mongoose	*Helogale parvula*		Unknown
White Tailed Mongoose	*Ichneumia albicauda*		Unknown
Banded Mongoose	*Mungos mungo*		Unknown
Egyptian Mongoose	*Herpestus Ichneumon*		Unknown
Striped Hyena	*Hyaena hyaena*		> 50
Spotted Hyena	*Crocula crocuta*		> 60
African Painted Dog	*Lycaon Pictus*	Endangered	5
Aardwolf	*Proteles cristatus*		20
Cheetah	*Acinonyx jubatus*	Endangered	20
Caracal	*Felis caracal*		20
Serval	*Felis serval*		Unknown
African Wild Cat	*Felis sylvestris*		Unknown
Lion	*Panthera Leo*		> 20
Leopard	*Panthera Pardus*		> 1

PROBOSCIDAE	LATIN NAME	STATUS	POPULATION (estimated)
African Elephant	*Loxodonta africana*	Endangered	> 250

PERISSODACTYLA	LATIN NAME	STATUS	
Common Zebra	*Equus burchelli*		150
Grevy's Zebra	*Equus grevyi*	Endangered	20

HYRACOIDEA	LATIN NAME	STATUS	POPULATION (estimated)
East African Rock Hyrax	*Procavia johnstoni*		Unknown
Bush Hyrax	*Heterohyrax brucei*		Unknown

1

Wildlife Works

RUKINGA WILDLIFE SANCTUARY
MAMMALS (continued...)

TUBULIDENTATA	LATIN NAME	STATUS	POPULATION (estimated)
Aardvark	*Orycteropus afer*		Unknown

PHOLIDOTA	LATIN NAME	STATUS	
Cape Pangolin	*Manis temminckii*		Unknown

ARTIODACTYLA	LATIN NAME	STATUS	POPULATION (estimated)
Warthog	*Phacocherus africanus*		> 120
Bushpig	*Potamochoerus porcus*		60
Giraffe	*Giraffa camelopardus*		80
Hartebeest	*Alcelophus buselophus*		40
Impala	*Aepyceros melampus*		300
Grant's Gazelle	*Gazella granti petersi*		250
Gerenuk	*Litocranius walleri*		150
African Buffalo	*Syncerus caffer*		> 200
Common Eland	*Taurotragus oryx*		60
Lesser Kudu	*Tragelophus imberbis*		130
Common Duiker	*Sylvicapra grimmia*		> 40
Fringe Eared Oryx	*Oryx beisa callotis*		50
Kirk's Dik Dik	*Madoqua kirkii*		> 1000
Klipspringer	*Oreotragus oreotragus*		> 10
Mountain Reedbuck	*Redunca fulvarufula*		Unknown
Waterbuck	*Kobus ellipsiprymous*		20
Steinkok	*Rhapicerus campestris*		Unknown
Oribi	*Ourebia Ourebi*		Unknown

RODENTIA	LATIN NAME	STATUS	POPULATION (estimated)
Unstriped Ground Squirrel	*Xerus rutilus*		Unknown
Bush squirrel	*Paraxerus Spp.*		Unknown
Crested Porcupine	*Hystrix Cristata*		Unknown

LAGOMORPHA	LATIN NAME	STATUS	POPULATION (estimated)
Cape Hare	*Lepus Capensis*		Unknown

2

Birds

See attached file 02_birds_v1.pdf

Reptiles

See attached file 03_reptiles_v1.pdf

Amphibians

See attached file 04_amphibians_v1.pdf

Wildlife Distribution in Rukinga Wildlife Sanctuary: A comparison of wildlife numbers since the arrival of Wildlife Works



Two bull African elephants (*Loxodonta africana*)
on Rukinga Wildlife Sanctuary

Alice Owen and Rob Dodson
Wildlife Works
P.O. Box 310
Voi
Kenya

Data collected by Dr. Barbara McKnight

Abstract:

This report will present data accumulated between 2000 and 2001 in an attempt to show that wildlife numbers have increased in Rukinga Wildlife Sanctuary since the arrival of Wildlife Works in 1999. The data presented will outline a comparison of observations from 2000 and 2001. An increase in average number of wildlife observed per day was noted for all species concerned in this report. Data were collected by conducting ground surveys from a vehicle. All data presented were collected by Dr. Barbara McKnight as part of her ongoing Tsavo Elephant Research Project. We suggested a correlation between the changed management of Rukinga Sanctuary and the increased numbers of wildlife. We also suggested that more research needs to be conducted to provide an accurate estimation and comparison of wildlife numbers on Rukinga since 2001.

Introduction:

The purpose of this study was to determine if there had been an increase in wildlife numbers on Rukinga Wildlife Sanctuary since the arrival of Wildlife Works. A total of 27 species were observed during vehicle surveys conducted on Rukinga in 2000 and 2001. This report chose to focus on nine of those 27 species. The species chosen were: lion (*Panthera leo*), cheetah, (*Acinonyx jubatus*), African elephant (*Loxodonta africana*), Cape buffalo (*Syncerus caffer*), fringed-eared oryx (*Oryx beisa callotis*), giraffe (*Giraffa camelopardalis*), serval cat (*Felis serval*), Burchell's zebra (*Equus burchelli*), and Grevy's zebra (*Equus grevyi*). Two factors were considered in choosing which animals should be focused on for the purposes of our report, importance in conservation and species home range. Rukinga is home to several species of concern to the international conservation community, such as, lion (*Panthera leo*), cheetah, (*Acinonyx jubatus*), African elephant (*Loxodonta africana*), and Grevy's zebra (*Equus grevyi*).

Species highlighted in this report were also chosen based on the size of their home range, defined as the territory and range a particular species have the ability to occupy. All species occupy a specific home range, some larger than others. For the purposes of this study, species were chosen whose home range was large enough to account for travel between Tsavo East and West National Parks. An animal's core home range generally centers on two factors, territorial behavior and availability of water. Rainfall data were taken into account when considering why there may have been an increase in wildlife numbers. The ability to find a viable water source is vital for wildlife in the Tsavo ecosystem. Several of the animals on this list, such as Burchell's zebra, Cape buffalo and Giraffe are dependent on frequent drinking and will travel large distances to find water. All of the species highlighted have a large enough core home range to utilize the corridor between the National Parks.

Methods/Results:

A study was conducted from 2000-2001 surveying random transects on Rukinga Wildlife Sanctuary using vehicles. Observations were conducted from 7:15 a.m. until 1:00 p.m. Collected data were compiled and presented as the average number of animals observed per day in proportion with the number of days spent observing. There were 13 more days spent observing in 2001 than 2000 (Table 1). Rainfall data were also collected for 2000 and 2001. There was no significant difference in rainfall recorded between 2000 and 2001. There were 97.1 mm less rain in 2001 than in 2000, 8.1 mm less (on average) per month (Table 2). An increase in average number of wildlife observed per day was seen from 2000 to 2001 (Fig. 1). There were no surveys conducted on Rukinga in 1999 and there was insufficient data collected in 2002 and 2003 to present definite comparisons to existing data. Since there were no observations conducted in 1999, all data collected will be compared to 2000.

Table 1: Average number of wildlife obs. per day on Rukinga Wildlife Sanctuary in 2000-2001.

Species	*Total # Obs. /yr 2000*	*Total #Obs./yr2001*	*Avg # of wildlife Obs. Per day 2000*	*Avg # of wildlife Obs. Per day 2001*
African elephant	264	754	3	6.8
Giraffe	34	201	0.37	1.8
Cape Buffalo	45	96	.45	.85
Lion	0	12	0	0.12
Serval Cat	0	4	0	.04
Burchell's Zebra	157	555	1.7	5
Grevy's Zebra	2	14	0.02	0.12
Cheetah	1	8	0.01	0.07
Fringed -eared Oryx	52	216	0.57	2

Total # of days spent Obs. :
2000-100 days 2001-113 days

Table 2: Rainfall data (in mm) for Rukinga Wildlife Sanctuary 2000-2001.

Month:	2000	2001
January	2.0	91.0
February	0.0	0.0
March	22.0	8.2
April	37.0	7.0
May	59.8	57.8
June	25.5	49.0
July	16.0	0.0
August	15.0	0.0

September	34.6	0.0
October	31.0	6.4
November	120.6	6.5
December	31.0	71.5
Total:	394.5	297.4
Average Per month:	32.88	24.78

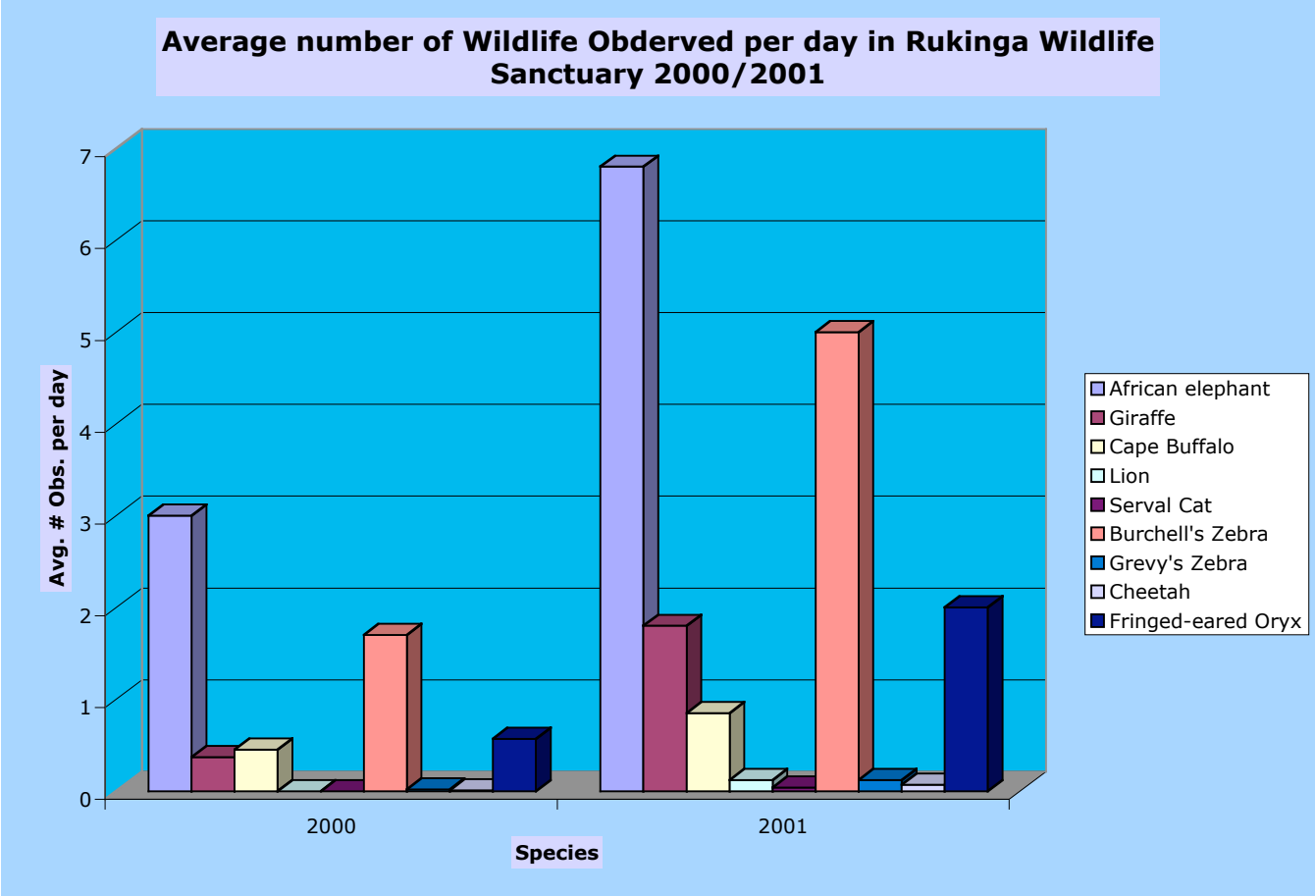
Discussion:

We conducted a study to ascertain whether or not there had been an increase in wildlife numbers in Rukinga Sanctuary since the arrival of Wildlife Works. Our data did show an increase in the average number of wildlife observed per day in proportion with the number of days spent observing. Informal observations show that there has been a marked increase of wildlife movement on Rukinga. Ariel surveys show about 200 plus elephants on Rukinga at the moment. Dr Mcknight ended her studies on Rukinga at the end of 2001, We propose that a continuation of her studies be conducted so that any further increases in wildlife numbers can be quantified.

There are several factors that may contribute to the increased numbers of wildlife on Rukinga. There seems to be a balanced predator/ prey dynamic on Rukinga, which may be partly due to the increased numbers of ungulates. The sanctuary has become a more suitable environment for prey animals, because of the elimination of cattle ranching, and the improved grazing conditions, thus, creating a viable food source for predators, which would explain the increased numbers of predators being observed as well. It was also determined that the amount of rainfall on the sanctuary has not played a significant role in the increased wildlife numbers on Rukinga. We are suggesting that the observed increase is therefore, due to the improved conditions on Rukinga since the arrival of Wildlife Works.

Wildlife numbers on Rukinga Wildlife Sanctuary are clearly on the rise. There are several possible explanations for this observed increase. Animals generally attempt to avoid contact with humans and since the arrival of Wildlife Works there has been a dramatic decrease in human presence and human wildlife conflict on Rukinga. Less human traffic makes Rukinga a significantly more suitable environment for the movement of wildlife coming from Tsavo National Park and the surrounding areas. The decrease in human presence also means that activities such as poaching/snaring and cattle ranching, which are detrimental to the local wildlife and habitat, are non-existent. Deforestation, snaring and habitat destruction due to charcoal burning has been eliminated entirely on Rukinga since 1999. These changes clearly demonstrate that the arrival of Wildlife Works has dramatically improved Rukinga as a viable habitat for wildlife. Therefore, we propose that wildlife numbers have increased since 1999 and that more studies need to be conducted to provide sufficient data to prove this theory.

Fig.1


Average number of Wildlife Obderved per day in Rukinga Wildlife Sanctuary 2000/2001
Avg. # Obs. per day
0
1
2
3
4
5
6
7
2000
2001
Species
African elephant
Giraffe
Cape Buffalo
Lion
Serval Cat
Burchell's Zebra
Grevy's Zebra
Cheetah
Fringed-eared Oryx

Annex 6
Press Release with Kenya Forest Service(KFS)



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Wildlife Works and the Kenya Forest Service Announce East Africa's First REDD Carbon Offset Project Under the Voluntary

Wed Apr 15, 2009 1:32pm EDT

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SAN FRANCISCO, CA and RUKINGA, KENYA, Apr 15 (MARKET WIRE) --
Today Wildlife Works Carbon, LLC and the Kenya Forest Service (KFS) announced the initiation of East Africa's first Carbon Offset project designed to take advantage of the emerging global carbon markets covering Reduced Emissions from Degradation and Deforestation (REDD). The project seeks to employ the Voluntary Carbon Standard (VCS) to carry out activities in Rukinga for participation in the voluntary carbon markets.

According to Alfred Gichu, a Chief Forest Officer from KFS, the National Focal Point for REDD Projects: "KFS intends to forge strong partnerships with the private sector in Kenya, a nation that takes pride in its role as an innovative business leader for East Africa. We welcome the entrance of Wildlife Works Carbon into the market, to assist us and Kenya's rural landowners in managing the technical complexity of the global carbon market, to engage the global carbon offset buyer in our efforts to protect our wilderness heritage, and to contribute to global efforts in climate change mitigation."

Wildlife Works Carbon is a new venture of Wildlife Works, Inc., a global leader in applying innovative market based solutions to the conservation of biodiversity.

"Wildlife Works has been a leader in using the power of the consumer marketplace to conserve biodiversity and protect forest habitat, and we see the emerging Voluntary Carbon Marketplace as a logical and exciting extension of our 10 year history," said Mike Korchinsky, Founder and President of Wildlife Works.

"We are pleased to see the VCS acting quickly to set in place a clear framework for avoided deforestation projects under their new REDD process, at a pace appropriate for the incredible threat facing frontier forests in the developing world," says Colin Wiel, co-Founder of Wildlife Works Carbon.

Wildlife Works Carbon believes it is their role and indeed their responsibility to help local landowners in the developing world to monetize their incredible forest and biodiversity assets whether they are communities, ownership groups or private individuals. What's more they are betting on the fact that the Global Voluntary Carbon marketplace is ready for carbon credits that the average consumer can relate to. "If you had a choice between carbon credits generated when a commercial factory pig farm reduces its toxic methane emissions, or carbon credits from a threatened natural forest that brings with them protection of elephants, lions, cheetah, giraffe and 54 other large mammal species which one would you prefer?" asks Korchinsky.

Wildlife Works Carbon, LLC is a new joint venture of Wildlife Works, Inc. and Colin Wiel Enterprises, and was established to pursue the use of the emerging marketplace for REDD Carbon Offsets as a sustainable and scaleable funding mechanism for biodiverse forest protection. Our first project in Rukinga, Kenya, builds on a successful 12 year track record, of bringing much needed jobs to a community that was being forced to destroy their magnificent wilderness in order to survive. In that time they have turned back time, and restored a huge piece of land to a healthy vibrant ecosystem, full of elephants, lions, and 50 other species of large mammal. At the same time, the community has received 18 new classrooms for their children, and the employees and their families have received full health care benefits in a community with incredibly high HIV incidence. Wildlife Works also founded an organic greenhouse to promote healthier farming practices, to provide local farmers with cash generating citrus trees and free agroforestry trees to use for building and fuel wood. Wildlife Works Carbon will provide the financial additionality to ensure long term sustainability of Wildlife Works efforts in Kenya and beyond.

The Kenya Forest Service, as the national REDD focal point, is currently spearheading a local multi-stakeholder effort to among other things

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- Michael Parness
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