The Kasigau Corridor
REDD Project
Phase II – The Community Ranches

Project Monitoring Plan

Taita Ranching Company Ltd	Maungu Ranching (DA) Company Ltd	Mgeno Ranching (DA) Company Ltd
Kasigau Ranching (DA) Company Ltd	Kambanga Ranching (DA) Company Ltd	Wangala Ranch
Amaka Ranching Company Ltd	Dawida Ranching (DA) Company Ltd	Washumbu Ranching (DA) Company Ltd
Sagalla Ranching (DA) Company Ltd	Choke Ranching (DA) Company Ltd	Kutima Ranching Company Ltd
	Ndara Ranching (DA) Company Ltd	

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Project Monitoring Plan (PMP)
For Verification Using the
Climate, Community and Biodiversity (CCB)
Project Design Standards Second Edition - December 2008

Authors: Jeremy Freund, Mike Korchinsky, Rob Dodson
Verification Period - Project Start Date through December 31st, 2010

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PROJECT OVERVIEW

The Kasigau Corridor REDD Project Phase II – The Community Ranches is an avoided deforestation project in Southeastern Kenya, managed by Wildlife Works Carbon LLC, on behalf of the indigenous Community Group of landowners, who are 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 the Kasigau Corridor.

The objective of the project is to protect in perpetuity those dryland forests that form a wildlife dispersal and migration corridor between Tsavo East and Tsavo West National Parks, to conserve the important biodiversity found in those forests, to provide alternative sustainable development opportunities for the local communities that live adjacent to the forests and to prevent the Emissions that would otherwise occur were those dryland forests to be converted to subsistence agriculture using the Slash and Burn methods typical to this area of Kenya.

In addition to meeting all of the Climate, Community and Biodiversity (CCB) Standards for approval, 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 has also been submitted under the Voluntary Carbon Standard (VCS) REDD AUMDD Standard following the approved VCS methodology VM0009 Methodology for Avoided Mosaic Deforestation of Tropical Forests V1-0.

Through a combination of Dryland Forest protection and extraordinary community sustainable development activities, this project is estimated to avoid the emission of over 48 Million metric tonnes of CO2e which would have been emitted due to slash and burn deforestation over the 30 year project life, or approximately 1,291,967 metric tonnes per year across the Carbon Pools of Above and Belowground Biomass, as well as Soil Carbon, after allowing for risk insurance buffer.

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), African wild dog (Lycaon pictus) as well as over 2000 African elephants (Loxidonta africana) seasonally.

The project is highly additional (under the project financial additionality tool), and baseline is an extension of actual deforestation that was occurring aggressively in the reference region right up to the time Wildlife Works signed Conservation Agreements to protect these Community Group Ranches at the beginning of 2010. Historical satellite imagery clearly demonstrates this fact, and establishes an accurate deforestation Baseline (without-project scenario) in the Kasigau Corridor, which is described in the Project Design Document in detail.

DOCUMENT OVERVIEW

This Project Monitoring Plan (PMP) is prepared for the first verification Period - January 1st through December 31st, 2011- of the Kasigau Corridor REDD Project - Phase II the Community Ranches, hereafter referred to as "the plan".

The plan represents a the commitment made by Wildlife Works Carbon LLC to consistently and accurately monitor the success of the Kasigau Corridor REDD project Phase II – The Community Ranches. The procedures for monitoring success indicators, as well as the indicators themselves, are outlined in this document. This document provides the method in which Wildlife Works Carbon LLC will monitor changes in Climate, Community and Biodiversity impacts throughout the lifetime of the project, including frequency of monitoring and variables to be measured that will accurately measure project progress.

CLIMATE IMPACT MONITORING

The Kasigau Corridor Project is an avoided deforestation (REDD) project. Monitoring of carbon stocks is therefore central to the measure of the success of the project.

The climate in the project zone 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 to be much more irregular and there have been two periods of extended drought in this time period. The project zone is located at 3^{o} S, and receives strong sunshine most days of the year. The coolest month is August, the hottest February

The majority of the project zone 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, at which point they photosynthesize through their bark to survive.

Initial Selection of Carbon Pools to Monitor

The following carbon pools will be monitored throughout the lifetime of the project:

Pool	Required	Included in Project?	Justification
Above-ground large tree biomass	Yes	Yes	Major pool considered
Above-ground small tree biomass	Yes	Yes	Major pool considered
Above-ground non-tree biomass	Optional	Yes	Major pool considered
Below-ground large tree biomass	Optional	Yes	Major pool considered
Below-ground small tree biomass	Optional	Yes	Major pool considered
Below-ground non-tree biomass	Optional	Yes	Major pool considered
Litter	No	No	Conservatively excluded
Standing dead wood	Optional	Yes	Major pool considered
Lying dead wood	Optional	No	Conservatively excluded
Soil	Optional	Yes	Major pool considered
Long-lived wood products	Yes	Yes	May be a significant reservoir under the baseline scenario

Carbon pools selected for inclusion in the project and respective justification

Although Methane (CH_4) and Nitrous Oxide (N_2O) are also greenhouse gases, they are conservatively excluded from this project, as neither of which are present to a significant degree (over 5% combined) in the Kasigau corridor region.

Periodicity of measurement

Forest Carbon

Forest carbon pools were measured completely (all plots) at project start. These pools include:

1. Aboveground Biomass – trees
2. Aboveground Biomass – shrubs and grasses
3. Belowground Biomass – trees
4. Belowground Biomass – shrubs and grasses
5. Soil Carbon

Moving forward, these pools will be measured for 20% of the plots per year, achieving a 100% coverage of the permanent plots every 5 years. The plots to be measured each year will be randomly selected from the 429 plots across the 13 group ranches,

effectively ignoring ranch boundaries, to achieve a comprehensive, unbiased measurement of the carbon pools - within each major landcover strata - over the extent of the project area.

Soil Carbon

Wildlife Works has no specific plans to measure soil carbon on an ongoing basis (except after 10 years, when a baseline re-evaluation is currently required by VCS), as the soil carbon pool is assumed to change more slowly than could be measured in a period similar to the lifetime of the project.

For monitoring of carbon pools, we follow the procedures presented in the approved VCS methodology VM0009, *Methodology for Avoided Mosaic Deforestation of Tropical Forests*, which was developed specifically for the Kasigau Corridor projects.

Leakage

For leakage monitoring, each of the permanent, un-marked leakage plots established within forested polygons in the leakage area (see below for detailed monitoring procedure) will be measured every monitoring period (Wildlife Works plans to verify this project every year, so all leakage plots will be evaluated once a year). The mean degradation value established from the *initial* measurement of the leakage plots will be used to develop a *leakage lag factor*. For each subsequent monitoring period, all leakage plots will be measured, establishing a mean degradation percentage for each monitoring period (once a year), known as the leakage factor. This factor will then be used to calculate a deduction from the total carbon inventory due to leakage (if any) for each corresponding monitoring period.

Initial monitoring

Initial Biomass plot sampling was conducted under the supervision of Wildlife Works VP Carbon Development Jeremy Freund and VP African Field Operations Rob Dodson. All plot sampling was conducted using the same successful, exacting protocol that was used for the Kasigau Corridor Phase I, and outlined in the *Standard Operating Procedure - Biomass*. Proper adherence to the SOP was ensured throughout the sampling process for all 13 group ranches.

Forest Carbon Pools

To most accurately estimate biomass in the project zone, within each monitoring period and at reasonable cost, we employed a stratified random plot sampling technique that we deemed suitable to the project area. A total of 429 permanent plots were overlaid on each of the 13 group-owned ranches in a stratified random pattern for all strata identified in the landcover map shown in the PDD, and the *Standard Operating Procedure - Biomass* was then used to collect a comprehensive forest inventory.

Soil Organic Carbon

Soil Organic Carbon (SOC) was measured at the beginning of the project to estimate the soil carbon pool within the project area. Soil inventory coordinates were provided to the soil plot sampling teams by our GIS team, at randomly selected forest plot locations, in a subset of ranches in the project area, as well as in shambas (farms) adjacent to the project area, in the reference region. They then sampled using the method illustrated further in the *Standard Operating Procedure - Soils*.

Leakage

As mentioned above, initial evaluation of the leakage plots yielded a mean degradation value that is in turn used to develop the *leakage lag factor*. This lag factor estimates the average period of time between initial degradation and deforestation of the land, as this is the characteristic way land is deforested in the Kasigau Corridor (i.e. land is typically degraded for fuel-wood by local agents until it is eventually fully cleared (deforested) for conversion to agriculture. This process is described in full detail in the VCS methodology VM0009. The leakage lag parameter is calculated at the beginning of the project (t_0), using equation [9] in the methodology VM0009

$$\hat{\delta}_{LE} = \log(\hat{d}_t) + \log(1 - \hat{d}_t) + \hat{\alpha} + \widehat{\boldsymbol{\theta}}\boldsymbol{x}^T \quad [9]$$

Where:

δ_{LE} = *lag parameter of leakage model*
$\hat{d}_t$ = *estimate of cumulative deforestation and degradation*
$\hat{\alpha}$ = *estimated intercept of linear predictor of cumulative deforestation model*
$\hat{\theta}$ = *estimated parameter vector of cumulative deforestation model*
$\hat{\beta}$ = *estimated time parameter of linear predictor of cumulative deforestation model*
$\boldsymbol{x}$ = *vector of observed covariates to deforestation*

This parameter is held constant until the baseline is reevaluated after 10 years from the project start date (t_0).

Ongoing Climate Impact Monitoring

Four additional teams have been trained using the procedure and by accompanying our initial Biomass sampling team on their work. Team members are periodically trained in both GPS navigation techniques and collecting waypoints. They use these skills to ensure that they do not get lost as well as marking actual plot locations when collecting biometrics in the field. Permanent plots will be monitored using the *Standard Operating Procedure – Biomass*, the major steps of which are:

1. Preparing to sample plots in the field

Each morning review the plots that will be visited that day, time expected back at a set location (e.g. base camp), and emergency contacts.

a. Gather all necessary sampling equipment (comprehensive list is included in the SOP – Biomass):

b. Get coordinate list of plots to be measured and load into a GPS handheld device(s).
c. Establish a contact person that can be reached at the end of each field day to ensure safe return from the field.

2. Navigating to plots
   a. Team navigates in a vehicle as close as possible to the selected plot using a GPS handheld.
   b. The following are evaluated to determine the most appropriate plot location:
      i. If the plot is accessible via vehicle, the plot is driven to and the plot center is identified.
      ii. If the plot is not accessible by vehicle, but is 200m or less from the nearest road, a perpendicular line from the nearest road is followed to the exact plot center. The perpendicular line is used to locate the plot center on foot.
      iii. If the plot is greater than 200m from the nearest road, the plot is relocated so that it is within 200m of the road along a perpendicular line in the direction of the original point. That line is used to locate the new plot center on foot.
      iv. If the original plot falls within a road or it is within 200m from the road but is inaccessible, the plot is relocated by walking to the edge of the 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. If, while navigating this line, another plot anomaly is crossed, the same direction is followed until the new plot anomaly far edge is reached, and the new plot center is established 100m from that edge.

3. Collecting plot measurements (biometrics)

The Biomass plots for this project are circular, with a radius of 17.84m (resulting in a plot area of 1/100 of a hectare.

The following variables are measured for each tree within each of the fixed plot locations:

- Tree Tag Number
- Diameter at breast height (dbh)
- Angle from North (0°)
- Distance from plot center
- Tree height
- Canopy Diameter
- Status (Living, Live Leaning, Standing Dead, Lying Dead)
- Standing Dead Class (According to IPCC LULUCF Good Practice Guidelines)
- Lying Dead Class (According to IPCC LULUCF Good Practice Guidelines)

4. Calculating Biomass and Carbon Dioxide Equivalent (CO2-e)

Biomass per tree is calculated using allometric formulas that were determined by Wildlife Works by using a destructive harvesting technique. A full description of this technique is presented in the CCB PDD in Section G1.4. The major points of the development of allometry for this ecosystem are as follows:

For all trees smaller than 35cm dbh, we developed a power relationship between dbh and green weight of the form $Green\ Weight = a[DBH]^b$

For trees measured above the maximum destroyed dbh for each species, a linear model was used, the slope of which is equal to the tangent of the line at 35cm dbh for the all-species curve. This ensures a two-piece approach, with a power curve capturing the variability for all trees of smaller size, and a more conservative linear model for larger trees for which we had less empirically measured data.

As an additional measure of conservativeness, we opted to use weighted regression to develop the power curves for smaller trees, ensuring that the scarcity of large trees was not excessively biasing that section of the model. Coefficients for all destructively harvested trees are presented in the PDD in Section G1.4, as well as the project allometric model spreadsheet "*allometry_weighted_PhaseII.xlsx*"

Specific allometric equations are used to calculate aboveground *Green Weight* for each species in each plot in each stratum for each of the ranches in the project zone. A carbon fraction, cf_{sp}, for all species of 50% is then used for trees and shrubs, and 45% for herbaceous vegetation, as per the UNIPCC 2006 GL AFOLU Chapter 3.2, and an average dry weight to green weight of 50% to convert biomass to tonnes Carbon, according to equation [50] in the VCS methodology VM0009

$$x_{i,j,k} = \frac{44}{12} \times \frac{1}{1{,}000} \times f_{sp}(\bullet) \times cf_{sp} \qquad [50]$$

Aboveground biomass is subsequently aggregated for all tree species within each plot, as per equation [45] in the VCS methodology VM0009

$$y_{j,k} = \frac{1}{a_{j,k}} \sum_{i \in x_{j,k}} x_{i,j,k} \qquad [45]$$

Where:

$y_{j,k}$ = *a quantity estimated for or measured on plot* j *in stratum* k
$a_{j,k}$ = *area of plot* j *in stratum* k
$x_{i,j,k}$ = *a quantity estimated for or measured for individual* i *on plot* j *in stratum* k
$\mathcal{X}_{j,k}$ = *set of all measurements of a type in plot* j *in stratum* k

Belowground biomass for all vegetation is calculated using a root:shoot ratio of 0.4 (as per the UNIPCC 2006 GL AFOLU Chapter 3.2)

The sum of all plots within a strata is performed, yielding a total aboveground and belowground biomass aggregate value presented in metric tonnes GHG per strata, and then expanded by the area of each strata to provide a project area total, measured in m.t.GHG. These calculations are performed according to equation [44] in the VCS methodology VM0009

$$\sum_{k \in \mathcal{S}} \frac{a_k}{n_k} \sum_{j \in \mathcal{P}_k} y_{j,k} \qquad [44]$$

Where:

a_k = the area of stratum k
n_k = number of plots in stratum k
$y_{j,k}$= a quantity estimated for or measured on plot j in stratum k
$\mathcal{P}_k$ = set of all plots in stratum k
$\mathcal{S}$ = set of all strata in the project area.

These calculations are also performed for each ranch in the project area for fund disbursement purposes.

5. Estimating Uncertainty

Uncertainties are first measured per plot, and then per strata. Ultimately, total *monitoring* standard error is determined for all measured pools for the project, and is later combined with uncertainties for the soil model and the cumulative deforestation model. A full description of calculation of these standard errors is listed in the methodology VM0009, and is considered too involved to repeat in this document, but the primary equation for calculating uncertainty for monitored carbon pools is given below.

Uncertainty is measured for each of the carbon pools included in the project using equation [47] in the VCS methodology VM0009

$$\hat{\sigma}_{SE} = \sqrt{\sum_{k \in \mathcal{S}} \left[\frac{a_k^2 \hat{\sigma}_k^2}{\#(\mathcal{P}_k)} \left(\frac{N_{P,k} - \#(\mathcal{P}_k)}{N_{P,k}} \right) \right]} \qquad [47]$$

Where:

$\hat{\sigma}_{SE}$ = *estimated standard error for the selected pool*
$\hat{\sigma}_k^2$ = *estimated variance in stratum k*
a_k = *area of stratum k*
$N_{P,k}$ = *total number of possible plots in stratum k*
$\mathcal{P}_k$ = *set of all plots in stratum k*
$\mathcal{S}$ = *set of all strata in the project area*

6. Quality Control

Quality Control (QC) for biomass plots was conducting using the following protocol:

i. An independent QC team not involved in the original plot sampling of each plot is given coordinates for the plot centers for 5% of the original plots. The Independent QC team is also given blank plot data recording sheets, plot radius for each carbon pool, a copy of the plot sampling "Standard Operating Procedure – Biomass", dbh tape, compass and long tape, and sent out to measure the plots as though they were collecting the data for the first time.
ii. The QC team returns to headquarters with data sheets, which are given to a third party analyst, who also were not part of the original nor the QC plot team, for comparison against the original plot data sheets.
iii. Any discrepancies are noted, and when all data compared; the two plot teams are brought together with the VP African Field Operations or his deputy, the Operations Manager, to discuss and explain any significant variance (±15%)
iv. The monitoring team lead is informed if more than 1 QC plot contains significant discrepancies from the original data sheets, and further QC plots may be required to establish the extent of the quality errors.
v. The Monitoring Team Lead makes a determination, based on the total number of plots found to be inaccurate, as to how this effects the validity of the original monitoring, and whether or not further team training is required before the next monitoring period. They also make a determination as to whether or not plots must be re sampled for the current monitoring period.

Leakage Monitoring

Wildlife Works has implemented a host of leakage mitigation strategies, including, but not limited to, an organic eco-factory, an eco-charcoal program, organic greenhouses, a reforestation program, cash crop program and the hiring and training of unarmed biodiversity rangers.

Wildlife Works will monitor the effectiveness of these mitigation programs using the process outlined in the methodology VM0009. A 160,048 ha leakage area was delineated and will be used to monitor 38 permanent leakage plots that were distributed randomly throughout forested polygons within the leakage area.

Leakage sampling teams will perform ongoing estimates of degradation according to *Standard Operating Procedure - Leakage*. No permanent marking was performed on the plots upon initial location, and the teams will simply return to the same northeast corner coordinate each monitoring period, and repeat the procedure in each subsequent period.

Ongoing leakage monitoring is summarized as follows:

1. Estimating leakage factor

    - Leakage plot team members perform transect analysis on each plot (the detailed transect procedure is listed in the *Standard Operating Procedure – Leakage*)
    - A mean degradation percentage – the leakage factor - is estimated
    - Two plot sampling personnel perform transect analysis at the same time on each plot, and on completion of the transects, compare assessments, to realize an agreed single degradation factor for each plot.

Estimating Leakage Impact

At each monitoring period, the leakage plots are sampled as detailed in section **Error! Reference source not found.** of the methodology VM0009. The leakage factor derived from the plot sampling procedures is used to compute a leakage model, which represents cumulative deforestation and degradation. The calculation of the leakage factor for each monitoring period is then compared to that leakage model, and a decision-tree style procedure is used to determine the value of carbon deducted – if any – due to leakage. The calculation is highly involved, and fully described in the methodology VM0009, but is not included here in the interest of brevity.

Leakage Quality Assurance

Leakage sampling was led by Operations Manager Jamie Hendriksen, and supervised by Rob Dodson, VP African Field Operations, Wildlife Works' most experienced field staff members. They are responsible for training other members of our leakage plot sampling team to perform this activity each monitoring period, and for performing QA on a selected sample of the leakage plots each monitoring period, ensuring consistency in their evaluation of the leakage factor for each monitoring period.

Summary of Climate Impact Monitoring Variables

The following table summarizes the variables measured for Climate Impact portion of the monitoring plan:

Variable	Unit	Periodicity of measurement
Tree Tag Number	numeric	100% at project start date. 20% every monitoring period (yearly).
Diameter at breast height (dbh)	cm	100% at project start date. 20% every monitoring period (yearly).
Angle from North (0°)	degrees (◦)	100% at project start date. 20% every monitoring period (yearly).
Distance from plot center	m	100% at project start date. 20% every monitoring period (yearly).
Tree height	m	100% at project start date. 20% every monitoring period (yearly).
Canopy Diameter	m	100% at project start date. 20% every

		monitoring period (yearly).
Tree status (Living, Live Leaning, Standing Dead, Lying Dead)	L,LL,SD,LD	100% at project start date. 20% every monitoring period (yearly).
Standing Dead Status	1,2,3	100% at project start date. 20% every monitoring period (yearly).
Lying Dead Class (According to IPCC Good Practice Guidelines, 2006)	1,2,3,4,5	100% at project start date. 20% every monitoring period (yearly).
Soil Organic Carbon	t · ha-1	Project start date (t_0) & Baseline Re-evaluation
Leakage Lag Factor	years	Project start date (t_0)
Leakage factor	dimensionless	Every monitoring period (yearly)

COMMUNITY IMPACT MONITORING

Wildlife Works gathers data relevant to our Community Impact in a variety of ways and at a range of frequencies. At one end of the spectrum is Human population data for the Project Reference Area are gathered every ten years from Kenya's national census data, while at the other end, there is daily information being recorded in areas such as sales of products from the project, such as fruit trees and eco-charcoal. In between is monthly information being collected in areas such as payroll and irregular periodicity data being collected such as for specific community project investments, such as number of greenhouses implemented.

In addition to census data, the only data to be collected on a longer than annual periodicity is data related to measures of community well-being that are not solely or directly under the influence of Wildlife Works project activities, such as community wide household income (HHI) or attitudes towards conservation. This data will be collected through Participatory Rural Appraisals (PRAs) probably every other year, but at frequencies determined by the independent researchers who are performing this work at the request of Wildlife Works.

As mentioned above in the Climate Impact Monitoring section, Wildlife Works plans to verify this project yearly. Therefore, once a year, we will summarize all of the data collected and include that summary in the CCB and VCS Verification reports for each monitoring period.

Community impact monitoring includes the following key indicators:

Success Metrics directly attributable to Wildlife Works

School Construction and Bursary Scheme

Indicator - Number bursaries for local children each year - measured ANNUALLY

- paid by WW
- paid by Kelimu, other
- Student name, village, age, primary school, secondary school/college/university, results

Indicator - Monies invested in school construction and maintenance - measured ANNUALLY

- Fund amount, date, where used, number of children housed, outcome

Organic Greenhouse Project

Indicator - Number full time jobs - measured MONTHLY and reported ANNUALLY

- Wildlife Works employees
- Total including in community (screen printing, etc.)

Indicator - Local Employment - measured MONTHLY and reported ANNUALLY

- How many employees come from project area communities?
- How many employees come from outside project area communities?

Indicator - Financial Investment/Return - measured and reported ANNUALLY

- Monies invested in capital expense (CAPEX) for new greenhouse / greenhouse expansion since REDD project began, 1st Jan, 2010.
- Annual operating expenses since REDD project began, 1st Jan, 2010.

Indicator - number of new greenhouse locations implemented - measured AS IMPLEMENTED and reported ANNUALLY

Indicator - number of trees propagated in greenhouse(s) - measured ANNUALLY

- total - all species
- fruit and agroforestry/fuelwood trees
- indigenous trees for reforestation projects

Indicator - number of seedlings sold (species, quantity, customer, date, price) - measured WEEKLY reported ANNUALLY

- revenue
- profits

Jojoba/Dryland Farming Project

Indicator - Number full time jobs - measured MONTHLY and reported ANNUALLY

- Wildlife Works employees
- Total including in-community

Indicator - Local Employment - measured MONTHLY and reported ANNUALLY

- How many employees come from project area communities
- How many employees come from outside project area communities?

Indicator - Financial Investment/Return - measured and reported ANNUALLY

- Monies invested in capital expense (CAPEX) since REDD project began, 1st Jan, 2010
- Annual operating expenses on Jojoba Project since REDD project began, 1st Jan, 2010
- Income generated from Jojoba Project since REDD project began, 1st Jan, 2010.

Soap Factory Expansion

Indicator - Number full time jobs - measured MONTHLY and reported ANNUALLY

- WW employees
- Total including in-community

Indicator - Local Employment - measured MONTHLY and reported ANNUALLY

- How many employees come from project area communities?
- How many employees come from outside project area communities?

Indicator - Financial Investment/Return - measured and reported ANNUALLY

- Monies invested in capital expense (CAPEX) since REDD project began, 1st Jan 2010
- Annual operating expenses on Soap Project since REDD project began, 1st Jan 2010

- Income generated from Soap Project since REDD project began, 1st Jan 2010

Ecotourism in project area and reference region

Indicator - Number full time jobs - measured MONTHLY and reported ANNUALLY
- WW employees
- Total including in-community (Camp Kenya, etc.)

Indicator - Local Employment - measured MONTHLY and reported ANNUALLY
- How many employees come from project area communities?
- How many employees come from outside project area communities?

Indicator - Financial Investment/Return - measured and reported ANNUALLY
- Monies invested in capital expense (CAPEX) since REDD project began, including bursaries for local youth to complete Ecotraining
- Annual operating expenses since REDD project began, 1st Jan, 2010.

Indicator - Number of local youth put through Ecotraining Guide Training (course date, name, age, address, successful completion y/n) - measured and reported ANNUALLY

Project Product Marketing and sales

Indicator - Number full time jobs - measured MONTHLY and reported ANNUALLY
- WW employees
- Total including in-community

Indicator - Local Employment - measured MONTHLY and reported ANNUALLY
- How many employees come from project area communities?
- How many employees come from outside project area communities?

Indicator - Sales from project area and zone products (non-carbon credit sales) - measured MONTHLY and reported ANNUALLY

General Success Metrics Influenced by but not directly attributable to Wildlife Works

Education

Indicator - number of children in each school - measured and reported ANNUALLY
- total
- average number of children per classroom
- highest number kids per classroom

Indicator - grades of children in national exams and position in district by school - measured and reported ANNUALLY

Indicator - number of children securing places in secondary school from each school - measured and reported ANNUALLY

Household Income

Indicator - Household Income - measured Bi-ANNUALLY* and reported ANNUALLY
- Average household income - dry and wet season

* Independent 3rd parties are conducting HHI and Community socio-economic impact assessments via PRAs on an irregular (approximately bi-annually), but not annual frequency.

BIODIVERSITY IMPACT MONITORING

Wildlife Works has been gathering data on wildlife populations for over 10 years, and has recently hired one of Kenya's leading experts in biodiversity monitoring, Dr. Mwangi Githiru, to lead in gathering, verifying, analyzing and reporting key biodiversity indicators. The goal is of course to demonstrate that the project is delivering on the stated commitment to improving the situation of the HCV species present in the project area.

Biodiversity data collection activities are performed on a daily basis when rangers in the field record the location of HCV wildlife. That data is entered into our systems locally for analysis by Dr. Githiru and his team. Once a year, we will summarize most of the data collected and include that summary in the CCB and VCS Verification reports for each annual monitoring period.

Biodiversity monitoring includes the following key indicators:

Success Metrics directly attributable to Wildlife Works

Forest and Biodiversity Monitoring

Indicator - Number full time jobs - measured MONTHLY and reported ANNUALLY

- WW employees
- Total including in-community

Indicator - Local Employment - measured MONTHLY and reported ANNUALLY

- How many employees come from project area communities
- How many employees come from outside project area communities?

Indicator - Financial Investment/Return - measured and reported ANNUALLY

- Monies invested in capital expense (CAPEX) since REDD project began, 1st Jan, 2010.
- Annual operating expenses since REDD project began
    - annual operating costs since 1st Jan, 2010.

Indicator - Species Population Statistics - measured DAILY and reported ANNUALLY

- Sightings (date, GPS location, species, #male, #female, #young, seen by)

Indicator - HCV Species Population Statistics - measured DAILY and reported ANNUALLY

- Sightings (date, GPS location, species, #male, #female, #young, seen by)

Indicator - Number of poaching incidents - measured DAILY and reported ANNUALLY

- Number of snares or traps found (GPS location, date, type, quantity)
- Number of dead animals captured (GPS location, date, species, quantity)
- Number of poaching arrests made (date, perpetrator name, arresting ranger, offense)

Indicator - Number of cattle grazing incursions - measured DAILY and reported ANNUALLY

- Number of charcoal, fuelwood or construction material incursions

Indicator - acres deforested in project area and Zone - measured DAILY and reported

ANNUALLY
Indicator - acres reforested in community land - measured and reported ANNUALLY

- number of indigenous trees successfully outplanted in villages within project zone
    - number outplanted by species
    - number surviving to year 2 by species
    - number surviving to year 3 by species
- number of indigenous trees successfully outplanted on Mt. Kasigau
    - number outplanted by species
    - number surviving to year 2 by species
    - number surviving to year 3 by species
- Monies invested in reforestation capital expense (CAPEX) - new greenhouses, equipment
- Annual reforestation operating expenses - salaries and community seedling payments

Carbon Project Leakage Mitigation

Indicator - Dryland Forest Acres protected by Wildlife Works Rangers - measured and reported ANNUALLY

- Acres Covered by WW carbon easements
- Acres under other form of agreement

Indicator - Total tonnes CO2e avoided emissions under Kasigau Corridor REDD Project Phase I & II - - measured and reported ANNUALLY
Indicator - Total annual tonnes CO2e validated and verified under Kasigau Corridor REDD Project Phase I & II - - measured and reported ANNUALLY
Indicator - Total annual tonnes Sustainable EcoCharcoal sold by REDD project - - measured MONTHLY and reported ANNUALLY
Indicator - Total annual tonnes CO2e sold by REDD project - measured MONTHLY and reported ANNUALLY
Indicator - Monies invested in documenting and validating/verifying - - measured and reported ANNUALLY
Indicator - Monies paid to community land owners - measured and reported ANNUALLY
Indicator - Monies paid to community projects - measured QUARTERLY and reported ANNUALLY

Section 2 - General Success Metrics Influenced by but not directly attributable to Wildlife Works

Support for Conservation

Indicator - Environmental conservation support from the community - measured Bi-ANNUALLY* and reported ANNUALLY

- % community understanding link between environmental protection/wildlife and economic progress

* Independent 3rd parties are conducting Community Attitudinal assessments via PRAs on an irregular (approx.. bi-annually) but not annual frequency.

Project Broad Environmental Impact - measured Bi-ANNUALLY* and reported ANNUALLY

Indicator - WW Project Popularity in Reference Region - measured Bi-ANNUALLY* and reported ANNUALLY

- % community responding favorably to WW presence
- % community directly and indirectly benefiting from WW presence

* Independent 3rd parties are conducting Community Attitudinal assessments via PRAs on an irregular (approx.. bi-annually) but not annual frequency.