MJUMITA COMMUNITY FOREST PROJECT (LINDI) 2012-2013 MONITORING REPORT

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ACRONYMS

AFOLU	Agriculture, Forestry and Other Land Use
AUDD	Avoided Unplanned Deforestation and Degradation
CCB	Climate, Community, and Biodiversity Standardard
GHG	Greenhouse Gas
icl	initial forest class
lat/lon	Latitude and Longitude
MCFPL	MJUMITA Community Forest Project (Lindi)
MJUMITA	Mtandao Wa Jamii Usimamizi Misitu Tanzania (Tanzania Community Forest Network)
NGO	Non-Governmental Organization
PD	Project Description
PDD	Project Design Document
REDD	Reducing Emissions from Deforestation and Forest Degradation
tCO2e	Metric ton of carbon dioxide equivalent
TFCG	Tanzania Forest Conservation Group
VCS	Verified Carbon Standard
VM	Verified Methodology
VNRC	Village Natural Resource Committee
WGS	World Geodetic System

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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

This project seeks to reduce green house gas emissions caused by unplanned deforestation on 41,924 ha of communal village land, while simultaneously promoting rural economic development and biodiversity conservation in Lindi Rural District in Tanzania. Deforestation in villages in Lindi District is primarily the result of the expansion of small-holder cultivation of cash and subsistence crops, with unsustainable charcoal harvesting also contributing to deforestation in some areas. Prior to the project start, forest areas within the project area were open access without secure tenure for individuals or communities. Communal forest land could be converted to customary household ownership through clearing and cultivation. The annual gross deforestation rate in the region encompassing the project area was 1.99% from 2001 to 2012.

The primary project activities included land-use planning and establishing village forest reserves, which gives village governments secure tenure and regulatory authority over the forests within their boundaries. Communities have put 67% of their remaining forest areas under protection, including 75% of forest with higher carbon stocks. Additionally, the project has promoted new agricultural practices which will help them avoid pests, maintain fertility and increase their crop yields, and thereby reduce the need to clear more forests for agriculture. The project has also supported community members to develop new forest friendly livelihoods like bee-keeping, and improved credit accessibility for community members looking to establish small businesses. Finally, village earnings from the sale of verified GHG emissions reductions and royalties charged for sustainable forest use, will help to offset the opportunity costs of REDD. The project has helped villages develop an innovative benefit sharing mechanism that pays dividends to every village member and allows community members to contribute to and plan for their own village development projects such as schools, clinics, wells, etc.

During this crediting period from April 21st, 2012 to April 20th, 2013, participating villages have implemented the new land-use and forest management plans preventing further expansion of agriculture into their village forest reserves and on forest land deemed unsuitable for agriculture (near streams and on steep slopes). In addition to their monthly forest patrols, in November 2012, the village natural resource committees conducted targeted patrols of areas of deforestation within their village forest reserves as detected by MJUMITA using remote sensing. They educated the community members whom they encountered about the forest management plans and instructed them that they should not expand their farms further or clear forest outside of the village forest reserves.

Also during this crediting period, new farmers in each village have adopted the agricultural practices and beekeeping promoted by the project. Community members used earnings from the first trial payment to start new small businesses.

Other funds from the first trial payments conducted just prior to the project start date, were used during this monitoring period to implement a wide variety of village development projects approved by village assemblies, mostly focused on improving infrastructure such as schools and medical facilities.

Within the project area, during this monitoring period, deforestation declined 29.4% compared to the baseline saving 302 ha of forest and preventing the GHG emissions equivalent of 40,178 tons of CO_2.

There was no increase in deforestation in the leakage belt compared to the baseline during this monitoring period.

1.2 Sectoral Scope and Project Type

The project's sectoral scope is Agriculture, Forestry and Other Land Use (AFOLU) and its project category is Reduced Emissions form Deforestation and Degradation (REDD). The primary project activity is avoiding unplanned deforestation and degradation (AUDD).

The project is a grouped project with each participating village being a project instance and each village government being a project proponent. New villages within the same reference region may be added in the future as project instances and proponents as per the requirements for grouped projects in the VCS standard and AFOLU requirements.

1.3 Project Proponent

As all of the project area is on communally owned village land, the project proponents are the participating project village councils who have overall control over the project area and responsibility for implementing the project's core activities (see section 12 of project details for more information). However, all of the project proponents have signed an MoU with MJUMITA empowering MJUMITA to undertake a variety of activities on their behalf (see next section).

No.	Name of Village	Name of Chairperson	Name of Village Executive Officer	Village Postal Address	Phone Numbers*	
					Chairperson	Village Executive Officer
1	Muungano	Juma M. Njangari	Rashid S. Rashid	P. O. Box 328 Lindi, Tanzania	0682 400547	0682593698
2	Mkombamosi	Rashid Mwishaweji	Chande A. Khalifa	P. O. Box 328 Lindi, Tanzania	-	0787370207
3	Makumba	Yusuph S. Pangani	Rashid B. Mpwili	P. O. Box 328 Lindi, Tanzania	-	0685296221
4	Likwaya	Mwalim K. Tanga	Hereswida Mathew	P. O. Box 328 Lindi, Tanzania	0783 270129	0782592267
5	Mkanga 1	Athumani Kimete	Anzigar Lilai	P. O. Box 328 Lindi, Tanzania	0689 618090	0787311753
6	Nandambi	Rashid S. Kibaba	Selemani Kitenge	P. O. Box 328 Lindi, Tanzania	0789 872884	0786048736
7	Kinyope	Musa Athumani Pilanga	Hamis A. Mwinyimmad	P. O. Box 328 Lindi, Tanzania	0689 306008	0782591072
8	Ruhoma	Said H. Katambi	Curben A. Chitanda	P. O. Box 328 Lindi, Tanzania	-	0686167333
9	Milola Margharibi	Issa Abdallah Pilipili	Hamis J. Mzee	P. O. Box 328 Lindi, Tanzania	0788 951190	0688347913

10	Kiwawa	Said M Manyanya	Ally M. Akalola	P. O. Box 328 Lindi, Tanzania	0684 977834 neighbor	0787753990
* Dialling instructions: Outside of Tanzania - replace the zero at the beginning of the number with +255. Inside Tanzania – dial as written.						

At community level, the project is aligned with the Local Government (District Authorities) Act (1982). The governance structures and roles and responsibilities of the Village, Ward and District authorities are defined by this Act and are summarized below in terms of how they relate to the project. While the village councils are listed as the project proponents due to their executive powers, there are many other institutional bodies within the village that have responsibilities within the REDD project.

The ***Village Assembly*** is the supreme authority on all matters of general policy-making in relation to the affairs of the village. A village assembly comprises all women and men ordinarily resident in the village and who has attained the apparent age of eighteen years. Meetings of the village assembly are supposed to be held at least every three months. In the context of the project, the village assembly have the power to accept or refuse the REDD project. The Village Assembly is also responsible for reviewing village by-laws including those pertaining to the village forest reserve, village land use plan and REDD revenue distribution. Although not required by law, the project has required the approval of the village assembly for the Village Forest Reserve, Village land use management and REDD by-laws. The village assembly elect and hold accountable the village council.

The ***Village Council*** is the organ in which is vested all executive power in respect of all the affairs and business of a village. This specifically includes power to 'plan and co-ordinate the activities of and render assistance and advice to the residents of the village engaged in .... forestry or other activity or industry of any kind'. Village councils are elected by the village assembly. Elections are held every three years. It is customary, although not stated in law, that the committee includes at least one representative from each sub-village. Where a village council proposes to make by-laws, they are required to convene a meeting of the village assembly to review the by-laws. The Village Council is then responsible for making amendments based on comments from the Village assembly; and to submit to the District Council. The Village Council is then responsible for enforcing the by-laws. In the context of the project, the Village Councils therefore play a key role in enforcing the village land use plan and by-laws; the village forest reserve management plan and by-laws; and the REDD by-laws. According to the MoUs with MJUMITA, the Village Councils are responsible for the implementation of the strategies intended to reduce emissions. The Village Councils also have the power to establish village committees and to delegate some of their power and responsibilities to those committees. In each of the project villages, the Village Councils have established three committees:

Village Natural Resources Committees: responsible for the management of all forests on village land including those inside the village forest reserves, implementing deforestation and carbon monitoring activities; and reporting to the village assembly on land use issues;

Village Land Use Management Committees: responsible for the implementation of the village land use plans and by-laws, and reporting to the village assembly on land use issues;

Village REDD Committees: responsible for maintaining a register of eligible recipients of REDD payments subject to public review; overseeing the REDD payment mechanism including facilitating a participatory

decision making process on the use of the REDD payments; and reporting to the village assembly on issues related to the REDD payments.

1.4 Other Entities Involved in the Project

Organization name	Mtandao wa Jamii Usimamizi Misitu Tanzania (MJUMITA) or The Tanzania Community Forest Network
Role in the project	Authorized representative for the project proponents, providing technical assistance to proponents regarding REDD activities, facilitating project validation and verification, and marketing VCUs.
Contact person	Rahima Njaidi
Title	Director
Address	Plot No. 323 Msasani Village, Old Bagamoyo Road P.O. Box 21522 Dar es Salaam, Tanzania
Telephone	+255 22 2669007
Email	mjumitaorg@mjumita.org

Organization name	Tanzania Forest Conservation Group
Role in the project	Providing technical assistance to proponents regarding REDD activities, social and biodiversity monitoring.
Contact person	Charles Meshack
Title	Executive Director
Address	Plot 323, Msasani Village, Old Bagamoyo Road PO Box 23410 Dar es Salaam, Tanzania
Telephone	+255 22 2669007
Email	tfcg@tfcg.or.tz

Mtandao wa Jamii Usimamizi wa Msitu Tanzania (MJUMITA or Tanzania Community Forest Network) in partnership with the Tanzania Forest Conservation Group (TFCG) and with financial support from the Royal Norwegian Embassy of Tanzania, provided technical expertise to the project proponents since the beginning of the project. MJUMITA and TFCG have helped participating villages establish land-use plans, village forest reserves, and implement strategies for reducing emissions from deforestation and degradation.

The ten participating villages have signed MoUs with MJUMITA, witnessed by the District Government, which empower MJUMITA to provide the proponent villages with the following services to facilitate access to the voluntary carbon market:

a) Remote monitoring of forest cover and carbon stocks

b) Coordinating ground monitoring of carbon stocks by participating villages

c) Identifying and contracting a VCS and CCBA approved project validator

d) Identifying and contracting VCS and CCBA approved project verifiers as needed

e) Preparing and submitting the project design document for validation

f) Preparing and submitting project monitoring reports for verification

g) Marketing and selling verified emissions reductions to buyers in the voluntary carbon market

h) Receiving payment from buyers in the voluntary carbon market on behalf of the village and other proponent villages

i) Retiring sold emissions reductions according to the VCS and CCBA requirements

j) Forwarding revenue from the sale of verified emissions reductions to the village subject to the stipulations specified in this agreement.

k) To avail information about carbon credit emissions and fulfil any other requirements by VCS and CCBA registries.

l) Provide capacity building to communities on any matter emerging related to REDD+, good governance, and carbon trading for improvement of their performance.

m) Facilitate village government to have operational plans in the format required by the project and any other need that may arise.

n) To facilitate participatory social and ecological assessment and monitoring and submit the results to any different stakeholders as the need may be.

o) To facilitate the Community Carbon Enterprise on any other technical requirement needed to meet conditions for REDD+.

Signed copies of each villages MoU have been provided to the Auditors.

The participating villages will collectively retain rights to the GHG reductions achieved by the project, but MJUMITA will be entitled to compensation from the project proponents to cover the costs of implementing its responsibilities. MJUMITA is responsible for dividing up the benefits derived from the sale of GHG reductions between the project proponents based on the agreed system of tracking each project proponents relative contribution to the overall GHG reductions achieved by the project.

The system for dividing GHG reductions between the proponent villages is based on the stock-flow REDD mechanism[1] proposed by the Woods Hole Research Center (WHRC) and Amazon Institute for Environmental Research (IPAM) to the UNFCCC, which places weight on both reductions in emissions compared to baseline emissions and forest carbon stock conservation. Under the system used by the project, 70% of the GHG emissions reductions generated by the project are divided between villages based on each villages performance relative to their individual portion of the project baseline emissions. The remaining 30% is divided amongst villages based on the relative proportion of total carbon stocks in the project area falling within each village. However, if any village exceeds their baseline emissions then the excess emissions above the baseline are subtracted from their portion of the carbon stock based

1 http://www.whrc.org/policy/pdf/cop14/Stock_Flow_Mechanism.pdf

credits and redistributed as carbon stock payments to actors who did not exceed their baselines. The intent of the system is to provide villages with lower than average baselines and a significant portion of the project areas carbon stocks an increased incentive to participate in REDD activities which may be necessary to prevent leakage from villages with higher historical baselines.

In interactions with MJUMITA, communities will be represented by their village chairperson and two other representative chosen in village assembly meetings, of whom one will be a woman. These three representatives from each village will form the core of the P*roject Executive Committee* in charge of overseeing the implementation of the MOU between MJUMITA and the participating villages. The village members of the committee will review, change, and approve budgets proposed by MJUMITA to cover costs associated with MRV and marketing. The committee will also review the monitoring reports compiled by MJUMITA and the village level performance reports and portions of REDD revenue awarded to each village. In the event that a significant amount of leakage is detected outside of the project area, as per the MOU, the committee will identify the responsible village so that the leakage can be included in estimates of their performance. The village representatives on the executive committee will also be responsible for presenting this information to their village assemblies.

The executive committee will also include members with an advisory role, including representatives from the districts chosen by the district executive director, the executive director from TFCG, a representative from the Forestry and Nature Conservation department of Sokoine University of Agriculture, and a representative from the Vice President's Office dealing with national level REDD issues. To enable the committee to be able to make informed decisions, all of the executive committee members will receive training on REDD MRV, including basics of remote sensing and GIS that will be used by MJUMITA to monitor performance and report to VCS and CCB. The committee will also receive copies of MJUMITA's annual financial audit and carbon sales information to confirm that MJUMITA is accurately reporting income and using it as instructed.

Additional stakeholders

Organization name	Lindi District Council
Role in the project	Providing skilled staff members for land-use and forest management planning, agricultural extension services and overseeing community development projects. Districts must approve all village land-use and forest management plans.
Contact person	Charles Mwaipopo
Title	District Forest Officer
Address	P. O. Box 328 Lindi, Tanzania
Telephone	
Email	charlesmwaipopo@gmail.com

Organization name	Lindi Municipal Council

Role in the project	Providing skilled staff for land-use and forest management planning, agricultural extension services and overseeing community development projects in villages in Lindi Municipality. Districts must approve all village land-use and forest management plans.
Contact person	Apiyo Ezra
Title	Municiple Forest Officer
Address	P. O. Box 328 Lindi, Tanzania
Telephone	+255655482050
Email	ezraapi@yahoo.co.uk

Village Councils report to the Ward Development committees and to the District Council.

The Ward Development Committee is responsible for ensuring the implementation of the decisions and policies of the district council, and of development schemes. The Ward Development Committee reports to the District Council.

The District Council is responsible for the implementation and monitoring of development projects throughout the District; and therefore plays a key role in supporting the villages in the implementation of the project's activities.

The project has worked closely since its beginning with the Lindi District Council. The district provided man power to facilitate the implementation of many key project activities including land-use and village forest reserve planning, and agricultural extension services to promote sustainable agricultural practices. Additionally, the land-use and forest management plans of the participating villages have been reviewed and approved by the Lindi District Council. The district will continue to provide support for ongoing project activities including agricultural extension activities and assistance with enforcing land-use and village forest reserve by-laws when needed. In exchange for these services, the participating villages will pay a cess of 5% of their revenue from REDD to the district council.

1.5 Project Start Date

The project start date is April 21st, 2012.

1.6 Project Crediting Period

The project crediting period will be for 30 years from April 21st, 2012 to April 20th, 2042. Although some project activities such as awareness raising and FPIC (free prior informed consent) began in 2010, the new land-use and village forest reserve bylaws passed by participating villages did not come into force until 2012. Furthermore, the first trial payment rewarding a community for having competed the REDD readiness activities was in November, 2011, while the rest were made in 2012. Therefore it was not expected that the project would have a significant effect on emissions prior to 2012.

1.7 Project Location

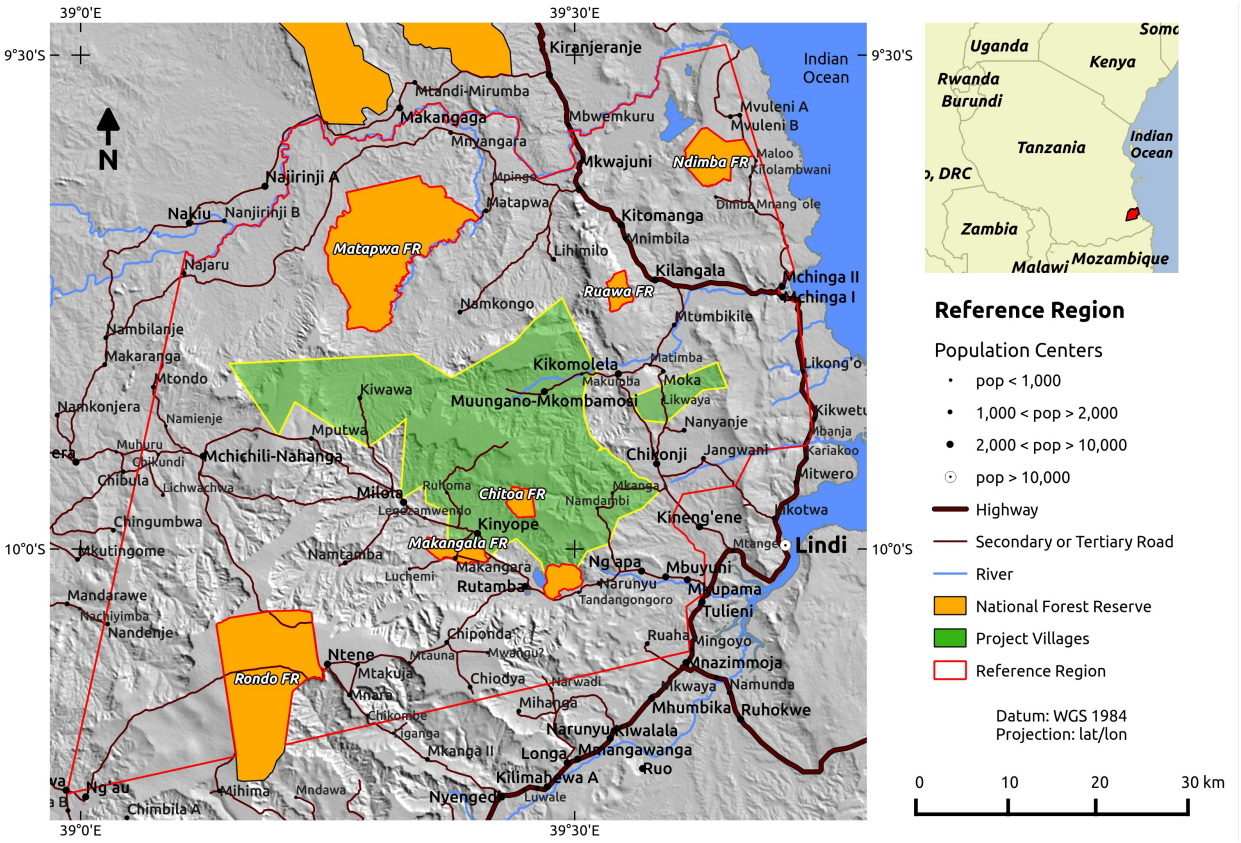

Figure 1: Initial project area villages and potential expansion areas (Reference Region)

The project area is on village land located in Lindi District, Lindi Region approximately 30 km inland from the Indian Ocean in south-eastern Tanzana (Figure 1). The initial project area (which has not changed during this monitoring period) consists of all forest areas (41,924 ha) at least 10 years old within the 10 initial participating project villages: Kinyope, Kiwawa, Likwaya, Makumba, Milola Magharibi, Mkanga 1, Mkombamosi, Muungano, Nandambi and Ruhoma. If funding becomes available, the project area may expand to include the forests in villages directly bordering the initial project area, including, but not necessarily limited to Namkongo, Lihimilo, Moka, Mtimba, Kikomolela, Rutamba, and Mputwa. GIS files have been shared with the verifier covering the initial participating project village boundaries, the reference region and the forest areas within these boundaries.

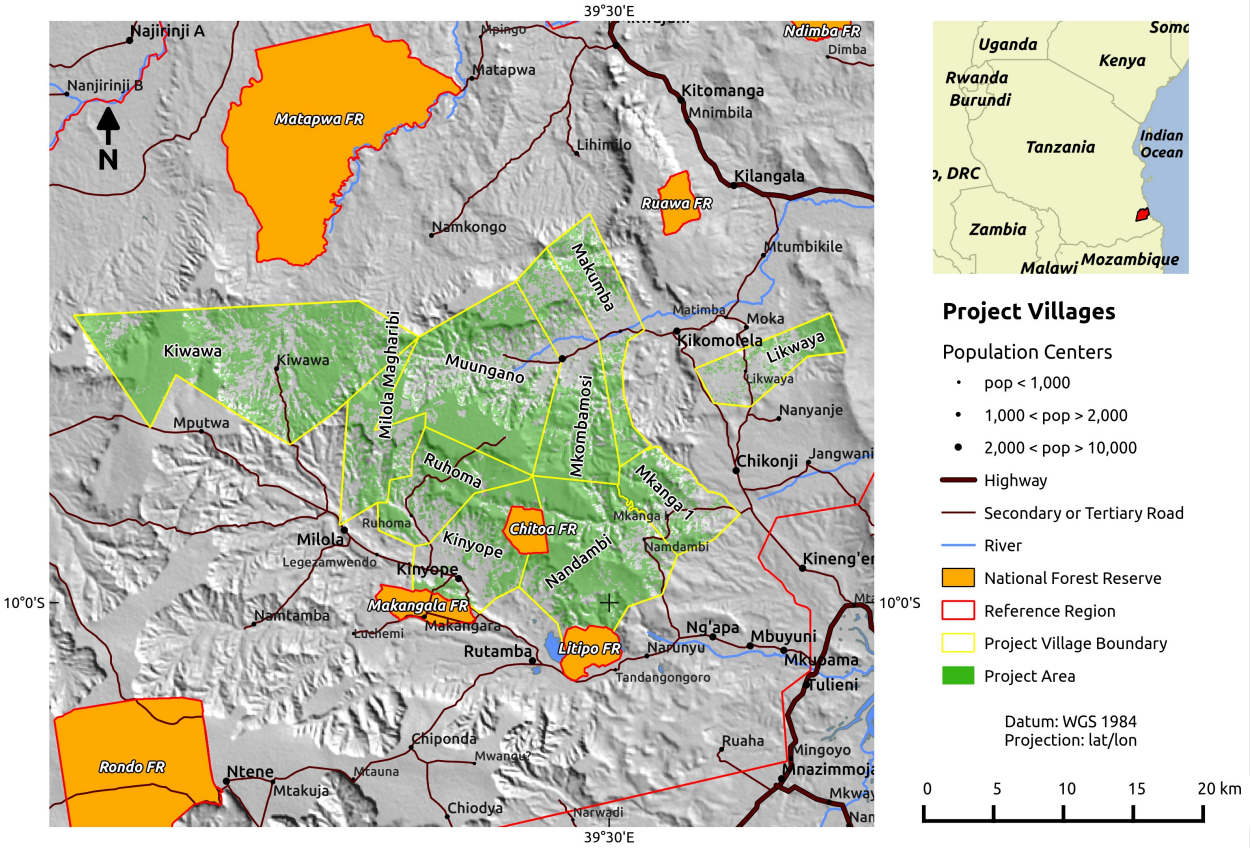

Figure 2: Initial project villages and forest area

Figure 2 is a close up of the initial project villages showing the boundaries of each village and their forest areas. Full page versions of Figure 1 and Figure 2 are presented in Part 2, Step 1 of the Methodological Annex.

1.8 Title and Reference of Methodology

The project uses the "Methodology for Avoided Unplanned Deforestation" (VM0015, Version 1.1) approved by VCS on December 3rd, 2012.

1.9 Other Programs

The project activities are not included in any emissions trading program.

The project has not sought and has no plans to seek out any other form of GHG related environmental credits.

The project is not registered or seeking to be registered under any other GHG programs.

2 IMPLEMENTATION STATUS

2.1 Implementation Status of the Project Activity

Activity 1. Improve governance at village level.

Between April 2012 and May 2013, the project provided training to 317 community members (177 men and 140 women) from four MJUMITA networks (UMIKIWAMI, MHIMIRU, UMICHITA and MHIMINA) in the

project area. The training covered: the REDD revenue sharing mechanism; REDD governance issues focusing on transparency, participation, accountability and the need for FPIC at all levels of REDD implementation; and accessing the Voluntary Carbon Market through VCS and CCBA. During these training sessions, the MoU between MJUMITA and the communities was presented for discussion. Comments provided were on the need for transparency during implementation, involvement of the District Council in the whole process, and the potential costs.

Governance training was also integrated into the farmer field school training provided to 165 farmers.

As part of ongoing project support, MJUMITA have been providing backstopping to the communities, throughout this period, to address governance issues and enhance communication between the communities and the project. To achieve improved communication selected members of the local MJUMITA networks have been supported with mobile phone credit to enable MJUMITA members to communicate with the project and other relevant stakeholders.

The project has also supported the construction of village offices in all ten villages in order to provide a conducive environment for the work of the village council and its committees.

Activity 2. Implement sustainable land management

Between 2010 – 2011, the project supported village land use planning in the project villages. The plans were approved by the respective village assemblies between July 2011 – January 2012, with the exception of Kiwawa, Ruhoma and Makumba which were finalized and approved between July – November 2012 i.e. during this implementation period. The approved plans were then submitted to the respective District for review and approval by Lindi District Council or Lindi Municipal Council. During this period some corrections were made to the maps. The corrected maps were returned to the respective village for further corrections and validation before returning them to the District for review and approval by the District council. For the villages in Lindi Rural District, the plans were then approved by the District Council on 29/07/2013. For Lindi Municipality (for Nandambi and Mkanga 1), they were approved by the Lindi Municipal Full Council, signed by Municipal Chairman and Executive Director on 23/07/2012. Between December 2012 and January 2013, the project returned signed copies to all participating villages; provided training on implementing the plans; and supported village assembly meetings in order to raise awareness about the plans and by-laws. The plans are now being implemented.

In order to raise awareness on the village land use plans, 280 signboards (35 sign boards per village) were produced and installed in 8 villages (Muungano, Mkombamosi, Likwaya, Nandambi, Mkanga1, Ruhoma, Kinyope and Milola). The boards show the location of different land uses and include HIV AIDs awareness messages.

In order to provide a secure place for storing land tenure documents, filing cabinets were distributed to six villages: Muungano, Mkombamosi, Mkanga1, Nandambi, Kinyope and Ruhoma Villages.

Requests for village land certificates for the 8 project villages in Lindi Rural, were submitted to the Lindi Rural District Lands Officer who submitted them to the Lands Commissioner for processing.

Activity 3. Community based forest management.

The CBFM plans and by-laws for all ten project villages were developed with support from the project prior to this implementation period.

Image 1: Members of a village natural resource committee measuring a tree during training on carbon stock assessment.

Nine Village Assemblies had approved their respective plan and by-laws between May 2011 and February 2012. In the case of Makumba Village, the Village Assembly approved their VFR plan and by-laws in December 2012. These were then submitted to the relevant district authorities and in some cases modifications were made, particularly to correct the boundaries. Revised maps and plans were returned for validation to the respective villages. Following validation at village level, the plans and by-laws were submitted for approval at District level. For the villages in Lindi Municipality (Mkanga 1 and Nandambi), the plans and by-laws were approved by the Municipal Council on 29/12/2012; and for the villages in Lindi Rural District, these were signed by the District between 29/12/2012 and 02/01/2013. Following approval at District level, signed copies of the plans and by-laws were returned to each village for full implementation. The training and awareness raising was combined with training and awareness raising on the implementation of the village land use plans. See Activity 2. for details. The plans are now being fully implemented.

Awareness raising events on forest fire prevention and fire fighting were held in 11 villages in Lindi (8 within the project site: Mkanga1, Nandambi, Milola Magharibi, Ruhoma, Kinyope, Muungano, Mkombamosi, and Likwaya and 3 adjacent to the project villages: Milola Mashariki, Nanyanje and

Ng'apa). The events were attended by 2376 people (1127 men and 1249 women) The training was carried out in collaboration with the TFS Southern Zone Publicity unit based in Ruvuma.

Activity 4. Channel REDD payments to communities.

Image 2: A woman from Ruhoma Village receives her and her children's REDD trial payment

With support from the project, REDD by-laws were developed by the ten communities and approved by their respective Village Assemblies prior to this implementation period. The by-laws provides legal authority for the village to control and own village REDD business activities and its subsequent revenues including linking the village with the service provider.

Having been approved by the respective Village Assemblies, the by-laws were then submitted to the respective District Council. Lindi Rural District Council approved the REDD by-laws for eight villages in July 2013. For the municipality a different format was requested. These are due to be approved in April 2014. Using the draft by-laws, the project supported a trial REDD payment for all ten villages. The amount payable to each village was based on estimates of each village's performance in terms of emission reductions. A total of TZS 284,842,940 was paid to the ten villages between November 2011 and June 2012. The project provided technical support to the REDD committees from each village to prepare a list of people eligible for a share of the REDD payments. These lists were developed and reviewed and validated at sub-village level and at village level in order to minimize the risk of 'ghost' claimants and to ensure that everyone, regardless of gender or wealth, was included.

The project provided training on how to invest some of this in community development projects. Each village council presented a plan regarding the use of funds for community development projects. The village assemblies reviewed the plan and decided whether to invest some of the REDD dividends in the proposed development project or not.

All villages chose to invest some of their funds in community development projects; with the balance being paid as individual payments. During the payment days, the project provide information on REDD and the project.

As part of the project's climate monitoring, 50 carbon plots were measured per village in nine villages (Ruhoma, Kinyope, Milola Magharibi, Kiwawa, Nandambi, Mkanga1, Likwaya, Mkombamosi and Muungano) in April and May 2013. In each village, members of the VNRC were trained and did the field assessment of carbon stock. The MJUMITA Carbon Monitoring Officer then re-measured 10 % of the plots for quality control. Equipment for carbon assessments by community members was purchased and distributed to these 9 villages. Equipment included: GPS, Calipers and Tape measures, Notebooks and Folders.

Activity 5. Improve profitability, ecological sustainability and climate change resilience of agriculture.

In 2011, the project developed an agricultural strategy for Lindi. The strategy advises on agricultural interventions that can improve livelihoods; reduce the potential for leakage of deforestation activities; and increase farmer resilience to climate change.

During this reporting period, the project began to implement this strategy.

Training was provided by the project Agricultural Officer working alongside the Ward Agricultural Officers from Tandangongoro, Matimba, Nangaru, Rutamba and Milola wards. Farmers were selected to join the farmer field schools from the respective village assemblies and in consultation with the village councils. Selection aimed to balance gender and to ensure the participation of farmers from marginalized sub-villages or those adjacent to village forest reserves. This exercise resulted in one farmer group being established in each of the five villages, involving a total of 128 people (59 women and 69 men). Each group then selected a plot to serve as the farmer field school.

Between May – June 2012, the groups were trained on group members' responsibility to promote improved agricultural practices to other farmers in their village, and on the importance of practicing the techniques learned in their individual plots / farms. Full training on conservation agriculture was then provided for four days per village in Mkanga 1, Likwaya, Muungano, Mkombamosi and Milola Magharibi Villages. The first 2 days were for theory and the other 2 were for practical training.

The trainer provided information on soil moisture and soil nutrient conservation; and planting in well-prepared pits or basins. After two days of theoretical training, the Agricultural Officer provided two days of practical training in each village. Slashing followed by pitting was done and thus the demonstration plots were established. In Milola Village and Mkanga 1 Village, cowpea seeds were sown. Planting of maize was planned for December 2012 followed by cowpeas in February, 2013. Various agro-equipments were provided to each farmer group as an extra support from the Project. Each group was provided with a tape measure, a roll of terrain rope, 20 hand hoes, 3 sharpening files and 7 pangas. Cowpea seeds were also

provided to the groups in Mkanga 1 and Milola. Weekly follow up visits were made to the demonstration plots in Milola and Mkanga 1 for weeding, and pest control.

Image 3: Farmers apply conservation agriculture techniques they learned in farmer field schools to prepare their land for planting Maize.

Following this first round of training on conservation agriculture, the project began to work in other sub-villages. Based on the lessons learned during the first round of training, the project aimed to improve the governance of the farmer field schools and to improve the effectiveness and efficiency of the CA training in terms of both reducing deforestation and improving livelihoods. In collaboration with the five Ward Agriculture extension officers, a total of 149 community members (95 men and 54 women) constituted CA farmer groups in 9 sub villages of 7 villages. Selection of appropriate farmer group participants was made focusing on sub villages adjacent to village forest reserves. The FFS were established in Kikumbi and Magela / Noto (Milola Magharibi), Mkundi (in Ruhoma), Kilolombwani and Umoja (in Nandambi) and Mandanje (in Mkanga 1). Others were Mapinduzi in Likwaya, Likandilo in Mkombamosi and Kipunga in Muungano. Training on conservation agriculture was provided by the project in Nandambi and Ruhoma in 2011.

A two-day training course was provided to each of the nine groups. This training was preceded by sub-village meetings to validate farmer group members at sub-village level and subsequently continued with training to group members on principles of good governance with a focus on transparency, equal distribution of costs and revenues, accountability, and clear distribution of roles and responsibilities. Problems which can destabilize a group were also discussed. The Project and Ward Agricultural Officers

helped group members to prepare a simple group constitution to clarify roles and responsibilities; group objectives; and other operational issues. The Agricultural Officer then provided training on conservation agriculture to each group. The major focus for the training was on farm preparation by strictly abiding to principles of Conservation agriculture reinforced by non-use of fire in any land preparation for cropping and basin preparation. Agro-inputs were provided for the farm field schools and for individual farmer group members / participants to apply in their own farms. In December 2012 - January 2013, maize was planted in the farmer field schools. Improved inputs were provided for the farm field schools and for the training participants to apply in their own farms. By the end of the training, 100 farmers from the 9 groups plus five farmers not involved in the groups, had applied conservation agriculture techniques on their farms thereby modeling for other farmers to observe. This training is in addition to the training in 2011 to 40 farmers (19 women and 21 men) from Ruhoma and Nandambi Village.

Table 1: Number of women and men farmers trained on conservation agriculture per village.

Village	Phase 1 May - June 2012		Phase 2 September - October 2012		Total
	Women	Men	Women	Men	
Kinyope	0	0	0	0	0
Kiwawa	0	0	0	0	0
Likwaya	14	14	6	12	46
Makumba	0	0	0	0	0
Milola Magharibi	17	13	7	17	54
Mkanga1	14	16	5	15	50
Mkombamosi	7	10	7	10	34
Muungano	7	16	7	10	40
Nandambi	0	0	14	18	32
Ruhoma	0	0	8	13	21
Total	**59**	**69**	**54**	**95**	**277**
Total Women					154
Total Men					123

In order to provide longer term technical support to farmers in the project area, the project also trained 18 farmers (12 men and 6 women) from the 9 sub-villages as Community Based Trainers in Conservation agriculture (CA). To enhance the sustainability of the approach seven government staff were also trained (four Ward Agricultural Extension Officers, two Village Agricultural Extension Officers and 1 District Crop Officer). A six day training course was provided by the Naliendele Agricultural Research Institute.

Topics covered by the training included:

- principles and advantages of conservation agriculture
- relationship between REDD and conservation agriculture
- participatory extension methods
- participatory planning, monitoring and evaluation
- gender and pro poor considerations in providing training to farmers

- on field crop production techniques (maize, millet, cassava, sesame)
- marketing techniques
- practical training sessions in land preparation, crop value addition and review tests of both oral and practical

Practical sessions covered:

- Land preparation based on Conservation Agriculture principles
- Optimal spacing during planting
- Soil fertility management including composting and efficient use of fertilizers.
- Soil moisture conservation

Image 4: Ward Councilor handing over a bicycle to a CBT from the Zinduka Farmer's Group at Mkanga 1 village to enable her to extend the CA message to group members and other farmers.

Having returned to their villages, the CBTs provided backstopping and advice to other farmers learning about conservation agriculture practices.

The project also provided training to farmers on methods to prevent crop losses due to crop-raiding by birds and mammals. The training involved 162 participants (93 men and 69 women) from Muungano, Mkombamosi, Mkanga 1, Likwaya, Ruhoma, Milola Magharibi and Nandambi. During the training events the farmers were trained on techniques for scaring away elephants, wild pigs, monkeys and birds. Prior to this implementation period, the project had also provided training on preventing crop losses to wild animals in: Makumba, Kikomolela, Matimba, Moka, Chikonji Kaskazini, and Kinyope.

Wild animal trapping nets were also distributed to farmers in seven villages including five villages in the project areas and two villages (Kikomolela and Matimba) in the leakage belt.. Nets to prevent crop raiding by wild animals were distributed in Muungano, Mkombamosi, Likwaya, Mkanga 1, Kikomolela, Matimba, and Kinyope.

The project also began to work with the DALDO to look at how extension services could be improved.

With a view to raising awareness on conservation agriculture, 22 farmers (14 men and 8 women) from 7 villages (Milola, Ruhoma, Nandambi, Likwaya, Mkombamosi, Muungano and Mkanga 1) participated in the Nane Nane agricultural exhibition in Lindi Municipality. Farmers were selected on the basis of how committed they had been during the training events and to ensure that women and poorer households were represented. Ninety percent of the participants were from the poorest wealth category. During the Nane Nane event the farmers had the opportunity to visit several important sections, including displays on crop production; prevention of crop raiding by elephants; food processing; and the LIMAS conservation agriculture display.

This visit has motivated farmers to adopt conservation agriculture techniques. For example, one farmer from Likwaya Village, was heard commenting “You will come and learn from us this time next year. We are going to improve beyond this” (*Mtakuja kujifunza kutoka kwetu muda kama huu mwakani. Sisi tunakwenda kuboresha zaidi ya hivi mlivyofanya nyinyi*)’ This statement followed a detailed explanation of CA by a representative farmer from the Jitumekwanza farmer group from Liwale.

Activity 6. Improve access to microfinance services for community members.

During this implementation period, training was provided to women and men on establishing and operating village savings and loans associations. The VSLAs provide a mechanism for community members to access loans and to save. Training was provided in 3 villages: Muungano, Mkombamosi and Makumba in May 2012. Prior to the project, no VSLAs or VICOBAs were present in these villages. In each village six days of training and awareness raising were provided including three days for meetings with the village government, including the VNRC and REDD revenue distribution committee, and the village assembly in order to introduce the VSL approach and to provide guidance on group formation. The community were informed that the sole source of loan funds will be members’ savings, with no external loans or grants being provided. Each group was provided with a VSL kit including a safe deposit box, a calculator, a ruler and record books.

This was followed by a 5 day training of community based trainers program with representatives from each group. 15 women and 15 men were trained as community based trainers, with 5 women and 5 men coming from each of the 3 villages. The CBT training sessions covered: group leadership and election of office bearers, development of policies and rules for social fund, share-purchase (savings) and loan activities; development of group constitution; record keeping and group management / management of a

meeting; first share purchase; first loan disbursement; first loan repayment, and share out. By May 2013, 12 VSLA groups in 3 villages were operational. Training in other villages will be provided in 2013/14.

Activity 7. Generate incomes from the sale of bee products.

The project provided training on bee keeping to 71 women and 119 men from eight villages, between April 2012 and May 2013. The project pro-actively sought women and men living in the forest adjacent sub-villages for the training. In each village, an initial 4 day training course took place involving 2 days of technical training and 2 days of theoretical training with follow up visits by project staff. The District Beekeeping Officer was involved in the training and will continue to provide support to the groups as part of his normal duties. Equipment was provided to the groups including 128 bee hives, beekeeping suits, honey strainers and hive tools.

Activity 8. Growing and harvesting trees on woodlots and through agroforestry.

The project has not yet provided training to farmers on silviculture. This will take place during 2013/14. As a result of the environmental education work some primary schools have established tree nurseries, particularly for fruit trees.

Activity 9. Improve social services and infrastructure

In all ten villages, communities chose to allocate a share of their REDD payments to improving social services and infrastructure. This includes four villages who chose to support the construction of health facilities; five villages who contributed to the village office construction; three villages who contributed to primary school facilities; and one village (Likwaya) who contributed to improving their water supply.

2.2 Deviations

Methodology Deviations

The project has not applied any deviations from the methodology during this accounting period.

Project Description Deviations

The project has not applied any deviations to the project description during this accounting period.

2.3 Grouped Project

No new instances of the project have been established during this period. The instances are the same as those established at the start of the project and listed in the PD.

3 DATA AND PARAMETERS

3.1 Data and Parameters Available at Validation

Data / Parameter	Forest cover benchmark map 2001
Data unit	ha
Description	Digital map of forest cover in the reference region, leakage belt,

	and project area at the beginning of the reference period (2001).
Source of data	Remote sensing analysis involving Landsat 5 and Landsat 7 data from path 165, row 67.
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied	Landsat data is the most easily accessible data. It is systematically gathered year round and at an appropriate resolution for this type of analysis. The analysis was carried out by MJUMITA. See Part 2, Section 2.4 of the Methodological Annex for a complete description of the procedures used to create the map.
Purpose of Data	This data was used as the starting point for the deforestation analysis used to determine the baseline scenario.
Comments	Geotiff raster – 30m resolution – projection UTM Zone 37S – datum WGS84

Data / Parameter	Map of 2001 to 2012 deforestation
Data unit	ha
Description	Digital map of deforestation and forest persistence in the reference region from 2001 to 2012.
Source of data	Remote sensing analysis involving Landsat 5 and Landsat 7 data from path 165, row 67. Training and accuracy assessment data for the analysis were derived from high resolution imagery available of google earth, Spot 5 imagery and ground truthing.
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied	Landsat data is the most easily accessible data. It is systematically gathered year round and at an appropriate resolution for this type of analysis. The analysis was carried out by MJUMITA. See Part 2, Section 2.4 of the Methodological Annex for a complete description of the procedures used to create the map.
Purpose of Data	This data was used to calculate historical deforestation rates used to determine the baseline deforestation rate (historical average). See Table B of the Methodological Annex for the deforestation rates calculated from this map.
Comments	Geotiff raster – 30m resolution – projection UTM Zone 37S – datum WGS84

Data / Parameter	Forest cover benchmark map 2012
Data unit	ha
Description	Digital map of forest cover in the reference region, leakage belt, and project area at the beginning of the project crediting period (2012).
Source of data	Remote sensing analysis involving Landsat 5 and Landsat 7 data from path 165, row 67. Training and accuracy assessment data for

	the analysis were derived from high resolution imagery available of google earth, Spot 5 imagery and ground truthing.
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied	Landsat data is the most easily accessible data. It is systematically gathered year round and at an appropriate resolution for this type of analysis. The analysis was carried out by MJUMITA. See Part 2, Section 2.4 of the Methodological Annex for a complete description of the procedures used to create the map.
Purpose of Data	This map was used as the starting point for projecting baseline deforestation. This map will also serve as the starting point for monitoring future deforestation.
Comments	Geotiff raster – 30m resolution – projection UTM Zone 37S – datum WGS84

Data / Parameter	Land use, land cover map 2012
Data unit	ha
Description	Digital map of forest cover types in the reference region, leakage belt, and project area at the beginning of the project crediting period (2012).
Source of data	Remote sensing analysis involving Landsat 5 and Landsat 7 data from path 165, row 67. Training and accuracy assessment data for the analysis were derived from high resolution imagery available of google earth, Spot 5 imagery and ground truthing.
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied	Landsat data is the most easily accessible data. It is systematically gathered year round and at an appropriate resolution for this type of analysis. The analysis was carried out by MJUMITA. See Part 2, Section 2.4 of the Methodological Annex for a complete description of the procedures used to create the map.
Purpose of Data	This map is used together with the map of projected baseline deforestation to determine baseline annual areas of deforestation of different forest types in the project area and leakage belt during the first fixed baseline period from 2012 to 2022. This map will also be used in combination with change detection to determine the annual areas of observed deforestation during the crediting period.
Comments	Geotiff raster – 30m resolution – projection UTM Zone 37S – datum WGS84

Data / Parameter	Map of projected baseline deforestation 2012-2022
Data unit	ha
Description	Digital map of projected deforestation and forest persistence in the reference region, leakage belt, and project area from 2012 to

	2022.
Source of data	Spatial model based on the relationships between historical deforestation and factor maps.
Value applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied	The historical average deforestation rates for high carbon forest and low carbon forests obtained from the analysis of the Map of 2001 to 2012 deforestation were applied to a deforestation risk map generated from a spatial model. The analysis was carried out by MJUMITA. See Part 2, Section 4 of the Methodological Annex for a complete description of the procedures used to create the map.
Purpose of Data	This map is used together with the 2012 land-use land-cover map to determine annual areas of baseline deforestation from different forest types in the project area and leakage belt during the first fixed baseline period from 2012 to 2022.
Comments	Geotiff raster – 30m resolution – projection UTM Zone 37S – datum WGS84

Data / Parameter	$ABSLPA_{t,icl}$
Data unit	ha / y-1
Description	Area of baseline deforestation in the project area in year *t* per forest class *icl.*
Source of data	Spatial model based on the relationships between historical deforestation and factor maps.
Value applied:	See VM Table 11.b in the Methodological Annex for values
Justification of choice of data or description of measurement methods and procedures applied	Crosstab analysis of the map of projected baseline deforestation from 2012-2022 and the land-use, land-cover map of 2012 in the project area. For further details see Part 2, Steps 2, 4 and 5 of the Methodological Annex.
Purpose of Data	Data is used in the calculation of baseline emissions from the project area.
Comments	None

Data / Parameter	$ABSLLK_{t,icl}$
Data unit	ha
Description	Area of baseline deforestation in the leakage belt in year *t* per forest class *icl.*
Source of data	Spatial model based on the relationships between historical deforestation and factor maps.
Value applied:	See VM Table 11.c in the Methodological Annex for values
Justification of choice of data or description of	Crosstab analysis of the map of projected baseline deforestation from 2012-2022 and the land-use, land-cover map of 2012 in the

measurement methods and procedures applied	leakage belt. For further details see Part 2, Steps 2, 4 and 5 of the Methodological Annex.
Purpose of Data	Data is used in the calculation of baseline emissions from the project area.
Comments	None

Data / Parameter	$\Delta Cab_{icl,t}$
Data unit	t CO_2e/ha
Description	Above ground carbon stock change factor for initial forest class *icl* in year *t* in the project area or leakage belt.
Source of data	Allometric equations applied to field measurements
Value applied:	High Carbon Forest: -159.23 in year t Low Carbon Forest: - 107.03 in year t
Justification of choice of data or description of measurement methods and procedures applied	Mandatory carbon pool. See Part 2, Step 6.1 of the Methodological Annex for details of field measurements and the allometric equations applied.
Purpose of Data	This data is used to calculate the carbon stock changes associated with deforestation in different forest types.
Comments	Also see VM Table 20.a.1-2 in the Methodological Annex for values. These values may change due to periodic carbon stock monitoring.

Data / Parameter	$\Delta Cbb_{icl,t}$
Data unit	t CO_2e/ha
Description	Below ground carbon stock change factor for initial forest class *icl* in year *t* in the project area or leakage belt.
Source of data	Allometric equations applied to field measurements
Value applied:	High Carbon Forest: -4.98 per year from year t to year t+9 Low Carbon Forest: -3.74 per year from year t to year t+9
Justification of choice of data or description of measurement methods and procedures applied	Mandatory carbon pool. See Part 2, Step 6.1 of the Methodological Annex for details of field measurements and the allometric equations applied.
Purpose of Data	This data is used to calculate the carbon stock changes associated with deforestation in different forest types.
Comments	Also see VM Table 20.a.1-2 in the Methodological Annex for values. These values may change as a result of periodic carbon stock monitoring.

Data / Parameter	$\Delta Cab_{fcl,t}$ (project area)
Data unit	t CO_2e/ha
Description	Above ground carbon stock change factor for final post-deforestation class *icl* in year *t* in the project area.
Source of data	Allometric equations applied to field measurements
Value applied:	High Carbon Forest: 2.72 per year from year t to year t+9
Justification of choice of data or description of measurement methods and procedures applied	Significant carbon pool. See Part 2, Step 6.1 of the Methodological Annex for details of field measurements and the allometric equations applied. Values for project area and leakage belt are different due to methodology rules for dealing with measurement uncertainty.
Purpose of Data	This data is used to calculate the carbon stock changes associated with deforestation in different forest types in the project area.
Comments	Also see VM Table 20.b.1 in the Methodological Annex for values.

Data / Parameter	$\Delta Cbb_{fcl,t}$ (project area)
Data unit	t CO_2e/ha
Description	Below ground carbon stock change factor for final post-deforestation class *icl* in year *t* in the project area.
Source of data	Allometric equations applied to field measurements
Value applied:	High Carbon Forest: 0.82 per year from year t to year t+9
Justification of choice of data or description of measurement methods and procedures applied	Significant carbon pool. See Part 2, Step 6.1 of the Methodological Annex for details of field measurements and the allometric equations applied. Values for project area and leakage belt are different due to methodology rules for dealing with measurement uncertainty.
Purpose of Data	This data is used to calculate the carbon stock changes associated with deforestation in different forest types in the project area.
Comments	Also see VM Table 20.b.1 in the Methodological Annex for values.

Data / Parameter	$\Delta Cab_{fcl,t}$ (leakage belt)
Data unit	t CO_2e/ha
Description	Above ground carbon stock change factor for final post-deforestation class *icl* in year *t* in the leakage belt.
Source of data	Allometric equations applied to field measurements
Value applied:	High Carbon Forest: 0.97 per year from year t to year t+9
Justification of choice of	Significant carbon pool. See Part 2, Step 6.1 of the Methodological

data or description of measurement methods and procedures applied	Annex for details of field measurements and the allometric equations applied. Values for project area and leakage belt are different due to methodology rules for dealing with measurement uncertainty.
Purpose of Data	This data is used to calculate the carbon stock changes associated with deforestation in different forest types in the leakage belt.
Comments	Also see VM Table 20.b.2 in the Methodological Annex for values.

Data / Parameter	$\Delta Cbb_{fcl,t}$ (leakage belt)
Data unit	t CO_2e/ha
Description	Below ground carbon stock change factor for final post-deforestation class *icl* in year *t* in the leakage belt.
Source of data	Allometric equations applied to field measurements
Value applied:	High Carbon Forest: 0.28 per year from year t to year t+9
Justification of choice of data or description of measurement methods and procedures applied	Significant carbon pool. See Part 2, Step 6.1 of the Methodological Annex for details of field measurements and the allometric equations applied. Values for project area and leakage belt are different due to methodology rules for dealing with measurement uncertainty.
Purpose of Data	This data is used to calculate the carbon stock changes associated with deforestation in different forest types in the leakage belt.
Comments	Also see VM Table 20.b.2 in the Methodological Annex for values.

Data / Parameter	$EBBtot_{icl}$
Data unit	t CO_2e/ha
Description	Factor for non-CO_2 emissions from forest burning per forest class *icl*.
Source of data	Field observations and IPCC default values.
Value applied:	High Carbon Forest: 12.54 Low Carbon Forest: 8.43
Justification of choice of data or description of measurement methods and procedures applied	Optional emissions monitoring. See Part 2, Step 6.2 of the Methodological Annex for details and equations applied.
Purpose of Data	This data is used to calculate the CO_2 equivalent of emissions from burning forest biomass during the process of deforestation.
Comments	Also see VM Table 23 in the Methodological Annex for values.

3.2 Data and Parameters Monitored

This section presents the data that was monitored during this crediting period. This data will in turn be used to update a series of tables as described in Part 3 of the methodological annex in order to calculate the net GHG reductions that occur during the crediting period.

Data / Parameter	Deforestation Map (2013 – 2022)
Data unit	ha
Description	A map of areas of deforestation and forest persistence in the project area and leakage belt during the project crediting period.
Source of data	Landsat 7, Landsat 8 and ALOS PALSAR data as needed, with high resolution imagery or field observations for ground truthing
Description of measurement methods and procedures to be applied	See Part 3, Task 1.1.2 of the Methodological Annex for a description of the procedures to create this map.
Frequency of monitoring/recording	Every 1 to 2 years depending on satellite image availability
Value applied:	N/A
Monitoring equipment	See Part 3, Task 1.1.2 of the Methodological Annex for a description of the tools used to create this map.
QA/QC procedures to be applied	High resolution satellite imagery and ground monitoring data will be used for ground truthing. The minimum accuracy of the deforestation map will be 80%.
Purpose of data	Deforestation detected in this map will be used as the basis for determining where deforestation has occurred in the project area and leakage belt during the crediting period.
Calculation method	N/A
Comments	none

Data / Parameter	$ABSLPA_{t,icl}$ *(ex post)*
Data unit	ha
Description	Annual area of *ex post* (observed) deforestation in initial forest class *icl* in the project area in year *t* of the crediting period.
Source of data	Deforestation Map (2013-2022) and Land-use land-cover map 2012
Description of measurement methods and procedures to be applied	R script generates a crosstab table showing the number of hectares deforested in each forest type in the project area.
Frequency of monitoring/recording	Every 1 to 2 years depending on satellite image availability

Value applied:	N/A
Monitoring equipment	See Part 3, Task 1.1.2 of the Methodological Annex for a description of the tools used to create the maps used in the analysis.
QA/QC procedures to be applied	High resolution satellite imagery and ground monitoring data will be used for ground truthing. The minimum accuracy of the deforestation map will be 80%.
Purpose of data	This data is used in the calculations of emissions from the project area during the crediting period.
Calculation method	N/A
Comments	These figures will appear in the verification report in the *ex post* versions of VM Table 11.b from the Methodological Annex (see Table 4 in this monitoring report).

Data / Parameter	$ABSLLK_{t,icl}$ *(ex post)*
Data unit	ha
Description	Annual area of *ex post* (observed) deforestation in initial forest class *icl* in the leakage belt in year *t* of the the crediting period.
Source of data	Deforestation Map (2013-2022) and Land-use land-cover map 2012
Description of measurement methods and procedures to be applied	R script generates a crosstab table showing the number of hectares deforested in each forest type in the leakage belt.
Frequency of monitoring/recording	Every 1 to 2 years depending on satellite image availability
Value applied:	N/A
Monitoring equipment	See Part 3, Task 1.1.2 of the Methodological Annex for a description of the tools used to create the maps used in the analysis.
QA/QC procedures to be applied	High resolution satellite imagery and ground monitoring data will be used for ground truthing. The minimum accuracy of the deforestation map will be 80%.
Purpose of data	This data is used in the calculations of emissions from the leakage belt during the crediting period.
Calculation method	N/A
Comments	These figures will appear in the verification report in the *ex post* versions of VM Table 11.c from the Methodological Annex (see Table 10 of this report).

3.3 Monitoring Plan

The project implemented the monitoring plan as described in Part 3 of the Methodological Annex.

Monitoring of land-use and land-cover change

The project site is still not part of a jurisdictional REDD program and there is no third party monitoring of the project site at this time. Therefore, the project is still responsible for monitoring land-use land-cover change in the project area and leakage belt. Land-use land-cover change was monitored using the same change detection techniques employed for the historical deforestation analysis (see Part 2, Step 2.4 and Step 2.5) following the monitoring protocol steps shown in Part 3, Task 1.1.2 of the Methodological Annex.

Steps:

1. The project acquire March to May Landsat 7 and Landsat 8 imagery from the USGS earth explorer website (Table 2) necessary to conduct IR-MAD change detection covering the project area and leakage belt. The acquired scenes from March, April, and May, were all cloudy and did not provide 100% coverage of the project area. Since PALSAR 2 has not yet been launched and PALSAR 1 ended service in 2011, the project acquired a Landsat 8 image from June, which when combined with the other 3 images provided 100% coverage of the project area.
2. No PALSAR data acquired.
3. The georeferencing of each image was compared to the base image (May 20, 2008 with clouds filled using data from May 10, 2010) used in the IR-MAD change detection. All images showed good agreement in georeferencing with less than 1 pixel error.
4. The project conducted IR-MAD change detection comparing each of the acquired Landsat scenes from 2013 to the base image using the python script provided by Mort Canty.
5. Cloud and Landsat 7 gap masks were created as appropriate for each image using the procedure described in Part 2, Step 2.4 of the methodological annex.
6. Using band math, it was determined that the acquired images provided 100% cloud and gap free coverage of the project area and leakage belt.
7. A decision tree was implemented in R to select pixels from the IR-MAD change images using the same procedures and values described in Part 2, step 2.4 of the methodological annex. A copy of the R script was provided to the verifiers. The IR-MAD image comparing the base image to June, 2013 was only used to detect deforestation and persistence in areas covered by clouds in the other Landsat images to reduce false positive deforestation detection associated with seasonality in the June image.
8. Two passes of a 3x3 majority filter and one pass of a 5 pixel orthogonal sieve was performed on the deforestation image.
9. The deforestation image was compared to the 2012 forest benchmark map so that only change areas classified as forest in 2012 were considered deforestation.
10. The deforestation image was converted to a vector of deforestation only and opened in google earth where it was compared to Geoeye imagery from July 2013. The detected deforestation showed good agreement with the high resolution imagery.

11. Accuracy assessment of the deforestation and persistence map was assessed as per the procedure described in Part 2, Step 2.5 of the methodological annex. The accuracy was greater than 80%.

12. By overlaying the deforestation map and the Land-use land-cover map of 2012, the areas of deforestation for each forest type during the monitoring period in the project area ($ABSLPA_{t,icl}$) and leakage belt ($ABSLLK_{t,icl}$) were calculated and entered in to the ex-post version of VM Table 11.b (project area deforestation per forest type) and VM Table 11.c (leakage belt area deforestation per forest type).

Table 2: Satellite imagery acquired to monitor deforestation during the monitoring period

Vector	Sensor	Resolution		% Reference Region Cover	% Cloud Cover	Acquisition date	Scene identifier	
		Spatial (m)	Image Type			(DD/MM/YYYY)	Path	Row
Data used for change detection during monitoring period								
Satellite	Landsat 7	30	multi-spec	100%	21%	23/03/2013	165	67
Satellite	Landsat 8	30	multi-spec	100%	5%	16/04/2013	165	67
Satellite	Landsat 8	30	multi-spec	100%	8%	25/05/2001	165	67
Satellite	Landsat 8	30	multi-spec	100%	1%	12/05/2002	165	67
Data use for land-use / land-cover interpretation and/or accuracy assessment								
Satellite	Geoeye	< 1	visible light	7%	2%	01/09/2011	On Google Earth	

Monitoring of carbon stock changes

No carbon stock monitoring was scheduled for this crediting period. The next monitoring will occur in 2015.

Monitoring of non-CO2 emissions from forest fires

Ex post versions for VM Table 23 and 24 were created using the data from the *ex post* version of VM Tables 11.b and 11.c.

Monitoring of impacts of natural disturbances and other catastrophic events

Village natural resource committees did not report any catastrophic events during the crediting period and there was no evidence of any catastrophic events in the remote sensing imagery used for the deforestation analysis.

Total *ex post* estimated actual net carbon stock changes and GHG emissions in the project area

Ex post estimates of actual net carbon stock changes are summarized in VM Table 29.

Monitoring of leakage

Leakage was evaluated by generating an ex-post version of VM Table 21.c using the deforestation data from VM Table 11.c and comparing it to the ex-ante version of VM Table 21.c. The difference between these two tables is presented in VM Table 21.d. The same was done for non-CO2 emissions from forest fires in the leakage belt (VM Table 24.b). For this crediting period, emissions from the leakage belt were less than the baseline, thus no leakage has occurred for this crediting period (leakage was set to zero).

There was also no reason to generate an ex-post version of VM Table 35 since no leakage occurred.

***Ex post* net anthropogenic GHG emission reductions**

Net anthropogenic GHG emission reductions and Verified Carbon Unites (VCUs) for this monitoring period were calculated using a *ex post* version of VM Table 36. The cumulative areas of credited avoided deforestation and areas of unavoided deforestation during this monitoring period within the project area and leakage belt are presented in Figure 3.

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

Baseline emissions were calculated prior to project validation as described in Step 6 of Part 2 of the Methodological Annex of the PD and summarized in VM Table 36. The portion of VM Table 36 covering the baseline emissions for the monitoring period covered by this report is shown in Table 3.

Table 3: Baseline carbon stock changes and GHG emissions from biomass burning during the monitoring period.

Project year t	Baseline carbon stock changes		Baseline GHG emissions	
	annual	cumulative	annual	cumulative
	$\Delta CBSLPA_t$	$\Delta CBSLPA$	$EBBBSLPA_t$	$EBBBSLPA$
	tCO_2-e	tCO_2-e	tCO_2-e	tCO_2-e
2012-2013	-126,560	-126,560	9,905	9,905

4.2 Project Emissions

Ex-post actual carbon stock changes were calculated as described in the monitoring plan section of this report following the procedures outlined in Part 3 of the Methodological Annex. The first step is to use the land-use land-cover change monitoring data to create ex-post versions of VM Table 11.b displayed here as Table 4.

Table 4: Ex-post annual areas deforested per forest class icl within the project area during the monitoring period

Area deforested per forest class icl within the project area			Total deforestation in the project area.	
ID_{icl}>	1	2		
Name >	High Carbon	Low Carbon	$ABSLRR_t$	$ABSLRR$

			annual	cumulative
Project year *t*	ha	ha	ha	ha
2012-2013	361	292	653	653

Then using carbon stock change factors from VM Tables 20.a.1 (above and below ground carbon stock changes) and 20.b.1 (above and below ground post deforestation carbon stock changes), ex-post versions of VM Table 21.b.1 and 21.b.2 were created as shown in Table 5 and Table 6.

Table 5: Ex-post actual carbon stock changes in above-ground biomass in the project area during monitoring period.

Carbon stock changes in the above ground biomass per initial forest class *icl*			Total carbon stock change in above-ground biomass of the initial forest classes in the project area		Carbon stock changes in above ground biomass per post-deforestation zone *z*		Total carbon stock change in above-ground biomass of post-deforestation zones in the project area		Total net carbon stock change in the above-ground biomass of the project area	
ID_{icl}	1	2	$\Delta Cab\ BSLPA_{icl,t}$	$\Delta Cab\ BSLPA_{icl}$	*IDz*	1	$\Delta Cab\ BSLPA_{z,t}$	$\Delta Cab\ BSLPA_{z}$	$\Delta Cab\ BSLPA_{t}$	$\Delta Cab\ BSLPA$
Name	High Carbon	Low Carbon	annual	cumulative	Name	All	annual	cumulative	annual	cumulative
Project year *t*	t CO_2e	t CO_2e	t CO_2e	t CO_2e	Project year *t*	t CO_2e	t CO_2e	t CO_2e	t CO_2e	t CO_2e
2012 - 2013	-57,523	-31,200	-88,724	-88,724	1	1,776	1,776	1,776	-86,948	-86,948

Table 6: Ex-post actual carbon stock changes in below-ground biomass in the project area during monitoring period.

Carbon stock changes in the below-ground biomass per initial forest class *icl*			Total carbon stock change in below-ground biomass of the initial forest classes in the project area		Carbon stock changes in below-ground biomass per post-deforestation zone *z*		Total carbon stock change in below-ground biomass of post-deforestation zones in the project area		Total net carbon stock change in the below-ground biomass of the project area	
ID_{icl}	1	2	$\Delta Cbb\ BSLPA_{icl,t}$	$\Delta Cbb\ BSLPA_{icl}$	*IDz*	1	$\Delta Cbb\ BSLPA_{z,t}$	$\Delta Cbb\ BSLPA_{z}$	$\Delta Cbb\ BSLPA_{t}$	$\Delta Cbb\ BSLPA$
Name	High Carbon	Low Carbon	annual	cumulative	Name	All	annual	cumulative	annual	cumulative
Project year *t*	t CO_2e	t CO_2e	t CO_2e	t CO_2e	Project year *t*	t CO_2e	t CO_2e	t CO_2e	t CO_2e	t CO_2e
2012 - 2013	-1,799	-1,090	-2,889	-2,889	1	535	535	535	-2,354	-2,354

Ex-post non-CO2 emissions from forest fires in the project area, were calculated using an ex-post version of VM Table 24.a (Table 7) and the parameters from VM Table 23.

Table 7: Ex-post actual non-CO2 emissions from forest fires in the project area.

Project year *t*	Emissions of non-CO_2 gases from baseline forest fires				Total baseline non-CO_2 emissions from forest fires in the project area	
	ID_{icl} = 1		ID_{icl} = 2		annual	cumulative
	$ABSLPA_{icl,t}$	$EBBBSLtot_{icl}$	$ABSLPA_{icl,t}$	$EBBBSLtot_{icl}$	$EBBBSLPA_t$	*EBBSLPA*
	ha	tCO_2-e	ha	tCO_2-e	tCO_2-e	tCO_2-e
2012 - 2013	361	4,529	292	2,456	6,985	6,985

4.3 Leakage

Leakage is quantified by comparing the baseline emissions for the leakage belt to the ex-post actual emissions from the leakage belt. Baseline carbon stock changes in the leakage belt were calculated prior to validation in Part 2, Step 6.1 of the Methodological Annex and presented in VM Tables 21.c.1 and 21.c.2. The baseline carbon stock changes for this monitoring period from these two tables is summarized in Table 8. Likewise, the baseline non-CO2 emissions from biomass burning were calculated prior validation in VM Table 24.b and the baseline non-CO2 emissions for this monitoring period are presented in Table 9.

Table 8: Baseline carbon stock changes in the leakage belt during the monitoring period.

Project year *t*	Total net carbon stock change in the above-ground biomass of the leakage belt		Total net carbon stock change in the below-ground biomass of the leakage belt	
	$\Delta Cab\ BSLLK_t$	$\Delta Cab\ BSLLK$	$\Delta Cbb\ BSLLK_t$	$\Delta Cbb\ BSLLK$
	annual	cumulative	annual	cumulative
	t CO_2e	t CO_2e	t CO_2e	t CO_2e
2012 - 2013	-193,304	-193,304	-5,957	-5,957

Table 9: Baseline non-CO2 emissions from forest fires in the leakage belt during the monitoring period

Project year *t*	Baseline emissions of non-CO_2 gases from forest fires				Total baseline non-CO_2 emissions from forest fires in the leakage belt	
	ID_{icl} = 1		ID_{icl} = 2		annual	cumulative
	$ABSLLK_{icl,t}$	$EBBBSLtot_{icl}$	$ABSLLK_{icl,t}$	$EBBBSLtot_{icl}$	$EBBBSLLK_t$	*EBBSLLK*

	ha	tCO_2-e	ha	tCO_2-e	tCO_2-e	tCO_2-e
2012 - 2013	755	9,465	696	5,865	15,330	15,330

Ex-post actual carbon stock changes in the leakage belt were calculated in the same manner as ex-post actual carbon stock changes in the project area. The first step is to use the land-use land-cover change monitoring data to create ex-post versions of VM Table 11.c displayed here as Table 10.

Table 10: Ex-post annual areas deforested per forest class icl within the leakage belt during the monitoring period

Area deforested per forest class icl within the leakage belt			Total baseline deforestation in the leakage belt	
ID_{icl}>	1	2		
Name >	High Carbon	Low Carbon	$ABSLLK_t$	*ABSLLK*
			annual	cumulative
Project year *t*	ha	ha	ha	ha
1	693	525	1,218	1,218

Then using carbon stock change factors from VM Tables 20.a.2 (initial forest class factors for leakage belt) and 20.b.2 (final non-forest class factors for leakage belt), ex-post versions of VM Table 21.b.1 and 21.b.2 were created as shown in Table 11 and Table 12.

The difference between the *ex ante* baseline carbon stock changes in the leakage belt and the *ex post* carbon stock changes for this monitoring period were calculated using VM Table 21.d (Table 13). Total *ex post* non-CO2 emissions from forest fires in the leakage belt were calculated using an ex-post version of VM Table 24.b (Table 14). Then a table similar to VM Table 21.d was created for calculating leakage from non-CO2 emissions from forest fires (Table 15). In both the case of carbon stock changes and emissions from forest fires, there were more emissions during the baseline scenario in the leakage belt than during the monitoring period. Thus, leakage for this monitoring period is set to zero.

Table 11: Ex-post actual carbon stock changes in above-ground biomass in the leakage belt during monitoring period.

Carbon stock changes in the above-ground biomass per initial forest class *icl*			Total carbon stock change in above-ground biomass of the initial forest classes in the leakage belt		Carbon stock changes in above ground biomass per post-deforestation zone *z*		Total carbon stock change in above-ground biomass of post-deforestation zones in the leakage belt		Total net carbon stock change in the above-ground biomass of the leakage belt	
ID_{icl}	1	2	$\Delta Cab\ BSLLK_{icl,t}$	$\Delta Cab\ BSLLK_{icl}$	*IDz*	1	$\Delta Cab\ BSLLK_{z,t}$	$\Delta Cab\ BSLLK_{z}$	$\Delta Cab\ BSLLK_{t}$	$\Delta Cab\ BSLLK$
Name	High Carbon	Low Carbon	annual	cumulative	Name	All	annual	cumulative	annual	cumulative
Project year *t*	t CO_2e	t CO_2e	t CO_2e	t CO_2e	Project year *t*	t CO_2e	t CO_2e	t CO_2e	t CO_2e	t CO_2e
1	-110,346	-56,191	-166,537	-166,537	1	1,181	1,181	1,181	-165,356	-165,356

Table 12: Ex-post actual carbon stock changes in below-ground biomass in the leakage belt during monitoring period.

Carbon stock changes in the below-ground biomass per initial forest class *icl*			Total carbon stock change in below-ground biomass of the initial forest classes in the leakage belt		Carbon stock changes in below ground biomass per post-deforestation zone *z*		Total carbon stock change in below-ground biomass of post-deforestation zones in the leakage belt		Total net carbon stock change in the below-ground biomass of the leakage belt	
ID_{icl}	1	2	$\Delta Cbb\ BSLLK_{icl,t}$	$\Delta Cbb\ BSLLK_{icl}$	*IDz*	1	$\Delta Cbb\ BSLLK_{z,t}$	$\Delta Cbb\ BSLLK_{z}$	$\Delta Cbb\ BSLLK_{t}$	$\Delta Cbb\ BSLLK$
Name	High Carbon	Low Carbon	annual	cumulative	Name	All	annual	cumulative	annual	cumulative
Project year *t*	t CO_2e	t CO_2e	t CO_2e	t CO_2e	Project year *t*	t CO_2e	t CO_2e	t CO_2e	t CO_2e	t CO_2e
1	-3,451	-1,964	-5415	-5415	1	341	341	341	-5,074	-5074

Table 13: Total net baseline carbon stock change in the leakage belt

Project year *t*	Total *ex ante* net baseline carbon stock change		Total *ex post* net actual carbon stock change		Total *ex post* leakage from carbon stock changes	
	annual	cumulative	annual	cumulative	annual	cumulative
	$\Delta CBSLLK_t$	$\Delta CBSLLK$	$\Delta CBSLLK_t$	$\Delta CBSLLK$	$\Delta CBSLLK_t$	$\Delta CBSLLK$
	t CO_2e	t CO_2e	t CO_2e	t CO_2e	t CO_2e	t CO_2e
2012-2013	-199,261	-199,261	-170,429	-170,429	-28,832	-28,832

Table 14: *Ex-post* actual non-CO2 emissions from forest fires in the leakage belt

Project year *t*	Emissions of non-CO_2 gases from baseline forest fires				Total baseline non-CO_2 emissions from forest fires in the leakage belt	
	ID_{icl} = 1		ID_{icl} = 2		annual	cumulative
	$ABSLLK_{icl,t}$	$EBBBSLtot_{icl}$	$ABSLLK_{icl,t}$	$EBBBSLtot_{icl}$	$EBBBSLLK_t$	$EBBSLLK$
	ha	tCO_2-e	ha	tCO_2-e	tCO_2-e	tCO_2-e
2012 - 2013	658.89	8,260	519.75	4,380	12,640	12,640

Table 15: Total net baseline non-CO2 emissions from forest fires in the leakage belt.

Project year *t*	Total *ex ante* net baseline emissions from forest fires in the leakage belt		Total *ex post* net actual emissions from forest fires in the leakage belt		Total *ex post* leakage from forest fires	
	annual	cumulative	annual	cumulative	annual	cumulative
	$\Delta CBSLLK_t$	$\Delta CBSLLK$	$\Delta CBSLLK_t$	$\Delta CBSLLK$	$\Delta CBSLLK_t$	$\Delta CBSLLK$
	t CO_2e	t CO_2e	t CO_2e	t CO_2e	t CO_2e	t CO_2e
2012-2013	15,330	15,330	12,640	12,640	-2,690	-2,690

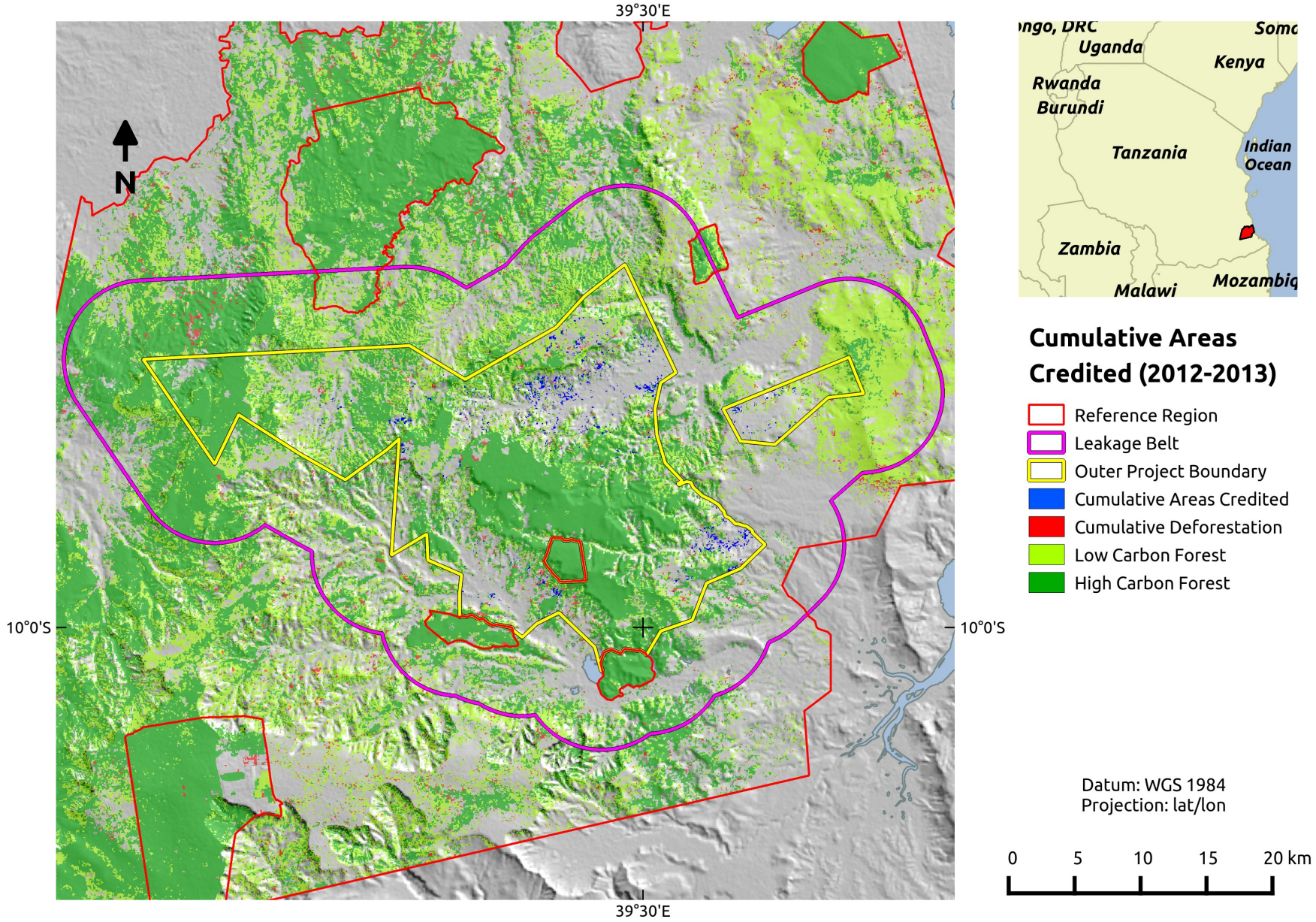

Figure 3: Cumulative Areas of Deforestation and Credited Avoided Deforestation 2012-2013

4.4 Net GHG Emission Reductions and Removals

As per the methodology presented in the Methodological Annex of the PD, the net anthropogenic GHG emission reductions of the AUD project activities during this monitoring period (Table 16) were calculated as follows:

$$\Delta REDD_t = (\Delta CBSLPA_t + EBBBSLPA_t) - (\Delta CPSPA_t + EBBPSPA_t) - (\Delta CLK_t + ELK_t)$$

Where:

$\Delta REDD_t$	*Ex post* estimated net anthropogenic greenhouse gas emission reduction attributable to the AUD project activity at year *t*; tCO_2e
$\Delta CBSLPA_t$	Sum of baseline carbon stock changes in the project area at year *t*; tCO_2e
	Note: The absolute value of $\Delta CBSLPA_t$ is used in equation 19.
$EBBBSLPA_t$	Sum of baseline emissions from biomass burning in the project area at year *t*; tCO_2e
$\Delta CPSPA_t$	Sum of *ex post* estimated actual carbon stock changes in project area at year *t*; tCO_2e
	Note: If $\Delta CPSPA_t$ represents a net increase in carbon stocks, a negative sign before the absolute value of $\Delta CPSPA_t$ is used. If $\Delta CPSPA_t$ represents a net decrease, a positive sign is used.
$EBBPSPA_t$	*Sum of (ex post estimated)* actual emissions from biomass burning in the project area at year *t*; tCO_2e
ΔCLK_t	Sum of *ex post* estimated leakage net carbon stock changes at year *t*; tCO_2e
	Note: If the cumulative sum of ΔCLK_t within the fixed baseline period is > 0, ΔCLK_t *shall be set to zero*.
ELK_t	Sum of *ex post* estimated leakage emissions at year *t*; tCO_2e
t	1, 2, 3 … *T,* a year of the proposed project crediting period; dimensionless

As per the methodology presented in the Methodological Annex of the PD, the number of Verified Carbon Units (VCUs) generated through the AUD project activities during this monitoring period (Table 16) were calculated at follows:

$$VCU_t = \Delta REDD_t - VBC_t$$

$$VBC_t = (\Delta CBSLPA_t - \Delta CPSPA_t) * Rf_t$$

Where:

VCU_t	Number of Verified Carbon Units that can be traded at time *t*; tCO_2e
	Note: If $VCU_t < 0$ no credits (VCUs) will be awarded and VCUs can only be granted if:

$$\sum_{t=0}^{t} \Delta REDD_t > 0$$

$\Delta REDD_t$	*Ex post* estimated net anthropogenic greenhouse gas emission reduction attributable to the AUD project activities at year *t*; tCO_2e
VBC_t	Number of Buffer Credits deposited in the VCS Buffer at time *t*; tCO_2e
$\Delta CBSLPA_t$	Sum of baseline carbon stock changes in the project area at year *t*; tCO_2e
$\Delta CPSPA_t$	Sum of *ex post* estimated actual carbon stock changes in the project area at year *t*; tCO_2e
RF_t	Risk factor used to calculate VCS buffer credits; %
	Note: RF_t was determined to be 10% using the latest version (v3.2) of the VCS-approved AFOLU Non-Permanence Risk Tool (see appendix 1).
t	1, 2, 3 … *T*, a year of the proposed project crediting period; dimensionless

Table 16: *Ex post* estimated net anthropogenic GHG emission reductions (ΔREDDt) and Verified Carbon Units (VCUt)

Project year t	Baseline carbon stock changes		Baseline GHG emissions		*Ex post* project carbon stock changes		*Ex post* project GHG emissions		*Ex post* leakage carbon stock changes		*Ex post* GHG leakage emissions		*Ex post* net anthropogenic GHG emission reductions		*Ex post* VCUs tradable		*Ex post* buffer credits	
	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative
	$\Delta CBSLPA_t$	$\Delta CBSLPA$	$EBBBSLPA_t$	$EBBBSLPA$	$\Delta CPSPA_t$	$\Delta CPSPA$	$EBBPSPA_t$	$EBBBSLPA$	ΔCLK_t	ΔCLK	ELK_t	ELK	$\Delta REDD_t$	$\Delta REDD$	VCU_t	VCU	VBC_t	VBC
	tCO_2-e	tCO_2-e	tCO_2-e	tCO_2-e	tCO_2-e	tCO_2-e	tCO_2-e	tCO_2-e	tCO_2-e	tCO_2-e	tCO_2-e	tCO_2-e	tCO_2-e	tCO_2-e	tCO_2-e	tCO_2-e	tCO_2-e	tCO_2-e
2012 - 2013	-126,560	-126,560	9,905	9,905	-89,302	-89,302	6,985	6,985	0	0	0	0	40,178	40,178	36,452	36,452	3,726	3,726

APPENDIX 1: NON-PERMANENCE RISK ASSESSMENT

Non-permanence risk for the carbon stock changes observed during this monitoring period was assessed using the latest version (v3.2) of the VCS-approved AFOLU Non-Permanence Risk Tool available at the time of writing this annex.

1 INTERNAL RISK

Project Management		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	The project is a REDD/AUD AFOLU project and therefore does not rely on tree planting to generate GHG credits.	N/A
b)	Ongoing enforcement of land-use and forest reserve management plans is required to protect carbon stocks in the project area.	2
c)	As described in sections 1.3 and 1.4 of the PD, the project is a partnership of multiple project proponent villages, with the NGOs MJUMITA and TFCG as implementing partners. The project activities consist of startup activities required to establish REDD in the participating villages and ongoing activities required to maintain REDD. Startup activities such as land-use and forest management planning were guided by professionals working for TFCG and MJUMITA with over 5 years of experience. For ongoing project activities, the core management team consists of the MJUMITA carbon enterprise coordinator and the MJUMITA technical adviser. The MJUMITA technical adviser is the most senior of the team with 12 years of experience working with rural communities to improve community forest management, establish conservation based enterprises, and market conservation related products. He is also an expert in the field of GIS and remote sensing and established the project baseline and monitoring protocol described in the validated project design. The carbon enterprise coordinator has _ years of experience working for both the government and MJUMITA in the field of forest management in Tanzania. He was instrumental in the design of the guidelines for benefit sharing within project proponent villages, which have proven popular and highly effective.	0
d)	The project proponent village governments are the primary project implementers. They are located in the immediate vicinity of the project area. The management team members provided by MJUMITA, the primary implementing partner, are located in Dar es Salaam, which is less than a day of travel from the project site. The management team is in constant communication with villages leaders, MJUMITA members, and elected community communication agents in each village and will continue to react quickly to any issues that arise.	0
e)	This is the first verification, so the project management team cannot yet claim to have managed a project through verification and issuance of GHG credits. However, the AFOLU project design, implementation, carbon accounting and reporting was carried out by the project management team in MJUMITA and not outsourced to	0

	other partners. Therefore, during subsequent verifications, the project can rightfully claim to have a management team that has successfully managed an AFOLU project through all stages.	
f)	The project went through an extensive processes of stakeholder consultations (see section 6 of PD) to identify risks to the project, means of monitoring these risks (see section 1.13 of PD), and risk mitigation activities (see section 1.13 of PD). The project has been validated under CCB standards. Furthermore, MJUMITA has several avenues to learn of unanticipated risks including feedback from MJUMITA members in participating communities, information from project communication agents (community members elected to serve as communication agents between MJUMITA and their respective communities who are provided with a phone and monthly airtime), annual village assembly meetings in participating villages that are attended by the MJUMITA carbon enterprise coordinator, and annual meetings of the project executive committee (described in section 1.4 of the PD). The project business plan (see Sup_Inf_Cash_Flow) provides a budget for addressing new risks. Therefore, the project management plan is very much in line with an adaptive management strategy.	-2
Total Project Management (PM) [as applicable, (a + b + c + d + e + f)] Total may be less than zero.		**0**

Financial Viability		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Not applicable	N/A
b)	Not applicable	N/A
c)	Not applicable	N/A
d)	All project startup activities were paid for by approximately $2.5 millions USD of donor funding provided to MJUMITA and TFCG by the Norwegian Ministry of Foreign Affairs, which will be exhausted by February 15th, 2015. The project's business plan shows that the project must obtain a minimum carbon price of $5.20 per VCU for this and each subsequent verification period in order to achieve its objectives and be financially self-sufficient (maintain a positive cash-flow) from February, 2015 onwards (see Sup_Inf_Cash_Flow) for projected cash-flow for the first fixed baseline period). The project's annual costs will be dramatically scaled back after the end of the start-up phase in August, 2014 as most of the project activities going forward will be implemented by participating communities with limited support from MJUMITA. From August 2014, only the community forest enterprise officer and a driver will continue to be employed full-time by MJUMITA for REDD activities. Their time and costs will be divided between the MJUMITA Community Forest Project Lindi and Kilosa sites (this PDD applies only to the Lindi site). At a price of $5.20, the project will generate enough revenue to cover all of the ongoing costs associated with the project, including performance based payments to project proponent villages at a level sufficient to cover opportunity costs, monitoring and verification, and saving enough revenue during the fixed-baseline period to cover the cost of the baseline renewal	0

	and validation in 2022 should the project need to continue in the voluntary market at that time. The average price for VCUs transacted in the voluntary carbon market in 2012 was $5.90, while the average price for REDD VCUs transacted in 2012 was $7.80. Thus, the project should be able to obtain the required minimum price, especially considering the considerable additional benefits that should appeal to corporate social responsibility buyers. Additionally, the project anticipates that by the end of the first fixed-baseline, other sources of funding will have become available through the creation of an international REDD program and that the project will be incorporated into a nested accounting system within Tanzania, which is currently under development. This could greatly decrease the project's costs associated with monitoring and could mean that the project could also forgo verification under VCS, if it can receive funding apart from the voluntary carbon market. Thus, the project will achieve the break even point immediately upon the sale of the VCUs from this monitoring period.	
e)	Not applicable	N/A
f)	Not applicable	N/A
g)	Not applicable	N/A
h)	Under a scenario of $5.35 per VCU, the project has already secured 100% of the funding to cover total cash out before break even. If needed, MJUMITA will also continue to fund raise to cover the costs of project implementation as it does with many other types of forest conservation activities in which it is engaged until a suitable buyer can be found.	0
i)	Not applicable since the project has already secured 100% of the financing required to reach the break-even point.	N/A
Total Financial Viability (FV) [as applicable, ((a, b, c or d) + (e, f, g or h) + i)] Total may not be less than zero.		**0**

Opportunity Cost		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Not applicable	N/A
b)	Not applicable	N/A
c)	Not applicable	N/A
d)	A survey of deforestation in the project area between 2010 and 2012 showed that the majority of deforestation was for a mixture of subsistence and cash crops. Although the most profitable crop in the area is sesame, it was only associated with a minority of deforestation, because it is viewed as a high risk crop by farmers. Maize cultivation, on the other hand, was found in 92% of clearings. Assuming that farmers are acting rationally, after accounting for the risk of crop failure, the most profitable land-use (whether for subsistence or sale)	0

	is maize combined with one other crop. If the project obtains a price of at least $5.20 per VCU, the project can afford to pass on $3.25 per VCU to communities, which is just enough to offset the opportunity cost of a typical farm in the project area. This is based on the following calculations. Based on the assessment of farms established from recent deforestation, the typical farm produces about $183.50 worth of crops (primarily maize) per hectare per year. Cultivating 1 hectare of land requires about 38 man power days, the labor opportunity cost of which is $53.20 (Mkamilo, 2004). Thus profit from1 hectare of cultivation on a typical farm is $130.30 per year of cultivation. Farmers in Lindi typically farm a plot for 1 to 2 years before abandoning it for an average of 10 years. Assuming a farmer cultivates for 2 years in a row and then fallows for 10 years before cultivating again, the 30 year (project life span) net present value using an annual discount rate of 10% of 1 hectare of land converted to farming is $303.48. At $3.25 per ton, after accounting for VCUs deposited into the risk buffer, the value of the average hectare of avoided deforestation is $367.53, which is about 17% more than that of a typical farm. Additionally, the project proponents made the choice to participate in REDD voluntarily because they recognized that doing so would result in net community benefits. The revenue sharing system established by the project proponents allows for both individual payments and community development projects as approved by each village assembly. Based on a survey of community members after REDD trial payments, MJUMITA found that even very small cash dividends can contribute to improving livelihoods. Forty-four per cent of respondents reported that someone in their household used their dividends for entrepreneurial activities aimed at increasing their agricultural productivity, livestock keeping, or starting a small business. Additionally, purchasing food, which was not considered an entrepreneurial activity, reduces labor demands and provides time to work on entrepreneurial activities. Unlike the baseline scenario, the average community member expends no labor to obtain REDD dividends. Thus, in the project scenario, REDD revenue can be leveraged by community members to be worth more than the value of the payments themselves. Additionally, almost all project proponent villages have decided in village assembly meetings to put some of their dividends into village development projects such as schools and health facilities, or improving water accessibility. Compared to REDD, the baseline land-uses are more difficult for the villages to tax and would therefore not result in revenue that communities can decided to put towards community development projects. Finally, the conservation agriculture techniques introduced by the project and that will continue to be spread by the project through community base trainers have resulted in substantially higher yields than traditional practices. Thus, the project proponent villages clearly recognize net community benefits from REDD.	
e)	Not applicable	N/A
f)	Not applicable	N/A
g)	Not applicable	N/A

h)	The participating project proponent villages democratically decided to institute the current management practices through the introduction of a series of new plans and bylaws, and could democratically decide to change the management practices as they see fit. However, we view this as unlikely given that the process to establish the land-use and forest management plans was participatory, involved a wide range of stakeholders, and communities were well informed regarding REDD at the time of the decisions (see section 6 of the PDD for evidence of extensive community consultation). Additionally, to the best of the knowledge of the implementing partners, no village in Tanzania has ever abolished a land-use or forest management plan once established. Thus there is no anticipated limit to project longevity.	-2
i)	Same response as to risk factor h.	-8
Total Opportunity Cost (OC) [as applicable, (a, b, c, d, e or f) + (g + h or i)] Total may not be less than 0.		**0**

Project Longevity		
a)	Not applicable	N/A
b)	The participating project proponent villages democratically decided to institute the current management practices through the introduction of a series of new plans and bylaws, and could democratically decide to change the management practices as they see fit. However, we view this as unlikely given that the process to establish the land-use and forest management plans was participatory, involved a wide range of stakeholders, and communities were well informed regarding REDD at the time of the decisions (see section 6 of the PDD for evidence of extensive community consultation). Additionally, to the best of the knowledge of the implementing partners, no village in Tanzania has ever abolished a land-use or forest management plan once established. Thus there is no anticipated limit to project longevity.	0
Total Project Longevity (PL) May not be less than zero		**0**

Internal Risk	
Total Internal Risk (PM + FV + OC + PL) Total may not be less than zero.	**0**

2 EXTERNAL RISKS

Land Tenure and Resource Access/Impacts		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating

a)	Ownership and resource access/use rights are held by the project proponent villages (see section 1.12 of the PD for more details)	0
b)	Not applicable	N/A
c)	The startup phase of the project (which is now complete) involved establishing land-use plans for each project proponent village. Part of the process of establishing land-use plans is clarifying village boundaries. Numerous boundary conflicts were identified and settled using established legal procedures. For a complete list of the conflicts and a description of the resolutions, see section 1.12 of the PD. Only one boundary dispute has not yet been fully resolved. This dispute involves approximately 600 ha of forest, which is far less than 5% of the project area.	0
d)	There are no disputes over access/use rights. The project area is clearly defined as communal village land and under the authority of the project proponent village councils (see section 1.12 of the PD for more details.).	0
e)	Not applicable	N/A
f)	The participating project proponent villages democratically decided to institute the current management practices through the introduction of a series of new plans and bylaws, and could democratically decide to change the management practices as they see fit. However, we view this as unlikely given that the process to establish the land-use and forest management plans was participatory, involved a wide range of stakeholders, and communities were well informed regarding REDD at the time of the decisions (see section 6 of the PDD for evidence of extensive community consultation). Additionally, to the best of the knowledge of the implementing partners, no village in Tanzania has ever abolished a land-use or forest management plan once established. Thus there is no anticipated limit to project longevity.	-2
g)	The project successfully resolved numerous village boundary conflicts as described in section 1.12 of the PD and expects to use the same procedures to resolve the last remaining dispute.	-2
Total Land Tenure (LT) [as applicable, ((a or b) + c + d + e + f + g)] Total may not be less than zero.		**0**

Community Engagement		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	The decision for project proponent villages to engage in REDD was approved by a majority of resident adults in village assembly meetings in each project proponent village after an exhaustive consultative process described in section 6 of the PD. The village assemblies are legally empowered to make decisions on behalf of all community members (see section 6 of the PD for more details). The small percentage of households that did not participate directly in this process have been notified about the project either through the REDD dividend payment process or have been approached directly in the field by members of the village natural resource committee members. It is estimated that awareness	0

	of the project amongst households living directly adjacent to the project area is near 100%.	
b)	Some residents from neighboring villages would have cleared forests in the project area in the baseline scenario. Since these farmers are not residents of the project proponent villages, they are not legally entitled to representation with regards to land-use decisions in the project proponent villages and were thus not consulted. However, a survey of deforestation in project proponent villages between 2010 and 2012 showed that only 33% of deforestation agents were not residents of the project proponent villages (see step 3.1 of the Methodological Annex of the PD for more details). Thus, far more than 20% of households who live within 20 km of the project area and who depend on the project area have been legally consulted. Furthermore, the project is targeting agricultural interventions to non-project proponent villages boarding the project area.	0
c)	The project is validated under the CCB standards, including GOLD level status for community benefits. The project proponent villages will continue to control decisions regarding project implementation through village assembly meetings and will interact with the implementing partner (MJUMITA) through the project executive committee meetings, annual village assembly meetings attended by the carbon enterprise coordinator, and phone conversations between the carbon enterprise coordinator and village leaders, MJUMITA members, and elected community communication agents (see section 6 of the PD for more details on ongoing consultive processes).	-5
Total Community Engagement (CE) [where applicable, (a + b + c)] Total may be less than zero.		**-5**

Political Risk		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Not applicable	N/A
b)	<table><tr><th>Indicator Name</th><th>2008</th><th>2009</th><th>2010</th><th>2011</th><th>2012</th><th>Average of all years</th></tr><tr><td>Control of Corruption: Estimate</td><td>-0.42</td><td>-0.44</td><td>-0.54</td><td>-0.68</td><td>-0.85</td><td>-0.59</td></tr><tr><td>Government Effectiveness: Estimate</td><td>-0.48</td><td>-0.59</td><td>-0.58</td><td>-0.63</td><td>-0.69</td><td>-0.59</td></tr><tr><td>Political Stability and Absence of Violence/Terrorism: Estimate</td><td>-0.21</td><td>0.07</td><td>-0.02</td><td>-0.04</td><td>0.03</td><td>-0.04</td></tr><tr><td>Regulatory Quality: Estimate</td><td>-0.50</td><td>-0.42</td><td>-0.41</td><td>-0.40</td><td>-0.40</td><td>-0.43</td></tr><tr><td>Rule of Law: Estimate</td><td>-0.34</td><td>-0.48</td><td>-0.49</td><td>-0.55</td><td>-0.58</td><td>-0.49</td></tr><tr><td>Voice and Accountability: Estimate</td><td>-0.17</td><td>-0.16</td><td>-0.13</td><td>-0.17</td><td>-0.22</td><td>-0.17</td></tr><tr><td>Average of all categories</td><td>-0.35</td><td>-0.34</td><td>-0.36</td><td>-0.41</td><td>-0.45</td><td>-0.38</td></tr></table> The average governance score of the World Bank Institute's Worldwide	4

	Governance Indicators for Tanzania for the 5 most recent years for which data is available is -0.38.	
c)	Not applicable	N/A
d)	Not applicable	N/A
e)	Not Applicable	N/A
f)	Tanzania is implementing REDD+ readiness activities supported by UN-REDD and bilateral support from the government of Norway. The project was started along with other pilot REDD projects in the country as part of REDD+ readiness activities funded by Norway.	-2
Total Political (PC) [as applicable ((a, b, c, d or e) + f)] Total may not be less than zero.		**2**

External Risk	
Total External Risk (LT + CE + PC) Total may not be less than zero.	**0**

3 NATURAL RISKS

Information on natural risks was gathered through meetings with project stakeholders described in section 6 of the PD.

Natural Risk (Fire)	
Significance	The Miombo woodland of the project area is fire adapted and early dry season fires cause little or no damage to Miombo woodland carbon stocks. Late dry season fires can have a degrading effect on Miombo carbon stocks. Coastal forest burn less frequently due to the lack of grass and greater moisture content of the undergrowth vegetation. However, it is observed that in exceptionally dry years (which occur every 2 to 3 years), it is not uncommon for some fires to spread into more open coastal forest areas. However, the remote sensing used to establish the baseline (described in Step 2.5 of the Methodological Annex of the PD) which involved satellite imagery covering 21 years from 1991 to 2012, did not detect any sign of deforestation caused by fire in the reference region. Fire is thus rather a potentially degrading force rather than likely to cause catastrophic loss of carbon stocks in the project area. However, over long periods of time, in the absence of mitigation, the carbon stocks are likely to decline. Therefore, the significance is rated as Minor.
Likelihood	Fires occur every year in the woodland portions of the project area and also in more open portions of the coastal forest in drought years that occur every 2 to 3 years. Thus, the likelihood is less than every 10 years.
Score (LS)	5
Mitigation	(0.5) The project is implementing a wide number of activities to reduce the risk of fire. The agricultural interventions promoted by the project encourage farmers to use vegetative debris from farm preparation as moisture retaining, weed

	suppressing and soil enhancing mulch rather than burning it. Additionally, the project has engaged in awareness raising on fire prevention and fire fighting, passing by-laws that prohibit the use of fire to clear forests; or the starting of fires within village forest reserves for any other reason. Also, a reduction of farming activities in the core of the project area will significant reduce the potential for fires in the coastal forest portions of the project area.

Natural Risk (Pest and Disease)	
Significance	No damage from pest or disease has ever been recorded in the project area.
Likelihood	No pest or disease events have been recorded in the area.
Score (LS)	0
Mitigation	0

Natural Risk (Extreme Weather)	
Significance	High winds have been documented to damage coastal forests in 1977 and 1993 in Tanzania according to Burgess *et al*. 2000. The records suggest the events were highly localized, only affecting one specific forest area in each case. Therefore, we rated the significance as insignificant.
Likelihood	Cyclones are extremely rare along the Tanzania coast. The two documented cases of significant tree falls along the Tanzanian coast occurred in 1993 and 1977, and both sites were more than 300 km to the north of the project area. No stakeholders in the project area mentioned high winds as a perceived threat to forests. Therefore, we rated the likelihood as every 25 to less than 50 years.
Score (LS)	1
Mitigation	1

Natural Risk (Geological Risk)	
Significance	There is no historically recorded damage to forests caused by earthquakes in the region and the region is not volcanic.
Likelihood	Significant earthquakes in the region are extremely rare and have never been documented to damage forests and the region is not volcanic.
Score (LS)	0
Mitigation	0

Score for each natural risk applicable to the project (Determined by (LS × M)	
Fire (F)	2.5
Pest and Disease Outbreaks (PD)	0
Extreme Weather (W)	1

Geological Risk (G)	0
Other natural risk (ON)	0
Total Natural Risk (as applicable, F + PD + W + G + ON)	**3.5**

4 OVERALL NON-PERMANENCE RISK RATING AND BUFFER DETERMINATION

4.1 Overall Risk Rating

Risk Category	Rating
I. Internal Risk	0
II. External Risk	0
III. Natural Risk	3.5
Overall Risk Rating (a + b + c)	**10***

* the minimum overall risk rating allowed by the tool is 10%.

4.2 Calculation of Total VCUs

See section 4.4 of the main body of the monitoring report.