



# VILLAGE CLIMATE SOLUTIONS 2013-2022 MONITORING REPORT



|                           |                                      |
|---------------------------|--------------------------------------|
| Project title             | Village Climate Solutions            |
| Project ID                | 1325                                 |
| Monitoring period         | 21-April-2013 to 20-April-2022       |
| Original date of issue    | 13-May-2024                          |
| Most recent date of issue |                                      |
| Version                   | 1.0                                  |
| VCS Standard Version      | 4.7                                  |
| Prepared by               | Theron Morgan-Brown, Reterra Limited |

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# PROJECT DETAILS

## 1.1 Summary Description of the Implementation Status of the Project

This project is reducing greenhouse gas emissions caused by unplanned deforestation in 41,924 ha of forest, while simultaneously promoting rural economic development and the conservation of endangered species in 8 villages and 2 mitaa in Lindi Municipality in Tanzania. Historically, deforestation in the area was driven by the expansion of small-holder cultivation of cash and subsistence crops.

The project was started by two NGOs, the Tanzania Forest Conservation Group and MJUMITA with donor funding from 2010-2015. The project helped villages improve forest management by establishing land-use plans and village forest reserves. The project also trained community members in conservation agriculture techniques to avoid pests, maintain fertility, and increase crop yields, reducing the need to clear more forests for agriculture. The project helped community members start beekeeping, and village savings and loans associations. Finally, the project helped villages develop an innovative REDD benefit sharing mechanism that paid dividends to every community member and generated revenue for village development projects chosen by community members.

Using donor funds, the project made the first performance-based REDD payments in 2014 and 2015 based on GHG reductions of 39,896 tCO<sub>2</sub>e achieved in the first monitoring period (2012-2013). Communities paid TSH 109 million to women and their dependent children, TSH 37 million to men, TSH 34 million to education, health, and water services, and TSH 7 million to forest management. Unfortunately, the NGO partners failed to find a suitable buyer for the 2012-2013 credits and could not support the project after 2015. The project communities continued to protect their village forest reserves without monitoring, verification, or sales. Cumulative emissions reductions reached 232,386 tCO<sub>2</sub>e in 2018.

Then, Lindi Municipality, decided to convert Nandambi and Mkanga 1 from villages to Mitaa and to sell a portion of their village forest reserves to Tanzanian investors. This would not have occurred if the project had been able to continue to verify and sell emissions reductions. This resulted in an acceleration of deforestation from 2019-2022 which reduced the projects cumulative emissions reductions to 103,877 tCO<sub>2</sub>e by 2022. Thus, net reductions for this monitoring period are 63,979 tCO<sub>2</sub>e.

At the end of 2022, in a new Tanzania company named Village Climate Solutions Limited (VCSL), which is majority owned by the Tanzania Forest Conservation Group, stepped into the role of MJUMITA with permission from MJUMITA and the project communities. VCSL is now working with Nandambi Mtaa and Lindi Municipality to bring at least 3000 ha of forest now on municipal land back into the project. VCSL has revitalized community forest management in these communities and taken steps to ensure the project will have a reliable revenue stream moving forward.

## 1.2 Audit History

| Audit type              | Period                        | Program   | Validation/verification body name       | Number of years |
|-------------------------|-------------------------------|-----------|-----------------------------------------|-----------------|
| Validation/verification | (21-April-2012–20-April-2013) | VCS + CCB | SCS Global Services                     | One year        |
| Verification            | (21-April-2013–20-April-2022) | VCS       | TÜV Rheinland Energy & Environment GmbH | Nine years      |

## 1.3 Sectoral Scope and Project Type

|                                     |       |
|-------------------------------------|-------|
| Sectoral scope                      | AFOLU |
| AFOLU project category <sup>1</sup> | REDD  |
| Project activity type               | AUDD  |

## 1.4 Project Proponent

|                   |                                                                                                                                     |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Organization name | Village Climate Solutions Limited                                                                                                   |
| Contact person    | Charles Meshack                                                                                                                     |
| Title             | Director                                                                                                                            |
| Address           | Postal code 1411, Morocco St, Ali Hassan Mwinyi Road, Plot 245, Block #B, Kinondoni district, Msasani ward, Dar es salaam, Tanzania |
| Telephone         | +255 655 380 607                                                                                                                    |
| Email             | meshack@villageclimatesolutions.co.tz                                                                                               |

## 1.5 Other Entities Involved in the Project

<sup>1</sup> See Appendix 1 of the VCS Standard

|                     |                                        |
|---------------------|----------------------------------------|
| Organization name   | Kinyope Village Government             |
| Role in the project | Managing authority for Kinyope Village |
| Contact person      | Maunde Yusufu                          |
| Title               | Village Executive Officer              |
| Address             | P O Box 1070 Lindi                     |
| Telephone           | 0627662531                             |
| Email               |                                        |

|                     |                                       |
|---------------------|---------------------------------------|
| Organization name   | Ruhoma Village Government             |
| Role in the project | Managing authority for Ruhoma Village |
| Contact person      | Somoe M Mwanga                        |
| Title               | Village Executive Officer             |
| Address             | P O Box 1070 Lindi                    |
| Telephone           | 0621507227                            |
| Email               |                                       |

|                     |                                                 |
|---------------------|-------------------------------------------------|
| Organization name   | Milola Magharibi Village Government             |
| Role in the project | Managing authority for Milola Magharibi Village |
| Contact person      | Mohamedi Katuli                                 |
| Title               | Village Executive Officer                       |
| Address             | P O Box 1070 Lindi                              |
| Telephone           | 0784794341                                      |
| Email               |                                                 |

|                     |                                       |
|---------------------|---------------------------------------|
| Organization name   | Kiwawa Village Government             |
| Role in the project | Managing authority for Kiwawa Village |
| Contact person      | Twalibu B Magulu                      |
| Title               | Village Executive Officer             |
| Address             | P O Box 1070 Lindi                    |
| Telephone           | 0672474026                            |
| Email               |                                       |

|                            |                                         |
|----------------------------|-----------------------------------------|
| <b>Organization name</b>   | Muongano Village Government             |
| <b>Role in the project</b> | Managing authority for Muungano Village |
| <b>Contact person</b>      | Rashidi Rashidi                         |
| <b>Title</b>               | Village Executive Officer               |
| <b>Address</b>             | P O Box 1070 Lindi                      |
| <b>Telephone</b>           | 0682593698                              |
| <b>Email</b>               |                                         |

|                            |                                           |
|----------------------------|-------------------------------------------|
| <b>Organization name</b>   | Mkombamosi Village Government             |
| <b>Role in the project</b> | Managing authority for Mkombamosi Village |
| <b>Contact person</b>      | Issa Mbaruku                              |
| <b>Title</b>               | Village Executive Officer                 |
| <b>Address</b>             | P O Box 1070 Lindi                        |
| <b>Telephone</b>           | 0783706901                                |
| <b>Email</b>               |                                           |

|                            |                                        |
|----------------------------|----------------------------------------|
| <b>Organization name</b>   | Makumba Village Government             |
| <b>Role in the project</b> | Managing authority for Makumba Village |
| <b>Contact person</b>      | Rashidi Mpwili                         |
| <b>Title</b>               | Village Executive Officer              |
| <b>Address</b>             | P O Box 1070 Lindi                     |
| <b>Telephone</b>           | 0786062079                             |
| <b>Email</b>               |                                        |

|                            |                                        |
|----------------------------|----------------------------------------|
| <b>Organization name</b>   | Likwaya Village Government             |
| <b>Role in the project</b> | Managing authority for Likwaya Village |
| <b>Contact person</b>      | Raymond Mlaponi                        |
| <b>Title</b>               | Village Executive Officer              |
| <b>Address</b>             | P O Box 1070 Lindi                     |
| <b>Telephone</b>           | 0788057969                             |

|       |  |
|-------|--|
| Email |  |
|-------|--|

|                     |                                                |
|---------------------|------------------------------------------------|
| Organization name   | Mkanga 1 Serikali ya Mtaa                      |
| Role in the project | Managing authority for Mkanga 1 Municipal Area |
| Contact person      | Ahmadi Juma Makuwango                          |
| Title               | Chairperson                                    |
| Address             | P O Box 1070 Lindi                             |
| Telephone           | 0621610719                                     |
| Email               |                                                |

|                     |                                                |
|---------------------|------------------------------------------------|
| Organization name   | Nandambi Serikali ya Mtaa                      |
| Role in the project | Managing authority for Nandambi Municipal Area |
| Contact person      | Saidi Ahmadi Kitenge                           |
| Title               | Chairperson                                    |
| Address             | P O Box 1070 Lindi                             |
| Telephone           | 0785835570                                     |
| Email               |                                                |

|                     |                                                                                                                                                           |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Organization name   | Lindi Municipality                                                                                                                                        |
| Role in the project | Providing technical advice to villages within Lindi Municipality on forest management, agricultural extension, by-laws, and village development projects. |
| Contact person      |                                                                                                                                                           |
| Title               | Municipal Executive Director                                                                                                                              |
| Address             | P O Box 1070 Lindi                                                                                                                                        |
| Telephone           |                                                                                                                                                           |
| Email               |                                                                                                                                                           |

|                     |                                                                                                  |
|---------------------|--------------------------------------------------------------------------------------------------|
| Organization name   | Tanzania Forest Conservation Group                                                               |
| Role in the project | Extension services, advocacy, biodiversity monitoring, expertise in community forest management. |

|                |                                                                                       |
|----------------|---------------------------------------------------------------------------------------|
| Contact person | Charles Meshack                                                                       |
| Title          | Executive Director                                                                    |
| Address        | Plot 323, Msasani Village, Old Bagamoyo Road, PO Box 23410<br>Dar es Salaam, Tanzania |
| Telephone      | +255 22 2669007                                                                       |
| Email          | cmeshack@tfcg.or.tz                                                                   |

|                     |                                                                           |
|---------------------|---------------------------------------------------------------------------|
| Organization name   | Reterra Limited                                                           |
| Role in the project | Marketing, remote sensing, technical training, technical document writing |
| Contact person      | Theron Morgan-Brown                                                       |
| Title               | Director                                                                  |
| Address             | Top Floor, 145 Uxbridge Rd., London W12 9RB, UK                           |
| Telephone           |                                                                           |
| Email               | info@reterra.ltd                                                          |

## 1.6 Project Start Date

|                    |                                                                                                                                                                                                                                                                                   |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project start date | 21-April-2012                                                                                                                                                                                                                                                                     |
| Justification      | Village land-use and forest reserve bylaws established as part of creating this project came into force and trial payments were made to communities in late 2011 and early 2012. This was the date of the only suitable Landsat image for mapping the project area at start date. |

## 1.7 Project Crediting Period

|                                                       |                                                                                                                             |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Crediting period                                      | 30-years (REDD AFOLU projects must be minimum of 20 years). Will be extended by 20 years at the next baseline revalidation. |
| Start and end date of first or fixed crediting period | 21-April-2012 to 20-April-2042                                                                                              |

## 1.8 Project Location

This is a grouped project. The initial project instances are on village land located in Lindi District, Lindi Region approximately 30 km inland from the Indian Ocean in south-eastern Tanzania (Figure 1). The initial project area 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. There have been no new project instances during this monitoring period.

A KML file of the village boundaries is available on the project's Verra VCS registry page.

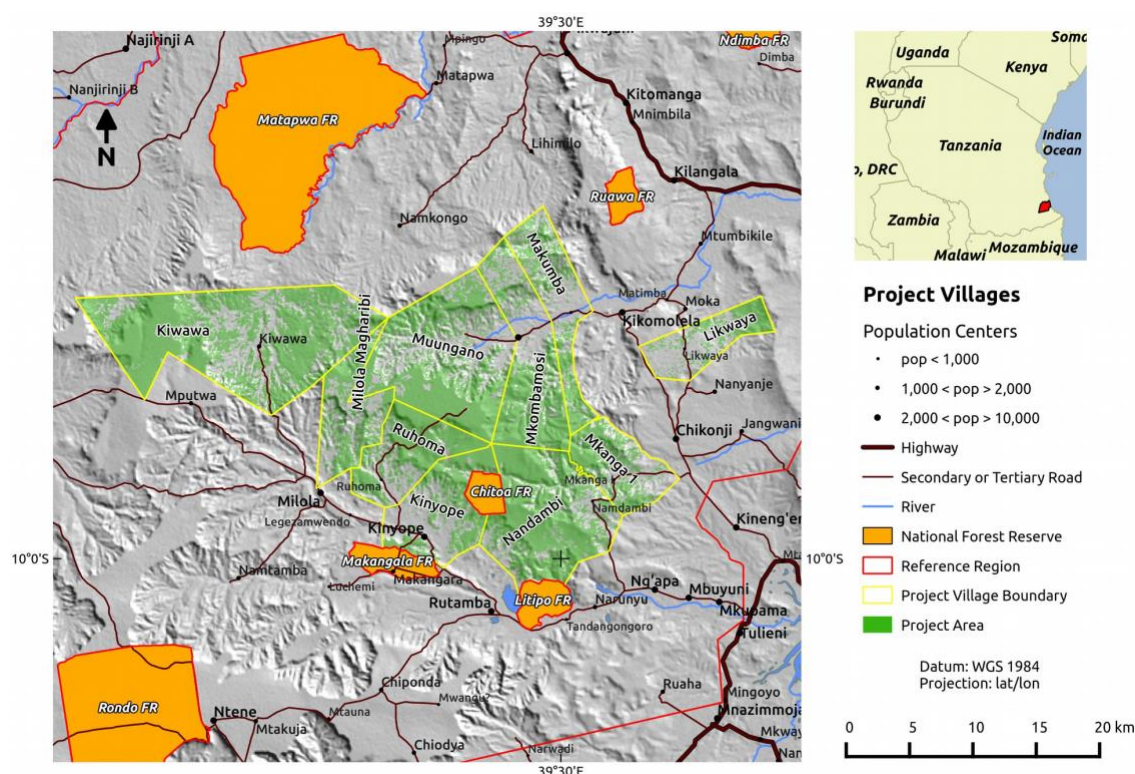


Figure 1 Project location and area.

## 1.9 Title and Reference of Methodology

| Type<br>(methodology,<br>tool or module). | Reference ID, if<br>applicable | Title                                           | Version |
|-------------------------------------------|--------------------------------|-------------------------------------------------|---------|
| Methodology                               | VM0015                         | Methodology for Avoided Unplanned Deforestation | 1.1     |

|      |        |                                                                                            |     |
|------|--------|--------------------------------------------------------------------------------------------|-----|
| Tool | VT0001 | Tool for the Demonstration and Assessment of Additionality in VCS AFOLU Project Activities | 3.0 |
| Tool |        | AFOLU Non-Permanence Risk Tool                                                             | 4.2 |

## 1.10 Double Counting and Participation under Other GHG Programs

### 1.10.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

### 1.10.2 Registration in Other GHG Programs

Is the project registered or seeking registration under any other GHG programs?

☒ Yes ☐ No

The project is registered under the CCB project and has previously issued VCS credits that were given an additional CCB tag. The project is not registered or seeking registration under any other GHG program.

## 1.11 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

### 1.11.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the *VCS Program Definitions* for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

### 1.11.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

☒ Yes ☐ No

The project is registered under the CCB project and has previously issued VCS credits that were given an additional CCB tag. The CCB tag does not result in double counting as it is added to VCS credits in the same registry and does not result in separate tradable units. The project is not registered or seeking registration under any other GHG program.

### 1.11.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes

☒ No

## 1.12 Sustainable Development Contributions

The project activities making the most direct contributions to sustainable development goals during this monitoring period were the following:

- forest patrols conducted by village natural resource committees with GPS locations of deforestation detected during the 2012-2013 monitoring period and continued patrols conducted periodically by all villages from 2015-2022. These contributed to reduced habitat loss and reduced green-house gas emissions.
- Performance-based payments made by MJUMITA to villages which reduced their emissions compared to baseline contributed to pro-poor spending and improvements in health and education services.

All the SD contributions overlap with nationally stated sustainable development priorities, but the project was designed prior to the inclusion of sustainable development goals in the VCS standard and has not made any provisions to monitor or report them nationally.

.

Table 1: Sustainable Development Contributions

| Row number | SDG target | SDG indicator                                                                      | Net impact on SDG indicator                                            | Current project contributions                                                                                                                                                                 | Contributions over project lifetime                                                                                                                                                                                                                                    |
|------------|------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1)         | 1.1        | 1.b.1 Pro-poor public social spending                                              | Implemented activities to increase public social spending              | Villages earned 187 million TSH during this monitoring period of which 109 million went to support women and children, 37 million to men, and 41 million TSH to village development projects. | Project villages earned approximately 472 million TSH since the start of the project from trial and performance-based payments. Of that, 346 million TSH was paid out as dividends to village residents and 126 million TSH was spent on village development projects. |
| 2)         | 2.4        | 2.4.1 Proportion of agricultural area under productive and sustainable agriculture | Implemented activities to increase the use of sustainable agriculture. | 228 farmers in project villages received conservation agriculture training and supplies from the project during this monitoring period.                                                       | 515 farmers in project villages received conservation agriculture training and supplies from the project during this monitoring period.                                                                                                                                |
| 3)         | 3.8        | 3.8.1 Coverage of essential health services                                        | Implemented activities to increase access to health-care services      | Mkanga 1 started construction of their health dispensary using funds earned from the project.                                                                                                 | A total of 3 villages have used project earnings to construct / rehabilitate health-care dispensaries.                                                                                                                                                                 |

|    |      |                                                                                                                                         |                                                                |                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                       |
|----|------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4) | 4.a  | 4.a.1 Proportion of schools offering basic services, by type of service                                                                 | Implemented activities to improve primary education facilities | Mkanga 1 used project earnings to purchase school desks and Makumba village used project earnings to add a classroom to their primary school.                                                                                           | A total of 4 villages have used project earnings to improve primary school facilities including the purchase of 30 desks and construction of 2 classrooms and 1 school toilet.                                                        |
| 5) | 6.1  | 6.1.1 Proportion of population using safely managed drinking water services                                                             | Implemented activities to improve access to safe drink water   | 4 villages used project earnings to repair boreholes as follows:<br><br>Ruhoma – 3 boreholes<br>Muungano – 4 boreholes<br>Mkombamosi – 3 boreholes<br>Makumba – 1 borehole                                                              | A total of 5 villages have used project earnings to improve access to safe drinking water by repairing 12 water infrastructure sites used by community members to access water.                                                       |
| 6) | 13.0 | 13.2.2 Total greenhouse gas emissions per year                                                                                          | Implemented activities to avoid emissions                      | Net reduction of greenhouse gas emissions of 63,981 tCO <sub>2</sub> e in this monitoring period.                                                                                                                                       | Net reduction of greenhouse gas emissions of 103,877 tCO <sub>2</sub> e since the beginning of the project.                                                                                                                           |
| 7) | 15.1 | 15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type | Implemented activities to increase                             | The village forest reserves in the project area include habitat for many endemic and threatened species including the Rondo Dwarf Galago, an endangered primate. The project reduced deforestation by 639 ha in this monitoring period. | The village forest reserves in the project area include habitat for many endemic and threatened species including the Rondo Dwarf Galago, an endangered primate. The project reduced deforestation by 941 ha since the project start. |

### 1.13 Commercially Sensitive Information

No commercially sensitive information has been excluded.

## 2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

### 2.1 Stakeholder Engagement and Consultation

#### 2.1.1 Stakeholder Identification

A thorough stakeholder identification process with direct participation from more than 2000 people in the project and neighbouring villages was conducted at project validation as detailed in section 6 of the project VCS PD and section G1.5 of the project CCB PDD. Reports describing the process in detail are available here: <https://www.tfcg.org/wp-content/uploads/2018/05/TF CG-and-MJUMITA-FPIC-at-project-establishment-FINAL.pdf>, and here: <https://www.tfcg.org/wp-content/uploads/2018/05/Lindi-Social-Impact-Assessment-Workshop-Report-2011-FINAL.pdf>

The original project documentation is still relevant for describing the stakeholders and identification for the project area which has remained village land. The only changes since then apply to what was previously Nandambi and Mkanga 1 villages, which were converted to municipal land by Lindi Municipality in 2018. This effectively removed those areas from control under the project because it resulted in the dissolution of the project proponents, Nandambi and Mkanga 1 village councils which had control over that area. Some of the project area in these villages was sold by the municipality to Tanzanian investors and institutions. Most of that has been cleared, but there is still some uncleared forest which may belong to buyers which may wish to join the project. The village governments have been replaced with what are being referred to as mitaa governments as described in THE LOCAL GOVERNMENT (URBAN AUTHORITIES) ACT, CAP 288 RE 2002. They do not have the same powers of land management as a village and thus cannot simply replace the former village councils in the project. Since 2023, Village Climate Solutions Limited has been working to identify stakeholders in these areas and develop means to bring as many of them and the remaining forests in that area back into the project. Note that there was a loss of stakeholders during the monitoring period and the process to identify new stakeholders and involve them in the project has happened outside of the monitoring period covered in this report. The following table is used to describe this ongoing process which will not be complete until the next monitoring report.

## Stakeholder Identification

Village Climate Solutions Limited introduced itself and the desire to reinvigorate and expand the Lindi REDD+ project in 2022, starting with several meetings with municipal leadership and heads of departments, including a full day workshop on REDD and the VCSL plan for a REDD project. VCSL then started meetings with village councils and village assemblies in the project area in November of 2022. Mapping of the remaining forest in the former Nandambi and Mkanga 1 village forest reserves showed that there was still significant forest in the former Nandambi VLFR, but very little in Mkanga 1. VCSL also sought GIS data from the Municipality to better understand the municipal plans. VCSL was able to obtain a plot map from the municipality covering the Chitoa plateau portion of Nandambi VLFR. While almost the whole area had been split into plots, including a portion that overlapped with the Chitoa Forest Reserve under the authority of the Tanzania Forest Service, it was evident that only plots on level ground had been purchased and cleared. The Noto plateau section of the Nandambi VLFR had not been split up in plots at all and was untouched by investors. Finally, it was evident that there were also some large patches of uncleared forest on the Chitoa plateau which had presumably been sold to investors.

The municipality was unable to provide sales records for most of the specific plots in Chitoa which could aid in identifying buyers who had not yet cleared land. One exception was for a plot given to the University of Dar es Salaam. That plot was at the western edge of the portion of the plot map and partially overlapped with the Chitoa Forest Reserve.

After working out with district and Nandambi Mtaa government authorities roughly which areas had been privatized and which areas had not been privatized, it was evident that there was still over 3000 ha of forest with potential for community forest management in the former Nandambi village forest reserve. Community forest management was seen as an ideal way forward because, Nandambi is still a rural farm community and apart from the addition of a few larger scale private landowners, the stakeholder makeup has not changed drastically since the start of the project. However, since it was no longer a village, it could not be protected as part of a village forest reserve. Through meetings with the Nandambi Mtaa government and municipal authorities, it was decided to

|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         | <p>form community-based organizations that could be given conditional title to the remaining forested land which was not privatized. To identify potential members for these CBOs, teams of local community members were tasked with surveying the owners of farms within 350 meters of the remaining forest. This had the added advantage of not excluding people from neighboring communities who might be living near the forest.</p> <p>The following new stakeholders have been identified so far in the Nandambi area:</p> <p>Institutional Landowners – The University of Dar es Salaam was given title 202 ha of the former Nandambi Village Forest Reserve by Lindi Municipality to develop a training center. About 29 ha of that overlapped with the Chitoo Forest Reserve. After learning that the area was all rare coastal forest part of a biodiversity hotspot, they have agreed to work with VCSL to return the area to the project. The details are still being worked out.</p> <p>Private Landowners – Some farm plots purchased by Tanzanian investors from the Municipality from the former Nandambi Village Forest Reserve have not yet cleared the land and may be interested to join the project. VCSL is still working to identify them. According to the municipality, some new landowners have already abandoned the land because they were not able to develop it as per the rules of their titles by the allotted date. Some of these areas may therefore be eligible to be given to community-based organizations instead.</p> <p>Community-Based Forest managers – A forest patrol team was selected in a Nandambi Mtaa assembly meeting. That team surveyed farm owners within 350 meters of remaining blocks of forest in the former Nandambi village forest reserve. As a result of this work, 3 CBOs with 130 households have been established. The membership includes community members from Nandambi and Mkanga 1, Narunyu, and Rutamba ya Sasa.</p> |
| Legal or customary tenure/access rights | <p>There are no changes in the 8 project villages which are still villages. In Nandambi and Mkanga 1, Village Climate Solutions is working to bring municipalized land back into the project. The most secure form of land ownership in Municipal land is titled land. Land titles are issued by the Ministry of Lands. This land can be included into the project</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                             | <p>when VCSL signs a contract with the owners. In addition to securing agreements with owners who purchased plots from the sale of land organized by the municipality, VCSL is supporting the municipality and Nandambi Mtaa government to form community-based organizations which will then be given titles for forest areas which they live or farm next too. These CBOs will have constitutions specifying democratic decision making and benefit sharing rules. The titles they receive will specify that the land-use is strictly for sustainable forest management. They will sign contracts with Village Climate Solutions Limited to bring the land back into the project.</p> |
| Stakeholder diversity and changes over time | There are no changes since the project start.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Expected changes in well-being              | There are no changes since the project start.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Location of stakeholders                    | There are no changes since the project start.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Location of resources                       | There are no changes since the project start.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## 2.1.2 Stakeholder Consultation and Ongoing Communication

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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| Ongoing consultation | <p>Since there was no monitoring or verification after 2014, there was very little to communicate regarding the project during this monitoring period. Furthermore, without further donor funding or sales, MJUMITA and TFCG could not implement their roles under the communication plan. The most consequential consultations during for community stakeholders were the series of village meetings leading up to the performance-based payments for reductions from the first monitoring period made with donor funding. In village assembly meetings in each village, MJUMITA presented large scale maps of deforestation from the monitoring period and a detailed explanation of the stock-flow analysis used to calculate the emissions reductions accomplished by each village. The accuracy of the maps was verified by the village natural resource committee team members who had been sent by the project to investigate the deforestation</p> |
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with GPS location data.

However, it is also important to remember that the village governments, who were the project proponents throughout this monitoring period, continued to function and thus were in regular communication with local stakeholders regarding any issues related to forest management through village assembly meetings.

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Village Climate Solutions Limited met with regional and district authorities in 2022 before meeting with villages. The meetings included basic introductory meetings, a training meeting with all municipal the heads of departments, and a meeting with the municipal finance committee, which gave VCSL permission to start to engage with the project communities.

Village Climate Solutions Limited have been in contact with the participating communities since November 2022. VCSL first met with village councils and the Nandambi Mtaa committee to present VCSL's plan for REDD in their communities and to gauge their interest in continuing with REDD. These meetings were also used to collect baseline information regarding the status of forest management and development in these communities. Next, VCSL was invited by the councils/mtaa committee to present the idea of continuing REDD and to seek permission for the councils/mtaa committee to sign a consent letter with VCSL, which is part of the process of registering a REDD project under the new National Carbon Trading Regulations.

Once VCSL had consent letters from each village/mtaa, it held meetings with the village councils and village natural resource committees to introduce a new forest patrol system centered around MerginMaps software.

VCSL has also held a series of meetings with Nandambi Mtaa council and assembly to plan the way forward with creating CBOs that will be given title and responsibility for managing remaining forests in the Mtaa.

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|                                     | <p>VCSL organized a meeting of district and municipal Lawyers to review and revise the draft carbon agreement it planned to sign with villages and each respective district / municipality under the expanded REDD project.</p> <p>Then, VCSL met with the village council and assembly in each of the Lindi project villages to present carbon agreements and get approval of them before presenting them to the municipal council.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Date(s) of stakeholder consultation | <p>February – March 2014</p> <p>MJUMITA meetings with 10 village assemblies presenting the basis for payments for performance from the first monitoring period.</p> <p>February – April 2014</p> <p>MJUMITA meetings with 8 village assemblies to execute the performance-based payments for the first monitoring period.</p> <p>January 2015</p> <p>MJUMITA meetings with 8 village assemblies to execute top-up payments for the first monitoring period.</p> <p>Key</p> <p>Sept 5, 2022 - Introductory VCSL meeting with the Lindi Municipal heads of departments</p> <p>Oct 1<sup>st</sup>, 2022 - VCSL REDD+ training with the Lindi municipal heads of departments</p> <p>Nov 10<sup>th</sup>, 2022 - VCSL presentation to the Municipal Council (Finance committee?)</p> <p>Nov 14<sup>th</sup>, 2022 - Dec 24<sup>th</sup>, 2022 - VCSL introduction/baseline meetings with each village/mtaa</p> <p>Feb 20<sup>th</sup>, 2023 – Mar 4<sup>th</sup>, 2023 - VCSL consent letter approval meeting with each village/mtaa</p> <p>Feb 21<sup>st</sup>, 2023 – Mar 4<sup>th</sup>, 2023 VCSL forest patrol system introduction meeting with each village/mtaa</p> <p>Sept 22<sup>nd</sup>, 2023 - VCSL meeting with Lind Municipal executive director, municipal lawyer and Lindi District</p> |

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|                                    | <p>Commissioner to get resolution to create CBOs to protect remaining forest in former Nandambi village forest reserve.</p> <p>Sept 23<sup>rd</sup>, 2023 – Sept 25<sup>th</sup>, 2023 - VCSL meetings with potential CBO members from Nandambi Mtaa, Mkanga 1, Naruyunu, and Rutamba regarding CBO formation to protect remaining forest in former Nandambi and Mkanga 1 village forest reserves.</p> <p>Sept 25<sup>th</sup>, 2023 – Sept 27<sup>th</sup>, 2023 – VCSL meeting to help CBOs form constitutions.</p> <p>Feb 6<sup>th</sup>, 2024 - District / Municipal Lawyer workshop to review the carbon agreement. The workshop was in Kibaha and included the Lindi municipal lawyer.</p> <p>Mar 14<sup>th</sup>, 2024 – Mar 25<sup>th</sup>, 2024 – Meetings to review and approve the updated forest management plans, carbon agreement, Deed of Accession, and Deeds of Partial release with each village, mtaa, and CBO.</p> <p>May 11<sup>th</sup>, 2024 – VCSL meeting with Lindi Municipal Council to review and approve the carbon agreement.</p> <p>May 27<sup>th</sup>, 2024 – May 31<sup>st</sup>, 2024 - Proposed dates for VCSL to present the results of the 2013-2022 monitoring to the original project villages/communities</p> |
| Communication of monitored results | <p>Communication of the prior monitoring period results was conducted in February and March 2014. Communication of the monitoring results for this monitoring period is scheduled for May 2024.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Consultation records               | <p>Project reports were used to document the process and results from stakeholder consultation prior to the start of the project and up until 2015. Since 2022, Village Climate Solutions has adopted an ODK form to help it track all engagement between VCSL and stakeholders. The form is filled out by the VCSL representative at the meeting. The form records basic details about the meeting such as when and where it occurred, the purpose, who attended, and the outcome of the meeting. Then the form also includes fields to add attachments to record a picture from the meeting and attach phone scans of the meeting attendance sheet and meeting minutes. All the data is stored in ODK central</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

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|                   | <p>running on a cloud server managed by Reterra Limited. VCSL can download data from the server as an excel file with attachments or open individual forms on the server.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Stakeholder input | <p>Stakeholders didn't make any input regarding the project design during this monitoring period. They were largely happy with the project design after the first round of performance-based payments. As described in the stakeholder identification section, the project is currently going through a process to identify and consult with stakeholders in what were previously Nandambi and Mkanga 1 villages. That process is not yet complete but will result in changes in the project design based on input from stakeholders.</p> <p>For the new carbon agreements between VCSL, the project villages, and Lindi municipality, VCSL organized a meeting involving the Lindi municipal lawyer. Revisions to the agreement were made in response to stakeholder input. Additionally, some additional changes were made after the first round of presentation to village assemblies based on their input.</p> |

### 2.1.3 Free, Prior, and Informed Consent

|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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| Consent | <p>The FPIC process carried out by TFCG/MJUMITA prior to the establishing the project is detailed in: <a href="https://www.tfcg.org/wp-content/uploads/2018/05/TFCG-and-MJUMITA-FPIC-at-project-establishment-FINAL.pdf">https://www.tfcg.org/wp-content/uploads/2018/05/TFCG-and-MJUMITA-FPIC-at-project-establishment-FINAL.pdf</a></p> <p>Consent was built from the ground up by organizing meetings at the sub-village level before calling village level meetings. This ensured that a large percentage of community members understood land-use planning, community forest management, and REDD before the decision to proceed with the project was brought before the village assembly. When presenting the project, representatives from MJUMITA and TFCG were also careful to provide people with the key information about the project in ways that are easy to understand; to not raise unrealistic expectation; and make it clear that community members</p> |
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|                 | <p>have the option to accept or reject the project.</p> <p>Relevant district employees were involved in every step to help explain topics and make sure that things were presented fairly to communities.</p> <p>During the process of taking over responsibility for the project from MJUMITA, VCSL has stuck to the same core FPIC tenants when presenting its plan for the project to village and Mtaa assemblies. It also made sure to involve relevant district staff members at every step to ensure communities understood what was being presented and that the material was presented fairly. The process started in November 2022 and took until May 2024 to complete giving communities plenty of time to understand what they were agreeing to. During this time, VCSL presented different aspects of the project and sought stakeholder approval in no fewer than 4 village assembly meetings and 5 village council meetings in each of the project villages/mtaa.</p>                                                                                                   |
| Outcome of FPIC | <p>For the project under MJUMITA, the outcomes of the FPIC process were land-use plans, by-laws, and forest management plans, which collectively created the legal basis for reducing deforestation in the project area. All these documents were developed through participatory processes and approved by village councils and assemblies. Additionally, since the project proponents were the villages themselves, MJUMITA secured a communications agreement with them giving it the power to operate the Verra registry account on their behalf.</p> <p>The project has not encroached on any land. The process of developing land-use plans and village forest reserves involved resolving several boundary disputes prior to the project start. During the first monitoring period, one outstanding dispute was discovered between Nandambi village and Rutamba ya Sasa village covering about 600 ha. This dispute no longer applies because after the municipalization of Nandambi, the area was removed from the project. VCSL is now working to return the land to the</p> |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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|  | <p>project by having the municipality help a CBO with members from both Rutamba and Nandambi get title over the area.</p> <p>The project has not displaced anyone. During the land-use planning process supported by TFCG/MJUMITA, villages did evict some people from farms. This however was not at the request of the project and since the areas were already deforested, also not for the purpose of including the areas in the project or generating emissions reductions. Instead, these actions were taken because these farmers were farming in the water sources for the villages, which is a violation of national land-use laws and was degrading the water quality.</p> <p>The outcomes of the VCSL FPIC activities since 2022 are the signed consent letters, approved updated forest management plans, and the signed carbon agreement. VCSL actions have not resulted in encroachment or displacement of people. Notably, the first step of the new forest patrol system introduced by VCSL was to have forest patrol teams visit everyone farming inside the village forest reserve boundaries, educate them about REDD and the village forest reserve rules and inform them that they would not be evicted from their farms regardless of the dates of establishment provided they did not encroach any further into the reserves.</p> |
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#### 2.1.4 Grievance Redress Procedure

| Grievances received                                                                                                                                                          | Resolution and outcome                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The only grievance that made its way beyond the village level was that several villages inquired / complained about the lack of verifications and payments from 2016 onwards | MJUMITA ultimately gave up on being able to sustain the project due to lack of sales in 2016 which left it unable to pay for future verifications or payments to communities. MJUMITA unsuccessfully attempted to market the 2012-2013 credits to energy companies developing gas reserves offshore of Lindi and Mtwara Regions. MJUMITA also listed the project with CODE REDD, an online sales platform for high quality REDD projects. MJUMITA was also in frequent contact with carbon brokers. However, nobody would agree |

to pay the minimum price needed of \$5.25 per VCU because the project was competing with VM0009 projects in Africa selling credits for as little as \$1.00 per VCU. Village Climate Solutions Limited will resolve this long-standing grievance by finding a buyer for the few credits generated under this monitoring report. More importantly though, VCSL has a signed VERPA with Reterra to supply credits for all future monitoring periods.

### 2.1.5 Public Comments

| Summary of comments received                                         | Actions taken     |
|----------------------------------------------------------------------|-------------------|
| No public comments have been received since the start of the project | No action to take |

## 2.2 Risks to Stakeholders and the Environment

|                                    | Risk identified                                    | Mitigation or preventative measure taken                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Risks to stakeholder participation | No risks identified at validation.                 | Communities own and control all aspects of the project. Participation in the project is voluntary.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Working conditions                 | Vehicle accidents<br>HIV<br>Forest patrol injuries | TFCG and MJUMITA have policies requiring no driving at night, all occupants wear seatbelts or in the case of motorbikes, wear helmets. First Aid training was provided to all project staff in January 2014. The three-day training program was organized by the Red Cross and included risk assessment; basic first aid; basic life support; basic trauma life support; and dealing with other medical emergencies.<br>MJUMITA and TFCG had an active awareness raising campaign amongst their staff and in the communities where they work, on the importance of prevention and testing. In the villages included in this PDD, HIV |

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|                                                                                                   |                    | <p>awareness messages are included on sign boards and on printed materials distributed by the project.</p> <p>To reduce the risk from forest patrol injuries, Gum boots, raincoats, overalls and first aid kits were provided by the project to all village natural resource committees at the beginning of the project. A portion of village REDD earnings were meant to support the purchase of these items going forward and villages did set aside some budget from the performance-based payments in 2013-2014. After that however, communities did not receive any more payments and eventually patrol teams were left without funds to purchase more protective clothing.</p> |
| Safety of women and girls                                                                         | No risk identified | The project does not negatively impact the safety of women or girls. Both MJUMITA and TFCG have policies against sexual harassment or discrimination and systems in place for reporting any violations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Safety of minority and marginalized groups, including children                                    | No risk identified | The project does not negatively impact the safety of marginalized groups of children.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Pollutants (air, noise, discharges to water, generation of waste, release of hazardous materials) | No risk identified | The project activities do not produce pollutants.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## 2.3 Respect for Human Rights and Equity

### 2.3.1 Labor and Work

|                                      |                                                                                                                                                                                                                                                          |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Discrimination and sexual harassment | <p>During this monitoring period, activities were carried out by participating villages, the Tanzania Forest Conservation Group, and MJUMITA. TFCG and MJUMITA have policies against sexual harassment and discrimination in their HR manuals and an</p> |
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|                                 | <p>anonymous reporting system to report violations. No violations were reported during this monitoring period. During this monitoring period, the project did not have a specific mechanism to monitor sexual harassment within community run bodies responsible for project implementation, but no grievances related to discrimination of sexual harassment were received.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Management experience           | <p>There was no change in management during the monitoring period. However, this monitoring report is submitted by Village Climate Solutions Limited who have replaced MJUMITA in the project. The relevant expertise and years of experience of the Village Climate Solutions Limited management team are as follows:</p> <p>Charles Meshack – Conservation scientist with master’s and 27 years of experience supporting community-based forest management, community benefit sharing, and biodiversity monitoring in Tanzania. Meshack has been the executive director for TFCG for over 20 years.</p> <p>Albert Aklei – Conservation scientist with a master’s and 14 years of experience supporting community-based forest management in Tanzania with a particular focus on governance.</p> <p>Wilson Mugasha – Forester with PhD and 15 years’ experience with forest biomass measurement and modeling in Tanzania. The author of the most widely used allometric equations for natural forests in Tanzania.</p> <p>Emmanuel Walala – Certified accountant with 17 years of experience in financial accounting, reporting and business performance management in Tanzania.</p> |
| Gender equity in labor and work | <p>During this monitoring period, activities were carried out by participating villages, the Tanzania Forest Conservation Group, and MJUMITA. According to MJUMITA and TFCG HR procedures all employment opportunities are advertised, and anyone can apply. For jobs requiring someone with a university degree, jobs are advertised in the national newspapers and via e-mail list serves. For local positions, jobs are advertised through notices in the relevant village. Employees are selected based on their qualifications, skills, and experience. MJUMITA and TFCG do not discriminate based on gender, religion, tribe, or political affiliation. Many of the activities in this project are implemented by community members who are elected either to represent their sub-village or are elected at village</p>                                                                                                                                                                                                                                                                                                                                                         |

|                                                         |                                                                                                                                                                                              |
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|                                                         | level. Women are required to constitute at least one third of the committees.                                                                                                                |
| <b>Human trafficking, forced labor, and child labor</b> | All project activities are carried out voluntarily by adults. At the village level, participation in committees relevant to the project can be voluntary or paid and is only open to adults. |

### 2.3.2 Human Rights

While the Tanzanian government does not specifically recognize any groups in the country as separately indigenous, a few hunter gatherer and pastoralist ethnic groups in Tanzania recognize themselves as indigenous. None of these groups are present in or near the project area, so there is no group that can be described as more indigenous than any others or in need to special protection or concern. Instead, the project has focused on respecting and promoting the rights of local communities. This is included the rights to self-determination, the right to free, prior, and informed consent, and the right to cultural heritage. The project area is owned by local communities and the project structure and activities were all designed in consultation with local community members through the legally recognized village government bodies, including the village councils and village assemblies. Village councils are elected once every 5 years and village assemblies are open to all community members. All plans and rules established to support the project were approved by both the village councils and village assemblies in each village.

All the key project activities on the ground area implemented by community members themselves. Village councils are responsible for land management and resolving any conflicts with regards to land. Village natural resource committees, which are also elected, are responsible for implementing the forest management plans and selecting forest patrol team members from among community members. Benefit sharing is organized by an elected committee of community members who follow the systems outlined in benefit sharing by-laws approved by each village council and assembly. Thus, local communities have near complete control over the project.

### 2.3.3 Indigenous Peoples and Cultural Heritage

The forest management plans, and corresponding bylaws were created through a democratic and participatory process and ensure that community members continue to have access to forest for traditional uses. Compared with the 'without project scenarios' in which communities anticipated an overall decline in the availability of forest products and the projected deforestation based on the historical baseline indicated a 44 % loss of forest over a 30-year period, the sustainable management of the village forest reserves safeguards the availability of traditional non-timber forest products including wild foods and medicinal plants. The forests will also continue to provide a suitable place to locate bee hives and will provide forage for bees so that beekeepers can produce honey.

## 2.3.4 Property Rights

|                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disputes over rights to territories and resources</b> | <p>No new project instances or area was added during this monitoring period. The rights to the forest resource use and management in the village forest reserves is governed by forest management plans and by-laws which were approved by village assemblies and village councils through participatory and democratic processes prior to the project start date. Local community members are still allowed to use many forest resources provided they adhere to the forest management plan and by-laws.</p> <p>As reported in the Previously there was a dispute over a section of the project area between Rutamba and Nandambi villages covering about 5% of the project area. That dispute no longer applies because the Lindi Municipality converted all the land in Nandambi village to municipal land, effectively removing the land from the project. Village Climate Solutions is currently organizing people farming living adjacent to the remaining forests in that area, regardless of which village they come from, to form CBOs which will be given rights to manage the area and benefit from REDD by the municipality. This will be reported on in the next monitoring report.</p> |
| <b>Respect for property rights</b>                       | <p>No new project instances or area was added during this monitoring period. Apart from the portion of the project area which was converted to municipal land by Lindi Municipality and thus ceased to be part of the project, the project area consists entirely of communally owned and managed forest. Farmers did encroach into the project area, but this represented new farm clearing where there was no historical customary right to the land. In principle, all forest which has never been cleared before in the project area belongs to the village as a whole and not individual households. The Village Land Act rests authority over such lands with the village council who are elected once every 5 years and represent all people living within the boundaries of a village. Thus, the encroachment does not represent</p>                                                                                                                                                                                                                                                                                                                                                         |

genuine disputes, but rather illegality by those who know better or lack of awareness by those who don't.

### 2.3.5 Benefit Sharing

#### Summary of the benefit sharing plan

This section describes the benefit sharing system that was in place during the monitoring period. Future benefit sharing will be based on a contract between participating villages and Village Climate Solutions Limited and the latest version of Tanzania's National Carbon Trading Regulations.

The project's benefit sharing system treats REDD+ as a village owned enterprise entitling all qualifying village members to equal dividends from REDD+ revenue. In addition to dividends, villagers can elect to tax themselves by reducing dividend payments and shifting funding to village development projects. The decision regarding how much to tax themselves and which village development projects to fund is made in village assembly meetings, which are open to all villagers.

Each village has bylaws passed to govern the implementation of the benefit sharing system. Those bylaws set out the rules to qualify as a village resident and whether minors are entitled to dividends. Most villages require 3 years of residency to qualify for REDD+ dividends and allow up to 2 children per household to receive dividends. Children's dividends are collected by mothers.

Payments are performance based using stock-flow accounting with a ratio of 30% of payments based on the proportion of project carbon stocks controlled by a village and 70% based on reductions in deforestation compared to the risk map for each village. Stock payments are reduced if a village exceeds the deforestation predicted by the risk map by the excess emissions. The initial price paid was to be \$3.25 per tCO<sub>2</sub>e based on estimated opportunity costs for avoided deforestation in the project area, which was covered with donor funding.

### Benefit sharing during the monitoring period

Due to the lack of sales and verifications after the first verification, there was only one set of performance-based payments made for the reductions accomplished from 2012-2013. Initial payments using \$3.25 per tCO<sub>2</sub>e were made in February and March 2014. Top up payments of an additional \$0.75 per tCO<sub>2</sub>e were made in January 2015 using excess donor funds. However, these payments were made based before the final version of the monitoring report which estimated a higher number of issuable credits. Thus, the actual payments relative to the number of issued credits for the period were equal to \$3.19 per VCU. Nandambi and Kinyope villages did not receive payments because they exceeded their baselines by more than the value of their stock-based payments.

The payments are summarized in Table 2.

**Table 2: Benefit sharing payments during monitoring period.**

| Village      | Residents receiving dividends |              |                         | Total Amount Contributed to Development (TZS) 2014 | Total Amount of Cash Dividend (TZS) 2014 | Total Amount of Cash Dividend (TZS) 2015 | Total Amount Paid (TZS) per village |
|--------------|-------------------------------|--------------|-------------------------|----------------------------------------------------|------------------------------------------|------------------------------------------|-------------------------------------|
|              | Men                           | Women        | Children and Dependents |                                                    |                                          |                                          |                                     |
| Kiwawa       | 465                           | 412          | 916                     | 4,411,350                                          | 25,102,000                               | 9,045,550                                | 38,558,900                          |
| Likwaya      | 103                           | 119          | 280                     | 1,711,450                                          | 6,275,000                                | 2,448,000                                | 10,434,450                          |
| Makumba      | 154                           | 209          | 428                     | 6,522,150                                          | 11,865,000                               | 5,635,500                                | 24,022,650                          |
| Milola       | 421                           | 444          | 466                     | 1,903,950                                          | 6,655,000                                | 2,623,200                                | 11,182,150                          |
| Mkanga 1     | 245                           | 233          | 308                     | 6,702,100                                          | 7,860,000                                | 4,463,150                                | 19,025,250                          |
| Mkombamosi   | 593                           | 625          | 1,132                   | 6,893,900                                          | 18,800,000                               | 7,875,000                                | 33,568,900                          |
| Muongano     | 596                           | 693          | 1,267                   | 10,382,500                                         | 25,560,000                               | 11,016,000                               | 46,958,500                          |
| Ruhoma       | 133                           | 213          | 255                     | 2,518,450                                          |                                          | 772,000                                  | 3,290,450                           |
| <b>Total</b> | <b>2,710</b>                  | <b>2,948</b> | <b>5,052</b>            | <b>41,045,850</b>                                  | <b>102,117,000</b>                       | <b>43,878,400</b>                        | <b>187,041,250</b>                  |

## 2.4 Ecosystem Health

| Risk identified | Mitigation or preventative measure taken during the monitoring period |
|-----------------|-----------------------------------------------------------------------|
|-----------------|-----------------------------------------------------------------------|

|                                        |                                                                         |                                                                                                                                                                                                    |
|----------------------------------------|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Impacts on biodiversity and ecosystems | No risk identified                                                      | As a REDD+ project protecting native ecosystems, the impacts on biodiversity and ecosystems are only expected to be positive.                                                                      |
| Soil degradation and soil erosion      | No risk identified                                                      | In addition to protecting forest, the project also promoted conservation agriculture, which includes soil preservation techniques.                                                                 |
| Water consumption and stress           | No risk identified                                                      | The project activities do not consume water.                                                                                                                                                       |
| Usage of fertilizers and pesticides    | Contamination of water sources or harm to non-target species or humans. | Training to farmers on the safe use of agricultural inputs including fertilizers and chemical pesticides and fungicides has been provided in the context of the conservation agriculture training. |

#### 2.4.1 Rare, Threatened, and Endangered species

The project area includes coastal forest which is part of the globally recognized Coastal Forests of Eastern Africa Biodiversity Hotspot which is home to many endemic and threatened species. The project does not promote any activities that pose a threat to these species, but instead as a REDD project is helping to protect their natural habitat. As described in the CCB PDD for this project, the baseline biodiversity survey for the project identified the 11 species in the table below that are listed as vulnerable or endangered in the IUCN Red List.

|                                                |                                                                                                                       |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Galagoides rondoensis (Rondo Dwarf Galago)     | Endangered primate - The project established village forest reserves which protect the habitat of this species.       |
| Loxodonta Africana (African Savannah Elephant) | Endangered - The project established village forest reserves which protect habitat frequently used by this species.   |
| Panthera leo (African Lion)                    | Vulnerable – The project established village forest reserves which protect habitat occasionally used by this species. |
| Panthera pardus (Leopard)                      | Vulnerable - The project established village forest reserves which protect the habitat of this species.               |
| Bauhinia loeseneriana                          | Endangered tree species - The project established village forest reserves which protect the habitat of this species.  |
| Dichapetalum braunii                           | Vulnerable plant species - The project established village forest reserves which protect the habitat of this species. |

|                                                |                                                                                                                       |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| <b>Leptactina papyrophloea</b>                 | Endangered plant species - The project established village forest reserves which protect the habitat of this species. |
| <b>Mimusops acutifolia</b>                     | Vulnerable tree species - The project established village forest reserves which protect the habitat of this species.  |
| <b>Monanthotaxis trichantha</b>                | Vulnerable shrub species - The project established village forest reserves which protect the habitat of this species. |
| <b>Peponium leucanthum</b>                     | Vulnerable plant species - The project established village forest reserves which protect the habitat of this species. |
| <b>Terminalia apetala (Pteleopsis apetala)</b> | Endangered tree species - The project established village forest reserves which protect the habitat of this species.  |

## 2.4.2 Introduction of species

The project is a REDD project and does not involve tree planting. Species promoted by the project as part of agricultural interventions include maize, beans, rice, cassava, sorghum, pigeon peas, cow peas and citrus trees. None of these species are new to the project area or invasive.

| Existing invasive species | Mitigation measures to prevent spread or continued existence of invasive species                                                |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| None                      | Protecting existing natural forests from clearing is the best defense against the introduction of invasive species to the area. |

## 2.4.3 Ecosystem conversion

This is a REDD project, and the project area was forest for at least 10 years prior to the project start date. So, no ecosystem conversion has taken place as part of project activities.

# 3 IMPLEMENTATION STATUS

## 3.1 Implementation Status of the Project Activity

This monitoring period can be broken into two periods in terms of project implementation. From 2013-2015, the project villages continued to be supported by MJUMITA and TFCG using the remaining donor funds allocated to establish the project. This included paying the villages for the credits generated during the first monitoring period. However, despite marketing efforts, MJUMITA did not find a VCU buyer willing to pay the minimum price of \$5.20 per VCU needed to sustain the project. From 2016-2022, without any funding from donors or sales, the project villages were essentially left to continue what activities they could do on their own. Consequently, there is limited documentation for activities for 2016-2022 period other than

what can be gleaned indirectly from baseline surveys conducted by Village Climate Solutions Limited in November of 2022.

One of the other consequences of the end of support from MJUMITA was that the Lindi Municipality decided to municipalize Nandambi and Mkanga 1 villages in 2018 and sold some land in the village forest reserves to Tanzanian investors. These villages had 8562 ha of the original project area. Clearing by investors in those two villages caused the loss of 1860 ha of project area. This caused a net loss of 128,510 tCO<sub>2</sub>e from 2019-2022, but this is not a loss or reversal since the number of unissued reductions from the 2013-2018 period exceeded the loss by 63,979 tCO<sub>2</sub>e. MJUMITA first learned that the municipalities actions could result in a loss in 2019 but did not have resources to investigate further. Sales of land to investors was not part of the baseline, though the potential threat was recognized in the project document. Had MJUMITA been able to sell the VCUs generated from the first monitoring period at the minimum price and continued to verify and sell credits from subsequent years and maintain project activities, this would not have happened. Village Climate Solutions Limited is currently working on several strategies to bring back much of the forest area taken by the municipality back under control of the project. That will be reported on in the next monitoring report.

Unfortunately, the project entered the voluntary carbon market at one of historical the low points in terms of prices. The project was also at a disadvantage compared to several other 'African' REDD projects because it used a conservative baseline applying the historical average deforestation rate and spatial risk modelling under VM0015 instead of using a less rigorous methodology. Due to opportunity costs alone, the project aimed to paid participating communities at least \$3.20 per VCU, making it impossible to sell VCUs for \$1 - \$2 like other projects. In the future, it is expected that the application of the new VM0048 to all REDD+ projects under Verra will improve the market for this project by removing from projects using less rigorous methodologies and improving the credibility of REDD+ credits more generally.

### Implementation from 2013-2015

Implementation records for this period are primarily drawn from TFCG reporting to the Royal Norwegian Embassy, which provided the startup funding for the project.

#### Continued Activities:

- **Improve governance at village level** – 9 project villages in Lindi received training from the project on improved governance related to community forest management during this period. The report did not disaggregate the number of women and men trained or the specific villages. Kiwawa village held elections for village natural resource committee (VNRC) members. The other 9 villages already had committees in place.
- **Community based forest management** – Village natural resource committees conducted at least 135 patrols during this period with all villages conducting at least 1 patrol. Villages reserved a total of TSH 8.6 million for village forest reserve management. Of this number, TSH 6.8 million was from performance-based REDD+

payments. Most of the rest of the funding was from harvesting permits. Funds were used to purchase patrol and office equipment, particularly gum boots and to pay for patrols.

- **Channel REDD payments to communities** – MJUMITA made performance-based payments to project villages as detailed in section 2.3.5 of this monitoring report. A total of approximately TSH 187 million was paid in two installments in 2014 and 2015 based on emissions reductions generated from the prior monitoring period. Villages paid out 146 million as dividends to community members following their REDD benefit sharing bylaws and reserved the rest for village development projects and forest management.
- **Improve profitability, ecological sustainability, and climate change resilience of agriculture** – The project's conservation agriculture trainers trained a total of 92 women and 136 men during the 2013-2014 farming season. Trainings happened in all villages except Mkanga 1 and Muungano. Training topics included:
  - Land preparation based on Conservation Agriculture principles.
  - Optimal spacing during planting
  - Soil fertility management including composting and efficient use of fertilizers.
  - Soil moisture conservation
- **Improve access to microfinance services for community members** – The project trained 177 women and 180 men in 7 project villages on village saving and loan association (VSLA) management. 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. This resulted in the formation of 18 new VSLA groups with every village forming at least 1 group. Eight of the 12 groups created in the previous monitoring period continued to be active in the other 3 project villages, meaning that all the villages had active VSLA groups during this monitoring period.
- **Generate incomes from the sale of bee products** – The project provided beekeeping training and hives to 65 women and 100 men in project villages during this monitoring period. The total number of active beekeepers during this period was 294.
- **Improve social services and infrastructure** – All project villages put at least some REDD earnings aside for village development projects during this period. Improvements to social services and infrastructure as a result of the project from this period are documented in Table 1 in section 1.12.

## Implementation from 2016-2022

The project does not have direct implementation data for this period as MJUMITA did not continue monitoring any activities after 2015. However, some information was obtained from focus group discussions with village councils or the 'area' government in the case of Nandambi for all the project villages except Mkanga 1 in November of 2022. These focus groups were conducted by Village Climate Solutions Limited. Mkanga 1 was not included because very little of their village forest reserve had not been cleared by investors by that time. Additional information was obtained from a project report from the Tanzania Forest Conservation Group for a 2019-2020 USAID funded project.

### Continued Activities:

**Improve governance at village level** – In 2019, as part of a wider project funded by USAID, the Tanzania Forest Conservation Group (TFCG) provided training on enhancing governance to village natural resource committees in Kinyope, Ruhoma, Milola Magharibi, Kiwawa, Likwaya, Mkombamosi, Muungano, and Makumba villages.

**Community forest governance** – The village continued to perform activities related to community forest management. Villages all reported that they still had village natural resource committees, including the two villages which had been municipalized. Except for Nandambi, all the villages reported having held elections for VNRCs between 2018 and 2022. Nandambi's last election was in 2017, which was before it had been municipalized. Elections for government positions in Tanzania are held once every 5 years or less, so the VNRCs in the 8 villages that had not been municipalized were still current. The villages reported that the committees were made up of 66 women and 67 men. They all reported that the VNRCs were still meeting monthly and performing at least 1 patrol a month except for Likwaya which had not conducted a patrol for just over a year. Milola Magharibi and Kiwawa reported receiving support on patrols from municipal authorities. Finally, through the same USAID funded project mentioned under improving village governance, TFCG provided gum boots, raincoats, and overalls to village natural resource committees for patrol activities in Kinyope, Ruhoma, Milola Magharibi, Kiwawa, Likwaya, Mkombamosi, Muungano, and Makumba.

### New Activities:

**Non-REDD earnings from village forest reserves** – 4 project communities reported earning revenue from sustainable timber harvesting from 2019-2022. Kiwawa village was supported by the NGO Mpingo Conservation and Development Initiative to develop quotas following their tool which is FSC approved and assumes a minimum 100-year rotation. The other villages were supported by the municipal forest officer. Another 3 villages reported earning small amounts of money from their forest reserves, most likely from fines and confiscated illegally harvested forest products.

| Village | Forest 2019-2022 Revenue Expenditures (TSH) | Total Revenue |
|---------|---------------------------------------------|---------------|
|---------|---------------------------------------------|---------------|

|                  | Forest Management | Village Development | Technical Support |             |
|------------------|-------------------|---------------------|-------------------|-------------|
| Nandambi         | 200,000           | 800,000             | 0                 | 1,000,000   |
| Milola Magharibi | 0                 | 2,600,000           | 0                 | 2,600,000   |
| Kiwawa           | 24,000,000        | 57,000,000          | 19,000,000        | 100,000,000 |
| Kinyope          | 760,000           | 7,240,000           | 0                 | 8,000,000   |
| Ruhoma           | 400,000           | 14,600,000          | 0                 | 15,000,000  |
| Likwaya          | 0                 | 0                   | 0                 | 0           |
| Makumba          | 0                 | 0                   | 0                 | 0           |
| Mkombamosi       | 8,000,000         | 57,000,000          | 0                 | 65,000,000  |
| Muongano         | 2,550,000         | 0                   | 450,000           | 30,000,000  |
| All              | 35,910,000        | 139,240,000         | 19,450,000        | 221,600,000 |

**Gazettement of Village Forest Reserves** – As described above, TFCG received funding from USAID for a project from 2019-2020. The aim of the project was to gazette village forest reserves with high biodiversity values. This is provided for in the Forest Act, 2002, and means that village forest reserves legal recognition is elevated from the district level to national level. The final step of the process is for the Attorney General's office to publish a notice in the national Government Gazette giving the details of the forest reserves and declaring them as nationally recognized protected areas. The Lindi REDD villages were identified as priority villages due to the high biodiversity value of the coastal forest portions of the reserves. Unfortunately, the municipality had already taken the land from Nandambi and Mkanga 1, so they could not be included in the project. The gazettement process involved the following steps:

- Meeting of the village council, natural resource committees and village assembly in each village to raise awareness on gazettement and get approval.
- Assessing forest reserve boundaries to prepare boundary coordinate maps to share with the ministry of Natural Resources and Tourism who are responsible for preparing JB maps for each reserve.
- Supporting districts/municipalities to complete the application process on behalf of villages.
- Follow up meetings with various national authorities to ensure timely processing.
- Holding village council and assembly meeting to report the outcome and return the gazettement notice.

The eight village forest reserves were officially gazetted in GN No. 487 published on June 26<sup>th</sup>, 2020.

## 3.2 Deviations

### 3.2.1 Methodology Deviations

No new methodological deviations were taken this monitoring period, but the following deviation were taken in the original validated project document.

In Part 2 Step 1.1.1 of VM0015, in the footnotes, the methodology says that Brown et al. 2007 suggest as a rule of thumb that for a project area greater than 100,000 ha, the reference region should be 5-7 times larger than the project area and that the reference region for a project area less than 100,000 ha should be 20 to 40 times the size of the project area. The same footnotes also say that these numbers are “indicatives” and that the exact ratio between the two areas depends on the regional and project circumstances.

The forested part of the reference region for this project is 6.4 times larger than the project area, though, in the Brown et al, 2007 they are referring to total reference region area, not just forested area, in which case the reference region chosen by this project is 9.6 times larger than the project area. This is still significantly less than 20 times larger, and while the language of the methodology suggests that the project area to reference region ratio recommendations are only suggestions, the validator has requested that the choice to use a smaller than suggested reference region size be listed as a deviation.

As stated in the methodological annex of the PD, the reference region size was limited due to the unique location of the project area with respect to forest types, forest tenure, and geography. It was also difficult to find relatively cloud free imagery covering other parts of the potential reference region for the historical reference period.

The western boundary of the reference region corresponds to the Landsat scene used in the baseline analysis with the shortest western extent. The northern boundary is marked by the Mbweburu river, which forms the boundary between Lindi Rural and Kilwa districts. The southern boundary corresponds to the southernmost extent of PALSAR scenes used in the baseline analysis. Finally, the eastern boundary was drawn along the coast to avoid mangrove and coastal thicket that are not found in the project area. To ensure that the reference region only included forests under the same tenure regime as the project area, five national forest reserves were excluded from the reference region, as was Lindi municipality based on the ministry of lands 2007 survey map of the area.

Thus, except for the eastern boundary, the reference region boundary choices correspond to satellite path and political boundaries, which is considered good practice as it avoids potentially drawing biased boundaries that include areas of deforestation while avoiding areas of forest persistence. At the same time, the reference region and project area villages are very similar with regards to historical deforestation rates, which is what the project has chosen as its

baseline approach to predict future quantities of deforestation. The deforestation rate from 2001 to 2012 within project area villages was 1.9% per annum, while the deforestation rate within the reference region was 1.99% per annum.

Also, the validation results of the deforestation model suggest that the model of deforestation for the entire reference region results in very accurate projections of deforestation within the project area villages. The quantity of deforestation predicted by the model to occur within the project area villages for the validation period (2006 to 2010) was 96% of what was observed.

Thus, the choice of a smaller reference region helps to ensure that the reference region and project area are very similar and does not appear to negatively affect the conservativeness of the estimates.

### 3.2.2 Project Description Deviations

There has been a restructuring of this project affecting the project proponent and other entities involved in the project sections of the project description. The restructuring occurred in 2024 and is thus outside of this monitoring period but must be noted in this report because this report is being submitted by the new project proponent - Village Climate Solutions Limited and the changes are described in the AFOLU non-permanence risk assessment.

In the original project structure, the participating villages were the project proponents, and the Tanzanian NGO MJUMITA had a communications agreement with the proponents to carry out monitoring, verification, and marketing functions. Village Climate Solutions Limited is taking over the role of MJUMITA. However, since the project is adding many new project instances (villages) in the next monitoring period, it is more practical for the project to have a single project proponent, which will be Village Climate Solutions Limited (VCSL). As such, VCSL has signed a DEED OF ACCESSION IN RESPECT OF VCS REGISTRATION DEED OF REPRESENTATION with the original project proponents. Then each proponent has also signed a DEED OF PARTIAL RELEASE IN RESPECT OF VCS REGISTRATION DEED OF REPRESENTATION to remove themselves as project proponents. Then, since Village Climate Solutions Limited is not the landowner of the project area, it has also signed a 40-year carbon agreement with the project villages and Lindi Municipality giving it control over the project.

The original project proponent villages have all been moved to section 1.5 Other Entities Involved in the Project. Reterra Limited, which is supporting the project with monitoring, technical expertise, and buying credits, has also been added to that section. MJUMITA, which is no longer involved in the project, has been removed.

Another change to section 1.5 Other Entities Involved in the Project, is the removal of Lindi District, which no longer exists. The district was split between Lindi Municipality and a new district called Mtama district. However, the division moved all the project villages under Lindi Municipality, which is still listed under section 1.5.

Finally, in addition to the change in project proponents and other entities involved, it is necessary to change the project name from MJUMITA Community Forest Project (Lindi) to Village Climate Solutions since MJUMITA is no longer involved in the project.

None of these project description deviations have impact on the applicability of the methodology, project additionality, or the appropriateness of the baseline scenario. No project description deviations were applied in previous monitoring periods.

### 3.3 Grouped Projects

No new project activity instances were added during this monitoring period.

### 3.4 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes ☒ No

## 4 DATA AND PARAMETERS

### 4.1 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                                                                                                                                                                                                                                                 |

|                                                                                                     |                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data / Parameter</b>                                                                             | Map of 2001 to 2012 deforestation                                                                                                                                                                                                                                                                                       |
| <b>Data unit</b>                                                                                    | ha                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b>                                                                                  | Digital map of deforestation and forest persistence in the reference region from 2001 to 2012.                                                                                                                                                                                                                          |
| <b>Source of data</b>                                                                               | 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.                                                                   |
| <b>Value applied</b>                                                                                | N/A                                                                                                                                                                                                                                                                                                                     |
| <b>Justification of choice of data or description of measurement methods and procedures applied</b> | 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. |
| <b>Purpose of data</b>                                                                              | 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.                                                                                    |
| <b>Comments</b>                                                                                     | Geotiff raster – 30m resolution – projection UTM Zone 37S – datum WGS84                                                                                                                                                                                                                                                 |

|                                                                                                     |                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data / Parameter</b>                                                                             | Forest cover benchmark map 2012                                                                                                                                                                                                                                                                                         |
| <b>Data unit</b>                                                                                    | ha                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b>                                                                                  | Digital map of forest cover in the reference region, leakage belt, and project area at the beginning of the project crediting period (2012).                                                                                                                                                                            |
| <b>Source of data</b>                                                                               | 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.                                                                   |
| <b>Value applied</b>                                                                                | N/A                                                                                                                                                                                                                                                                                                                     |
| <b>Justification of choice of data or description of measurement methods and procedures applied</b> | 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. |

|                        |                                                                                                                                                                    |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose of data</b> | 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. |
| <b>Comments</b>        | Geotiff raster – 30m resolution – projection UTM Zone 37S – datum WGS84                                                                                            |

|                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data / Parameter</b>                                                                             | Land use, land cover map 2012                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Data unit</b>                                                                                    | ha                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Description</b>                                                                                  | Digital map of forest cover types in the reference region, leakage belt, and project area at the beginning of the project crediting period (2012).                                                                                                                                                                                                                                                           |
| <b>Source of data</b>                                                                               | 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.                                                                                                                                                        |
| <b>Value applied</b>                                                                                | N/A                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Justification of choice of data or description of measurement methods and procedures applied</b> | 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.                                                                                      |
| <b>Purpose of data</b>                                                                              | 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. |
| <b>Comments</b>                                                                                     | Geotiff raster – 30m resolution – projection UTM Zone 37S – datum WGS84                                                                                                                                                                                                                                                                                                                                      |

|                         |                                                                                                                                          |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data / Parameter</b> | Map of projected baseline deforestation 2012-2022                                                                                        |
| <b>Data unit</b>        | ha                                                                                                                                       |
| <b>Description</b>      | Digital map of projected deforestation and forest persistence in the reference region, leakage belt, and project area from 2012 to 2022. |
| <b>Source of data</b>   | 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 | $ABSLK_{t,icl}$                                                                            |
| 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 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 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                                                                             | $\Delta C_{ab,icl,t}$                                                                                                                           |
| Data unit                                                                                    | t CO <sub>2</sub> e/ha                                                                                                                          |
| Description                                                                                  | Above ground carbon stock change factor for <u>initial</u> forest class icl in year t in the <u>project area or leakage belt</u> .              |
| Source of data                                                                               | Allometric equations applied to field measurements                                                                                              |
| Value applied                                                                                | High Carbon Forest: -159.23 in year t<br>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                                                                             | $\Delta C_{bb,icl,t}$                                                                                                                           |
| Data unit                                                                                    | t CO <sub>2</sub> e/ha                                                                                                                          |
| Description                                                                                  | Below ground carbon stock change factor for <u>initial</u> forest class icl in year t in the <u>project area or leakage belt</u> .              |
| 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<br>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 because of periodic carbon stock monitoring. |

|                                                                                              |                                                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | $\Delta C_{ab_{fcl,t}}$ (project area)                                                                                                                                                                                                                                      |
| Data unit                                                                                    | t CO <sub>2</sub> e/ha                                                                                                                                                                                                                                                      |
| Description                                                                                  | Above ground carbon stock change factor for <u>final post-deforestation</u> class icl in year t in the <u>project area</u> .                                                                                                                                                |
| 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                                                                             | $\Delta C_{bb_{fcl,t}}$ (project area)                                                                                                                                                                                                                                      |
| Data unit                                                                                    | t CO <sub>2</sub> e/ha                                                                                                                                                                                                                                                      |
| Description                                                                                  | Below ground carbon stock change factor for <u>final post-deforestation</u> class icl in year t in the <u>project area</u> .                                                                                                                                                |
| 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                                                                             | $\Delta C_{ab_{fcl,t}}$ (leakage belt)                                                                                                                                                                                                                                      |
| Data unit                                                                                    | t CO <sub>2</sub> e/ha                                                                                                                                                                                                                                                      |
| Description                                                                                  | Above ground carbon stock change factor for <u>final post-deforestation</u> class icl in year t in the <u>leakage belt</u> .                                                                                                                                                |
| 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 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                                                                             | $\Delta C_{bb_{fcl,t}}$ (leakage belt)                                                                                                                                                                                                                                      |
| Data unit                                                                                    | t CO <sub>2</sub> e/ha                                                                                                                                                                                                                                                      |
| Description                                                                                  | Below ground carbon stock change factor for <u>final post-deforestation</u> class icl in year t in the <u>leakage belt</u> .                                                                                                                                                |
| 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 | EBB <sub>toticl</sub> |
|------------------|-----------------------|

|                                                                                              |                                                                                                                                             |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Data unit                                                                                    | t CO <sub>2</sub> e/ha                                                                                                                      |
| Description                                                                                  | Factor for non-CO <sub>2</sub> emissions from forest burning per forest class icl.                                                          |
| Source of data                                                                               | Field observations and IPCC default values.                                                                                                 |
| Value applied                                                                                | High Carbon Forest: 11.38<br>Low Carbon Forest: 7.65                                                                                        |
| 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 <sub>2</sub> equivalent of emissions from burning forest biomass during the process of deforestation. |
| Comments                                                                                     | Also see VM Table 23 in the Methodological Annex for values.                                                                                |

## 4.2 Data and Parameters Monitored

|                                                                 |                                                                                                                                                           |
|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 monitored                                                 | 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 the 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 <sub>t,icl</sub> (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 monitored                                                 | 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 the 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 | ABSLK <sub>t,icl</sub> (ex post) |
| Data unit        | ha                               |

|                                                                        |                                                                                                                                                                            |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>                                                     | Annual area of ex post (observed) deforestation in initial forest class icl in the leakage belt in year t of the crediting period.                                         |
| <b>Source of data</b>                                                  | Deforestation Map (2013-2022) and Land-use land-cover map 2012                                                                                                             |
| <b>Description of measurement methods and procedures to be applied</b> | R script generates a crosstab table showing the number of hectares deforested in each forest type in the leakage belt.                                                     |
| <b>Frequency of monitoring/recording</b>                               | Every 1 to 2 years depending on satellite image availability                                                                                                               |
| <b>Value monitored</b>                                                 | N/A                                                                                                                                                                        |
| <b>Monitoring equipment</b>                                            | 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.                                            |
| <b>QA/QC procedures to be applied</b>                                  | High resolution satellite imagery and ground monitoring data will be used for ground truthing. The minimum accuracy of the deforestation map will be 80%.                  |
| <b>Purpose of the data</b>                                             | This data is used in the calculations of emissions from the leakage belt during the crediting period.                                                                      |
| <b>Calculation method</b>                                              | N/A                                                                                                                                                                        |
| <b>Comments</b>                                                        | These figures will appear in the verification report in the ex-post versions of VM Table 11.c from the Methodological Annex (see <a href="#">Table 10</a> of this report). |

### 4.3 Monitoring Plan

#### 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 currently. 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 one of the change detection techniques (changes in L-Band Radar HV backscatter) 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. However, some steps were accomplished using tools that were not previously available. For instance, using Google Earth Engine to acquire free fully processed PALSAR I and II radar data and detect change instead of buying PALSAR data, processing it, and then running change detection in R. These changes do not however represent a change in the input data or analysis,

just sources of data and tools for analysis. Therefore, they are not listed as project description deviations.

#### Steps:

1. Uploaded the 2012 Forest Cover Benchmark Map (FCBM), a parameter available at validation, to Google Earth Engine as an asset. See Part 2, Section 2.4 of the Methodological Annex for a complete description of the procedures used to create the map.
2. Executed a Google Earth Engine (GEE) script (script available at [https://code.earthengine.google.com/?accept\\_repo=users/VCSL/Public](https://code.earthengine.google.com/?accept_repo=users/VCSL/Public)) that performs change detection using PALSAR radar data to detect deforestation in forest pixels in the 2012 Forest Cover Benchmark Map. The script loads PALSAR I and II data from the Global PALSAR-2/PALSAR Yearly Mosaic, v2 dataset available in Google Earth Engine. The mosaic products are processed nearly identically to the PALSAR data used in the PD. The only difference is that v2 mosaic products include a scene balancing step which reduce the effects of seasonality observed when adjacent PALSAR paths from different acquisition dates are mosaiced. This is a very minor change and represents an improvement compared to the processing used in the PD and is akin to the relative radiometric correction applied to the Landsat data used in the PD. The GEE script compares PALSAR II mosaic HV values for each year from 2015 to 2022 to the minimum PALSAR I mosaic values for 2009 and 2010. There is no PALSAR I or II data available for the 2011-2014 period, but since the comparison data for the change detection for all years is the 2009-2010 minimum mosaic, the beginning of the baseline validity period is still covered by the analysis. Areas that have an PALSAR II HV value below 1795 and where the value is less than or equal to 95% of the 2009-2010 minimum value and orthogonally connected to at least 5 other pixels meeting the requirements are considered deforestation if they overlap with a forest pixel in the 2012 forest cover benchmark map. All the detected changes are mapped in reverse order so that areas of change detected earlier in the monitoring period can over-write overlapping areas of change detected later in the monitoring period. The final output map shows 0s for areas of non-forest in the 2012 FCBM, 1s for forest persistence, and then values ranging from 2-9 for periods of first detected forest loss (2012-2015, 2015-2016, 2016-2017, 2017-2018, 2018-2019, 2019-2020, 2020-2021, 2021-2022).
3. The dates of the PALSAR scenes used in the section of the 2022 Global PALSAR-2 mosaic overlapping with the reference region were calculated from the 'epoch' band to makes sure that the entire baseline validity period was covered. The four scenes were from July, August, October, and November 2022. Thus, the entire baseline validity period from April 21, 2012 to April 20, 2022 was covered by the analysis.
4. After downloading, the change map produced in step 3 was compared to the original 2012 FCBM. It was apparent that Google Earth had introduced a half pixel shift to the

northwest, mostly likely due to a difference in the whether the dataset extent was defined based on pixel edges or pixel centre. A simple python script was used to shift the dataset back into alignment with the original 2012 FCBM. After that, the change map was compared with recent high-resolution imagery from Google Earth and Planet.com to ensure there was good georeferencing agreement at the edges of forest persistence. Potential georeferencing errors appeared to be less than 1 pixel from the change map on average. The change map resolution had the same resolution (30x30 meters) and dimensions as the 2012 FCBM.

5. Forest loss from the 2012-2013 monitoring period that was not captured in the result from step 2 was added to the map using band math. This resulted in a map (see Figure 2) where the largest timestep in monitoring was 2 years (2013-2015), which is comparable with the historical reference period analysis from the PD which had time steps of 2 years. This helps ensure farm clearings that are followed after only 1 year are still detected as deforestation.
6. The A&cATaMa plugin in QGIS was used to create a stratified random sample examining the accuracy of the change detection in the project area and leakage belt for the entire baseline validity period with 200 points in the forest persistence class and 100 points in the deforestation class (Figure 3). The starting non-forest class was not included since it is not part of either the leakage belt or project area.
7. The sample points were centred into pixels by generating square buffers the size of pixels around each sampling point and then using the generate pixel centroids function in QGIS to find the pixel centroid overlapped by each square buffer. Then to assist in visualizing orthogonally connected pixels, a 5x5 polygon grid of pixels centered on each pixel centroid was generated.
8. Accuracy assessment was done as per Part 2, Step 2.5 of the methodological annex using high resolution imagery from Google Earth, Bing, Planet.com, and Sentinel-2 to interpret the correct LULCC classes for each sample pixel. The Planet.com base-map for May 2022 was interpreted as representing the end of the monitoring period.
9. A confusion matrix was generated as per Step 2.5 of the methodological annex, but then weighted by the map classes sizes for the two LULCC classes. This is an improvement<sup>2</sup> over the previous approach of just using the raw counts from 100 points of forest and 100 points of deforestation. It is also more conservative since it increases the weight of any missed points of deforestation in the forest persistence class. The producer and user's accuracy for both forest persistence and deforestation were above 80% (see Table 3).

---

<sup>2</sup> Olofsson, P., Foody, G. M., Stehman, S. V., & Woodcock, C. E. (2013). Making better use of accuracy data in land change studies: Estimating accuracy and area and quantifying uncertainty using stratified estimation. *Remote sensing of environment*, 129, 122-131.

10. Despite the meeting the accuracy requirements, there were some obvious areas of missed deforestation. Some portions of larger commercial clearings between 2018 and 2022 were not captured in the change map. In some cases it appears that larger scale commercial clearings were created and left to immediately coppice and regenerate without ever being farmed. Parts of clearings nearest to the forest edge or where there was sufficient time for widespread woody coppicing to occur between the PALSAR imagery dates were therefore missed. To correct this issue, the Serval plugin in QGIS was used to add in deforestation by reclassifying selected areas of pixels for the appropriate years based on interpretation of Sentinel-2, Google Earth, and Planet.com high resolution imagery. Only missed deforestation was added.
11. As a final check of map quality, the zonal histogram function in QGIS was used to count pixels of deforestation in the reference region during the monitoring period. Mapped deforestation was 46,476 ha compared to projected deforestation of 42,126 ha, which suggests that the mapping approach was consistent with the one used in the baseline and that the projected baseline deforestation was reasonable.
12. Finally, the Zonal histogram function in QGIS was used to count the pixels in each area of deforestation from 2013-2022 for each forest strata in the 2012 Land Use Land Cover Map during the monitoring period in the project area ( $ABSLPA_{t,icl}$ ) and leakage belt ( $ABSLK_{t,icl}$ ). The pixel counts were converted to ha by multiplying by 0.09 and entered 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).
13. The monitoring for this monitoring period was carried out on behalf of Village Climate Solutions Limited by Theron Morgan-Brown, a director in Reterra Limited. Theron is an expert in remote sensing and GIS. Previously, as technical advisor for MJUMITA, he authored the VCS project description, methodological annex and first monitoring report for this project.
14. The monitored data for this monitoring period was limited to maps generated from remote sensing and parameters calculated from the maps. No non-conformities in data gathering or processing were identified. All the raster maps and spreadsheets used to calculate the parameters monitored during this monitoring period are stored on the Village Climate Solutions Limited One Drive.

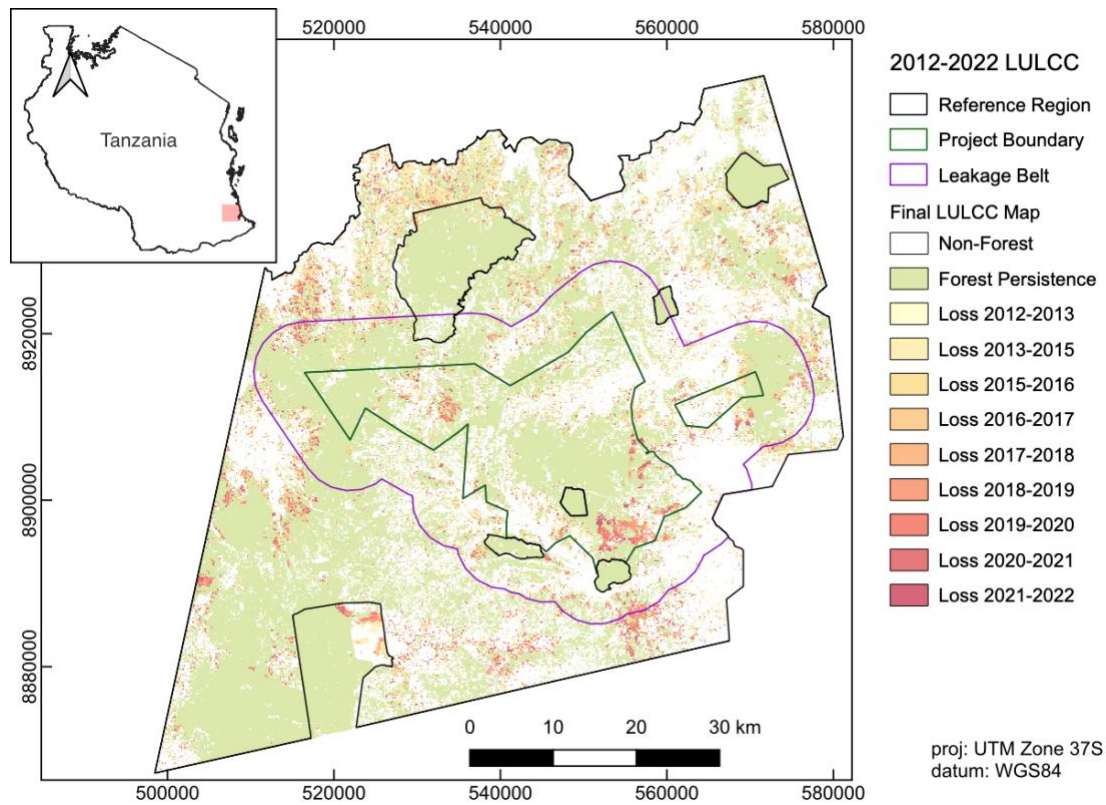


Figure 2: Detailed LULCC 2012-2022 Map

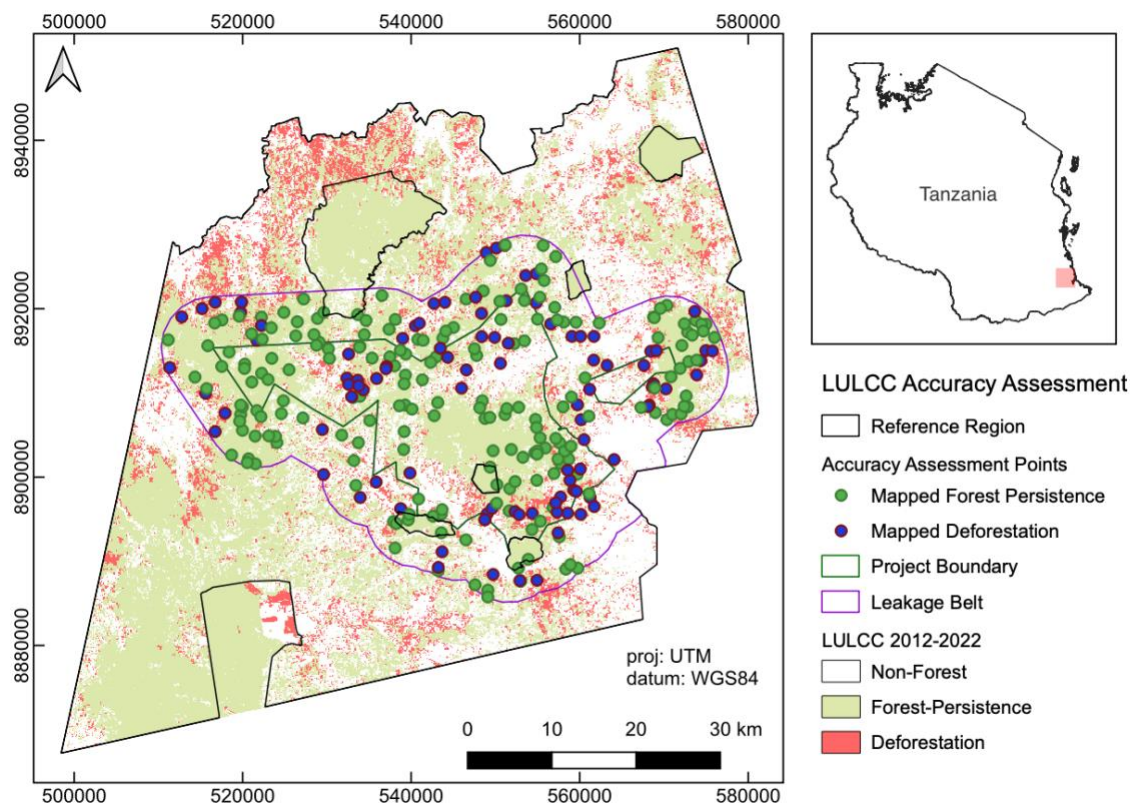


Figure 3: LULCC 2012-2022 and Accuracy Assessment Points

Table 3: Area Weighted Accuracy Assessment of 2012-2022 LULCC Map

| Map Class           | Sample Data |            |               | User's Accuracy | Overall Accuracy |
|---------------------|-------------|------------|---------------|-----------------|------------------|
|                     | Non-Forest  | Forest     | Deforestation |                 |                  |
| Forest              | 0.03789582  | 0.76633772 | 0.03368517    | 91%             | 90%              |
| Deforestation       | 0.00641906  | 0.01765242 | 0.1380098     | 85%             |                  |
| Producer's Accuracy | N/A         | 98%        | 80%           |                 |                  |

### Monitoring of carbon stock changes

No carbon stock monitoring was conducted. Carbon stocks will be updated as part of

### Monitoring of non-CO2 emissions from forest fires (biomass burning)

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, there were sub-periods with and without leakage, which is documented in VM Table 35.

## 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 4.

The method to identify the cumulative areas of credited avoided deforestation is not clear in the methodology. Most of the pixels of projected deforestation that were not deforested during the baseline validity period were not credited for avoided deforestation since they were offset by deforestation that occurred elsewhere in the project area. Deforestation risk maps are not very accurate at the pixel level, so this is expected. Complicating matters even further, areas that were credited one year, could be lost another year but then offset by new additional credited areas. So credited areas do not remain fixed. Finally, it was also recognized that observed deforestation in the high carbon class was higher than baseline, meaning that all the net credits ultimately came from the low carbon class. Therefore, the following steps were devised to locate these areas:

1. In the project area, calculate the difference between the projected baseline hectares of deforestation the observed hectares of deforestation.
2. In the leakage belt, if there are any years where cumulative observed carbon stock changes exceeded baseline carbon stock changes, calculate the difference between projected baseline deforestation and the observed hectares of deforestation for those years.

3. Subtract the excess deforestation step 2 from the results in step 1. The result was 931 ha. Since observed deforestation in the high carbon class was higher than baseline, all these ha would be from the low carbon class.
4. Mask out pixels in the deforestation risk map for the low carbon class (figure 19 in the methodological annex) that overlap with areas of observed deforestation during the baseline validity period.
5. Perform a cumulative frequency analysis of the remaining pixel risk values in the low carbon class to determine the risk value above which there are pixels equal to the area determined in step 3.
6. Using band math, generate a map showing the pixels selected using the risk value threshold from step 5.

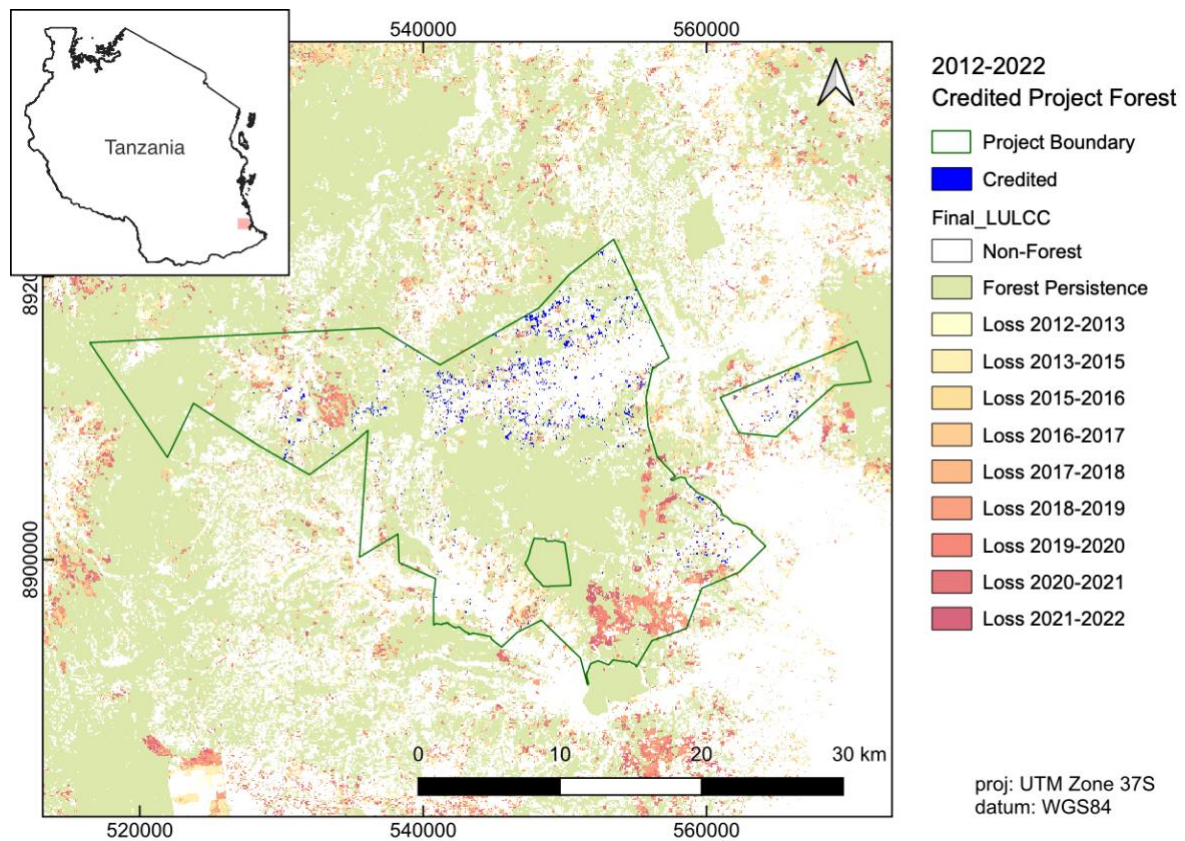


**Figure 4: Cumulative Deforestation and Credited Avoided Deforestation 2012-2022**

# 5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

## 5.1 Baseline Emissions

Baseline emissions were calculated at validation as per the tables and formulas described in Step 6 of Part 2 of the attached Methodological Annex and summarized in VM Table 36 of the Methodological Annex. The portion of VM Table 36 covering the baseline emissions for the first baseline validity period are shown in Table 4.

**Table 4: 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          |
|                | $\Delta\text{CBSLPA}_t$       | $\Delta\text{CBSLPA}$ | $\text{EBBSLPA}_t$     | $\text{EBBSLPA}$    |
|                | tCO <sub>2</sub> -e           | tCO <sub>2</sub> -e   | tCO <sub>2</sub> -e    | tCO <sub>2</sub> -e |
| 2012-2013      | -126,560                      | -126,560              | 8,992                  | 8,992               |
| 2013-2014      | -114,024                      | -240,584              | 8,049                  | 17,041              |
| 2014-2015      | -112,758                      | -353,342              | 7,910                  | 24,951              |
| 2015-2016      | -113,212                      | -466,554              | 7,894                  | 32,845              |
| 2016-2017      | -108,057                      | -574,611              | 7,480                  | 40,325              |
| 2017-2018      | -104,407                      | -679,018              | 7,175                  | 47,500              |
| 2018-2019      | -99,345                       | -778,363              | 6,771                  | 54,271              |
| 2019-2020      | -100,788                      | -879,151              | 6,831                  | 61,102              |
| 2020-2021      | -97,697                       | -976,848              | 6,568                  | 67,670              |
| 2021-2022      | -95,765                       | -1,072,613            | 6,389                  | 74,059              |

## 5.2 Project Emissions

Ex-post actual carbon stock changes were calculated as described in the monitoring plan section of this monitoring report following the procedures outlined in Part 3 of the attached Methodological Annex. The first step is to use the land-use land-cover change monitoring data (see Figure 2) for this monitoring period to create ex-post versions of VM Table 11.b.

However, due to the switch to using PALSAR II global mosaic imagery for change detection, the monitored period from 2013 to 2015 significantly exceeded 2 years (Table 5). The imagery

used for monitoring the 2015 imagery from the PALSAR II global mosaic were from July, September, and October, whereas the baseline assumed project years running from April to April. The 2012-2013 monitoring period for instance used imagery from April 2013. This is particularly significant in the Tanzanian context because most deforestation each year occurs during the dry season (August – November) as people prepare farms for the next growing season.

Therefore, there was a need to adjusting the timing of the observed deforestation to correspond with the expected time intervals in the baseline. Note that it would also not be correct to push all the excess observation time into the following year as the same problem would persist since the PALSAR II global mosaics are always constructed from dry season imagery. Thus, the 2022 imagery date is also after the end of the end date of the baseline validity period. However, as demonstrated in Table 5, a few extra months of observation is not significant when considering the entire 9-year monitoring period. Thus, the most suitable compromise would be to spread the excess observation time evenly over all the monitoring period intervals. Note that the estimate of the cumulative deforestation for the monitoring period is not changed, just the timing.

**Table 5: Monitoring period lengths based on satellite imagery dates.**

| Baseline Monitoring Period | Monitoring Start | Expected Monitoring End | Actual Monitoring Period End | Expected Length (days) | Actual Length (days) | Percent Increase |
|----------------------------|------------------|-------------------------|------------------------------|------------------------|----------------------|------------------|
| 2013-2015                  | 4/21/13          | 4/20/15                 | 9/6/15                       | 729                    | 868                  | 19.07%           |
| 2013-2022                  | 4/21/13          | 4/20/22                 | 8/28/22                      | 3286                   | 3416                 | 3.96%            |

To adjust the monitored period timing to match the ex-ante baseline period timing more closely, the following steps were performed:

1. Use Google Earth to determine the median image date for PALSAR 2 global mosaic data covering the project area in 2015 and 2022.
2. Perform the calculations as shown in Table 5 to estimate how much the 2013-2015 and 2013-2022 monitored periods exceeded the length of the corresponding periods in the baseline.
3. For each forest class, reduce the observed deforestation for the 2013-2015 period by the relative percent increase in the observed time length period vs the corresponding baseline period.
4. For each forest class, subtract the result for step 3 from the original observed deforestation from the period and divide by 9.

5. For each forest class, for each time step in the monitoring period, add the result from step 4 to arrive at the adjusted estimate of observed deforestation. Note that for the 2013-2015 period, the result for step 4 is multiplied by 2 before being added to the result from step 3.
6. Finally, since the carbon stock change factors are applied annually, the 2013-2015 deforestation estimate was divided into 2013-2014 and 2014-2015 estimates using the relative amount of projected baseline deforestation in each period as proportions to split the observed deforestation.
7. The result of these step is the ex-post version of VM Table 11.b (Table 6).

**Table 6: Ex-post annual areas deforested per forest class icl within the project area during the first baseline validity period.**

| Area deforested per forest class icl within the project area |             |            | Total ex-post deforestation in the project area |                      |
|--------------------------------------------------------------|-------------|------------|-------------------------------------------------|----------------------|
| ID <sub>icl</sub> >                                          | 1           | 2          | ABSLPA <sub>t</sub><br>annual                   | ABSLPA<br>cumulative |
| Name >                                                       | High Carbon | Low Carbon |                                                 |                      |
| Project year t                                               | ha          | ha         | ha                                              | ha                   |
| 2012-2013                                                    | 361         | 292        | 653                                             | 653                  |
| 2013-2014                                                    | 362         | 409        | 771                                             | 1,424                |
| 2014-2015                                                    | 369         | 382        | 752                                             | 2,176                |
| 2015-2016                                                    | 162         | 218        | 380                                             | 2,556                |
| 2016-2017                                                    | 190         | 199        | 389                                             | 2,945                |
| 2017-2018                                                    | 236         | 215        | 451                                             | 3,396                |
| 2018-2019                                                    | 691         | 381        | 1,072                                           | 4,467                |
| 2019-2020                                                    | 631         | 218        | 849                                             | 5,316                |
| 2020-2021                                                    | 478         | 213        | 691                                             | 6,007                |
| 2021-2022                                                    | 571         | 266        | 838                                             | 6,845                |

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) of the *methodological annex*, ex-post versions of VM Table 21.b.1 and 21.b.2 were created as shown in Table 7 and Table 8.

Ex-post non-CO2 emissions from forest fires in the project area (Table 9), were calculated using the same procedures described in the methodological annex used to generate VM Table 24.a using ex post deforestation data and the parameters from VM Table 23.

**Table 7: 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                  | $\Delta CabBSLPA_{icl,t}$                                                                           | $\Delta CabBSLPA_{icl}$ | $ID_z$                                                                     | 1                  | $\Delta CabBSLPA_{z,t}$                                                                           | $\Delta CabBSLPA_z$ | $\Delta CabBSLPA_t$                                                           | $\Delta CabBSLPA$  |
| Name                                                                          | High Carbon        | Low Carbon         | annual                                                                                              | cumulative              | Name                                                                       | All                | annual                                                                                            | cumulative          | annual                                                                        | cumulative         |
| Project year t                                                                | t CO <sub>2e</sub> | t CO <sub>2e</sub> | t CO <sub>2e</sub>                                                                                  | t CO <sub>2e</sub>      | Project year t                                                             | t CO <sub>2e</sub> | t CO <sub>2e</sub>                                                                                | t CO <sub>2e</sub>  | t CO <sub>2e</sub>                                                            | t CO <sub>2e</sub> |
| 2012-2013                                                                     | -57,482            | -31,253            | -88,735                                                                                             | -88,735                 | 1                                                                          | 1,776              | 1,776                                                                                             | 1,776               | -86,959                                                                       | -86,959            |
| 2013-2014                                                                     | -57,665            | -43,773            | -101,438                                                                                            | -190,173                | 2                                                                          | 3,874              | 3,874                                                                                             | 5,650               | -97,564                                                                       | -184,523           |
| 2014-2015                                                                     | -58,824            | -40,918            | -99,742                                                                                             | -289,915                | 3                                                                          | 5,918              | 5,918                                                                                             | 11,568              | -93,824                                                                       | -278,347           |
| 2015-2016                                                                     | -25,784            | -23,308            | -49,092                                                                                             | -339,007                | 4                                                                          | 6,951              | 6,951                                                                                             | 18,519              | -42,141                                                                       | -320,488           |
| 2016-2017                                                                     | -30,241            | -21,334            | -51,575                                                                                             | -390,582                | 5                                                                          | 8,010              | 8,010                                                                                             | 26,529              | -43,565                                                                       | -364,053           |
| 2017-2018                                                                     | -37,549            | -23,000            | -60,549                                                                                             | -451,131                | 6                                                                          | 9,236              | 9,236                                                                                             | 35,765              | -51,313                                                                       | -415,366           |
| 2018-2019                                                                     | -110,020           | -40,743            | -150,763                                                                                            | -601,894                | 7                                                                          | 12,151             | 12,151                                                                                            | 47,916              | -138,612                                                                      | -553,978           |
| 2019-2020                                                                     | -100,418           | -23,366            | -123,784                                                                                            | -725,678                | 8                                                                          | 14,460             | 14,460                                                                                            | 62,376              | -109,324                                                                      | -663,302           |
| 2020-2021                                                                     | -76,128            | -22,778            | -98,906                                                                                             | -824,584                | 9                                                                          | 16,339             | 16,339                                                                                            | 78,715              | -82,567                                                                       | -745,869           |
| 2021-2022                                                                     | -90,945            | -28,510            | -119,455                                                                                            | -944,039                | 10                                                                         | 18,617             | 18,617                                                                                            | 97,332              | -100,838                                                                      | -846,707           |

**Table 8: 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                  | $\Delta C_{bbBSLPA}_{icl,t}$                                                                        | $\Delta C_{bbBSLPA}_{icl}$ | $ID_z$                                                                     | 1                  | $\Delta C_{bbBSLPA}_{z,t}$                                                                        | $\Delta C_{bbBSLPA}_z$ | $\Delta C_{bbBSLPA}_t$                                                        | $\Delta C_{bbBSLPA}$ |
| Name                                                                          | High Carbon        | Low Carbon         | annual                                                                                              | cumulative                 | Name                                                                       | All                | annual                                                                                            | cumulative             | annual                                                                        | cumulative           |
| Project year t                                                                | t CO <sub>2e</sub> | t CO <sub>2e</sub> | t CO <sub>2e</sub>                                                                                  | t CO <sub>2e</sub>         | Project year t                                                             | t CO <sub>2e</sub> | t CO <sub>2e</sub>                                                                                | t CO <sub>2e</sub>     | t CO <sub>2e</sub>                                                            | t CO <sub>2e</sub>   |
| 2012-2013                                                                     | -1,798             | -1,092             | -2,890                                                                                              | -2,890                     | 1                                                                          | 535                | 535                                                                                               | 535                    | -2,355                                                                        | -2,355               |
| 2013-2014                                                                     | -3,601             | -2,622             | -6,223                                                                                              | -9,113                     | 2                                                                          | 1,168              | 1,168                                                                                             | 1,703                  | -5,055                                                                        | -7,410               |
| 2014-2015                                                                     | -5,441             | -4,051             | -9,492                                                                                              | -18,605                    | 3                                                                          | 1,784              | 1,784                                                                                             | 3,487                  | -7,708                                                                        | -15,118              |
| 2015-2016                                                                     | -6,247             | -4,866             | -11,113                                                                                             | -29,718                    | 4                                                                          | 2,096              | 2,096                                                                                             | 5,583                  | -9,017                                                                        | -24,135              |
| 2016-2017                                                                     | -7,193             | -5,611             | -12,804                                                                                             | -42,522                    | 5                                                                          | 2,415              | 2,415                                                                                             | 7,998                  | -10,389                                                                       | -34,524              |
| 2017-2018                                                                     | -8,368             | -6,415             | -14,783                                                                                             | -57,305                    | 6                                                                          | 2,784              | 2,784                                                                                             | 10,782                 | -11,999                                                                       | -46,523              |
| 2018-2019                                                                     | -11,809            | -7,839             | -19,648                                                                                             | -76,953                    | 7                                                                          | 3,663              | 3,663                                                                                             | 14,445                 | -15,985                                                                       | -62,508              |
| 2019-2020                                                                     | -14,949            | -8,655             | -23,604                                                                                             | -100,557                   | 8                                                                          | 4,359              | 4,359                                                                                             | 18,804                 | -19,245                                                                       | -81,753              |
| 2020-2021                                                                     | -17,330            | -9,451             | -26,781                                                                                             | -127,338                   | 9                                                                          | 4,926              | 4,926                                                                                             | 23,730                 | -21,855                                                                       | -103,608             |
| 2021-2022                                                                     | -20,174            | -10,448            | -30,622                                                                                             | -157,960                   | 10                                                                         | 5,613              | 5,613                                                                                             | 29,343                 | -25,009                                                                       | -128,617             |

**Table 9: Ex-post actual non-CO2 emissions from forest fires in the project area.**

| Project year $t$ | Emissions of non-CO <sub>2</sub> gases from ex-post biomass burning |                      |                  |                      | Total ex-post non-CO <sub>2</sub> emissions from forest fires in the Project Area |                     |
|------------------|---------------------------------------------------------------------|----------------------|------------------|----------------------|-----------------------------------------------------------------------------------|---------------------|
|                  | $ID_{icl} = 1$                                                      |                      | $ID_{icl} = 2$   |                      | annual                                                                            | cumulative          |
|                  | $ABSLPA_{icl,t}$                                                    | $EBBBSL_{tot_{icl}}$ | $ABSLPA_{icl,t}$ | $EBBBSL_{tot_{icl}}$ | $EBBBSLPA_t$                                                                      | $EBBBSLPA$          |
|                  | ha                                                                  | tCO <sub>2</sub> -e  | ha               | tCO <sub>2</sub> -e  | tCO <sub>2</sub> -e                                                               | tCO <sub>2</sub> -e |
| 1                | 361                                                                 | 4,108                | 292              | 2,234                | 6,342                                                                             | 6,342               |
| 2                | 362                                                                 | 4,121                | 409              | 3,129                | 7,250                                                                             | 13,592              |
| 3                | 369                                                                 | 4,204                | 382              | 2,925                | 7,129                                                                             | 20,721              |
| 4                | 162                                                                 | 1,843                | 218              | 1,666                | 3,509                                                                             | 24,229              |
| 5                | 190                                                                 | 2,161                | 199              | 1,525                | 3,686                                                                             | 27,915              |
| 6                | 236                                                                 | 2,684                | 215              | 1,644                | 4,328                                                                             | 32,243              |
| 7                | 691                                                                 | 7,863                | 381              | 2,912                | 10,775                                                                            | 43,018              |
| 8                | 631                                                                 | 7,177                | 218              | 1,670                | 8,847                                                                             | 51,865              |
| 9                | 478                                                                 | 5,441                | 213              | 1,628                | 7,069                                                                             | 58,934              |
| 10               | 571                                                                 | 6,500                | 266              | 2,038                | 8,538                                                                             | 67,471              |

### 5.3 Leakage Emissions

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 the baseline validity period from these two tables is summarized in Table 10. 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 11.

**Table 10: Baseline carbon stock change in leakage belt during baseline validity 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 |                   |
|------------------|-------------------------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------|-------------------|
|                  | $\Delta CabBSLLK_t$                                                           | $\Delta CabBSLLK$ | $\Delta CbbBSLLK_t$                                                           | $\Delta CbbBSLLK$ |
|                  | annual                                                                        | cumulative        | annual                                                                        | cumulative        |

|           | t CO2e   | t CO2e     | t CO2e  | t CO2e   |
|-----------|----------|------------|---------|----------|
| 2012-2013 | -193,304 | -193,304   | -5,957  | -5,957   |
| 2013-2014 | -158,413 | -351,717   | -10,898 | -16,855  |
| 2014-2015 | -152,903 | -504,620   | -15,708 | -32,562  |
| 2015-2016 | -149,886 | -654,506   | -20,452 | -53,015  |
| 2016-2017 | -142,929 | -797,435   | -25,009 | -78,023  |
| 2017-2018 | -140,579 | -938,014   | -29,525 | -107,549 |
| 2018-2019 | -133,371 | -1,071,385 | -33,848 | -141,396 |
| 2019-2020 | -135,307 | -1,206,692 | -38,258 | -179,654 |
| 2020-2021 | -128,986 | -1,335,678 | -42,506 | -222,161 |
| 2021-2022 | -121,901 | -1,457,579 | -46,563 | -268,724 |

**Table 11: Baseline non-CO2 emissions from forest fires in the leakage belt during baseline validity period**

| Project<br>year $t$ | Baseline emissions of non-CO <sub>2</sub> gases from forest fires |                      |                  |                      | Total baseline non-CO <sub>2</sub> emissions from forest fires in the project area |                     |
|---------------------|-------------------------------------------------------------------|----------------------|------------------|----------------------|------------------------------------------------------------------------------------|---------------------|
|                     | $ID_{icl} = 1$                                                    |                      | $ID_{icl} = 2$   |                      | annual                                                                             | cumulative          |
|                     | $ABSLPA_{icl,t}$                                                  | $EBBBSL_{tot_{icl}}$ | $ABSLPA_{icl,t}$ | $EBBBSL_{tot_{icl}}$ | $EBBBSLPA_t$                                                                       | $EBBBSLPA$          |
|                     | ha                                                                | tCO <sub>2</sub> -e  | ha               | tCO <sub>2</sub> -e  | tCO <sub>2</sub> -e                                                                | tCO <sub>2</sub> -e |
| 1                   | 452                                                               | 5,144                | 503              | 3,848                | 8,992                                                                              | 8,992               |
| 2                   | 398                                                               | 4,530                | 460              | 3,519                | 8,049                                                                              | 17,041              |
| 3                   | 406                                                               | 4,621                | 430              | 3,290                | 7,910                                                                              | 24,951              |
| 4                   | 418                                                               | 4,757                | 410              | 3,137                | 7,894                                                                              | 32,845              |
| 5                   | 387                                                               | 4,405                | 402              | 3,075                | 7,480                                                                              | 40,325              |
| 6                   | 377                                                               | 4,291                | 377              | 2,884                | 7,175                                                                              | 47,500              |
| 7                   | 359                                                               | 4,086                | 351              | 2,685                | 6,771                                                                              | 54,271              |
| 8                   | 375                                                               | 4,268                | 335              | 2,563                | 6,831                                                                              | 61,102              |
| 9                   | 362                                                               | 4,120                | 320              | 2,448                | 6,568                                                                              | 67,670              |
| 10                  | 351                                                               | 3,995                | 313              | 2,394                | 6,389                                                                              | 74,059              |

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 12. The same steps described in section 5.2 of this monitoring report were used to rescale the observed deforestation in each sub-monitoring period to better align with the timing of sub-periods in the baseline projections.

**Table 12: Ex-post annual areas deforested per forest class icl within the leakage belt during the baseline validity period.**

| Area deforested per forest class icl within the leakage belt |             |            | Total ex-post deforestation in the leakage belt |            |
|--------------------------------------------------------------|-------------|------------|-------------------------------------------------|------------|
| ID <sub>icl</sub> >                                          | 1           | 2          |                                                 |            |
| Name >                                                       | High Carbon | Low Carbon | ABSLLK <sub>t</sub>                             | ABSLLK     |
|                                                              |             |            | annual                                          | cumulative |
| Project year <sub>t</sub>                                    | ha          | ha         | ha                                              | ha         |
| 2012-2013                                                    | 693         | 525        | 1,218                                           | 1,218      |
| 2013-2014                                                    | 610         | 642        | 1,252                                           | 2,470      |
| 2014-2015                                                    | 587         | 634        | 1,221                                           | 3,691      |
| 2015-2016                                                    | 371         | 517        | 889                                             | 4,579      |
| 2016-2017                                                    | 379         | 386        | 765                                             | 5,344      |
| 2017-2018                                                    | 275         | 384        | 659                                             | 6,003      |
| 2018-2019                                                    | 618         | 659        | 1,277                                           | 7,280      |
| 2019-2020                                                    | 414         | 539        | 953                                             | 8,233      |
| 2020-2021                                                    | 547         | 468        | 1,015                                           | 9,248      |
| 2021-2022                                                    | 545         | 473        | 1,018                                           | 10,265     |

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) from the methodological annex, ex-post versions of VM Table 21.b.1 and 21.b.2 were created as shown in Table 13 and Table 14.

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 15). 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 16). Then a table like VM Table 21.d was created for calculating leakage from non-CO2 emissions from forest fires (Table 17). Finally, ex-post estimated total leakage was summarized using an ex-post version of VM Table 35 (Table 18).

**Table 13: 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 <sub>icl</sub>                                                             | 1                  | 2                  | $\Delta CabBSLLK_{icl,t}$                                                                           | $\Delta CabBSLL_{icl}$ | ID <sub>z</sub>                                                            | 1                  | $\Delta CabBSLLK_{z,t}$                                                                           | $\Delta CabBSLLK_z$ | $\Delta CabBSLLK_t$                                                           | $\Delta CabBSLLK$  |
| Name                                                                          | High Carbon        | Low Carbon         | annual                                                                                              | cumulative             | Name                                                                       | All                | annual                                                                                            | cumulative          | annual                                                                        | cumulative         |
| Project year t                                                                | t CO <sub>2e</sub> | t CO <sub>2e</sub> | t CO <sub>2e</sub>                                                                                  | t CO <sub>2e</sub>     | Project year t                                                             | t CO <sub>2e</sub> | t CO <sub>2e</sub>                                                                                | t CO <sub>2e</sub>  | t CO <sub>2e</sub>                                                            | t CO <sub>2e</sub> |
| 2012-2013                                                                     | -110,346           | -56,191            | -166,537                                                                                            | -166,537               | 1                                                                          | 1,181              | 1,181                                                                                             | 1,181               | -165,356                                                                      | -165,356           |
| 2013-2014                                                                     | -97,126            | -68,688            | -165,814                                                                                            | -332,351               | 2                                                                          | 2,396              | 2,396                                                                                             | 3,577               | -163,418                                                                      | -328,774           |
| 2014-2015                                                                     | -93,498            | -67,813            | -161,311                                                                                            | -493,662               | 3                                                                          | 3,580              | 3,580                                                                                             | 7,157               | -157,731                                                                      | -486,505           |
| 2015-2016                                                                     | -59,098            | -55,373            | -114,471                                                                                            | -608,133               | 4                                                                          | 4,442              | 4,442                                                                                             | 11,599              | -110,029                                                                      | -596,534           |
| 2016-2017                                                                     | -60,345            | -41,339            | -101,684                                                                                            | -709,817               | 5                                                                          | 5,184              | 5,184                                                                                             | 16,783              | -96,500                                                                       | -693,034           |
| 2017-2018                                                                     | -43,721            | -41,098            | -84,819                                                                                             | -794,636               | 6                                                                          | 5,823              | 5,823                                                                                             | 22,606              | -78,996                                                                       | -772,030           |
| 2018-2019                                                                     | -98,450            | -70,516            | -168,966                                                                                            | -963,602               | 7                                                                          | 7,062              | 7,062                                                                                             | 29,668              | -161,904                                                                      | -933,934           |
| 2019-2020                                                                     | -65,977            | -57,637            | -123,614                                                                                            | -1,087,216             | 8                                                                          | 7,986              | 7,986                                                                                             | 37,654              | -115,628                                                                      | -1,049,562         |
| 2020-2021                                                                     | -87,086            | -50,085            | -137,171                                                                                            | -1,224,387             | 9                                                                          | 8,970              | 8,970                                                                                             | 46,624              | -128,201                                                                      | -1,177,763         |
| 2021-2022                                                                     | -86,728            | -50,625            | -137,353                                                                                            | -1,361,740             | 10                                                                         | 9,957              | 9,957                                                                                             | 56,581              | -127,396                                                                      | -1,305,159         |

**Table 14: Ex-post actual carbon stock changes in below-ground biomass in the leakage belt during baseline validity 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 <sub>icl</sub>                                                             | 1                  | 2                  | $\Delta C_{bbBSLLK_{icl,t}}$                                                                        | $\Delta C_{bbBSLLK_{icl}}$ | ID <sub>z</sub>                                                            | 1                  | $\Delta C_{bbBSLLK_{z,t}}$                                                                         | $\Delta C_{bbBSLLK_z}$ | $\Delta C_{bbBSLLK_t}$                                                        | $\Delta C_{bbBSLLK}$ |
| Name                                                                          | High Carbon        | Low Carbon         | annual                                                                                              | cumulative                 | Name                                                                       | All                | annual                                                                                             | cumulative             | annual                                                                        | cumulative           |
| Project year t                                                                | t CO <sub>2e</sub> | t CO <sub>2e</sub> | t CO <sub>2e</sub>                                                                                  | t CO <sub>2e</sub>         | Project year t                                                             | t CO <sub>2e</sub> | t CO <sub>2e</sub>                                                                                 | t CO <sub>2e</sub>     | t CO <sub>2e</sub>                                                            | t CO <sub>2e</sub>   |
| 2012-2013                                                                     | -3451              | -1964              | -5,415                                                                                              | -5,415                     | 1                                                                          | 341                | 341                                                                                                | 341                    | -5,074                                                                        | -5,074               |
| 2013-2014                                                                     | -6489              | -4364              | -10,853                                                                                             | -16,268                    | 2                                                                          | 692                | 692                                                                                                | 1,033                  | -10,161                                                                       | -15,235              |
| 2014-2015                                                                     | -9413              | -6733              | -16,146                                                                                             | -32,414                    | 3                                                                          | 1033               | 1,033                                                                                              | 2,066                  | -15,113                                                                       | -30,348              |
| 2015-2016                                                                     | -11261             | -8668              | -19,929                                                                                             | -52,343                    | 4                                                                          | 1282               | 1,282                                                                                              | 3,348                  | -18,647                                                                       | -48,995              |
| 2016-2017                                                                     | -13149             | -10113             | -23,262                                                                                             | -75,605                    | 5                                                                          | 1496               | 1,496                                                                                              | 4,844                  | -21,766                                                                       | -70,761              |
| 2017-2018                                                                     | -14516             | -11549             | -26,065                                                                                             | -101,670                   | 6                                                                          | 1681               | 1,681                                                                                              | 6,525                  | -24,384                                                                       | -95,145              |
| 2018-2019                                                                     | -17595             | -14013             | -31,608                                                                                             | -133,278                   | 7                                                                          | 2038               | 2,038                                                                                              | 8,563                  | -29,570                                                                       | -124,715             |
| 2019-2020                                                                     | -19659             | -16027             | -35,686                                                                                             | -168,964                   | 8                                                                          | 2305               | 2,305                                                                                              | 10,868                 | -33,381                                                                       | -158,096             |
| 2020-2021                                                                     | -22382             | -17777             | -40,159                                                                                             | -209,123                   | 9                                                                          | 2589               | 2,589                                                                                              | 13,457                 | -37,570                                                                       | -195,666             |
| 2021-2022                                                                     | -25095             | -19546             | -44,641                                                                                             | -253,764                   | 10                                                                         | 2874               | 2,874                                                                                              | 16,331                 | -41,767                                                                       | -237,433             |

**Table 15: Total ex-post carbon stock change in the leakage belt**

| Project year<br>$t$ | 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 <sub>2</sub> e                            | t CO <sub>2</sub> e | t CO <sub>2</sub> e                          | t CO <sub>2</sub> e | t CO <sub>2</sub> e                             | t CO <sub>2</sub> e |
| 2012-2013           | -199,261                                       | -199,261            | -170,430                                     | -170,430            | 28,831                                          | 28,831              |
| 2013-2014           | -169,311                                       | -368,572            | -173,579                                     | -344,009            | -4,268                                          | 24,563              |
| 2014-2015           | -168,611                                       | -537,183            | -172,844                                     | -516,853            | -4,233                                          | 20,330              |
| 2015-2016           | -170,338                                       | -707,521            | -128,676                                     | -645,529            | 41,662                                          | 61,992              |
| 2016-2017           | -167,938                                       | -875,459            | -118,266                                     | -763,795            | 49,672                                          | 111,664             |
| 2017-2018           | -170,104                                       | -1,045,563          | -103,380                                     | -867,175            | 66,724                                          | 178,388             |
| 2018-2019           | -167,219                                       | -1,212,782          | -191,474                                     | -1,058,649          | -24,255                                         | 154,133             |
| 2019-2020           | -173,565                                       | -1,386,347          | -149,009                                     | -1,207,658          | 24,556                                          | 178,689             |
| 2020-2021           | -171,492                                       | -1,557,839          | -165,771                                     | -1,373,429          | 5,721                                           | 184,410             |
| 2021-2022           | -168,464                                       | -1,726,303          | -169,163                                     | -1,542,592          | -699                                            | 183,711             |

**Table 16 Total Ex-post emissions from forest fires in leakage belt.**

| Project year<br>$t$ | Emissions of non-CO <sub>2</sub> gases from ex-post forest fires |                      |                  |                      | Total ex-post non-CO <sub>2</sub> emissions from forest fires in the leakage belt |                     |
|---------------------|------------------------------------------------------------------|----------------------|------------------|----------------------|-----------------------------------------------------------------------------------|---------------------|
|                     | $ID_{icl} = 1$                                                   |                      | $ID_{icl} = 2$   |                      | annual                                                                            | cumulative          |
|                     | $ABSLLK_{icl,t}$                                                 | $EBBBSL_{tot_{icl}}$ | $ABSLLK_{icl,t}$ | $EBBBSL_{tot_{icl}}$ | $EBBBSLLK_t$                                                                      | $EBBBSLLK$          |
|                     | ha                                                               | tCO <sub>2</sub> -e  | ha               | tCO <sub>2</sub> -e  | tCO <sub>2</sub> -e                                                               | tCO <sub>2</sub> -e |
| 2012-2013           | 693                                                              | 7,886                | 525              | 4,016                | 11,903                                                                            | 11,903              |
| 2013-2014           | 610                                                              | 6,942                | 642              | 4,909                | 11,851                                                                            | 23,754              |
| 2014-2015           | 587                                                              | 6,682                | 634              | 4,847                | 11,529                                                                            | 35,283              |
| 2015-2016           | 371                                                              | 4,224                | 517              | 3,958                | 8,182                                                                             | 43,464              |
| 2016-2017           | 379                                                              | 4,313                | 386              | 2,955                | 7,267                                                                             | 50,732              |

|           |     |       |     |       |        |        |
|-----------|-----|-------|-----|-------|--------|--------|
| 2017-2018 | 275 | 3,125 | 384 | 2,937 | 6,062  | 56,794 |
| 2018-2019 | 618 | 7,036 | 659 | 5,040 | 12,076 | 68,870 |
| 2019-2020 | 414 | 4,715 | 539 | 4,120 | 8,835  | 77,705 |
| 2020-2021 | 547 | 6,224 | 468 | 3,580 | 9,804  | 87,509 |
| 2021-2022 | 545 | 6,198 | 473 | 3,618 | 9,817  | 97,326 |

**Table 17 Total ex post increase in GHG emissions due to displaced forest fires**

| Project year<br>$t$ | Total baseline non-CO <sub>2</sub> emissions from forest fires in the leakage belt |                     | Total ex-post non-CO <sub>2</sub> emissions from forest fires in the leakage belt |                     | Total ex post increase in GHG emissions due to displaced forest fires |                     |
|---------------------|------------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------|---------------------|
|                     | annual                                                                             | cumulative          | annual                                                                            | cumulative          | annual                                                                | cumulative          |
|                     | $EBBSLLK_t$                                                                        | $EBBSLLK$           | $EBBSLLK_t$                                                                       | $EBBSLLK$           | $EADLK_t$                                                             | $EADLK$             |
|                     | t CO <sub>2</sub> e                                                                | t CO <sub>2</sub> e | t CO <sub>2</sub> e                                                               | t CO <sub>2</sub> e | t CO <sub>2</sub> e                                                   | t CO <sub>2</sub> e |
| 2012-2013           | 13,917                                                                             | 13,917              | 11,903                                                                            | 11,903              | -2,014                                                                | -2,014              |
| 2013-2014           | 11,508                                                                             | 25,425              | 11,851                                                                            | 23,754              | 343                                                                   | -1,671              |
| 2014-2015           | 11,196                                                                             | 36,621              | 11,529                                                                            | 35,283              | 333                                                                   | -1,338              |
| 2015-2016           | 11,061                                                                             | 47,682              | 8,182                                                                             | 43,464              | -2,879                                                                | -4,218              |
| 2016-2017           | 10,641                                                                             | 58,323              | 7,267                                                                             | 50,732              | -3,374                                                                | -7,591              |
| 2017-2018           | 10,549                                                                             | 68,872              | 6,062                                                                             | 56,794              | -4,487                                                                | -12,078             |
| 2018-2019           | 10,107                                                                             | 78,979              | 12,076                                                                            | 68,870              | 1,969                                                                 | -10,109             |
| 2019-2020           | 10,320                                                                             | 89,299              | 8,835                                                                             | 77,705              | -1,485                                                                | -11,594             |
| 2020-2021           | 9,939                                                                              | 99,238              | 9,804                                                                             | 87,509              | -135                                                                  | -11,729             |
| 2021-2022           | 9,501                                                                              | 108,739             | 9,817                                                                             | 97,326              | 316                                                                   | -11,413             |

Table 18: Ex-post estimated total leakage

| Project year t | Total GHG emissions from increased grazing activities |                     | Total ex post increase in GHG emissions due to displaced forest fires |                     | Total ex post decrease in carbon stocks due to displaced deforestation |                     | Carbon stock decrease due to leakage prevention measures |                     | Total net carbon stock change due to leakage |                     | Total net increase in GHG emissions due to leakage |                     |
|----------------|-------------------------------------------------------|---------------------|-----------------------------------------------------------------------|---------------------|------------------------------------------------------------------------|---------------------|----------------------------------------------------------|---------------------|----------------------------------------------|---------------------|----------------------------------------------------|---------------------|
|                | annual                                                | cumulative          | annual                                                                | cumulative          | annual                                                                 | cumulative          | annual                                                   | cumulative          | annual                                       | cumulative          | annual                                             | cumulative          |
|                | $E_{gLK_t}$                                           | $E_{gLK}$           | $E_{ADLK_t}$                                                          | $E_{ADLK}$          | $\Delta CADLK_t$                                                       | $\Delta CADLK$      | $\Delta CLPMLK_t$                                        | $\Delta CLPMLK$     | $\Delta CLK_t$                               | $\Delta CLK$        | $ELK_t$                                            | $ELK$               |
|                | tCO <sub>2</sub> -e                                   | tCO <sub>2</sub> -e | tCO <sub>2</sub> -e                                                   | tCO <sub>2</sub> -e | tCO <sub>2</sub> -e                                                    | tCO <sub>2</sub> -e | tCO <sub>2</sub> -e                                      | tCO <sub>2</sub> -e | tCO <sub>2</sub> -e                          | tCO <sub>2</sub> -e | tCO <sub>2</sub> -e                                | tCO <sub>2</sub> -e |
| 2012-2013      | 0                                                     | 0                   | -2,014                                                                | -2,014              | 28,831                                                                 | 28,831              | 0                                                        | 0                   | 28,831                                       | 28,831              | -2,014                                             | -2,014              |
| 2013-2014      | 0                                                     | 0                   | 343                                                                   | -1,671              | -4,268                                                                 | 24,563              | 0                                                        | 0                   | -4,268                                       | 24,563              | 343                                                | -1,671              |
| 2014-2015      | 0                                                     | 0                   | 333                                                                   | -1,338              | -4,233                                                                 | 20,330              | 0                                                        | 0                   | -4,233                                       | 20,330              | 333                                                | -1,338              |
| 2015-2016      | 0                                                     | 0                   | -2,879                                                                | -4,218              | 41,662                                                                 | 61,992              | 0                                                        | 0                   | 41,662                                       | 61,992              | -2,879                                             | -4,218              |
| 2016-2017      | 0                                                     | 0                   | -3,374                                                                | -7,591              | 49,672                                                                 | 111,664             | 0                                                        | 0                   | 49,672                                       | 111,664             | -3,374                                             | -7,591              |
| 2017-2018      | 0                                                     | 0                   | -4,487                                                                | -12,078             | 66,724                                                                 | 178,388             | 0                                                        | 0                   | 66,724                                       | 178,388             | -4,487                                             | -12,078             |
| 2018-2019      | 0                                                     | 0                   | 1,969                                                                 | -10,109             | -24,255                                                                | 154,133             | 0                                                        | 0                   | -24,255                                      | 154,133             | 1,969                                              | -10,109             |
| 2019-2020      | 0                                                     | 0                   | -1,485                                                                | -11,594             | 24,556                                                                 | 178,689             | 0                                                        | 0                   | 24,556                                       | 178,689             | -1,485                                             | -11,594             |
| 2020-2021      | 0                                                     | 0                   | -135                                                                  | -11,729             | 5,721                                                                  | 184,410             | 0                                                        | 0                   | 5,721                                        | 184,410             | -135                                               | -11,729             |
| 2021-2022      | 0                                                     | 0                   | 316                                                                   | -11,413             | -699                                                                   | 183,711             | 0                                                        | 0                   | -699                                         | 183,711             | 316                                                | -11,413             |

## 5.4 GHG Emission Reductions and Carbon Dioxide 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 were calculated using equation 19 and summarized using an ex-post version of VM Table 36 (Table 19). However, the ex-post tradable VCU were calculated slightly differently for the 2013-2018 period due to the losses from 2018-2022. Following direct guidance from Verra, the calculation of the ex-post tradable VCUs for each sub-monitoring period from 2013-2018 were calculated after deducting the losses from the 2018-2022 period. The deductions were applied based on the proportion that each year contributed to the net reductions. For instance, if a year was responsible for 10% of the net emissions reductions between 2013-2018, then 10% of the loss from 2019-2022 was subtracted from that year. Also following guidance from Verra, the risk buffer allocations for the years of emissions reductions were calculated before subtracting the later losses resulting in a much higher rate of risk buffer contributions for those years relative to the final issuances for those years.

Equation 19:

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

Where:

|                   |                                                                                                                                                                                                                                                                                                                                   |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $\Delta REDD_t$   | Ex post estimated net anthropogenic greenhouse gas emission reduction attributable to the AUD project activity at year t; tCO <sub>2</sub> e                                                                                                                                                                                      |
| $\Delta CBSLPA_t$ | Sum of baseline carbon stock changes in the project area at year t; tCO <sub>2</sub> e<br><b>Note:</b> 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 <sub>2</sub> e                                                                                                                                                                                                                                  |
| $\Delta CPSPA_t$  | Sum of ex post estimated actual carbon stock changes in project area at year t; tCO <sub>2</sub> e<br><b>Note:</b> 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 <sub>2</sub> e                                                                                                                                                                                                                |
| $\Delta CLK_t$    | Sum of ex post estimated leakage net carbon stock changes at year t; tCO <sub>2</sub> e<br><b>Note:</b> If the cumulative sum of $\Delta CLK_t$ within the fixed baseline period is > 0, $\Delta CLK_t$ shall be set to zero.                                                                                                     |
| $ELK_t$           | Sum of ex post estimated leakage emissions at year t; tCO <sub>2</sub> e                                                                                                                                                                                                                                                          |
| t                 | 1, 2, 3 ... T, a year of the proposed project crediting period; dimensionless                                                                                                                                                                                                                                                     |

Note that in the case of this project,  $ELK_t$  is also set to zero whenever the cumulative sum of  $\Delta CLK_t > 0$  because it only represents CH<sub>4</sub> emissions from biomass burning associated with deforestation caused by farm clearing. If there is no activity displacement, then there is also no increase in CH<sub>4</sub> emissions. Thus, the cumulative sum of was  $> 0$  for all years during the baseline validity period, the values for  $\Delta CLK_t$  and  $ELK_t$  are set to zero as shown in Table x.

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 <sub>2e</sub><br><b>Note:</b> If $VCU_t < 0$ no credits (VCUs) will be awarded and VCUs can only be granted if: $\sum \Delta REDD_t > 0$ |
| $\Delta REDD_t$   | Ex post estimated net anthropogenic greenhouse gas emission reduction attributable to the AUD project activities at year $t$ ; tCO <sub>2e</sub>                                                              |
| $VBC_t$           | Number of Buffer Credits deposited in the VCS Buffer at time $t$ ; tCO <sub>2e</sub>                                                                                                                          |
| $\Delta CBSLPA_t$ | Sum of baseline carbon stock changes in the project area at year $t$ ; tCO <sub>2e</sub>                                                                                                                      |
| $\Delta CPSPA_t$  | Sum of ex post estimated actual carbon stock changes in the project area at year $t$ ; tCO <sub>2e</sub>                                                                                                      |
| $Rf_t$            | Risk factor used to calculate VCS buffer credits; %<br><b>Note:</b> $Rf_t$ was determined to be 15.28% using the latest version (v4.2) 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 19 VM Table 36. Ex post estimated net anthropogenic GHG emission reductions ( $\Delta\text{REDD}_t$ ) and Verified Carbon Units (VCU<sub>t</sub>)**

| 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          |
|                | $\Delta\text{CBSLPA}_t$       | $\Delta\text{CBSLPA}$ | $\text{EBBBSLPA}_t$    | $\text{EBBBSLPA}$   | $\Delta\text{CPSPA}_t$               | $\Delta\text{CPSPA}$ | $\text{EBBPSPA}_t$            | $\text{EBBBSLPA}$   | $\Delta\text{CLK}_t$                 | $\Delta\text{CLK}$  | $\text{ELK}_t$                | $\text{ELK}$        | $\Delta\text{REDD}_t$                             | $\Delta\text{REDD}$ | $\text{VCU}_t$        | $\text{VCU}$        | $\text{VBC}_t$         | $\text{VBC}$        |
|                | tCO <sub>2</sub> -e           | tCO <sub>2</sub> -e   | tCO <sub>2</sub> -e    | tCO <sub>2</sub> -e | tCO <sub>2</sub> -e                  | tCO <sub>2</sub> -e  | tCO <sub>2</sub> -e           | tCO <sub>2</sub> -e | tCO <sub>2</sub> -e                  | tCO <sub>2</sub> -e | tCO <sub>2</sub> -e           | tCO <sub>2</sub> -e | tCO <sub>2</sub> -e                               | tCO <sub>2</sub> -e | tCO <sub>2</sub> -e   | tCO <sub>2</sub> -e | tCO <sub>2</sub> -e    | tCO <sub>2</sub> -e |
| 2012-2013      | -126,560                      | -126,560              | 8,992                  | 8,992               | -89,314                              | -89,314              | 6,342                         | 6,342               | 0                                    | 0                   | 0                             | 0                   | 39,896                                            | 39,896              | 36,171                | 36,171              | 3,725                  | 3,725               |
| 2013-2014      | -114,024                      | -240,584              | 8,049                  | 17,041              | -102,619                             | -191,933             | 7,250                         | 13,592              | 0                                    | 0                   | 0                             | 0                   | 12,204                                            | 52,100              | 2,314                 | 38,485              | 1,743                  | 5,467               |
| 2014-2015      | -112,758                      | -353,342              | 7,910                  | 24,951              | -101,532                             | -293,465             | 7,129                         | 20,721              | 0                                    | 0                   | 0                             | 0                   | 12,007                                            | 64,107              | 2,276                 | 40,761              | 1,715                  | 7,183               |
| 2015-2016      | -113,212                      | -466,554              | 7,894                  | 32,845              | -51,158                              | -344,623             | 3,509                         | 24,229              | 0                                    | 0                   | 0                             | 0                   | 66,439                                            | 130,547             | 12,602                | 53,362              | 9,482                  | 16,664              |
| 2016-2017      | -108,057                      | -574,611              | 7,480                  | 40,325              | -53,954                              | -398,577             | 3,686                         | 27,915              | 0                                    | 0                   | 0                             | 0                   | 57,897                                            | 188,444             | 10,977                | 64,339              | 8,267                  | 24,931              |
| 2017-2018      | -104,407                      | -679,018              | 7,175                  | 47,500              | -63,312                              | -461,889             | 4,328                         | 32,243              | 0                                    | 0                   | 0                             | 0                   | 43,942                                            | 232,386             | 8,326                 | 72,666              | 6,279                  | 31,211              |
| 2018-2019      | -99,345                       | -778,363              | 6,771                  | 54,271              | -154,597                             | -616,486             | 10,775                        | 43,018              | 0                                    | 0                   | 0                             | 0                   | -59,256                                           | 173,130             | 0                     | 72,666              | 0                      | 31,211              |
| 2019-2020      | -100,788                      | -879,151              | 6,831                  | 61,102              | -128,569                             | -745,055             | 8,847                         | 51,865              | 0                                    | 0                   | 0                             | 0                   | -29,797                                           | 143,333             | 0                     | 72,666              | 0                      | 31,211              |
| 2020-2021      | -97,697                       | -976,848              | 6,568                  | 67,670              | -104,422                             | -849,477             | 7,069                         | 58,934              | 0                                    | 0                   | 0                             | 0                   | -7,226                                            | 136,107             | 0                     | 72,666              | 0                      | 31,211              |
| 2021-2022      | -95,765                       | -1,072,613            | 6,389                  | 74,059              | -125,847                             | -975,324             | 8,538                         | 67,471              | 0                                    | 0                   | 0                             | 0                   | -32,231                                           | 103,877             | 0                     | 72,666              | 0                      | 31,211              |

To comply with VCS Standard V4.5 the emissions reductions above were divided into calendar years using the proportion of days from each calendar year falling into each monitoring period assuming a monitoring period start of April 21<sup>st</sup> in each year and an end of April 20<sup>th</sup> the following year. Thus, each monitoring period includes approximately 254 days of the starting year of the period and 109 days of the subsequent year. Rounded to the nearest whole percent, this is 70% and 30% respectively.

|                                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| State the non-permanence risk rating (%)                                                              | 15.28                                                                                 |
| Has the non-permanence risk report been attached as either an appendix or a separate document?        | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No                   |
| For ARR and IFM projects with harvesting, state, in tCO <sub>2</sub> e, the Long-term Average (LTA).  | Not an ARR or IFM project                                                             |
| Has the LTA been updated based on monitored data, if applicable?                                      | <input type="checkbox"/> Yes <input type="checkbox"/> No<br>Not an ARR or IFM project |
| State, in tCO <sub>2</sub> e, the expected total GHG benefit to date.                                 | 103,877                                                                               |
| If a loss occurred (including a loss event or reversal), state the amount of tCO <sub>2</sub> e lost: |                                                                                       |

| Vintage period             | Baseline emissions (tCO <sub>2</sub> e) | Project emissions (tCO <sub>2</sub> e) | Leakage emissions (tCO <sub>2</sub> e) | Buffer pool allocation (tCO <sub>2</sub> e) | Reductions VCUs (tCO <sub>2</sub> e) | Removals VCUs (tCO <sub>2</sub> e) | Total VCU issuance (tCO <sub>2</sub> e) |
|----------------------------|-----------------------------------------|----------------------------------------|----------------------------------------|---------------------------------------------|--------------------------------------|------------------------------------|-----------------------------------------|
| 21-Apr-2012 to 20-Apr-2013 | 135,552                                 | 95,656                                 | 0                                      | 3,725                                       | 36,171                               |                                    | 36,171                                  |
| 21-Apr-2013 to 31-Dec-2013 | 85,451                                  | 76,908                                 | 0                                      | 1,220                                       | 1,620                                |                                    | 1,620                                   |
| 01-Jan-2014 to 31-Dec-2014 | 121,090                                 | 109,023                                | 0                                      | 1,724                                       | 2,287                                |                                    | 2,287                                   |
| 01-Jan-2015 to 31-Dec-2015 | 120,975                                 | 70,865                                 | 0                                      | 7,152                                       | 9,504                                |                                    | 9,504                                   |
| 01-Jan-2016 to 31-Dec-2016 | 117,208                                 | 56,748                                 | 0                                      | 8,631                                       | 11,464                               |                                    | 11,464                                  |

|                            |                  |                  |          |               |               |          |               |
|----------------------------|------------------|------------------|----------|---------------|---------------|----------|---------------|
| 01-Jan-2017 to 31-Dec-2017 | 112,769          | 64,640           | 0        | 6,876         | 9,122         |          | 9,122         |
| 01-Jan-2018 to 31-Dec-2018 | 107,756          | 136,052          | 0        | 1,884         | 2,498         |          | 2,498         |
| 01-Jan-2019 to 31-Dec-2019 | 107,168          | 145,803          | 0        | 0             | 0             |          | 0             |
| 01-Jan-2020 to 31-Dec-2020 | 105,271          | 119,268          | 0        | 0             | 0             |          | 0             |
| 01-Jan-2021 to 31-Dec-2021 | 102,787          | 127,516          | 0        | 0             | 0             |          | 0             |
| 01-Jan-2022 to 20-Apr-2022 | 30,646           | 40,315           | 0        | 0             | 0             |          | 0             |
| <b>Total</b>               | <b>1,146,672</b> | <b>1,042,795</b> | <b>0</b> | <b>31,211</b> | <b>72,666</b> | <b>0</b> | <b>72,666</b> |

For the next table, the ex-ante estimated reductions and removals from VM Table 36 in the methodological annex were redistributed to calendar years using the same approach as in the table above.

| Vintage period             | Ex-ante estimated reductions/removals | Achieved reductions/removals | Percent difference | Explanation for the difference                                                                                                                                         |
|----------------------------|---------------------------------------|------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 21-Apr-2012 to 20-Apr-2013 | 33,752                                | 39,896                       | 18%                | Deforestation isn't 100% predictable.                                                                                                                                  |
| 21-Apr-2013 to 31-Dec-2013 | 24823.4                               | 8,543                        | -66%               | The 2013 to 2015 PALSAR change detection used 2010 as the comparison image and may have picked up deforestation missed in previous periods using different techniques. |
| 01-Jan-2014 to 31-Dec-2014 | 38682                                 | 12,066                       | -69%               | This is also part of the 2013-2015 change detection.                                                                                                                   |
| 01-Jan-2015 to 31-Dec-2015 | 43681.7                               | 50,110                       | 15%                | Deforestation isn't 100% predictable.                                                                                                                                  |
| 01-Jan-2016 to 31-Dec-2016 | 47133.5                               | 60,460                       | 28%                | Deforestation isn't 100% predictable.                                                                                                                                  |

|                            |         |         |       |                                                                                     |
|----------------------------|---------|---------|-------|-------------------------------------------------------------------------------------|
| 01-Jan-2017 to 31-Dec-2017 | 50040.3 | 48,129  | -4%   | Deforestation isn't 100% predictable.                                               |
| 01-Jan-2018 to 31-Dec-2018 | 52273.3 | -28,297 | -154% | Lindi Municipality sold land from Nandambi and Mkanga 1 villages to local investors |
| 01-Jan-2019 to 31-Dec-2019 | 53369.6 | -38,635 | -172% | Continued clearing associated with municipal land sale                              |
| 01-Jan-2020 to 31-Dec-2020 | 52425   | -13,997 | -127% | Continued clearing associated with municipal land sale                              |
| 01-Jan-2021 to 31-Dec-2021 | 51188.3 | -24,729 | -148% | Continued clearing associated with municipal land sale                              |
| 01-Jan-2022 to 20-Apr-2022 | 15261.9 | -9,669  | -163% | Continued clearing associated with municipal land sale                              |

# APPENDIX 1: COMMERCIALY SENSITIVE INFORMATION

| Section | Information | Justification |
|---------|-------------|---------------|
|         |             |               |
|         |             |               |
|         |             |               |
|         |             |               |

# APPENDIX 2: NON-PERMANENCE RISK REPORT

## 1 INTERNAL RISK

**Table 1. Project Management**

| Project Management |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Score |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| Q1                 | The project has an adaptive management plan which includes a monitoring plan.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Yes   |
| Q2                 | Do any of the following project management risks apply to the project?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |
| a)                 | The project activities do not involve planting for the generation of carbon credits.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0     |
| b)                 | Ongoing enforcement is necessary to protect forest carbon stocks in the project area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2     |
| c)                 | <p>The management team includes directors from both Village Climate Solutions Limited and Reterra Limited. Their relevant expertise and years of experience are as follows:</p> <p>Charles Meshack – Conservation scientist with master’s and 27 years of experience supporting community-based forest management, community benefit sharing, and biodiversity monitoring in Tanzania.</p> <p>Albert Aklei – Conservation scientist with a master’s and 14 years of experience supporting community-based forest management in Tanzania with a particular focus on governance.</p> <p>Wilson Mugasha – Forester with PhD and 15 years’ experience with forest biomass measurement and modeling in Tanzania. The author of the most widely used allometric equations for natural forests in Tanzania.</p> <p>Emmanuel Walala – Certified accountant with 17 years of experience in financial accounting, reporting and business performance management in Tanzania.</p> <p>Theron Morgan-Brown – Conservation scientist with PhD, 14 years’ experience in remote sensing, GIS, and REDD MRV and 18 years’ experience supporting sustainable management of community forests and community forest enterprises in Tanzania.</p> | 0     |
| d)                 | The Village Climate Solutions Limited management team is based in Dar es Salaam, which is less than 1 day’s travel from the project site. Additionally, the project partner, the Tanzania Forest Conservation Group employs an extension officer based only 1 hour away in Lindi town since 2023 to support the project villages.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0     |
| e)                 | Since the net emissions reductions for this monitoring period are positive, even though the project lost a substantial amount of project area, no loss event has occurred. Additionally, Village Climate Solutions Limited took over responsibility for the project in 2023 and is reporting the project area loss in this monitoring report in 2024. The new commercial nature of the project management will help to ensure continuous financial flows for project management and project area monitoring. Monthly forest patrols are funded in every village and the new management team                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0     |

|                                                                     |                                                                                                                                                                                                                                                                                                         |          |
|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
|                                                                     | has established a good working relationship with the Lindi Municipality which will prevent the type of expropriation that occurred from ever happening again.                                                                                                                                           |          |
| f)                                                                  | This is not an ALM project.                                                                                                                                                                                                                                                                             | 0        |
| g)                                                                  | This is not an ALM project                                                                                                                                                                                                                                                                              | 0        |
| Q3                                                                  | Does the following mitigation apply to the project?                                                                                                                                                                                                                                                     |          |
| h)                                                                  | <b>Mitigation:</b> Theron Morgan-Brown of Reterra Limited has authored 3 AFOLU PDs validated under the VCS standard and 3 AFOLU monitoring reports verified under the VCS standard. He has also worked as a VVB for Plan Vivo AFOLU projects and validated Plan Vivo's first REDD+ project in Tanzania. | -2       |
| i)                                                                  | This is not an ALM project                                                                                                                                                                                                                                                                              | 0        |
| <b>Total Project Management [a + b + c + d + e + f + g + h + i]</b> |                                                                                                                                                                                                                                                                                                         | <b>0</b> |

## Table 2. Financial Viability

| Financial Viability |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |    |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Q1                  | How long is the project's payback period (i.e., how many years will it take to breakeven)?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | e) |
| e)                  | In addition to reviving the original project, Village Climate Solutions Limited is adding new project instances. From 2022-2023, Village Climate Solutions Limited was funded with grant money from the African Forest Carbon Catalyst and UBS-Optimus Foundation. For 2024 - 2027, any gap between VCSL cashflow requirements and sales is funded by Reterra Limited against future credit sales under a VERPA. No gaps are expected after 2027. Thus, VCSL can cover all ground operations, payments to communities and required fees and distributions to various government entities under the National Carbon Trading Regulations from the very first issuance. There was no investment outlay by Village Climate Solutions Limited beyond very small amounts associated with the initial purchase of company shares, some of which was accomplished through in-kind work. The project reaches breakeven immediately. Reterra's finances are also considered since it is responsible for covering MRV and verification costs. Reterra also received grant funding from the same sources mentioned above as part of its role supporting Village Climate Solutions. In 2024, it secured a loan from the UBS-Optimus Foundation to cover all the costs in advance of the issuance of credits from the expanded project expected at the end of 2024. The repayment schedule of the loan is flexible based on cashflows, so Reterra also instantly reaches breakeven. | 0  |
| Q2                  | What percentage of funding has the project secured to cover the total cash out required before the project reaches breakeven?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | i) |
| i)                  | As described in the response to Q1, both the project proponent and its supporting partner are already at breakeven due to the combination of grant and loan funding and flexible repayment plans.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0  |
| Q3                  | Does the following mitigation apply to the project?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |    |

|                                                                        |                                                                                                                                                                    |          |
|------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| j)                                                                     | <b>Mitigation:</b> Project has available, as callable and secured financial resources, at least 80 percent of total cash out before the project reaches breakeven. | -2       |
| <b>Total Financial Viability [(b, c, d or e) + (f, g, h or i + j)]</b> |                                                                                                                                                                    | <b>0</b> |

### Table 3. Opportunity Cost

| Opportunity Cost |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Score |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| Q1               | Are the baseline activities subsistence-driven? If No, proceed to Q2. If Yes, proceed to Q3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | No    |
| Q2               | What is the NPV of the most profitable alternative land use activity compared to the NPV of the project activity? A response is only required if the answer to Q1 is No.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | d)    |
| d)               | <p>NPV of the most profitable alternative land use activity is expected to be 20 percent or less than that of project activities. Consistent with the original project management, Village Climate Solutions Limited aims to pay communities a minimum price which is equivalent to NPV of not converting the land to other uses. For credits generated in 2012-2013, MJUMITA paid communities the equivalent of \$3.20 per tCO<sub>2</sub>e, which was more than the opportunity cost at the time. MJUMITA performed an updated opportunity cost analysis of deforestation in Lindi Region in 2021. The analysis involved 10 random sampling points in areas of deforestation that occurred between 2017 and 2020. The areas were visited on the ground by the survey team and village representatives who helped to identify the farm owner. Then the next nearest 9 farmers who had also cleared land in the previous 3 years were identified to generate a total sample of 100 farmers.</p> <p>The results showed that opportunity costs are heavily negative for the first few years after deforestation. This is mainly due to crop damage caused by wild animals, especially baboons, monkeys, and bush-pigs, and to a lesser extent, elephants. This means that farmers must expend significant labor to live full-time on their farm for the entire growing season or accept very low yields. It appears that farmers expect that eventually other farmers will come to advance the forest edge away from their farm and thereby reduce the presence of wild animals. They accept high losses in early years in the expectation of better years in the future.</p> <p>Therefore, the analysis relied primarily upon farmer expectations of yields rather than actual reported yields from the survey years and assumed that such negative yields only occurred once every 10 years. Farmers reported that farms were typically used for 4 years and fallowed for 3.</p> <p>The data for charcoal production suggested the opportunity cost is negative and is thus a rare activity. It was not included in the calculation of opportunity cost.</p> <p>Opportunity cost was calculated using a 30-year annual profit flow with a 10% discount rate. The area weighted annual profit was calculated for all farms together using Equation 1. Two different annual profit estimates were calculated using the crop yields reported by farmers from the last harvest season and crop yields for what farmers reported would be an average season.</p> <p>Equation 1: Area Weighted Annual Profit per Acre Cultivated <math>AP_{acre} = \frac{\sum(Q_c \times P_c) - \sum(V_i + I_i) - \sum(AP_f \times LD_{acre} \times LC_{day})}{\sum(AP_f)}</math></p> <p>Where:<br/> <math>OPC_{acre}</math> = Opportunity Cost Per Acre</p> | 0     |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |       |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
|    | <p> <math>Q_c</math> = Harvest quantity of crop <math>c</math><br/> <math>P_c</math> = Unit price of crop <math>c</math> (estimated by farmer or actual price paid to farmer)<br/> <math>V_i</math> = Value of input <math>i</math><br/> <math>l_i</math> = Lifespan of input <math>i</math> in years<br/> <math>AP_f</math> = Acres prepared by farmer <math>f</math><br/> <math>LD_{acre}</math> = Labor days per acre farmed (84.5 days)<br/> <math>LC_{day}</math> = Labor cost per day (5000 TSH) </p> <p>Then, the 30-year opportunity cost model was built with the following assumptions:</p> <ol style="list-style-type: none"> <li>1. Profit in fallow years is zero.</li> <li>2. An extra 11.62 labor days are required per acre in the first year of cultivation to clear the forest.</li> <li>3. Very low yield seasons like the one recorded in the survey occur once every 10 years. Therefore, the annual profit estimates for a normal year should be reduced by 1/10 of the losses that occur in a very low yield season.</li> <li>4. The annual discount rate of future income is 10%.</li> </ol> <p>The model results in a 30-year opportunity cost of 613,306 TSH per acre. Scaled to a hectare and converted to US dollars at 2320 TSH per dollar yields \$655.79 per hectare.</p> <p>Weighting emissions from the two initial forest classes equally, the average emissions are 161.5 tCO<sub>2</sub>e per ha, which gives an opportunity cost of \$4.06 per tCO<sub>2</sub>e. VCSL will always pay communities the minimum price required under the National Carbon Trading Regulations (currently 51% of VCSL revenue) but will also pay at least \$4.08 per tCO<sub>2</sub>e inflating at 2% a year even if it is higher than the price required by the regulations.</p> |       |
| Q3 | The answer to Q1 is No, so this question does not apply.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |       |
| Q4 | Do any of the following mitigations apply to the project?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | j)    |
| j) | <p><b>Mitigation:</b> Even without continue support from MJUMITA and carbon revenue, the participating communities did continue to reduce emissions from 2015-2018 indicating that the established village forest reserves, forest management plans, land-use planning and by-laws were permanent. However, the loss of project land to the municipality starting in 2019 highlighted that while the forest management and land-use plans were permanent in the eyes of the villages, land could still potentially be taken out of the project area through municipalization. Fortunately, as part of wider national program supported by USAID, the Tanzania Forest Conservation Group supported 8 of the original 10 project villages to upgrade their village forest reserves from declared village forest reserves to gazetted village forest reserves under Government Notice 487 in 2020 as per the 2002 Forest Act. Gazetted village forest reserves are recognized at the national level and can only be degazetted with approval from national authorities, which to the best of the knowledge of the project developers, has never happened. This means now that effectively 58% of the remaining project area is legally protected indefinitely. Thus, the mitigation is weighted accordingly.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | -2.32 |
| k) | <p><b>Mitigation:</b> While the project proponent is majority owned by a not-for-profit organization, land-use decisions in this project are ultimately up to government which is not considered a not-for-profit in this tool. Thus, this mitigation does not apply.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |

**Total Opportunity Cost (OC) = [as applicable, (a, b, c, d, e, f, g or h) + (i or j) + k]** **0**

**Table 4. Project Longevity**

| Project Longevity                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |             |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Q1                                                              | Did the project request registration on or after 1 January 2024?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | No          |
| Q2                                                              | As described in Q4 in Table 3, 58% of the remaining project area is now permanently protected in nationally gazette village forest reserves. Thus, the longevity for those areas are more than 100 years. The longevity for the remaining 42% can only be assured for as long as the project agreement between VCSL, the project villages, and the municipality.                                                                                                                                                                                                                                     | Yes/No      |
| Q3                                                              | The project villages have 40-year carbon agreements with Village Climates Solutions Limited starting in 2024. Since the villages are the legal owners and managers of project area land and forests as per the Village Land Act and Forest Act, this gives VCSL control over the project activities and carbon credits. The municipality is a co-party to the agreement assuring that they will not interfere with any village land in the project for the remainder of the project. Since the project start-date was in 2012, this agreement effectively extends the project longevity to 52 years. | 52          |
| Q4                                                              | The project has management, financial, and monitoring plans in place for the entire project longevity as evidenced by the project financial model / plan.                                                                                                                                                                                                                                                                                                                                                                                                                                            | Yes         |
| Q5                                                              | The project is not an ARR or IFM project.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | No          |
| Q6                                                              | The project is not an ARR or IFM project.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             |
| Q7                                                              | The carbon agreement between Village Climate Solutions Limited, the project villages, and the municipality specifies the roles for each party to the agreement to ensure the continuation of the practices that generate emissions reductions.                                                                                                                                                                                                                                                                                                                                                       | Yes         |
| b)                                                              | With a longevity of 52 years, the risk score in this section would be 12. However, as noted in Q2, 58% of the project area is protected indefinitely. Thus, the risk score of 12 was by the remaining 42%.                                                                                                                                                                                                                                                                                                                                                                                           | 5.04        |
| Q8                                                              | Is the project a grouped project where contract durations with individual project activity instances are less than the project longevity?                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Yes         |
| <b>Total Project Longevity (PL) = [as applicable, (a or b)]</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>5.04</b> |

**Table 5. Internal Risk**

**Total Internal Risk (PM + FV + OC + PL)** **5.04**

## 2 EXTERNAL RISK

**Table 6. Land Tenure (Ownership) and Resource Access or Impacts**

| Land Tenure (Ownership) and Resource Access or Impacts |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Score |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| Q1                                                     | The startup phase of the project completed in 2012 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 VSC PD. Documentation of these boundary conflict resolutions have been shared with the verification body. The process of establishing village forest reserves, forest management plans, land-use plans, and supporting by-laws was led by committees of villagers elected in villages assembly meetings. All plans were ultimately approved by the democratically elected village councils after being discussed and approved in village assembly meetings, which is the body open to all village residents.                                                                                                                                                                                                                                                                                                | Yes   |
| Q2                                                     | The project villages have 40-year carbon agreements with Village Climate Solutions Limited starting in 2024. Since the villages are the legal owners and managers of project area land and forests, this gives VCSL control over the project activities and carbon credits. The municipality is a co-party to the agreement assuring that they will not interfere with any village land in the project for the remainder of the project.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Yes   |
| Q3                                                     | Do the same or different entities hold land ownership and resource access or use rights?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | a     |
| a)                                                     | Ownership and resource access or use rights are held by the same entity(ies). As per the Village Land Act and Forest Act, the project villages are the legal owners of the project land and use/management rights to the project forests.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0     |
| Q4                                                     | Is the project in a country/jurisdiction with a history of national, sub-national, or local government ("Government") intervention in land or resource use?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | c     |
| c)                                                     | The Lindi Municipal Government expropriated approximately 20% of the project area through municipalization in 2019 but are now working with Village Climate Solutions to return most of that land back to the project through supporting the establishment of community-based organizations comprising of residents adjacent to the project forests and giving them title to the land contingent on sustainable forest management. The CBOs will then sign the carbon agreement to become part of the project. Village Climate Solutions has signed an agreement with the University of Dar es Salaam, which was given project land by the municipality, to enter that land into the project. At a minimum, agreements with CBOs and UDSM will return 3896 ha to the project. Unfortunately, this still leaves 11%. At future verification though, the addition of new project instances will greatly increase the total project area and lower the amount having been lost to expropriation to well below 10% meaning this risk category will no longer apply. It should also be noted that as a party to the carbon agreement, the municipality has promised to never again try to change the status of the project land. | 10    |
| Q5                                                     | What percent of the project area is affected by disputes over land tenure or ownership?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | h     |
| h)                                                     | The only boundary dispute between villages remaining at the project start date no longer applies because that area was expropriated by the municipality and is now being given to CBOs to manage and the CBO for that area includes community members from Rutamba village which had the dispute with Nandambi village.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0     |

|                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |          |
|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
|                                                                                                  | There was, however, significant encroachment in the portion of the project area not expropriated by the municipality by community members, which this tool automatically defines as disputes. During the past 5 years, this was equivalent to 1851 ha or 4% of the project area. Almost none of this represents genuine disputes in ownership or rights. 1318 ha of this deforestation occurred where it was legally allowed. The project area included all forests in the project villages, and it was never expected that clearing in forests where it was legally allowed would halt, but rather that the project activities would slow clearing in areas outside the village forest reserves while striving to halt deforestation inside the village forest reserves. Only about 533 ha were cleared in village forest reserves. However, even then, this was not due to overlapping claims of ownership or access rights, but rather just illegality in the absence of funding for enforcement and or lack of awareness by newcomers to the area. |          |
| Q6                                                                                               | What percent of the project area has disputes over access or use rights?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | k        |
| k)                                                                                               | No disputes exist.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0        |
| Q7                                                                                               | This is not a WRC project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |          |
| Q8                                                                                               | Do any of the following mitigation apply to the project?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |          |
| n)                                                                                               | <b>Mitigation:</b> Project area is protected by a legally binding commitment (e.g., a license, conservation easement, conservation servitude, or protected area) to continue management practices that protect carbon stocks for the duration of the project crediting period.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -2       |
| o)                                                                                               | <b>Mitigation:</b> Where disputes over land tenure, ownership or access or use rights exist, documented evidence is provided that demonstrates the project is taking action to try to resolve the disputes or clarify overlapping claims.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | -2       |
| <b>Total Land Tenure [(a or b) + (c, d or e) + (f, g or h) + (i, j or k) + (l or m) + n + o]</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>6</b> |

### Table 7. Stakeholder Engagement

| Stakeholder Engagement |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Score |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| Q1                     | Are local populations, including those living in the project area or within 20 km of the boundary of the project area, reliant on the project area?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Yes   |
| Q2                     | Have more or less than 50 percent of stakeholders living within and reliant on the project area been consulted?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | b     |
| b)                     | 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 VCS PD. The village assemblies are legally empowered to make decisions on behalf of all community members (see section 6 of the VSC 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 forest patrol teams. To reestablish awareness, particularly for new commers, the project support forest patrol teams to visit every detected point of clearing in the village forest reserves that occurred | 0     |

|                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |
|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
|                                                                          | between May 2022 and November 2023. Anyone encountered was instructed to contact the local village government.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |
| Q3                                                                       | Have more or less than 20 percent of stakeholders living outside the project area within 20 km of the project area, and who are reliant on the project area been consulted?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | d        |
| d)                                                                       | 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 VCS 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. As described in Section 6 of the VCS PDD, an exhaustive social impact assessment conducted at several scales was used to identify stakeholders. Beyond agriculturalists from outside villages, there are no other major groups of people from outside the project proponent villages that are reliant on the area. This was reconfirmed through forest patrol work done in 2023. Farmers encountered farming illegally in village forest reserves were warned, educated about REDD, and told to contact the appropriate village council. | 0        |
| <b>Total Stakeholder Engagement [as applicable, (a or b) + (c or d)]</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>0</b> |

| Table 8. Political Risk                        |                                                                                                                                                                                                                                                             |          |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Political Risk                                 |                                                                                                                                                                                                                                                             | Score    |
| Q1                                             | What is the governance score for the country?                                                                                                                                                                                                               | -0.55    |
| a)                                             | Governance score of less than -0.79                                                                                                                                                                                                                         | 0        |
| b)                                             | Governance score of -0.79 to less than -0.32                                                                                                                                                                                                                | 4        |
| c)                                             | Governance score of -0.32 to less than 0.19                                                                                                                                                                                                                 | 0        |
| d)                                             | Governance score of 0.19 to less than 0.82                                                                                                                                                                                                                  | 0        |
| e)                                             | Governance score of 0.82 or more                                                                                                                                                                                                                            | 0        |
| Q2                                             | Does the following mitigation apply to the project?                                                                                                                                                                                                         |          |
| f)                                             | <b>Mitigation:</b> Tanzania is 1) a party to the Paris Agreement and has submitted an NDC to the UNFCCC Secretariat in the last five years (last submission 2021); 2) Tanzania includes AFOLU commitments in its NDC, and 3) has a national REDD+ strategy. | -2       |
| <b>Total Political [(a, b, c, d or e) + f]</b> |                                                                                                                                                                                                                                                             | <b>2</b> |

| Table 9. External Risk                    |  |
|-------------------------------------------|--|
| <b>Total External Risk (LT + SE + PC)</b> |  |
| <b>8</b>                                  |  |

| 3 Natural Risk |                                 |                                  |                |                         |                             |
|----------------|---------------------------------|----------------------------------|----------------|-------------------------|-----------------------------|
| Natural Risk   |                                 | Historic Natural Risk Score (LS) | Mitigation (M) | Sub-total Risk (LS x M) | Affected by Climate Change? |
| a)             | Fire (F)                        | 4                                | 0.50           | 2.00                    | Yes                         |
| b)             | Pest and disease outbreaks (PD) | 0                                |                | 0.00                    | Yes                         |
| c)             | Extreme weather (W)             | 0                                |                | 0.00                    | Yes                         |
| d)             | *Geological risk (G)            | 0                                |                | 0.00                    | No                          |
| h)             | Sea-level rise (SLR)            | 0                                | 0              | 0.00                    | Yes                         |

#### Fire

Fire occurs in the project area almost every year, primarily in the miombo sections mainly caused by escaped fires from farm clearing activities. Miombo woodlands are fire adapted and there is no history of any significant damage to carbon stocks caused by fire in the project area. Fires in coastal forest sections of the project area could cause damage, but there is also no history of this in the project area. Thus, the frequency of fire in the project area is less than every 10 years, but the damage is insignificant.

The project has introduced annual clearing of village forest reserve boundaries during the early dry season combined with early burning to mitigate the potential for late dry season fires and further reduce what is already relatively insignificant damage to project carbon stocks from fire.

#### Pest and Disease

There is no history of pest or disease affecting natural forests in the area.

#### Extreme Weather

There is no history of extreme weather causing damage to forests anywhere in Lindi Region.

#### Geological risk

There is no history of earthquakes causing damage to forests in Lindi Region and the area is not volcanic. There is no history of landslides in the project area, most of which is on a plateau or mild slopes.

#### Sea-level rise

All the project area is over 100m above sea level. So, there is no risk.

| Projected Future Climate Impact on Natural Risk                | Aggregated Sub-total Risk | Future Climate Impact Factor | Total (Aggregated sub-total risk x future climate impact factor) |
|----------------------------------------------------------------|---------------------------|------------------------------|------------------------------------------------------------------|
| Natural risk associated with climate change impact (NR-c)      | 2.00                      | 1.12                         | 2.24                                                             |
| Natural risk NOT associated with climate change impact (NR-nc) | 0.00                      | 1.00                         | 0.00                                                             |

The values in the table above were calculated using the Future Climate Impacts tab of the AFOLU NON-PERMANENCE RISK REPORT EXCEL CALCULATION TOOL, V4.2 using the default values for S. Eastern Africa. Climate impact drivers were assigned a positive, negative, or does not apply rating based on their relation to fire risk, since it was the only natural risk associated with the project.

|                                               |             |
|-----------------------------------------------|-------------|
| <b>Total Natural Risk (NR-c + NR-nc +SLR)</b> | <b>2.24</b> |
|-----------------------------------------------|-------------|

## OVERALL NON-PERMANENCE RISK RATING AND BUFFER DETERMINATION

| Risk Category                   |               | Rating |
|---------------------------------|---------------|--------|
| a)                              | Internal risk | 5.04   |
| b)                              | External risk | 8.0    |
| c)                              | Natural Risk  | 2.24   |
| Overall risk rating (a + b + c) |               | 15.28  |

## APPENDIX 3: METHODOLOGICAL ANNEX