# ASSESSMENT REPORT

*The World Bank Group's BioCarbon Fund Initiative for Sustainable Forest Landscapes (ISFL)*

*Eastern Province Jurisdictional Sustainable Landscape Programme (EP-JSLP)*

**Prepared for:**

**World Bank Group**
**23 May 2023**

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| | |
|---|---|
| **Program** | Eastern Province Jurisdictional Sustainable Landscape Programme (EP-JSLP) |
| **Program Entity** | Ministry of Green Economy and Environment (MGEE) |
| **Program Location** | Eastern Province, Zambia |
| **Monitoring Period** | N/A |
| **Prepared By** | SCS Global Services (SCS) |
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## Executive Summary

SCS Global Services (SCS) was retained by the Initiative for Sustainable Forest Landscapes (ISFL) of the World Bank Group to perform an independent assessment of the Eastern Province Jurisdictional Sustainable Landscape Programme ("the Program") against the ISFL Emission Reductions Program Requirements and associated guidelines. The scope of this assessment was to confirm that the information provided in the emission reductions program document is correct and complete and to apply expert judgement to evaluate the feasibility of program design aspects and identify areas of improvement to inform the World Bank Group's and ISFL contributors' review of the Program. While this is an independent assessment, it should be noted that the assessment team worked closely with the ISFL staff and others at the World Bank Group to develop the findings and conclusions described in this report.

This report presents an overview of the assessment process and its conclusions, as well as a summary assessment opinion. The assessment checklist, audit plan and a detailed list of all findings issued during the assessment process are included as appendices.

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# 1 Introduction

SCS Global Services (SCS) is a global leader in third-party certification, auditing, testing services, and standards. Established as an independent third-party certification firm in 1984, our goal is to recognize the highest levels of performance in environmental protection and social responsibility in the private and public sectors, and to stimulate continuous improvement in sustainability by recognizing and certifying achievements which align with the United Nations Sustainable Development Goals (SDGs). An internationally recognized verification body, SCS is currently accredited to ISO 14065 for Greenhouse Gas Validation and Verification by the American National Standards Institute (ANSI), offering carbon offset project validation and verification under such voluntary carbon programs as the Verified Carbon Standard (VCS), the American Carbon Registry (ACR), and the Climate, Community and Biodiversity (CCB) standards. SCS is also an accredited verification body for the Cap-and-Trade Program of the California Air Resources Board and has conducted jurisdictional assessments in Colombia and Ecuador under the REDD Early Movers Program.

SCS was commissioned by the World Bank Group to undertake an assessment of the Eastern Province Jurisdictional Sustainable Landscape Programme ("the ER Program"). The ER Program consists of interventions to address emissions reductions including Sustainable Forest Management, Climate Smart Agriculture, and other activities to reduce forest degradation such as fuel efficient cookstoves and sustainable charcoal production through Zambia's Eastern Province. This report covers review of the ER Program, as described in the emission reductions program document, as a project deliverable.

## 1.1 ER Program Description

The Eastern Province Jurisdictional Sustainable Landscape Programme (ER-JSLP) is a Results-Based Climate Finance (RBCF) follow up project to the Zambia Integrated Forest Landscape Project (ZIFLP), an initiative supported by the Zambian Government and other international agencies including the World Bank. The EP-JSLP is being developed as a long-term results-based payment programme that takes over where the implementation phase of the ZIFLP ends. The EP-JSLP is located in the Eastern Province of Zambia and covers an area of 5,097,587 hectares. EP-JSLP's key beneficiaries are poor rural communities, especially those which directly depend on agriculture and forest resources for their livelihoods and therefore, most vulnerable to climate change. The targeted communities are expected to engage in emissions reductions activities that reduce deforestation through Community Forestry and collaborative management, adopt technologies to reduce wood-use that causes degradation and improved agricultural practices.

## 1.2 Assessment Team

The assessment team consisted of the following individuals:

- Lead Auditor: Alexa Dugan

- Auditors: Vanessa Mascorro, Dr. Raleigh Ricart
- Local Technical Expert: Boniface Mumba
- Technical Reviewer: Dr. Erynn Maynard-Bean

# 2 Assessment Details

## 2.1 Scope and Objectives

The objectives of the assessment are as follows:

- Ensure, according to the applicable level of assurance, that the information provided in the emission reductions program document is correct and complete (i.e., not leaving out information that might affect the opinion of the reader).
- Conduct an independent assessment of the compliance against the approved ER Program Requirements and associated guidelines.
- Apply expert judgement to evaluate the feasibility of ER Program design aspects and identify areas of improvement to inform the World Bank Group's and ISFL contributors' review of the ER Program.

The scope of the assessment entails review, as required, to achieve the above objectives. The following areas were particularly emphasized. In some cases, consideration of the areas indicated below extends the scope of the assessment beyond a strict assessment for conformance to the assessment criteria. The assessment of the aspects indicated with an "*" was informed, as applicable, by the due diligence process of the World Bank Group.

| Aspect | Expected Scope of the Assessment |
|---|---|
| Drivers of AFOLU emissions and removals | ▪ Correctness and completeness of the analysis on historic and future trends (qualitative and quantitative) in drivers of AFOLU emissions and removals<br>▪ Expert judgement of the analysis, including the barriers to mitigation |
| Description and justification of the ISFL ER Program's planned actions and interventions | ▪ Expert judgement whether the proposed actions and interventions address drivers of emissions and are informed by the contribution of key sources and sinks to the total GHG emissions and removals in the Program GHG Inventory and the analysis of trends<br>▪ Expert judgement of continued private sector engagement achieved or planned in addressing drivers of emissions |

| Aspect | Expected Scope of the Assessment |
|---|---|
| | ▪ Expert judgement of risks to implementation and potential benefits of planned actions and interventions |
| Financing plan for implementing the planned actions and interventions of the ISFL ER Program | ▪ Correctness and completeness of information on the transaction costs and the identified funding gaps for the ISFL ER Program and the plan for mitigating gaps<br>▪ Expert judgement whether the identified sources of finance are sufficient to affect the land use activities and drivers of emissions and removals<br>▪ Expert judgement of the financial and economic analyses, discount rates, and flows of funds |
| Analysis of laws, statutes, and other regulatory frameworks | ▪ Correctness and completeness of the information provided in the Program document<br>▪ Expert judgement to identify any known legal or regulatory issues in the program area that can affect the program design, including benefit sharing |
| Risk for displacement | ▪ Correctness and completeness of the information provided in the analysis of displacement risk<br>▪ Expert judgement on the effectiveness of the proposed strategy to mitigate and/or minimize, to the extent possible, potential Displacement |
| Participation under other GHG initiatives | ▪ Correctness and completeness of the information provided whether parts of the program area, or projects in the program area, are included in other GHG initiatives and if this creates a risk of double counting, and/or double payment |
| Data management and registry systems to avoid multiple claims to ERs | ▪ If applicable, expert judgement whether the Program and Projects Data Management System is sufficient, secure, and robust<br>▪ If the ISFL ER Program is not using the World Bank's transaction registry for FCPF and ISFL ER Programs, expert judgement whether the transaction registry is sufficient, secure, and robust<br>▪ If applicable, expert judgement of the data management and registry systems to recognize nested projects and avoid multiple claims to ERs |
| ISFL Reporting | ▪ Assess whether the GHG Inventory is comparable in its use of definitions, categories and subcategories with |

| Aspect | Expected Scope of the Assessment |
|---|---|
| | national processes such as the national GHG inventory, REDD+ and the Biannual Update Report<br>▪ Assess whether the best available data sets, methods, models and assumptions have been used in the ISFL Reporting and that the inventory applies the general IPCC principles of transparency, completeness, consistency, accuracy and comprehensiveness. |
| Selection of subcategories for accounting | ▪ Correctness and completeness of the data and information provided on the choice of the subcategories<br>▪ Assess whether the quality and baseline setting requirements have been applied correctly and the choice of the subcategories is correct and justified<br>▪ Assess whether all significant pools and sources of greenhouse gas emissions are included. If a major carbon pool/ or gas is excluded, assess whether this has been sufficiently explained and justified, provided it is not a significant pool. |
| Emissions baseline | ▪ Assess whether the methods used to construct are in line with the IPCC and best practice approaches as defined, for example by the GFOI<br>▪ Correctness and completeness of the data used to construct the baseline<br>▪ Assess whether the baseline requirements have been applied correctly and the Emissions Baseline estimate is calculated correctly<br>▪ Assess whether the uncertainty in the Emissions Baseline has been correctly identified and assessed in accordance with IPCC good practice |
| Time bound plan to increase the completeness of the scope of accounting and improve data and methods for the subsequent ERPA Phases during the ERPA Term | ▪ Expert judgement whether the proposed plan is feasible, addresses priority subcategories and is likely to increase the completeness of the scope of accounting and improve data and methods for the subsequent ERPA Phases |
| Ex-ante estimation of the emission reductions | ▪ Expert judgement if the assumed effectiveness of the program in addressing the drivers and its impact on the emissions is justified and based on reasonable assumptions |

| Aspect | Expected Scope of the Assessment |
|---|---|
| Monitoring approach | ▪ Assess whether the data and methods proposed for monitoring are consistent enough with the data and methods used for the determination of the baseline to allow for meaningful comparison and calculation of the emission reductions<br>▪ Assess whether the proposed monitoring methods and arrangements are in place as described in the Program Document and are technically capable of collecting the data<br>▪ Assess whether the uncertainty in the data and parameters to be monitored has been correctly identified and assessed and if the proposed approach to manage and reduce uncertainty reflects good practice |
| Reversals | ▪ Correctness and completeness of the data and assumption used in the assessment of the reversal risk<br>▪ Assess whether the ISFL Buffer Requirements have been applied correctly |

## 2.2 Criteria

The criteria for the assessment were as follows:

- The approved ISFL ER Program Requirements, April 2021 ("the Program Requirements")
- The following associated guidelines:
    - ISFL Buffer Requirements, April 2020 ("the Buffer Requirements")
    - ISFL Program Document Template, January 2020 ("the PD Template")[1]

## 2.3 Good Practice Guidance

The following guidance documents were referenced as good practice in undertaking the assessment, though said documents were not formally considered to be part of the assessment criteria. Where it was appropriate to apply professional judgment in assessing against the indicators set out in SCS' assessment checklist (see Appendix C below), methodological approaches that appropriately followed good practice were automatically assumed to meet the intent of a given indicator.

- 2006 IPCC Guidelines for National Greenhouse Gas Inventories ("the IPCC 2006 Guidelines")

[1] Noting that any guidance within the PD Template pertaining to brevity or word count was not considered part of the auditable criteria, though said guidance was referenced in determination of the level of detail that should be within the ERPD.

- The following ISFL Program documents:
    - Guidance Note on the Preparation of Financing Plan of REDD+ and Landscape Emission Reduction Programs, August 2017 ("the Financing Plan Note")
    - Note on the Ability of Program Entity to Transfer Title to Emission Reductions, March 2018 ("the Title Transfer Note")
- GFOI 2016, Integration of remote-sensing and ground-based observations for estimation of emissions and removals of greenhouse gases in forests: Methods and Guidance from the Global Forest Observations Initiative, Edition 2.0, Food and Agriculture Organization, Rome ("GFOI").

## 2.4 Normative Assessment References

The following normative references guided SCS' assessment approach:

- Terms of Reference, updated 14 December 2018
- SCS' Program Quality Manual and Auditor Manual
- The following normative references of the International Organization for Standardization (ISO):
    - ISO 14065:2013, Greenhouse gases — *Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition*
    - International Accreditation Forum Mandatory Document 6: 2014 —*Application of ISO 14065: 2013*
    - ISO 14064-3:2006, Greenhouse gases — *Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions* (note that the Terms of Reference includes a reference to "ISO 14064-3:2013" but the most recent update to ISO 14064-3 is dated 2006)
    - ISO 14066:2011, Greenhouse gases — *Competence requirements for greenhouse gas validation teams and verification teams*

## 2.5 Level of Assurance

Both a reasonable and limited level of assurance were selected for the assessment work described in this report and were determined at the indicator level as set out in the assessment checklist (see Appendix A below).

## 2.6 Materiality

The term "discrepancy", as implicitly defined in Section 2.30 of ISO 14064-3:2006, encompasses the terms "error", "omission" and "misrepresentation" (i.e., these three types of distortion are different categories of discrepancies). Any discrepancies which also presented clear divergence from stated requirements of the assessment criteria were treated as non-conformities in the assessment process. Any other discrepancies identified during the course of the assessment were subject to the following materiality assessment.

- In respect of quantitative matters:
    - A discrepancy in the program GHG inventory and/or the process used to select subcategories eligible for ISFL accounting was considered material if it resulted in an incorrect determination of the subcategories eligible for ISFL accounting.
    - A 1.00% materiality threshold applied to any over-estimation of the emissions baseline.[2]
- Regarding reporting of information in the ERPD:
    - Any factual errors in the reporting of information in the ERPD were considered material if the incorrectly reported information was directly or indirectly required to be reported in the ERPD by the assessment criteria.

Any discrepancies identified as material through application of the above criteria were treated as non-conformities in the assessment process. Any discrepancies not identified as material through application of the above criteria were inherently considered immaterial. In the event that discrepancies were identified that did not require immediate correction but that required corrective action or mitigation at some later time, a special type of finding, termed an Observation, was issued by SCS (see Section 3.5, below, for a description of findings).

# 3 Assessment Process

The assessment services described in this report were performed through a combination of document reviews and interviews with relevant personnel. At all times, SCS assessed the conformance of the ER Program, as described in the ERPD, to the assessment criteria. The assessment team issued findings to ensure that the ER Program fully conformed to all requirements. The services included the following steps.

## 3.1 Methodology

The assessment was performed through a combination of document review and interviews with relevant personnel, as discussed in Sections 3.2 through 3.4 of this report. At all times, the ERPD and the ER Program described therein were assessed for conformance to the criteria described in Section 2.2 of this report. As discussed in Section 3.5, findings were issued to identify any actual or potential areas of risk or concern.

A risk assessment was conducted, and a sampling plan produced, in accordance with Sections 4.4.1 and 4.4.3 of ISO 14064-3:2006, respectively, following a proprietary approach developed by SCS. The process involved identification of key areas of "residual risk" (areas where there exists risk of a material discrepancy that is not prevented or detected by the QA/QC processes of the ER Program). Sampling and

[2] The materiality analysis was carried out by first calculating the difference between the reported Emissions Baseline and the assessment team's calculation of the same quantity, and then dividing by the reported Emissions Baseline. If the resulting quantity was greater than 1.00%, the discrepancy was considered material. Otherwise, the discrepancy was not considered material. Under-estimation of the Emissions Baseline was not considered a material discrepancy.

data testing activities were planned to address any risk where the likelihood of an area of nonconformance or material discrepancy (see Section 2.6 above regarding what constitutes a material discrepancy) going undetected by the assessment team was judged to be unacceptably high. An audit plan was created that took the sampling plan into account.

## 3.2 Document Review

The emissions reduction program document (Zambia_Eastern_Province_ISFL_ERPD_ver 14_21.05.23.docx; "the ERPD") was carefully reviewed for conformance to the assessment criteria. The following additional documentation, provided by ER Program personnel in support of the ERPD, was also reviewed by the assessment team:

| Document | File Name (If Applicable) | Ref. |
|---|---|---|
| Summary of the documentation provided to the assessment team | Summary Archiving and Documentation Guidelines for the AFOLU GHG l Inventory for Eastern Province.docx | 1 |
| Benefit Sharing Plan | EP JSLP Abridged BSP V13_April 2023 | 2 |
| Relevant laws – Zambia Constitutional Amendment | 1_Constitution_of_Zambia__Amendment_2016-Act_No._2_0 | 3 |
| Relevant laws - Chiefs Act | 2_Chiefs Act Chap287 | 4 |
| Relevant laws – Lands Act | 3_Lands-act-184 1995-29-eng-1996-12-31 | 5 |
| Relevant laws – Forests Act | 4 The Forests Act 2015 | 6 |
| Relevant laws – Community Forest Management | 5a Statutory Instrument No 11 Of 2018 The Forests (Community Forest Management) Regulations | 7 |
| Relevant laws – Forest Carbon Act | 5b Forest Carbon SI 2021 | 8 |
| Calculation workbook – Emissions Baseline | Final AFOLU GHG Inventory_15.05.23.xlsx revised.xlsx | 9 |
| Ex-ante estimates – Climate Smart Agriculture | 20230111 CSA Analysis & Results Tool.xlsx<br>20230111 CSA Baseline SOC Analysis & Results.xlsx<br>20230112 CSA summary document - for the ERPD.docx | 10 |
| Ex-ante estimates – Climate Smart Agriculture (Roth C model) | [Various files] | 11 |
| Exante estimates - Climate Smart Agriculture (MRV) | 2023011 MRV Tool Zone I.xlsx<br>2023011 MRV Tool Zone IIa.xlsx | 12 |
| Exante estimates - Climate Smart Agriculture (UNIQUE Databases) | [Various files] | 13 |
| Calculation workbook – Firewood and charcoal | Firewood charcoal growth rates_calculations_091222 | 14 |
| Audit findings explanation | 20230116 Observations on audit findings.docx | 15 |

| Document | File Name (If Applicable) | Ref. |
|---|---|---|
| | Response_Audit_Querry_No.34_Brian_Mutasha_Screenshots.docx<br>20220802 SCS queries & responses Jul onwards_ajd.docx<br>image003.png | |
| Ex-ante estimates – Project activities | Overall ER-updated.xlsx | 16 |
| Methods & Data documentation | Methods and Data Documentation_ Revised_ 31.03.2023.docx | 17 |
| Livestock Data | [Various files] | 18 |
| Land Data – Collect Earth data and analysis | EP_Filtered_and_Analyzed_AD_final_25.11.22.xlsx<br>LULUCF_Analysis_25.11.2022.xlsx<br>EP_analysed.shp<br>[Various supporting files] | 19 |
| Land Data – Vegetation types | vegtn_class_final.xlsx, vegtn_extract.shp, vegtn_class_rast (geodatabase), Forestland_25.11.22<br>4. Zambia_s_Vegetation_Types_Descriptions_Based_on_ Fanshawe_1976.docx<br>THE VEGETATION OF ZAMBIA_Mar11.pdf | 20 |
| Zambia Integrated Land use Assessments, reports & technical papers | 1._ILUAII_Final_Report<br>2. ILUAII_Technical_Paper_No.3_Assessment_of_Existing _Models_for_Biomass_Calculations.docx | 21 |
| Program Area boundary | Eastern_prov.shp | 22 |
| Aggregate Sources & Non-CO2 Data | [Various files] | 23 |
| Zambia National Woodfuel Study | National Woodfuel Study 2021 | 24 |
| References on Charcoal production | MANUAL FOR CHARCOAL PRODUCTION IN EARTH KILNS IN ZAMBIA.pdf<br>Zambiancharcoalproduction_miombowoodlandrecovery.pdf | 25 |
| Zambia's Biennial Update Report (BUR) | First Biennial Update Report – Zambia.docx | 26 |
| Zambia's Forest Reference Emissions Level (FREL) | zambia_frel-2020-technical_assessment | 27 |
| Study on Zambia forest biomass | AG & BG Biomass_2021.pdf | 28 |
| Study on crop productivity in Zambia | A Long History of Low Productivity in Zambia_ Is it Time to Do Aw | 29 |
| Forestry Department Plantation area data | FD_Plantation Data_28.11.22 | 30 |
| Zambia Forest Action Plan, Monitoring & REDD documentation | Zambia_Forestry_Action_Plan_1999_ZFAP_excerpts.pdf<br>Zambia_country _profile_MRV_for_REDD+.pdf;<br>Zambia REDD+ Strategy (FINAL ed.) (2).pdf;<br>Zambia-Forest-Account-Technical-Report-6th-APRIL.pdf | 31 |
| Zambia soil survey & data | ZIFL SOIL SURVEY_EDIT_June_2022<br>ZIFLP_2021_SOC_ZARI | 32 |

| Document | File Name (If Applicable) | Ref. |
|---|---|---|
| Agriculture Statistics | Technical_compendium_Agric_Stats_Zambia | 33 |
| Indaba Agricultural Policy Research Institute Working Paper No. 151 | IAPRI, 2019 wp151_CSA_and_deforestation | 34 |
| Zambia wildfire references | Chidumayo 2013<br>Hoffa - Seasonality of carbon emissions from biomass burning_1999.pdf<br>Effects_of_accidental_fire_on_miombo_woodland.pdf<br>Fire Management Assessment of Eastern Province_2015_hollingsworth_l001.pdf<br>Quantity of biomass burned_scholes1996.pdf<br>[Various other files] | 35 |
| Annex 2 – Financing Plan | JSLP Financing plan Annex 2 two yr monitoring 26 Apr final.xlsx | 36 |
| Zambia ERPD contributor feedback response matrix | Zambia ERPD_Consolidated Contributor Feedback-Response Matrix-December 16 2021 | 37 |
| Documentation pertaining to other carbon offset projects in the program's region | Updated_List_Climate_Change_Project_Eastern_Province;<br>2017_Dir_letter_on_auth_REDD_proj;<br>Letter FD to BCP 2019;<br>MINUTES OF THE MRV STAKEHOLDER WORKSHOP_26.08.22;<br>Minutes_HWTG_Meeting_Petauke_Edited;<br>REPORT ON THE STAKEHOLDER WORKSHOP TO REVIEW THE MEASUREMENT_19.12.21 | 38 |
| Uncertainty Analysis | Crop_Data_Area_Planted_2008-2018_v1_with refs.xlsx<br>Final Livestock data documentation sheet template.xlsx<br>Uncertainity Calculations_2008_2018.xlsx<br>UNCERTAINTY ASSESSMENT NARRATIVE.docx | 39 |
| Audit query response | Response_Audit_Querry_No.34_Brian_Mutasha_Screenshots | 40 |
| Carbon project documentation | BCP_LowerZambezi_REDD+Project_PDD_CCB_21Jun_2013.pdf;<br>VCS PDD COMACO SALM REDD.pdf<br>Updated_List_Climate_Change_Project_Eastern_Province.docx | 41 |
| Monitoring Framework & Supporting Documentation | Proposed_EP-JSLP_MRV_framework v2.docx<br>JSLP Draft Indicator Table 10 Feb 2023.docx<br>CFM monitoring.pdf;<br>ZIFLP forestry implementation overview 14 Feb | 42 |
| Note on Ability to Transfer Title | ZIFLP ERP Note on Ability to transfer title to ERs updated 17 Aug22.docx | 43 |

## 3.3 Interviews

### 3.3.1 Interviews with ER Program Personnel

The process used in interviewing ER Program personnel was a process wherein the assessment team elicited information regarding (1) the ERPD and any supporting work products or documents and (2) actions undertaken to conform to various requirements.

The following personnel associated with (a) the program entity, (b) any organizations responsible for managing/implementing the ER Program and/or (c) any partner organizations involved in the ER Program were interviewed.

The phrase "throughout audit", under "Date(s) Interviewed", indicates that interviews took place throughout the assessment process.

**1. Program Personnel**

| Individual | Affiliation | Role | Date(s) interviewed |
|---|---|---|---|
| Noel Muchimba | Zambia Integrated Forest Landscape Project | Project Manager | Throughout audit |
| Arthur Asumani | Zambia Integrated Forest Landscape Project | Technical Officer | Throughout audit |
| Godfrey Phiri | Zambia Integrated Forest Landscape Project | Environmental & Social Inclusion Officer | Throughout audit |
| Alastair Anton | Zambia Integrated Forest Landscape Project | Community Forestry Technical Advisor | Throughout audit |
| Hartley Walimwipi | Zambia Integrated Forest Landscape Project | ER Specialist | Throughout audit |
| Esther Mwale | Zambia Integrated Forest Landscape Project | Office Manager | Throughout audit |
| Charity Nalweya | Zambia Environmental Management Agency | Manager Climate Change and Natural Resources | Throughout audit |
| Annel M. Phiri | Zambia Environmental Management Agency | Technical Assistant to the Director General | Throughout audit |
| Lillian Chama Kalenge | Zambia Environmental Management Agency | Principal Inspector - CC & GHG | Throughout audit |
| Mwiche Kabwe | Zambia Environmental Management Agency | ZMERIP Coordinator/EHPMP Manager | Throughout audit |
| Victor Chiiba | Forestry Department | Acting Chief Forestry Officer | Throughout audit |
| Deuteronomy Kasaro | Forestry Department | Principal Forestry Officer - Headquarters | Throughout audit |
| Chabu Sumba | Forestry Department | Principal Forestry Officer – Eastern Province | Throughout audit |
| Abel Siampale | Forestry Department | GIS & Remote Sensing Specialist | Throughout audit |
| Franco Mwila | Centre for Energy, Environment, and Engineering | Natural Resource Specialist | Throughout audit |
| Francis Yamba | Centre for Energy, Environment, and Engineering | Natural Resource Specialist | Throughout audit |

| | | | |
|---|---|---|---|
| Mashuta Kalebe | Zambia Agriculture Research Institute | Principal Agricultural Research Officer | Throughout audit |
| Brenda Mwamba | Zambia Agriculture Research Institute | Soil Scientist | Throughout audit |
| Chrispin Moyo | Ministry of Agriculture | Principal Agricultural Specialist - (Mapping & Remote Sensing) | Throughout audit |

**2. World Banks task team**

| Individual | Affiliation | Role | Date(s) interviewed |
|---|---|---|---|
| Catalina Becerra Leal | World Bank Group | Carbon Finance Specialist | Throughout audit |
| Ademola Braimoh | World Bank Group | Climate-Smart Agriculture Coordinator | Throughout audit |
| Marco Van Der Linden | World Bank Group | Consultant/REDD+ Expert | Throughout audit |
| Matthias Seebauer | The World Bank Group | Head of Monitoring & MRV | Throughout audit |
| Francisco Obreque | World Bank Group | Senior Rural Development Specialist | Throughout audit |
| Andres Espejo | World Bank Group | FCPF Fund Manager/ Lead Natural Climate Solutions | Throughout audit |
| Roy Parizat | World Bank Group | ISFL BioCarbon Fund Manager | Throughout audit |

### 3.3.2 Interviews with Individuals Other Than ER Program Personnel

The process used in interviewing individuals other than ER Program personnel was a process wherein the assessment team made inquiries to check the validity of information provided to the assessment team.

No additional individuals other than the ER program personnel described in section 3.3.1 above were interviewed.

## 3.4 Site Inspections

Due to the COVID-19 pandemic as well as the audit team's expert assessment regarding the need for an in-person site visit, no site visit occurred during this assessment. In lieu of a site visit, the assessment team performed web-based meetings with program personnel and program partners. In addition, the assessment team utilized remotely sensed imagery to assess land use classes in the program area.

## 3.5 Resolution of Findings

Findings are the formal mechanism used by SCS to identify any actual or potential areas of risk or concern. The following discusses the types of findings that may arise from the assessment process.

**New Information Requests (NIRs)**

If the assessment team determined that they have not been furnished with sufficient information to make a decision regarding conformance, a New Information Request (NIR) was issued. After a response was received, the assessment team evaluated the submission and determined if adequate information had been provided or if additional findings (NIR, NCR, OBS) were warranted.

**Non-Conformity Reports (NCRs)**

When the assessment team identified (1) a clear non-conformity with respect to a specific indicator (where a given indicator was of the "binary" conformance type) or (2) a material discrepancy (see "Materiality", above, for more information), a Non-Conformity Report (NCR) was issued. Closure of an NCR required that the assessment team be provided with evidence that the underlying issue resulting in issuance of the NCR had been duly addressed.

**Observations (OBSs)**

An OBS indicated one or more of the following:

- An area where immaterial discrepancies existed between the observations, data testing results or professional judgment of the assessment team and the information reported or utilized (or the methods used to acquire such information) within the ERPD.
- An area where the expert judgement of the assessment team suggested that there were opportunities for improvement in the areas falling within the assessment scope.
- An area which presented a risk of future non-conformance.

Where an OBS was written against an indicator of the "professional judgement" conformance type, the OBS was written when a low (III) or medium (II) conformance rating had been assigned. Annex A's General Guidance section contains more detail regarding the two conformance types and ratings.

**Forward Action Requests (FAR)**

When the assessment team finds that one or more NIR or/and NCR have not been closed after significant[3] efforts made by the Program Entity to provide sufficient evidence to resolve the underlying issue. A FAR can be issued only after having discussed it with the World Bank and upon the approval of the Fund Manager/FMT. FAR will be turned into World Bank Conditions of Effectiveness that need to be

[3] Significant effort can be considered when more than three rounds of findings are needed to close one or more NIR or/and NCR or by an ad hoc decision made by the ISFL Fund Manager

fulfilled by ER Programs during the Conditions Fulfillment period following the signature of the ERPA to ensure the FAR is addressed prior to the submission of the first ER Monitoring Report.

A FAR shall be addressed during the first monitoring event, and a VVB shall provide a positive opinion as part of the first verification report.

# 4 Assessment Findings

The major findings of the assessment are described below for each category included in the scope of the assessment (see "Scope and Objectives", above). The assessment findings at the indicator level are described in Appendix C below.

## 4.1 Determination of ISFL Accounting Scope

### 4.1.1 ISFL Reporting

The following findings from Appendix C are relevant to this sub-section:

- NIR 1, 64, 67-68
- NCR 19, 78

The assessment team took the following steps to assess the program GHG inventory for comparability with use of definitions, categories and subcategories with national processes such as the national GHG inventory, REDD+ and the Biannual Update Report:

- Independently reviewed and took inventory of the program datasets to assess the level of consistency between the national GHG inventory and the program GHG inventory. For instance, the program utilizes the national forest inventory and land use dataset known as the Integrated Land-Use Assessments (ILUA), phase one and two. These datasets form the basis of the emission factors for the national GHG inventory and Zambia's Forest Reference Emissions Level (FREL).
- In cases where datasets were developed specifically for this program, such as the land use land cover change (LULUCF) activity data, the assessment team compared definitions of various land use classes (e.g., forest definition) applied to the activity data to the definitions applied to other components in the program's quantification (e.g., emission factors) to evaluate consistency both within the programs applied definitions and with other national processes.
- The assessment team independently evaluated other regional and national program datasets including the Fire Management Assessment of the Eastern Province, National Woodfuel Study, and other peer-reviewed publications to assess the consistency of definitions, geographies, and key assumptions with national GHG reporting.

The assessment team took the following steps to assess whether the best available data sets, methods, models and assumptions have been used and that the inventory applies the general IPCC principles of transparency, completeness, consistency, accuracy and comprehensiveness:

- Held meetings with the program's technical team to gain a clear understanding of the process in determining the best available data sets, methods and models to be employed by the program.
- Independently reviewed literature regarding the availability of datasets pertaining to forest inventory, soil characteristics, forest resource use, disturbances, land use change, and agriculture in Zambia to confirm that the best available data sets and assumptions have been utilized by the program.
- Independently reviewed Zambia's Forest Reference Level Submission to the UNFCCC (FREL, 2020) to assess whether similar data sets, methods, and assumptions have been used for the national GHG inventory and represents the best available data in the country.
- If no country specific or region-specific information was available, the assessment team independently evaluated whether the most relevant and accurate default values from the 2006 IPCC Guidelines were applied.

In summary, based on the processes and procedures conducted, the assessment team concludes the following:

- The best available data sets, methods, models, and assumptions have been used and that the inventory applies the general IPCC principles of transparency, completeness, consistency, accuracy and comprehensiveness.
- Given that the program is directly employing several national GHG inventory datasets and processes including the ILUA data for emission factors and Collect Earth for activity data, the program GHG inventory inherently applies comparable use of definitions, categories and subcategories as other national processes related to GHG inventory and REDD+.
- Overall, conservative assumptions and parameters have been used to ensure the baseline is accurate yet conservative.

### 4.1.2 Selection of Subcategories for Accounting

The following findings from Appendix C are relevant to this sub-section:

- NIR 20
- NCR 35, 69-73

The assessment team took the following steps to assess the correctness and completeness of the data and information provided on the choice of the subcategories:

- Independently assessed the datasets used for each land use subcategory to determine the IPCC tier, availability, and vintage of the data sources.
- Independently quantified the emissions baseline for each subcategory to check the absence of errors in the quantification of net emissions and removals per subcategory as well as the relative contribution to total GHG emissions and removals associated with all land use conversions.

- Independently identified, recalculated, and selected subcategories in accordance with the section 4.3.4-4.3.15 of the ER Program Requirements to assess the step 1-3 selection of subcategories as indicated in the ERPD and calculations workbooks.

The assessment team took the following steps to assess whether the quality and baseline setting requirements have been applied correctly and confirm that the choice of the subcategories is correct and justified:

- Classified each subcategory by IPCC tier and independently assessed whether subcategories utilized data and procedures that utilize IPCC Tier 1 or Tier 2 methods and data.
- Classified each subcategory by IPCC approach and independently assessed whether subcategories utilized data and procedures that utilize IPCC Approaches 1, 2 or 3 methods and data.
- Classified each subcategory by the vintage of available data sources to independently assess whether only subcategories that have sufficient historic data available to construct an Emission Baseline over a Baseline Period of approximately 10-year period at the start of a ISFL ERPA Phase were selected.
- Independently evaluated the source of each of the datasets utilized in the baseline quantification and independently re-calculated the interim emissions baseline.
- Reviewed the subcategory selection process as described and demonstrated in section 4.2 of the ERPD to evaluate conformance with the subcategory selection criteria.

In summary, based on the processes and procedures conducted, the assessment team concludes the following:

- Confirmed that the selection of subcategories is in conformance with the procedures outlined in the ISFL Program Requirements and free from material error.

### 4.1.3 Time Bound Plan to Increase Completeness Accounting Scope

The following findings from Appendix C are relevant to this sub-section:

- NIR 61, 80
- NCR 57, 73, 79

The assessment team took the following steps to assess whether the proposed plan is feasible, addresses priority subcategories and is likely to increase the completeness of the scope of accounting and improve data and methods for the subsequent ERPA Phases:

- Reviewed the description of the time-bound plan for including the subcategories of direct N2O from managed soils and methane emissions from enteric fermentation in domestic livestock as described in section 4.3 and Annex 8 of the ERPD, which requires that country-specific emission

factors be developed as well as data on the number of livestock and their characteristics be developed.

- Conducted meetings with the program team to inquire about the status of the implementation of this time-bound plan, the relevant parties involved, and the availability of data or generating such data.
- Reviewed the baseline emissions analysis and subcategory selection datasets to understand the significance of the direct N20 from managed soils (3.C.4) and enteric fermentation from domestic non-dairy cattle (3.A.1) subcategories as far as relative emissions.
- Compared the required input data and parameters for calculating the pools in this subcategory to the potential improvements a described in the ERPD.

In summary, based on the processes and procedures conducted, the assessment team concludes the following:

- Determined that the plan, which involves collaborative efforts among the Ministry of Agriculture and research institutes to conduct livestock surveys at the national level for integration into the establishment of emission factors for direct N20 from managed soil and for enteric fermentation from domestic non-dairy cattle, is already underway.
- Confirmed that funding will be needed to conduct these surveys and establish new national-level emission factors and datasets on livestock quantities and characteristics. The funding needed for development of these subcategories is included in the financing plan as a funding gap for which plans are underway to address.
- Verified that the improvement plan includes the required input and data parameters for calculating the pools in this subcategory using tier 2 data.
- Ultimately found that the time-bound plane is feasible based on a review of institutions referenced and interviews with program personnel and will increase the completeness of the accounting scope through improved data quality pertaining to the two livestock emission subcategories selected.
- Confirmed that the two livestock subcategories (direct N20 from managed soils and enteric fermentation from domestic non-dairy cattle) have been included as part of the interim baseline as they meet the baseline setting requirement, but that they will be updated when the tier 2 data is available.

## 4.2 Design of Planned Actions and Interventions

### 4.2.1 Drivers of AFOLU Emissions and Removals

The following findings from Appendix C are relevant to this sub-section:

- NIR 67-68

The assessment team took the following steps to assess the correctness and completeness of the analysis on historic and future trends (qualitative and quantitative) in drivers of AFOLU emissions and removals:

- Reviewed the ERPD (Section 3.1.1) to cross check against the ER Program Requirements including the template requirements.
- Held meetings with the program's technical team as well as World Bank personnel to gain a clear understanding of how the program has identified and evaluated drivers of AFOLU emissions and removals.
- Solicited feedback from in-country specialists, who are familiar with local laws and customs, and have expertise in the technical fields required for reliable assessment.
- Engaged with the primary literature, including peer-reviewed journal articles and national publications/reports (e.g., FREL, ILUA) to assess if the claims issued by the project are in-line with current scientific findings.

In summary, based on the processes and procedures conducted, the assessment team concludes the following:

- The description provided in the ERPD and the supplemental documents is appropriate and complete.
- The drivers of AFOLU emission and removals are reasonable and accurate as compared to the quantification of emissions and removals as well as corresponding literature including the FREL, ILUA reports, and other peer-reviewed journal articles.

### 4.2.2 Description and Justification of the Program's Planned Actions and Interventions

The following findings from Appendix C are relevant to this sub-section:

- NIR 64

The assessment team took the following steps to assess whether the proposed actions and interventions address drivers of emissions and are informed by the contribution of key sources and sinks to the total GHG emissions and removals in the program GHG inventory and the analysis of trends:

- Reviewed the ERPD (Section 3.1) to cross check against the ER Program Requirements including the template requirements.
- Held meetings with the program's technical team as well as World Bank personnel to gain a clear understanding of how the program intends to execute proposed actions and interventions.
- Solicited feedback from in-country specialists, who are familiar with local laws and customs, and have expertise in the technical fields required for reliable assessment.
- Engaged with the primary literature (i.e., peer-reviewed publications, FREL, ILUA, carbon project documentation) to assess if the planned actions and interventions are feasible, directly influence the drivers of emissions, and are in-line with current scientific findings.

- Conducted a review of projects and activities that are already underway within the province (e.g., nested carbon projects) and the Zambia Integrated Forest Landscape Program (ZIFLP).
- Compared the planned actions and interventions to the description of the drivers of AFOLU emission and removals as well as the quantification of emissions to evaluate whether there is a clear and direct relationship between the planned actions to reduce emissions and the drivers of emissions.

The assessment team took the following steps to assess the extent and effectiveness of private sector engagement (either achieved or planned) in addressing drivers of emissions:

- Reviewed the ERPD (Section 3.1) to cross check against the ER Program Requirements including the template requirements.
- Held meetings with the program's technical team as well as World Bank personnel to gain a clear understanding of how the program intends to execute proposed actions and interventions.
- Solicited feedback from in-country specialists, who are familiar with local laws and customs, and have expertise in the technical fields required for reliable assessment.
- Engaged with the primary literature to assess if the claims issued by the project are in-line with current scientific findings.
- Increased familiarity with current privately held carbon offset projects in the country to understand their contributions to addressing drivers of emissions and to assess the program's planned interactions and engagements with the nested carbon projects.

The assessment team took the following steps to assess the magnitude of risks to (a) ER Program implementation and (b) the potential benefits of planned actions and interventions and the extent to which mitigation mechanisms have been included in ER Program design:

- Reviewed the ERPD to cross check against the ER Program Requirements including the template requirements.
- Held meetings with the program's technical team as well as World Bank personnel to gain a clear understanding of how the program intends to execute proposed actions and interventions.
- Solicited feedback from in-country specialists, who are familiar with local laws and customs, and have expertise in the technical fields required for reliable assessment.
- Engaged with the primary literature to assess if the claims issued by the project are in-line with current scientific findings.

In summary, based on the processes and procedures conducted, the assessment team concludes the following:

- The description provided in the ERPD and supplemental documents is appropriate and complete.

- The planned interventions (enhance sustainable forest management, Climate Smart Agriculture, reduce fuelwood and charcoal consumption with efficient cookstoves, creation of sustainable woodlots) are directly related to the most significant drivers of emissions.
- The planned interventions are feasible and have already been underway in the province via the ZIFLP and other privately run carbon offset projects.

### 4.2.3 Financing Plan for Implementing the Planned Actions and Interventions of the Program

The following findings from Appendix C are relevant to this sub-section:

- NCR 76-77

The assessment team took the following steps to assess the correctness and completeness of information on projected costs, revenues and funding gaps or surpluses:

- Reviewed the ERPD (Section 3.3.1) and Annex 2 to cross check against the ER Program Requirements including the template requirements.
- Held meetings with the program's technical team as well as World Bank personnel to gain a clear understanding of how the program has developed and analyzed its finances and financial planning for the duration of program implementation.
- Applied expert judgement to assess whether all planned interventions are completely included in the program costs and are realistically represented in the financial analysis and planning.
- Conducted an independent recalculation of the ex-ante estimated emission reductions and applied assumptions of the costs of emission reduction tons to independently recalculate the total revenues.
- Applied expert judgement to assess the feasibility in the program's plans for addressing the funding gap.
- Reviewed the sensitivity analysis of the financial plan to understand the risks and potential uncertainty associated with the financing plan.
- Solicited feedback from in-country specialists, who are familiar with local laws and customs, and have expertise in the technical fields required for reliable assessment.

The assessment team took the following steps to assess whether the identified sources of finance are sufficient to affect the land use activities and drivers of emissions and removals:

- Reviewed the ERPD, including annex 2, to cross check against the ER Program Requirements including the template requirements.
- Held meetings with the program's technical team as well as World Bank personnel to gain a clear understanding of how the program has developed and analyzed its finances.
- Applied expert judgement to assess the estimated costs of the planned interventions and the annual levels of implementation to assess whether the sources of finances and relevant amounts of sufficient to affect the land use activities.

- Engaged with the primary literature to assess if the claims issued by the project are in-line with current scientific findings.

The assessment team took the following steps to assess the financial and economic analyses (including discount rates and other parameters):

- Reviewed the ERPD (Section 3.3.1) to cross check against the ER Program Requirements including the template requirements.
- Held meetings with the program's technical team as well as World Bank personnel to gain a clear understanding of how the program has developed and analyzed its cash flow analysis and funding gap.
- Applied expert judgement and knowledge of financial principles when assessing the cash flow assumptions including the ISFL purchase cost for VERs, discount rates, and implementation rates.

The assessment team took the following steps to assess the arrangements for flow of funds:

- Reviewed the ERPD (Section 3.3.1) to cross check against the ER Program Requirements including the template requirements.
- Applied expert judgement when reviewing the arrangements for flow of funds to assess whether sufficient agreements are in place and fundings sources are adequate to address the program implementation costs and funding gaps.
- Held meetings with the program's technical team as well as World Bank personnel to gain a clear understanding of how the program has developed and analyzed its finances.

In summary, based on the processes and procedures conducted, the assessment team concludes the following:

- The description provided in the ERPD and supplemental documents is appropriate and complete.
- The financial planning appears to be accurate and contain complete information on projected costs, revenues and funding gaps or surpluses.
- The financial planning applies established principles of cash flow analyses and includes accurate application of parameters (e.g., cost of VERs) and ex-ante emission reductions.
- The financing plan for ISFL program implementation is feasible, realistic, and appears to sufficiently address the land use activities and the drivers of emissions.

### 4.2.4 Risk for Displacement

The following findings from Appendix C are relevant to this sub-section:

- N/A

The assessment team took the following steps to assess the correctness and completeness of the information provided in the analysis of displacement risk:

- Reviewed the ERPD to cross check against the ER Program Requirements including the template requirements.
- Held meetings with the program's technical team as well as World Bank personnel to gain a clear understanding of how the program has addressed potential displacement.
- Solicited feedback from in-country specialists, who are familiar with local laws and customs, and have expertise in the technical fields required for reliable assessment.
- Engaged with the primary literature to assess if the claims issued by the project are in-line with current scientific findings.

The assessment team took the following steps to assess the effectiveness of the proposed strategy to mitigate and/or minimize, to the extent possible, potential displacement:

- Reviewed the ERPD to cross check against the ER Program Requirements including the template requirements.
- Held meetings with the program's technical team as well as World Bank personnel to gain a clear understanding of how the program has addressed potential displacement
- Applied expert judgement when assessing the risk of displacement and whether planned interventions (enhance sustainable forest management, Climate Smart Agriculture, reduce fuelwood and charcoal consumption with efficient cookstoves, creation of sustainable woodlots) will effectively combat this risk.

In summary, based on the processes and procedures conducted, the assessment team concludes the following:

- The description provided in the ERPD and supplemental documents is appropriate and complete.
- Activity shifting leakage from shifting agriculture, fuelwood extraction and charcoal production are the likely drivers of displacement which is accurately described in the ERPD.
- The planned interventions (enhance sustainable forest management, Climate Smart Agriculture, reduce fuelwood and charcoal consumption with efficient cookstoves, creation of sustainable woodlots) are feasible solutions to the risk of displacement caused by activity shifting leakage.

## 4.3 Tracking, Management, Disbursement and Reduction of Risks to Emission Reductions

### 4.3.1 Analysis of Laws, Statutes, and Other Regulatory Frameworks

The following findings from Appendix C are relevant to this sub-section:

- N/A

The assessment team took the following steps to assess the correctness and completeness of the information provided in the ERPD in respect of laws, statutes, and other regulatory frameworks:

- Reviewed the ERPD (Section 3.1.4) to cross check against the ER Program Requirements including the template requirements.
- Held meetings with the program's technical team as well as World Bank personnel to gain a clear understanding of how the program has assessed the validity of the project against any known legal or regulatory frameworks, including the Forest Carbon Stock Management Regulations, 2021, the Forest Act of 2015, the Lands Act 1995, Forests (Community Forest Management) Regulations, 2018 (S.I. No. 11 of 2018), the Wildlife Act of 2015, and the Chiefs Act of 1994.
- Solicited feedback from in-country specialists, who are familiar with local laws and customs, and have expertise in the technical fields required for reliable assessment.
- Applied expert judgment while reviewing the laws pertinent to this project to assess whether the proposed project activities are in-line with the legal and regulatory frameworks in place.
- Independently reviewed the Forest (Carbon Stock Management) Regulations of 2021 to better understand the national requirements around jurisdictional GHG initiatives.

The assessment team took the following steps to assess the existence and extent of any known legal or regulatory issues in the program area that could affect the ER Program design and the existence and effectiveness of any mitigation mechanisms to address such issues:

- Reviewed the ERPD (Section 3.1.4) to cross check against the ER Program Requirements including the template requirements.
- Held meetings with the program's technical team as well as World Bank personnel to gain a clear understanding of how the program has assessed the validity of the project against any known legal or regulatory frameworks, including the Forest Carbon Stock Management Regulations, 2021, the Forest Act of 2015, the Lands Act 1995, Forests (Community Forest Management) Regulations, 2018 (S.I. No. 11 of 2018), the Wildlife Act of 2015, and the Chiefs Act of 1994.
- Solicited feedback from in-country specialists, who are familiar with local laws and customs, and have expertise in the technical fields required for reliable assessment.
- Applied expert judgment while reviewing the laws pertinent to this project and ensured that project activities were in-line with the legal and regulatory frameworks in place.

In summary, based on the processes and procedures conducted, the assessment team concludes the following:

- The description provided in the ERPD and supplemental documents is appropriate and complete.
- The program staff are knowledgeable about the local laws and statutes and have abided by and worked within these frameworks while designing and executing this project.

- There is low risk of non-adherence to laws and regulatory frameworks, especially considering that this jurisdictional program is operated by government officials who are obligated to uphold the law as they are public servants.
- There are regulatory enforcement and monitoring measures in place to ensure that all project activities and implementing actors maintain compliance with laws and regulatory frameworks in place.

### 4.3.2 Participation Under Other GHG initiatives

The following findings from Appendix C are relevant to this sub-section:

- NIR 65

The assessment team took the following steps to assess the correctness and completeness of the information provided whether parts of the program area, or projects in the program area, are included in other GHG initiatives and if this creates a risk of double counting, and/or double payment:

- Independently reviewed the ERPD (Section 3.7.2) and cross-checked it against the program requirements.
- Carefully reviewed the other AFOLU carbon projects (under VCS) existing in the Eastern Province to understand the size, location, and monitoring of these other projects.
- Held meetings with the program's technical team as well as World Bank personnel to gain a clear understanding of how the program intends to avoid risk of double counting and how their identification of and engagement with other AFOLU carbon projects has determined their internal risk of double counting.
- Independently reviewed the Forest (Carbon Stock Management) Regulations of 2021 to better understand the national requirements around jurisdictional GHG initiatives relative to projects encompassed (nested) within the jurisdiction.
- Independently reviewed documentation pertaining to the consultation and agreements with other carbon offset project developers in the region, including meeting meetings, official letters, and stakeholder workshop reports.

In summary, based on the processes and procedures conducted, the assessment team concludes the following:

- Concluded that the jurisdictional program has considered double counting risk and has designed the project accordingly, including with benefit sharing mechanisms, to avoid double counting.
- The program has actively identified and engaged with other AFOLU carbon projects to ensure these projects are aware and in agreement with the program's approach for nesting and benefit sharing to prevent any double counting of emission reductions.
- Given the benefit sharing plans in place, agreements between the program and private carbon offset parties, established registry system, and legal regulations in place, the risk of double-counting is low.

### 4.3.3 Data management and Registry Systems to Avoid Multiple Claims to Emission Reductions

The following findings from Appendix C are relevant to this sub-section:

- NIR 65

The assessment team took the following steps to assess whether the program and projects data management system is sufficient, secure, and robust:

- Independently reviewed the ERPD (Section 3.7.3) and cross-checked it against the program requirements.
- Held meetings with the program's technical team as well as World Bank personnel to gain a clear understanding of how the program intends to assess whether the data management system is sufficient, secure, and robust and how these strategies align with current regulatory frameworks including the Forest Act of 2015 and Forests (Carbon Stock Management) Regulation, 2021
- Carefully reviewed the other AFOLU carbon projects (under VCS) existing in the Eastern Province to understand the size, location, and monitoring of these other projects.
- Independently reviewed the Forest (Carbon Stock Management) Regulations of 2021 to better understand the national requirements around jurisdictional GHG initiatives relative to projects encompassed (nested) within the jurisdiction.
- Independently reviewed documentation pertaining to the consultation and agreements with other carbon offset project developers in the region, including meeting meetings, official letters, and stakeholder workshop reports.

The assessment team took the following steps to assess whether the transaction registry to be used is sufficient, secure, and robust:

- Independently reviewed the ERPD (Section 3.7.3) and cross-checked it against the program requirements.
- Independently reviewed the Zambia REDD+ Registry webpage and end-user manual on the use of the registry.
- Held meetings with the program's technical team as well as World Bank personnel to gain a clear understanding of how the program intends to utilize the registry recognize nested projects and avoid multiple claims to emission reduction as well as the program's REDD+ Registry.
- Carefully reviewed the other AFOLU carbon projects (under VCS) existing in the Eastern Province to understand the size, location, and monitoring of these other projects.
- Independently reviewed the Forest (Carbon Stock Management) Regulations of 2021 to better understand the national requirements around jurisdictional GHG initiatives relative to projects encompassed (nested) within the jurisdiction.

The assessment team took the following steps to assess whether the data management and registry systems are sufficiently robust and sophisticated as to recognize nested projects and avoided multiple claims to emission reductions:

- Independently reviewed the ERPD (Section 3.7.3) and cross-checked it against the program requirements.
- Independently reviewed the Zambia REDD+ Registry webpage and end-user manual on the use of the registry.
- Held meetings with the program's technical team as well as World Bank personnel to gain a clear understanding of how the program intends to utilize the registry to recognize nested projects and avoid multiple claims to emission reduction as well as the program's REDD+ Registry.
- Carefully reviewed the other AFOLU carbon projects (under VCS) existing in the Eastern Province to understand the size, location, and monitoring of these other projects.
- Independently reviewed the Forest (Carbon Stock Management) Regulations of 2021 to better understand the national requirements around jurisdictional GHG initiatives relative to projects encompassed (nested) within the jurisdiction.

In summary, based on the processes and procedures conducted, the assessment team concludes the following:

- Confirmed that the project's data management system is sufficient, secure, sophisticated, and robust.
- Concluded that the program has actively identified and engaged with other AFOLU carbon projects, specifically COMACO and BCP, to ensure that multiple claims to emission reductions do not occur.
- Confirmed that data management system is in-line with regulatory requirements outlined in the Forest Act of 2015 and Forests (Carbon Stock Management) Regulation, 2021.
- Confirmed that the program has established a REDD+ Registry (in progress) to serve as a data management system to allow for tracking of carbon project areas, rights transfers, and agreements.
- Given the benefit sharing plans in place, agreements between the program and private carbon offset parties, established registry system, and legal regulations in place, the risk of double counting is low.

### 4.3.4 Reversals

The following findings from Appendix C are relevant to this sub-section:

- NIR 62

The assessment team took the following steps to assess the correctness and completeness of the data and assumptions used in the assessment of the reversal risk:

- Independently reviewed the ERPD (Section 4.7) and cross-checked it against the program requirements.
- Held meetings with the program's technical team as well as World Bank personnel to gain a clear understanding of how the program intends to manage reversal risk, including the Environmental and Social Management Framework, Grievance Mechanisms, and Resettlement Policy Framework.
- Inquired about social and environmental safeguards, such as other government agencies, NGOs (e.g., BioCarbon partners), and programs that can reduce the risk of reversals.
- Solicited feedback from in-country specialists, who are familiar with local laws and customs, and have expertise in the technical fields required for reliable assessment.
- Applied expert judgement to assess whether the data and assumptions included in assessing both anthropogenic and natural risk were valid, while also consulting the primary literature to assess whether these data and assumptions are in-line with current scientific findings.

The assessment team took the following steps to assess whether the Buffer Requirements have been applied correctly:

- Independently reviewed the ERPD (Section 3.7.3) and cross-checked it against the program requirements.
- Held meetings with the program's technical team as well as World Bank personnel to gain a clear understanding of how the buffer credits were calculated.

In summary, based on the processes and procedures conducted, the assessment team concludes the following:

- The project has accurately assessed reversal risk by identifying social and environmental safeguards that can keep this risk low.
- The reversal risk appears to the reasonable and accurate, though it must be noted that the risk of future climatic events is difficult to predict due to stochasticity of disturbance events.
- Assured that the program is accurately calculating reversal set-aside percentage as per the requirements of the ISFL Buffer guidelines.

## 4.4 Quantification of Emission Reductions

### 4.4.1 Emissions Baseline

The following findings from Appendix C are relevant to this sub-section:

- NIRs 2-18, 21-23, 26, 29-32, 34, 38, 40-41, 44, 46-48, 51-52, 54, 58, 66-68, 80, 83
- NCRs 24-25, 27-28, 33, 37, 39, 42-43, 45, 49-50, 53, 74, 78-79, 82

The assessment team took the following steps to assess whether the methods used to construct are in line with the IPCC and best practice approaches:

- Reviewed the application of the methods and datasets, including assumptions and selection of parameters used to construct the emissions baseline to assess whether they are in line with IPCC methods and best practice approaches.
- Assessment team applied the IPCC guidelines, other criteria described in section 2.2 above, and best practice approaches to independently quantify the emissions baseline for a sample of subcategories (i.e., those selected by applying section 4.3 of the program requirements) using the complete datasets or samples of data utilized by the program team.
- Conducted meetings and interviews with the program team to better understand the data and methods applied and check the validity of information provided to the assessment team.

The assessment team took the following steps to assess the correctness and completeness of the data used to construct the baseline:

- Independently assessed the land use land cover (LULC) classification from a sample of Collect Earth points with the use of ancillary imagery sources (i.e., Google Earth), to determine whether the Collect Earth tool, as well as the training and QA/QC processes employed, were appropriate to ensure high-quality data and minimize the impact of any measurement errors.
- Independently reviewed the data sources and assumptions used to develop the emission factors for all land cover classes and carbon pools.
- Independently assessed the program area and the number of Collect Earth sample points within the Eastern Province boundary by performing an intersection of the sample points within the boundary.
- Conducted meetings and interviews with the program team to better understand the data and methods applied and to check the validity of information provided to the assessment team.
- The auditors confirmed through independent recalculation and review of the datasets available for each subcategory that the baseline presented represents an interim baseline which will be updated when the improvement plan is completed.

The assessment team took the following steps to whether the baseline requirements have been applied correctly and the emissions baseline estimate is calculated correctly:

- Independently replicated the quantification of the emissions baseline using a combination of the complete datasets (e.g., emission factors and land use conversions) and/or a sample of the datasets for the subcategories, applied by the program team to verify that the emissions baseline estimate is free of material discrepancies.
- The replication of the quantification included recalculation of the following: activity data, emission factors for live, dead and soil pools, the number of sample points within the program boundary, program area boundaries (Eastern Province boundary, stratum and biome boundaries), area expansion factor per sample point, subcategory selection (described above in section 4.1.2 above), and the emissions (disturbances, fuelwood and harvest removals) and removals (growth rates).

The assessment team took the following steps to assess whether the uncertainty in the emissions baseline has been correctly identified and assessed in accordance with IPCC good practice:

- Reviewed the ERPD (section 4.5.3, Annex 9) to verify that all potential uncertainties arising in the baseline scenario as well as measurement, monitoring and reporting have been identified and assessed in accordance with IPCC good practice.
- The assessment team has issued a Forward Action Request regarding the uncertainty in emissions baseline as we were unable to confirm that the uncertainty values applied for each subcategory's activity data and emission factors are accurate. See finding 58 and section 5.2 below.

In summary, based on the processes and procedures conducted, the assessment team concludes the following:

- The methods, including assumptions and selection of parameters, used to construct the emissions baseline are in line with the IPCC and best practice approaches.
- The data used to construct the emissions baseline is correct and complete for the subcategories ultimately selected.
- The baseline requirements have been applied correctly and the emissions baseline estimate has been calculated correctly as is free of material discrepancies.
- The assessment team was unable to reach a reasonable level of assurance regarding the assessment of uncertainty in the emissions baseline and therefore has issued a Forward Action Request (see section 5.2 below).

### 4.4.2 Monitoring Approach

The following findings from Appendix C are relevant to this sub-section:

- NIR 36, 64
- NCR 56

The assessment team took the following steps to assess whether the data and methods proposed for monitoring are consistent enough with the data and methods used for the determination of the baseline to allow for meaningful comparison and calculation of the emission reductions:

- Reviewed and independently identified the key datasets and methods used for the baseline determination which will be needed for continued monitoring.
- Conducted interviews with the program team to better assess the monitoring plans and personnel required for continued monitoring of the program emissions including land use change monitoring and program implementation emissions.
- Reviewed the monitoring approach in section 4.5.1 in the ERPD to determine whether it is consistent with these key datasets and methods used for the baseline determination.

- Reviewed documentation and interviewed program team to determine whether an appropriate party is delegated as responsible for carrying out the monitoring strategy.

The assessment team took the following steps to assess whether the proposed monitoring methods and arrangements are in place as described in the ERPD and are technically capable of collecting the data:

- We independently assessed whether the data needed for monitoring will be continually updated and available by reviewing the monitoring frequency of the NFI and Activity Data including LULC (Google Earth/ancillary imagery services with Collect Earth).
- Applied expert judgement to assess whether the proposed monitoring methods and arrangements are in place as described in the ERPD and are technically capable of collecting the data.
- Conducted interviews with the technical experts on the program team to evaluate whether the team includes the technical capacities for collection and synthesis of monitoring data.

The assessment team took the following steps to assess whether the uncertainty in the data and parameters to be monitored has been correctly identified and assessed:

- Independently identified the sources of uncertainty and compared to those identified in section 4.5.3, annex 9 and annex 10 of the ERPD. The main sources of uncertainty identified are those associated with the activity data and the emissions factors.
- Compared the identified sources of uncertainty for each data and parameter to be monitored to determine whether they were identified following approaches from the most recent IPCC guidance and guidelines.
- Applied expert judgement to conclude that the assessment of sources of uncertainty in construction of the Emissions Baseline is justifiable.
- Compared the monitoring plan to the elements of the time-bound plan described in section 4.1.3 above to assess whether there is consistency in the identification of data and parameters that have the highest uncertainty and that are most critical to improving accuracy and increasing completeness of the accounting scope.

The assessment team took the following steps to assess whether the proposed approach to manage and reduce uncertainty reflects good practice:

- Compared the proposed approach to manage and reduce uncertainty to the guidance set out in the IPCC 2006 Guidelines to determine whether such guidance has been considered and applied.
- Applied expert judgement to assess whether the proposed approach to reduce uncertainties reflects good practice and are relevant and feasible for each data and parameter.

In summary, based on the processes and procedures conducted, the assessment team concludes the following:

- All monitoring procedures are appropriate to the stated tasks.

- The monitoring procedures are technically capable of collecting the data needed to allow for meaningful comparison and calculation of the emission reductions from the baseline.
- The appropriate institutional framework and organizational structure is in place to make monitoring of the data and parameters feasible.
- The uncertainty in the data and parameters to be monitored has been correctly identified and assessed.
- The proposed approach to manage and reduce uncertainty generally reflects good practice.

### 4.4.3 Ex-Ante Estimation of the Emission Reductions

The following findings from Appendix C are relevant to this sub-section:

- NCR 59, 76

The assessment team took the following steps to assess whether the assumed effectiveness of the Program in addressing the drivers and its impact on the emissions is justified and based on reasonable assumptions:

- Reviewed the ERDP and supporting documentation to assess the justification of the applied emissions reduction estimation approaches, assumptions, and parameters.
- Reviewed project-scale application of similar project activities and methodologies in the Program Area to better assess the potential effectiveness of proposed measures.
- Conducted interviews with the program team to better understand how the proposed activities will be implemented to address the drivers of deforestation and reduce emissions.
- Applied expert judgement while reviewing the application of methodologies and assumptions used to estimate ex-ante emission reductions.
- Applied expert judgement to independently evaluate the assumed effectiveness of the program in addressing the drivers of emissions and their impacts on the emissions.
- Compared the proposed program activities to the National REDD Strategy to determine whether the program is in-line with national strategies and estimated emissions reductions.

In summary, based on the processes and procedures conducted, the assessment team concludes the following:

- The assumed effectiveness of the Program in addressing the drivers and its impact on the emissions has been justified in the ERPD and supporting documentation and is considered feasible.
- The proposed activities are directly in-line with main drivers of deforestation and degradation and are directed at the largest emission sources in the region.
- The program team has applied appropriate peer-reviewed methodologies (e.g., Verified Carbon Standard (VCS) approved methodologies and Clean Development Mechanism (CDM) methodologies to estimate ex-ante emission reductions relatively accurately.

# 5 Conclusion

## 5.1 Assessment Opinion

SCS Global Services (SCS) was retained by the Initiative for Sustainable Forest Landscapes (ISFL) of the World Bank Group to perform an independent assessment of the Eastern Province Jurisdictional Sustainable Landscape Programme (EP-JSLP) against the ISFL Emission Reductions Program Requirements and associated guidelines. During the review of the ERPD, the assessment team was informed by the due diligence processes of the ISFL team in the World Bank Group and others at the World Bank Group to develop the findings and conclusions described in this report.

The conclusions of the assessment engagement differ between the two levels of assurance utilized in the assessment. The conclusions are set out according to each level of assurance in the table below.

| Applicable Level of Assurance | Conclusions |
|---|---|
| Reasonable | Based on the processes and procedures conducted, and with the exception of any potential or actual areas of risk or concern as documented in Section 5.2 below:<br>▪ The information provided in the ERPD is correct and complete (i.e., not leaving out information that might affect the opinion of the reader).<br>▪ The Program, as described in the ERPD, complies with the assessment criteria as described above. |
| Limited | Based on the processes and procedures conducted, and with the exception of any potential of actual areas of risk or concern as documented in Section 5.2 below:<br>▪ There is no evidence that the information provided in the ERPD is incorrect and/or incomplete (i.e., leaving out information that might affect the opinion of the reader).<br>▪ There is no evidence that the Program, as described in the ERPD, does not comply with the assessment criteria as described above. |

The reader is encouraged to refer to Appendix C below for information regarding the level of assurance applied to any indicator of interest.

In addition, the following summary conclusions are made, with a limited level of assurance, regarding those areas in which the scope of the assessment extends beyond a strict assessment for compliance to the assessment criteria:

| Area | Conclusions |
|---|---|
| Effectiveness of achieved or planned private sector engagement in addressing drivers of emissions | Based on the processes and procedures conducted:<br>▪ Based on interviews with program partners and review of program activities in place or planned, the ERPD provides a complete description of the planned private sector engagement in addressing drivers of emissions.<br>▪ The private sector included at this time includes the expertise necessary to provide the described activities.<br>▪ The private sector included at this time includes support from a wholistic range of entities necessary to implement the program activities necessary to address the drivers of emissions. |
| Risks to (a) program implementation and (b) the potential benefits of planned actions and interventions | Based on the processes and procedures conducted:<br>▪ As stated above, the experience and knowledge pertaining to project activities, the strong community engagement elements, and the collaboration among government agencies and the private sector at this time lay the foundation for the success of the program implementation.<br>▪ Although a funding gap currently exists, mechanisms for funding have been put in place and alternative funding sources have been identified and/or secured. Thus, the assessment team believes this to be a low risk factor.<br>▪ The assessment concluded that wildfire is the highest emission source and a significant threat to forests in the region. While program activities seek to reduce wildfire threats, the extent of forest fires and impacts of climate change on fire occurrence and severity poses a risk to program implementation and benefits.<br>▪ A review of literature, in-country expertise, and interviews with the program team revealed that climatic events such a flooding and drought pose a threat to agriculture and can |

| Area | Conclusions |
|---|---|
| | put additional pressure on forests systems. While project activities including Climate Smart Agriculture seek to address crop failures and productivity, uncertainty regarding the extent and severity of climatic events and the ability of the program to adequately mitigate such climate events poses a risk to program implementation and benefits. |
| Plan for mitigating funding gaps | Based on the processes and procedures conducted:<br>▪ While the entirety of the funding gaps is intended to be covered by additional funding sources secured (e.g., extension of the ZIPFL Program), future funding for components including salaries also relies on government budgets that are updated annually and therefore not available at the times of this assessment.<br>▪ Overall, mechanisms for funding have been put in place and alternative funding sources have been identified and/or secured, thus the assessment team believes this to be a low risk factor. |
| Plan whether the identified sources of finance are sufficient to have a meaningful impact on the land use activities and drivers which cause emissions and removals | Based on the processes and procedures conducted:<br>▪ The identified sources of financing (e.g., extension of the ZIPFL Program, World Bank grant), appear at this time to be sufficient to have a meaningful impact on the land use activities and drivers which cause emissions and removals. |
| Financial and economic analyses | Based on the processes and procedures conducted:<br>▪ The economic analysis provided is well designed, prepared by a reputable company responsible for carbon projects and jurisdictional scale analyses, and is backed by documentation supporting the data inputs. |
| Arrangements for flow of funds | Based on the processes and procedures conducted:<br>▪ The arrangement for flow of funds is well documented and described in the economic analysis described above. |

| Area | Conclusions |
|---|---|
| Any known legal or regulatory issues in the program area that can affect the program design, and the implications thereof | Based on the processes and procedures conducted:<br>▪ No known legal or regulatory issues in the program area that can affect the program design, including benefit sharing, and the implications thereof, were identified by the assessment team. |
| Effectiveness of the proposed strategy to mitigate and/or minimize, to the extent possible, potential displacement | Based on the processes and procedures conducted:<br>▪ Based on the documentation provided, the assessment team believes that the claims in the ERPD are accurate regarding this criterion. The project activities have been designed to prevent and mitigate the extent of displacement of emissions outside of the program area.<br>▪ On-site analysis should occur during the verification phase of this process. |

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| **Lead Verifier's Approval** |  <br>Alexa Dugan, 23 May 2023 |
| **Technical Reviewer's Approval** |  <br>Erynn Maynard-Bean, 23 May 2023 |

## 5.2 Forward Action Requests and Potential or Actual Areas of Risk or Concern

This section contains a summary description of areas of potential opportunity for improvement as well as areas of current non-conformance or potential risk of non-conformance in the future.

The column headers in the below table have the following meanings:

- No: The number of the area of risk or concern (assigned in consecutive sequence).
- Indicator(s): A cross-reference to any applicable indicators in the assessment checklist (see Appendix C below for more information).
- Finding(s): A cross-reference to the unresolved finding to which the area of risk of concern is related.
- Sec: A cross-reference to the applicable section of the requirement against which the unresolved finding was issued, as pasted from the applicable indicator(s) in Appendix C; note that the one- or two-character alphabetical codes at the beginning of each section reference have the following codes:
    - T : PD Template
    - PR : Program Requirements
    - BR : Buffer Requirements
- Requirement Text: The text of the requirement against which the unresolved finding was issued, as pasted from the applicable indicator(s) in Appendix C.
- Forward Action Request OR Potential or Actual Area of Risk or Concern: A description of the potential or actual area of risk or concern.

| No. | Indicator(s) | Finding(s) | Sec. | Requirement Text | Forward Action Request or Potential or Actual Area of Risk or Concern |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| 01 | R.A. 05 | OBS 55 | PR§4.1.2 | The ER Program Requirements states that “ISFL ER Programs shall, for the purpose of ISFL Reporting, compile a GHG inventory of all AFOLU categories, subcategories, gases and pools12 in the Program Area (Program GHG Inventory) utilizing existing data that have been collected using best available methods and approaches that are consistent with the most recent IPCC guidance and guidelines." The IPCC requires that the SOC pool be calculated using equation 2.25 or 2.26 which both contain 2 parts. The equations require that the SOCref parameter be multiplied by stock change factors (Flu, Fmg, Fi). For instance, section 2.3.3.1 of the 2006 IPCC states “the soil organic C stocks are estimated for the first (SOC0-T) and last year (SOC0) based on multiplying the reference C stocks by stock change factors. Annual rates of carbon stock change are estimated as the difference in stocks at two points in time divided by the time dependence of the stock change factors.” This section later states that “stock change factors are very broadly defined and include: 1) a land-use | **Area of Concern:** The program team initially included the stock change factors to calculate the soil organic carbon pools for all subcategories involving land use changes and subsequent emissions or removals from the soil organic carbon pool. In the final version of the calculation workbook, the stock change factors were removed from the equations and only the difference in soil reference carbon stock is applied to determine emissions or removals in soil during land use change. The IPCC guidelines do not include any guidance on situations in which these stock change factors may be omitting stock change factors. The assessment team could not find any evidence that omitting stock change factors is warranted, even in cases where total soil carbon stocks are directly measured. However, through independent recalculation, the assessment team ultimately found that by omitting the stock change factors, it resulted in a more conservative emissions baseline and therefore has no material implications. |

| No. | Indicator(s) | Finding(s) | Sec. | Requirement Text | Forward Action Request or Potential or Actual Area of Risk or Concern |
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| | | | | factor (FLU) that reflects C stock changes associated with type of land use, 2) a management factor (FMG) representing the principal management practice specific to the land-use sector (e.g., different tillage practices in croplands), and 3) an input factor (FI) representing different levels of C input to soil." | |

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| 02 | R.A 41<br>R.A. 42 | NIR 58 | 4.6.1,<br>4.6.2,<br>4.6.4 | Section 4.6 of the ER Program Requirements provides specific requirements for assessing the uncertainty of the emissions reduction baseline and the monitoring of emissions and removals. For instance:<br>- Section 4.6.1 states: "ISFL ER Programs shall systematically identify and assess sources of uncertainty in the determination of the Emissions Baseline and the monitoring of Emissions and Removals following the most recent IPCC guidance and guidelines."<br>- Section 4.6.2 states "ISFL ER Programs shall, to the extent feasible, follow a process of managing and reducing uncertainty in the determination of the Emissions Baseline and the monitoring of Emissions and Removals."<br>- Section 4.6.4 states "ISFL ER Programs shall set aside a portion of emission reductions calculated in Section 4.5.3 in a buffer | **Forward Actin Request:** The assessment team issued finding #58 in reference to the estimation of the baseline uncertainty and the ex-ante uncertainty. This finding was not completely addressed and the audit team discovered that there appears to be confusion between the Uncertainty Set-Aside and the Reversal Set-Aside percentages. We detail these remaining issues:<br><br>(1) Finding #58 states "The audit team requests a detailed and transparent demonstration of the uncertainty analysis described in section 4.5.3 of the ERPD. Please demonstrate how all relevant data and parameters have been included in the uncertainty estimations for each subcategory. For example, please demonstrate how the uncertainty regarding the area burned (20% of the forest area), percent of biomass burned (25% of biomass), total charcoal removal, total fuelwood removals, and forest growth were included in the forestland remaining forestland subcategory. Please provide such a demonstration for all ISFL eligible subcategories." The response/data provided also does not address the uncertainty of these baseline assumptions included in the forest remaining forest subcategory (fire, charcoal removal, fuelwood removal, etc.). It appears that only the collect earth uncertainty (activity data) and the uncertainty of emission factors (aboveground and belowground biomass) are considered, but the |

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| | | | | reserve[22] to reflect the level of uncertainty associated with the estimation of emission reductions during the ISFL ERPA Phase. The portion to be set aside shall be equal to the uncertainty set-aside factor in the following table:[Table 11]"<br><br>Note that section 4.7 of the ER Program Requirements provides specific requirements for assessing the reversal risk. Lastly, the ISFL Buffer Requirements documents provides guidance on the calculation of the uncertainty set-aside percentages (part 1) and the reversal set aside percentage (part 2). These are separate buffer pool percentages and calculations. | uncertainty of all other parameters impacting the baseline for forest remaining forest have not been considered. The audit team will require clear demonstration and justification of these key baseline assumptions/datasets in the forestland remaining forestland subcategory.<br><br>(2) The information provided is not transparent enough for us to confirm the baseline uncertainty for each subcategory and the combined total uncertainty. For example, in the document UNCERTAINTY ASSESSMENT NARRATIVE.docx provided, it states "Data for estimating emissions in the Land category was obtained from the ILUA data in the Eastern Province Analyzed spreadsheet with Activity uncertainty of ±5% and ±3% for emission factor uncertainty. Uncertainty levels for Collect Earth dataset was estimated at ±1.4% as show in the file: EP_Filtered_and_Analyzed_AD_final_16.12.22." It remains unclear how these values of +-5% or +-3% were derived. For instance in the file EP_Filtered_and_Analyzed_AD_final_16.12.22.xlsx, the Fl-FL uncertainty appears to be +-2.6%. However, for other land use transitions, the error is much higher. For instance, FL-CL shows an uncertainty of +-17.9% and FL to SL has an uncertainty of +-73.5%. Thus, it is unclear how a +-5% was derived for the activity data for each individual land use class. For the emission factors, |

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| | | | | | a value of +-3% is indicated for each land use subcategory, but it is unclear how this was determined and whether it considered all pools (biomass, dead wood, and soil organic carbon). The audit team will require clear demonstration and justification of these land emission factors, including a justification of why it is appropriate to apply the same uncertainty level to all land subcategories and pools.<br><br>(3) The values in the workbook Uncertainty Calculations_2008_2018.xlsx provided do not match those in table 85 in Annex 6 of the ERPD, nor is the calculation of the combined uncertainty for each subcategory demonstrated in the Uncertainty Calculations_2008_2018.xlsx. The audit team will request this demonstration of the total baseline uncertainty for each subcategory as well as the overall uncertainty of all subcategories included.<br><br>(4) Section 4.6 of the ERPD states "Considering the overall uncertainty in LULUCF sector of 15%, the uncertainty set aside factor equals 3%. Considering the overall uncertainty in Forestland Remaining Forest Land (where most of the emissions are emanating), of 2.92%, Forestland converted to Cropland 18.61% and Cropland remaining cropland 50.2%, the uncertainty set aside factor equals 3% being the aggregate uncertainty of emission |

| No. | Indicator(s) | Finding(s) | Sec. | Requirement Text | Forward Action Request or Potential or Actual Area of Risk or Concern |
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| | | | | | reductions between 15% and 30%." However, Annex 6, section 6 shows different uncertainty values for these classes. For instance, it shows a total uncertainty of 5.83% for forest remaining forest. Also, there is no demonstration of how an overall uncertainty of 15% was quantified. The audit team requests such a demonstration. Second, according to section 4.6.4 of the ER Program requirements, the uncertainty set-aside factor associated with a 15%-30% uncertainty is 4% (not 3% as stated in the ERPD). Note that this uncertainty set-aside factor is independent of the Reversal Set-Aside Percentages (section 4.7 of the Program Requirements). Please see the ISFL Buffer Requirements which clearly distinguishes that there are 2 separate set-aside percentages (Uncertainty Set-Aside and Reversal Set-Aside).<br><br>This forward action request is being issued to require that a transparent and complete demonstration of the calculation of the baseline uncertainty and an estimation of the uncertainty set-aside percentage be provided in accordance with section 4.6 of the ER Program Requirements and with attention to the points raised above in this FAR. |

| No. | Indicator(s) | Finding(s) | Sec. | Requirement Text | Forward Action Request or Potential or Actual Area of Risk or Concern |
|---|---|---|---|---|---|
| 3 | R.A. 05 | 29, 32, 33, NCR 42, NCR 45 | PR§4.1.2 | "ISFL ER Programs shall, for the purpose of ISFL Reporting, compile a GHG inventory of all AFOLU categories, subcategories, gases and pools12 in the Program Area (Program GHG Inventory) utilizing existing data that have been collected using best available methods and approaches that are consistent with the most recent IPCC guidance and guidelines." | **Area of risk:** As described in the findings, the audit team continued to express concerns (and nonconformities) regarding the accounting of soil organic carbon (SOC) emissions across subcategories. We concluded that unless the program team had considered that the soil carbon pool was stable for land remaining land (e.g., forest remaining forest, cropland remaining cropland), it would result in double counting of soil emissions for other subcategories involving conversions. For instance, a decline in soil carbon was initially quantified in the subcategory forest converted to cropland. The decline was due to (1) the area of forest declining and (2) the higher soil emissions associated with cropland. However, the decline in SOC due to a decline in the forest area would be double counted in the forestland remaining forestland subcategory as well. This resulted in double counting. The program was ultimately able to address these findings by implementing the assumption of stable soil carbon for land remaining land, as is permitted under the IPCC Guidelines and the ISFL Guidance note on the Application of the IPCC Guidelines. However, for monitoring, the program team intends to track the soil carbon in cropland remaining cropland to account for potential increases in soil carbon associated with project activities. When the program team applies assumption of non-stable SOC for land remaining land (e.g., cropland remaining cropland) under the program's ex-post monitoring, it will introduce significant complexity to the quantification and tracking of emissions to ensure that there is no double counting. The assessment team is has identified the accounting of monitored SOC emissions as an area of risk. |

# Appendix A: Assessment Checklist

The column headers in the below checklist tables have the following meanings. See Annex A of SCS' inception report for more information.

- No: The number assigned to the indicator.
- Sec: The section reference to the applicable requirement text, using the following coding system:
  - T : PD Template
  - PR : Program Requirements
  - BR : Buffer Requirements
- Requirement Text: The text of the applicable requirement.
- Indicator: The text of the indicator.
- Assessment Findings: A summary of the assessment team's findings in respect of the indicator.
- LA (Level of Assurance): R (for reasonable level of assurance) or L (for limited level of assurance)
- CT (Conformance Type), defined as follows:
  - Binary (Type B) means that conformance to the indicator is binary: it has been achieved or not. The B code identifies indicators that are tied to prescriptive requirements within the assessment criteria.
  - Professional Judgment (Type P) means that professional judgment will be applied to determine indicator conformance.
- CC (Conformance Code), using the following codes:
  - For both Type B and Type P:
    - N/A: Not applicable
  - For Type B:
    - C means that the evidence collected by the assessment team suggests that a state of conformance exists with respect to the applicable requirement.
    - NC means that the evidence collected by the assessment team suggests that a state of non-conformance exists with respect to the applicable requirement.
  - For Type P:
    - Ratings of 'I', 'II' and 'III' signify a high, medium and low level of conformance to the indicator, respectively.

## Cross-Cutting Documentation Requirements

| No. | Sec. | Requirement Text | Indicator | Assessment Findings | LA | CT | CC |
|---|---|---|---|---|---|---|---|
| CC-01 | T§1 | Please complete all sections of this PD. If sections of the PD are not applicable, explicitly state that the section is left blank on purpose and provide an explanation why this section is not applicable. | All applicable sections of the PD Template are completed; if any section(s) of the PD Template are not applicable, it is explicitly stated that "this section is left blank on purpose" and an explanation of why the section is not applicable is provided. | Confirmed through review of the ERPD. | L | B | C |
| CC-02 | T§1 | Provide definitions of key terms that are used and use these key terms, as well as variables etc., consistently using the same abbreviations, formats, subscripts, etc. | Key terms[4] are defined and used consistently, with the same spelling, formatting and/or abbreviations, throughout the ERPD. | Confirmed through review of the ERPD. | L | B | C |
| CC-03 | T§1 | Provide definitions of key terms that are used and use these key terms, as well as variables etc., consistently using the same abbreviations, formats, subscripts, etc. | Mathematical variables are presented consistently, with the same notation, throughout the ERPD. | Confirmed through review of the ERPD. | L | B | C |
| CC-04 | T§1 | The presentation of values in the PD, including those used for the calculation of emission reductions, should be in international standard format e.g.,,, 1,000 representing one thousand and 1.0 representing one. | All values in the ERPD are in international standard format, as in the following examples: (a) 1,000 represents one thousand and (b) 1.0 represents one. Values are not presented in the format that reverses the use of the comma and period (e.g., 1.000 representing one thousand). | Confirmed through review of the ERPD. | L | B | C |
| CC-05 | T§1 | Please use International System Units (SI units – refer to http://www.bipm.fr/enus/3_SI/si.html) and if other units are used for weights/currency (Lakh/crore etc.), | All values in the ERPD are presented using SI units; if values are presented using different units (which is acceptable at the discretion of the ERPD preparer), such values are | Confirmed through review of the ERPD. | L | B | C |

[4] A "key term" has the following attributes: (1) not within the standard American or British English lexicon; (2) important for an understanding of how the Program, as described in the ERPD, is compliant with the assessment criteria; and (3) not defined in the Program Requirements glossary.

| No. | Sec. | Requirement Text | Indicator | Assessment Findings | LA | CT | CC |
|---|---|---|---|---|---|---|---|
| | | they should be accompanied by their equivalent S.I. units/norms (thousand/million). | accompanied by a presentation using SI units. | | | | |
| CC-06 | T§1 | If the PD contains equations, please number all equations and define all variables used in these equations, with units indicated. | Any equations included in the ERPD contain the following attributes: (1) numbered in sequential order; (2) all variables defined, and (3) units indicated for all variables. | Confirmed through review of the ERPD. | L | B | C |

## ISFL ER Program Design Requirements

| No. | Sec. | Requirement Text | Indicator | Assessment Findings | LA | CT | CC |
|---|---|---|---|---|---|---|---|
| PD-01 | T§2.1.1 | Name of the ISFL ER Program | The name of the ER Program is reported in the provided table in Section 2.1.1 of the ERPD. | Confirmed through review of the ERPD. | L | B | C |
| PD-02 | T§2.1.1 | Name of the Program Area | The name of the jurisdiction constituting the Program Area is reported in the provided table in Section 2.1.1 of the ERPD. | Confirmed through review of the ERPD. | L | B | C |
| PD-03 | T§2.1.1 | Geographic area of the Program Area (hectares) | A "justifiable" estimate of the size of the Program Area (in units of hectares) is reported in the provided table in Section 2.1.1 of the ERPD. | Confirmed through review of the ERPD. | L | B | C |
| PD-04 | T§2.1.1 | Population of the Program Area | A "justifiable" estimate of the population of the Program Area is reported in the provided table in Section 2.1.1 of the ERPD. | Confirmed through review of the ERPD. | L | B | C |
| PD-05 | T§2.1.1 | Ex-ante estimate of emission reductions (ERs) for the ISFL ER Program (tonnes of $CO_2e$) | An ex-ante estimate of Emission Reductions for the ISFL ER Program,[5] in units of $tCO_2e$, is reported in the provided table in Section 2.1.1 of the ERPD. The information provided is consistent with that provided in Section 4.6 of the ERPD. | Confirmed through review of the ERPD. | L | B | C |
| PD-06 | T§2.1.2 | Please provide a brief description (roughly 150 words or less) of the rationale for the selection of the jurisdiction for the Program Area for an | A description of the rationale for the selection of the jurisdiction for the Program Area, including a description of the unique characteristics of the | Confirmed through review of the ERPD. | L | B | C |

[5] See indicators RA-60 through RA-62 for requirements for ex-ante estimates of Emission Reductions.

| No. | Sec. | Requirement Text | Indicator | Assessment Findings | LA | CT | CC |
|---|---|---|---|---|---|---|---|
| | | ISFL ER Program, including its unique characteristics that align with the ISFL Vision. | jurisdiction that align with the ISFL Vision, has been provided in Section 2.1.2 of the ERPD. | | | | |
| PD-07 | T§2.1.3 | Please provide a brief summary (roughly 300 words or less) of… The drivers of AFOLU emissions and removals, including deforestation and forest degradation | A summary of the drivers of AFOLU emissions and removals, as identified in indicator PD-27, is provided in Section 2.1.3 of the ERPD. | Confirmed through review of the ERPD. | L | B | C |
| PD-08 | T§2.1.3 | Please provide a brief summary (roughly 300 words or less) of… The broader vision of the ISFL ER Program, including the proposed interventions to address AFOLU emissions and the impact they will have in the jurisdiction on sustainable land use | A summary of the broader vision of the Program, including the proposed interventions to address AFOLU emissions and the impact they will have on sustainable land use in the jurisdiction, is provided in Section 2.1.3 of the ERPD. | Confirmed through review of the ERPD. | L | B | C |
| PD-10 | T§2.1.3 | Please provide a brief summary (roughly 300 words or less) of… The expected outcomes of the ISFL ER Program and how they will be sustained beyond the lifetime of the ISFL ER Program | A summary of the expected outcomes of the ER Program, and how they will be sustained beyond the lifetime of the ER Program,[6] is provided in Section 2.1.3 of the ERPD. | Confirmed through review of the ERPD. | L | B | C |
| PD-11 | T§2.1.4 | Estimate of costs and revenues of planned actions and interventions, including institutional, implementation, and transaction costs | An estimate of costs and revenues of planned actions and interventions, including institutional, implementation, and transaction costs, is reported in the provided table in Section 2.1.4 of the ERPD. The information provided is consistent with that provided in Section 3.1.3 of the ERPD.[7] | Confirmed through review of the ERPD. | L | B | C |
| PD-12 | T§2.1.4 | Amount of financing identified/secured financing for planned actions and interventions | The amount of financing identified or secured for planned actions and interventions is reported in the provided table in Section 2.1.4 of the ERPD. The information provided is consistent with that provided in Section 3.1.3 of the ERPD.[7] | Confirmed through review of the ERPD. | L | B | C |

[6] The "lifetime of the Program," for purposes of this indicator, must extend at least to the end of the ERPA Term, and could optionally extend beyond that period if ER Program activities are planned to take place after the end of the ERPA Term.

[7] See indicators PD-34 through PD-40 for criteria against which financial data are to be assessed.

| No. | Sec. | Requirement Text | Indicator | Assessment Findings | LA | CT | CC |
|---|---|---|---|---|---|---|---|
| PD-13 | T§2.1.4 | Financing surplus or gap amount | The amount of financing surplus or gap is reported in the provided table in Section 2.1.4 of the ERPD. The information provided is consistent with that provided in Section 3.1.3 of the ERPD.[7] | Confirmed through review of the ERPD. | L | B | C |
| PD-14 | T§2.1.4 | Please provide a brief summary (roughly 100 words or less) of the measures proposed to address financing gap, if any and arrangements for flow of funds. | A summary of (1) the measures proposed to address the financing gap (if applicable)[8] and (2) arrangements for flow of funds is provided in Section 2.1.4 of the ERPD. The information provided is consistent with that provided in Section 3.1.3 of the ERPD. | Confirmed through review of the ERPD. | L | B | C |
| PD-16 | T§2.2.2 | Organization(s) responsible for managing/implementing the ISFL ER Program (if more than one, please list all) | The indicated details in the template are provided in Section 2.2.1 of the ERPD. | Confirmed through review of the ERPD. | L | B | C |
| PD-17 | T§2.2.3 | Partner organizations involved in the ISFL ER Program: Please list existing partner agencies and organizations involved in the design and implementation of the ISFL ER Program or that have executive functions in financing, implementing, coordinating and/or controlling activities that are part of the proposed ER Program | Information regarding the existing partner agencies and organizations involved in the design and implementation of the ER Program or that have executive functions in financing, implementing, coordinating and/or controlling activities that are part of the ER Program is included in the provided table in Section 2.2.3 of the ERPD. | Confirmed through review of the ERPD. | L | B | C |
| PD-18 | T§2.2.4 | Please provide a brief description (roughly 150 words or less) of coordination within the government (across ministries/departments) for the management/implementation of the ISFL ER Program. For example, how do ministries focused on environmental issues, agriculture, finance, etc. coordinate formally or informally on this program, including through coordination platforms or shared responsibilities. | A description of coordination within the government (across ministries/departments) for the management/implementation of the ER Program, as indicated in the PD Template, is provided in Section 2.2.4 of the ERPD. | Confirmed through review of the ERPD. | L | B | C |

[8] See indicator PD-41 through PD-44 for criteria against which the plan for mitigating the financing gap (if applicable) is to be assessed.

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| PD-19 | | Please provide a brief description (roughly 150 words or less) of coordination between the government and other organizations (including civil society, the private sector, and other stakeholders) for the management/implementation of the ISFL ER Program. | A description of coordination between the government and other organizations (including civil society, the private sector, and other stakeholders) for the management/implementation of the ER Program is provided in Section 2.2.4 of the ERPD. | Confirmed through review of the ERPD. | L | B | C |
| PD-20 | PR§3.1.1 | ISFL ER Programs are required to demonstrate that they are undertaken using a jurisdictional and Integrated Landscape Management approach, in accordance with the ISFL's Vision. | The ER Program design is aligned with the Integrated Land Management approach, including collaboration among various stakeholders with the purpose of achieving sustainable landscapes. | Confirmed through review of the ERPD. | L | P | I |
| PD-21 | | | The ER Program design is aligned with concepts described in the ISFL Vision, including its intention to reduce greenhouse gas emissions at the jurisdictional scale. | Confirmed through review of the ERPD. | L | P | I |
| PD-22 | PR§3.2.1 | The design of the ISFL ER Program shall be informed by the contribution of key sources and sinks to the total GHG emissions and removals in the Program GHG Inventory (described in section 4.1). | The subcategories included in the Step 1 selection (see indicators RA-16 through RA-19) are identified for the purposes of ER Program design. | Confirmed through review of the ERPD. | L | B | C |
| PD-23 | PR§3.2.2 | For the analysis of trends, ISFL ER Programs shall identify the key drivers of AFOLU emissions and removals, by performing a qualitative historical analysis (or quantitative if data are available) to identify those subcategories for which emissions or removals have changed significantly over the base period, and a qualitative analysis of the subcategories likely to | Subcategories that have been subject to significant increases in emissions or decreases in removals during the Baseline Period (see indicator RA-20 for guidance regarding specification of the Baseline Period) are identified in an analysis of trends using one of the following approaches:<br>1. A quantitative analysis, if quantitative data are available to support such an analysis. | Confirmed through review of the ERPD, calculation workbook, and supporting data and documentation. | L | B | C |

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| | | show a significant increase of emissions or decrease of removals in the future. | 2. A qualitative analysis,[9] if quantitative data are not available to support a quantitative analysis.<br><br>The conclusions drawn from the analysis (i.e., the specific identification of subcategories) are "justifiable". | | | | |
| PD-24 | | | Subcategories that are likely to show a significant increase in emissions or decrease in removals in the relatively near future[10] are identified in the analysis of trends.[11] The conclusions drawn from the analysis (i.e., the specific identification of subcategories) are "justifiable". | Confirmed through review of the ERPD, calculation workbook, and supporting data and documentation. | L | B | C |
| PD-25 | | | The data constituting inputs to the analysis of trends are the "best available" data. | Confirmed through review of the ERPD, calculation workbook, and supporting data and documentation. | L | P | I |
| PD-26 | | | The analysis of trends has appropriately identified any subcategories not included in the Step 1 selection meeting one or more of the following criteria:<br><br>1. The subcategory has been associated with a significant increase in emissions or a significant decrease in removals during the Baseline Period. | Confirmed through review of the ERPD, calculation workbook, and supporting data and documentation. | L | P | I |

[9] The qualitative analysis may (1) be based on expert judgement and (2) include consideration of whether emissions from a subcategory have decreased or removals have increased through the use of mitigation techniques, such as technology adoption or a coordinated change in land management practices.

[10] The temporal scale of the analysis should probably roughly align with the anticipated duration of the ERPA Term unless there is good reason to do otherwise. The intent is that the projection include all phases of the ERPA Term, not just the first phase, in order to appropriately consider any circumstances that may not occur in the immediate future but can reasonably be projected to occur by the end of the ERPA Term.

[11] The qualitative analysis may (1) be based on expert judgement and (2) include consideration of any barriers that prevent mitigation policies and measures to be implemented in the absence of the proposed Program (i.e., it is permissible to project likely future conditions under a scenario in which such barriers remain in place).

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| | | | 2. The subcategory is likely to be associated with such an increase in emissions or decrease in removals during the relatively near future.[12] | | | | |
| PD-27 | PR§3.2.2; T§3.1.1 | For the analysis of trends, ISFL ER Programs shall identify the key drivers of AFOLU emissions and removals, by performing a qualitative historical analysis (or quantitative if data are available) to identify those subcategories for which emissions or removals have changed significantly over the base period, and a qualitative analysis of the subcategories likely to show a significant increase of emissions or decrease of removals in the future.<br><br>Please provide a brief description… of the identified drivers of land use change that contribute to GHG emissions and removals associated with AFOLU (e.g., deforestation and forest degradation and other aspects of land use change) in the Program Area… include more information on the drivers of AFOLU emissions and removals in Annex 1. | The key drivers of land use change associated with the subcategories identified in indicators PD-23 through PD-26 are identified in a "justifiable" fashion and described in the ERPD, as follows:<br><br>1. A brief description of identified drivers is provided in Section 3.1.1 of the ERPD.<br>2. A longer description of identified drivers is provided in Annex 1 of the ERPD. | Confirmed through review of the ERPD. | L | B | C |
| PD-28 | PR§3.2.1 | The design of the ISFL ER Program shall be informed by the contribution of key sources and sinks to the total GHG emissions and removals in the Program | The subcategories identified in indicator PD-22, and the key drivers of land use change identified in indicators PD-23 through PD-27, have been considered in design of the ER Program (i.e., | Confirmed through review of the ERPD and discussions with the program team. | L | B | C |

[12] An example of such a subcategory would be Forest Land to Cropland, in the case where deforestation rates within the jurisdiction have historically been low but where a significant improvement in access, such as with the recent completion of the Interoceanic Highway between Brazil and Peru, is projected to be accompanied by an increase in deforestation rates.

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| | | GHG Inventory (described in section 4.1) and an analysis of trends. Together these shall be the basis to specify interventions to address the key drivers of AFOLU emissions and removals and to identify the entities that would undertake them. | consideration has been given to the design of activities that are intended to mitigate the emissions or reduced removals associated with any such subcategories or drivers). | | | | |
| PD-29 | | | One of the following is true for every subcategory identified in indicator PD-22 and/or every key driver of land use change identified in indicators PD-23 through PD-27:<br><br>1. One or more ER Program activities has been specifically designed to mitigate the emissions or reduced removals associated with the subcategory or driver.<br>2. Otherwise, a compelling rationale can be provided in support of the decision not to address the emissions or reduced removals associated with the subcategory or driver in the ER Program design. | Confirmed through review of the ERPD and discussions with the program team. | L | P* | I |
| PD-30 | T§3.1.2 | Please provide a description (roughly 1,000 words or less) of planned actions and interventions (including existing, improved, and/or new activities; investments; measures; and governance, regulation, and/or policy interventions) for the ISFL ER Program. Include:<br>i. A description of how these actions and interventions impact the main factors influencing emissions or address the drivers of land use change, deforestation, and forest degradation | A description is provided in Section 3.1.2 of the ERPD regarding the planned actions and interventions[13], including the following:<br><br>1. A description of how said actions and interventions impact the main factors of land use change, deforestation, and forest degradation in the subcategories targeted by the program.<br>2. A description of the following:<br>a. The priority placed on each of the planned actions and interventions based on | Confirmed through review of the ERPD and discussions with the program team. | L | B | C |

[13] It is acceptable to group actions and interventions for purposes of satisfying this indicator, so long as the clarity of the analysis is not degraded (e.g., it is not necessarily that a separate description be provided regarding how each action or intervention impacts "the main factors influencing emissions or address the drivers of land use change, deforestation").

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| | | (identified in a. above) in the subcategories targeted by the ISFL ER Program<br>ii. A description of the prioritization and timelines of the planned actions and interventions based on implementation risks for the activities and their potential benefits. | implementation risks for the activities and their potential benefits.<br>b. The timelines of the planned actions and interventions based on implementation risks for the activities and their potential benefits. | | | | |
| PD-31 | | | Partnerships have been entered into with private sector actors, or there are concrete plans to pursue such partnerships. | Confirmed through review of the ERPD and discussions with the program team. | L | P* | I |
| PD-32 | | | Where partnerships have been entered into or are planned, these partnerships are likely to be effective in addressing the drivers of emissions. | Confirmed through review of the ERPD and discussions with the program team. | L | P* | I |
| PD-33 | | | Risks to (a) ER Program implementation and (b) the potential benefits of planned actions and interventions have been adequately considered in planning the actions and interventions, and appropriate mitigation mechanisms have been incorporated into Program design, where feasible. | Confirmed through review of the ERPD and discussions with the program team. | L | P* | II |
| PD-34 | T§3.1.3 [14] | Please outline the financing plan for the ISFL ER Program. A guidance note on the preparation of financing plans for REDD+ and landscape emission reduction programs provides the details of the steps to be followed in the preparation of the financing plan. Please include the following information: | A specific time period covered by the financing plan has been identified, and this time period is "justifiable". It is generally expected that this period commences at the date of effectiveness of the ER Program (as defined by ER Program personnel) and extends past the end of the ERPA Term;[15] where a shorter time period is covered by the financing plan, the following are true: | Confirmed through review of the ERPD and discussions with the program team. | L | P* | I |

[14] Assessment of all indicators related to T§3.1.3 will be determined by consultation with the World Bank Group.

[15] From Section 1 of Annex 2 of the Financing Plan Note: "It is useful to define the Program period of the financing plan which may cover the period from the date of effectiveness of an ER Program until the end of Program implementation which is expected to be longer than the period covered under the emission reduction payment agreement (ERPA). Therefore, the Program period of the financing plan needs to be realistic and consider the duration and circumstances of Program implementation."

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| | | i. Costs of program implementation (sum of implementation costs, institutional costs and transaction costs)<br>ii. Sources of financing (public and private sources, reinvestment of revenue from program and amount of ER revenue proposed for use in program implementation)<br>iii. Financing surplus or gap of the ER program; and options for addressing financing gap, if any | 1. The time period covered by the financing plan is appropriate to the circumstances of the ER Program.<br>2. The time period covered by the financial plan is unlikely to result in the conclusion that the ER Program enjoys a financing surplus where use of a longer time period would result in the conclusion that the ER Program is faced with a financing gap. | | | | |
| PD-35 | | | A "justifiable" estimate of the costs of ER Program implementation (sum of implementation costs, institutional costs and transaction costs) is reported in the provided table in Section 3.1.3 of the ERPD. | Confirmed through review of the ERPD and discussions with the program team. | L | B | C |
| PD-36 | | | The estimate of the costs of ER Program implementation is comprehensive; that is, it (1) covers the entire time period covered by the financing plan (as assessed in indicator PD-34) and (2) includes all of the types of costs identified in Section 2.2.1 of the Financing Plan Note unless any omitted costs are not relevant to ER Program implementation. | Confirmed through review of the ERPD and discussions with the program team. | L | P* | I |
| PD-37 | | | A "justifiable" determination of the sources of financing is provided in the provided table in Section 3.1.3 of the ERPD. | Confirmed through review of the ERPD and discussions with the program team. | L | B | C |
| PD-38 | | | 1. The quantity of unsecured financing[16] has been conservatively determined; i.e. it includes only funding sources that are very likely to materialize. | Confirmed through review of the ERPD and discussions with the program team. | L | P | II |

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| | | | 2. Unsecured financing[16] that is unlikely to flow during the 2-3 years from the start of an ER Program or until after the first verification event has been excluded as a source of funding (such funding may be included in the sensitivity analysis) unless a compelling rationale can be provided for its inclusion.<br>3. Documentary evidence can be provided to support any claimed secured financing.<br>4. Financing that will not flow until after the time period covered by the financing plan (as assessed in indicator PD-34) is excluded from the reported information. | | | | |
| PD-39 | | | The identified sources of finance are sufficient to have a meaningful impact on the land use activities and drivers which cause emissions and removals, as determined in indicator PD-27. | Confirmed through review of the ERPD and discussions with the program team. | L | P* | I |
| PD-40 | | | A "justifiable" estimate of the financing surplus or gap of the ER Program, calculated as the difference between funding financing available and ER Program cost (both for each year of the time period covered by the financing plan and across time periods) is reported in the provided table in Section 3.1.3 of the ERPD. | Confirmed through review of the ERPD and discussions with the program team. | L | B | C |
| PD-41 | | | If funding gaps exist, a plan for mitigating them is presented in Section 3.1.3 of the ERPD. | Confirmed through review of the ERPD. | L | B | C |

[16] The Financing Plan Note suggests unsecured financing be defined as "The sources of financing that are anticipated during Program period but cannot be verified at the beginning of an Program."

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| PD-42 | | | If funding gaps exist, the plan for mitigating them, as presented in Section 3.1.3 of the ERPD, is concrete, making clear the specific actions to be taken to mitigate gaps. | Confirmed through review of the ERPD. | L | P* | II |
| PD-43 | | | If funding gaps exist, the plan for mitigating them, as presented in Section 3.1.3 of the ERPD, is time-bound, with specific milestones provided for additional funding to be secured. | Confirmed through review of the ERPD. | L | P* | II |
| PD-44 | | | If funding gaps exist, the plan for mitigating them, as presented in Section 3.1.3 of the ERPD, is realistic and reasonably capable of being implemented. | Confirmed through review of the ERPD. | L | P* | II |
| PD-45 | T§3.1.3 | Please briefly describe the following (roughly 150 words or less):<br>i. Financial and economic analysis (e.g.,, NPV, IRR)<br>ii. Sensitivity analysis (to assess the influence of changes in costs, revenues, funding sources and discount rates on program financing)<br>iii. Proposed fund flow arrangements | A "justifiable" financial analysis and economic analysis, as generally described in Section 2.7 of the Financing Plan Note[17], is described in Section 3.1.3 of the ERPD. | Confirmed through review of the ERPD and discussions with the program team. | L | B | C |
| PD-46 | | | The discount rate used for the financial analysis has the following attributes:<br>1. The selection of the discount rate is "justifiable".<br>2. The discount rate is reflective of the expectations of the Program Entity for return on long-term investments[18], as determined using one of the following sources of information:<br>a. An internal discount rate used by the Program Entity in financial planning and analysis. | Confirmed through review of the financial analysis and discussions with the program team. | L | P* | I |

[17] In assessing against these indicators, the assessment team is not to assess against the Financing Plan Note, but merely to confirm that described analysis follows the general form as set out in the Financing Plan Note.

[18] Such an expectation is referred to as the "time value of money" in the economics literature.

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| | | | b. The interest rate charged by financial institutions in the host country on long term loans for forestry or agriculture or other land use projects.[19]<br>c. Any other source that, as accurately as possible, reflects the expectations of the Program Entity for return on long-term investments. | | | | |
| PD-47 | | | The calculation of net present value or internal rate of return in the financial analysis is "justifiable" and is carried out according to good practice in the field of financial investment analysis. | Confirmed through review of the financial analysis and discussions with the program team. | L | P* | I |
| PD-48 | | | Any values for externalities[20] in the economic analysis are "justifiable" (the "base" prices for carbon, as set out in Section 2.7.4 of the Financing Plan Note, are automatically deemed "justifiable"). | Confirmed through review of the financial analysis and discussions with the program team. | L | P* | I |
| PD-49 | | | The calculation of net present value or internal rate of return in the economic analysis is "justifiable" and is carried out according to good practice in the field of financial investment analysis. | Confirmed through review of the financial analysis and discussions with the program team. | L | P* | I |
| PD-50 | | | A "justifiable" sensitivity analysis[21] (to assess the influence of changes in costs, revenues, funding sources and discount rates on ER Program financing), as generally described in Section 2.7 of the Financing Plan Note[17], is described in Section 3.1.3 of the ERPD. | Confirmed through review of the financial analysis and discussions with the program team. | L | B | C |

[19] As suggested in Section 2.7.3.1 of the Financing Plan Note.
[20] Externalities, in this context, are costs and benefits not directly paid by or flowing to the Program Entity, respectively.
[21] The assessment criteria does not clarify whether it is required that the uncertainty analysis pertain to the financial analysis, the economic analysis, or both; therefore, the uncertainty analysis may pertain to only one, or both, of the above.

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| PD-51 | | | The range of discount rates used for the sensitivity analysis is "justifiable" and adequately captures the range of variability that could reasonably be expected in the discount rate.[22] | Confirmed through review of the financial analysis and discussions with the program team. | L | P* | I |
| PD-52 | | | The "parameters" included in the sensitivity analysis include changes in costs, revenues, financing sources, discount rates, and other ER Program specific "parameters" that have significant influence on the ER Program. | Confirmed through review of the financial analysis and discussions with the program team. | L | P* | I |
| PD-53 | | | The impact of a "justifiable" range of upper thresholds for costs, and a "justifiable" range of lower thresholds for benefits, are tested in the uncertainty analysis to assess whether there is an impact on the outcome of the analysis. | Confirmed through review of the financial analysis and discussions with the program team. | L | P* | I |
| PD-54 | | | Key variables that have major influence on costs, revenues, cash flow and the calculated net present value or internal rate of return are identified through the uncertainty analysis, and the identification of such variables is reasonable. | Confirmed through review of the financial analysis and discussions with the program team. | L | P* | I |
| PD-55 | | | The proposed fund flow arrangements are described in Section 3.1.3 of the ERPD. | Confirmed through review of the ERPD and discussions with the program team. | L | B | C |
| PD-56 | | | The description of the proposed fund flow arrangements in 3.1.3 of the ERPD provides a description of plans for the dissemination of funds from the sale of Emission Reductions between any relevant entities involved in operation of the Program. | Confirmed through review of the ERPD and discussions with the program team. | L | B | C |
| PD-57 | | | The proposed fund flow arrangements, as described in Section 3.1.3 of the ERPD, are appropriate in light of the formal and informal institutional arrangements between entities involved in operation of the Program. | Confirmed through review of the ERPD and discussions with the program team. | L | P* | I |

[22] The default range of -/+2 percent as lower and upper bound discount rates, as suggested in Section 2.7.3.3 of the Financing Plan Note, should automatically be assigned a conformance ranking of I for purposes of this indicator.

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| PD-58 | TAnnex 2 | Please include the summary financing plan according to the template below. | The summary financing plan is included, according to the provided template, in Annex 2 of the ERPD.[23] The information provided is more detailed than, but consistent with, the information provided in Section 3.1.3 of the ERPD (e.g., the same total ER Program costs are reported in the two sections). | Confirmed through review of the ERPD and discussions with the program team. | L | B | C |
| PD-59 | | | The presentation of information in the financing plan included in Annex 2 of the ERPD follows the categories set out in the Financing Plan Note[24] unless a compelling rationale can be provided in support of a deviation from the categories set out in the Financing Plan Note. | Confirmed through review of the ERPD and discussions with the program team. | L | P | II |
| PD-60 | T§3.1.4 [25] | Please provide an analysis (roughly 500 words or less) of the planned actions and interventions in the context of relevant local, regional and national laws, statutes and regulatory frameworks, including relevant international conventions and agreements. Please identify any potential compliance issues of the actions and interventions with these laws, statutes, regulatory frameworks, conventions and agreements; and identify legal and regulatory gaps. If applicable discuss how these issues will be addressed. | A "justifiable" analysis of the planned actions and interventions in the context of relevant legal requirements[26] is provided in Section 3.1.4 of the ERPD. | Confirmed through review of the ERPD and supporting documentation, and discussions with the program team. | L | B | C |
| PD-61 | | | The following information is provided in Section 3.1.4 of the ERPD:<br>1. A "justifiable" analysis of whether any of the planned actions and interventions has the potential to result in noncompliance with a relevant legal requirement.<br>2. If any such potential has been identified, a description of the situation | Confirmed through review of the ERPD and supporting documentation, and discussions with the program team. | L | B | C |

[23] In areas where there exists lack of clarity regarding how the provided template is to be filled out, any reasonable interpretation of the provided template will be considered acceptable for purposes of this indicator.
[24] For example, the determination of what constitutes "multilateral" funding follows Section 2.3.2 of the Financing Plan Note.
[25] Assessment of all indicators related to T§3.1.4 will be determined by consultation with the World Bank Group.
[26] The term "legal requirements," in the context of the indicators in this checklist, is very broad and includes local, regional and national laws, statutes and regulatory frameworks, including relevant international conventions and agreements.

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| | | | of potential noncompliance and the proposed means for addressing it. | | | | |
| PD-62 | | | The following information is provided in Section 3.1.4 of the ERPD:<br>1. A "justifiable" analysis of whether there are any legal or regulatory gaps that may impact the implementation of the planned actions and interventions (e.g., if there is lack of regulatory clarity on the management responsibilities of the various agencies involved in implementation).<br>2. If any such gap has been identified, a description of the situation and the proposed means for addressing it. | Confirmed through review of the ERPD and supporting documentation, and discussions with the program team. | L | B | C |
| PD-63 | | | The planned actions and interventions are free from the actual or potential compliance issues in respect of relevant legal requirements[26] or, if this is not the case, an appropriate mitigation plan with a reasonable possibility of success is in place to address any issues. | Confirmed through review of the ERPD and supporting documentation, and discussions with the program team. | L | P* | I |
| PD-64 | | | The planned actions and interventions are free from actual or potential entanglement with legal and/or regulatory gaps or, if this is not the case, an appropriate mitigation plan with a reasonable possibility of success is in place to address any issues. | Confirmed through review of the ERPD and supporting documentation, and discussions with the program team. | L | P* | I |
| PD-65 | T§3.1.5; PR§3.2.5 | Please describe (roughly 500 words or less) the following: | 1. A "justifiable" identification of the subcategories[27] that can reasonably be projected to be impacted by the | Confirmed through review of the ERPD and | L | B | C |

[27] The term "sources and sinks" is used in the Program Requirements and the PD Template, but review of the IPCC 2006 Guidelines suggests that these terms are used somewhat interchangeably with the term "category" (of which a subcategory would be a component).

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| | | i. GHG sources and sinks that may be impacted by the proposed ISFL ER Program and an assessment of their associated risk for displacement<br>ii. A strategy for mitigating and/or minimizing, to the extent possible, potential displacement, prioritizing key sources of displacement risk<br>iii. How the ISFL ER Program's planned actions and interventions have been designed to address displacement | Program[28] is provided in Section 3.1.5 of the ERPD.<br>2. For each subcategory identified in step (1) above, a "justifiable" assessment of the risk of the subcategory for Displacement[29] is provided in Section 3.1.5 of the ERPD. | discussions with the program team. | | | |
| PD-66 | | | A strategy for mitigating and/or minimizing, to the extent possible, potential displacement, prioritizing key sources of displacement risk, is provided in Section 3.1.5 of the ERPD. | Confirmed through review of the ERPD and discussions with the program team. | L | B | C |
| PD-67 | | | A "justifiable" assessment is provided in Section 3.1.5 of the ERPD regarding how the ER Program's planned actions and interventions have been designed to address Displacement. | Confirmed through review of the ERPD and discussions with the program team. | L | B | C |
| PD-68 | | | The planned actions described in Section 3.1.5 of the ERPD are likely to be effective in to mitigating and/or minimizing potential Displacement. | Confirmed through review of the ERPD and discussions with the program team. | L | P* | II |
| PD-142 | T§3.6.2 | Please indicate whether the ISFL ER Program, or any part of the Program Area, has transferred, or is planning to transfer, any ERs to, or received or is planning to receive otherwise payment for, ERs from any other GHG mitigation initiative. This would include parts of the Program Area that are registered or are seeking registration under | A "justifiable" search for any instance whereby the ER Program, or any part of the Program Area, has transferred, or is planning to transfer, any ERs to, or received or is planning to receive otherwise payment for, ERs from any other GHG mitigation initiative[30] has been performed and Section 3.6.2 of the ERPD contains an indication of whether any such instances were noted. | Confirmed through review of the ERPD and discussions with the program team. | L | B | C |

[28] Note that the list of such subcategories may or may not be identical to the list of subcategories eligible for ISFL Accounting. It is quite possible that the ER Program will impact subcategories that are currently not included in the accounting scope.

[29] Emissions occurring outside the host country are not considered to be Displacement unless it is completely evident that they are a consequence of land use activities moving from inside the Program Area to an area outside the Program Area.

[30] Any parts of the Program Area in which individual projects or jurisdictional programs have been registered, or are currently seeking registration, under greenhouse gas programs or schemes such as the Clean Development Mechanism (CDM), the Verified Carbon Standard (VCS) or the Green Climate Fund (GCF), must be identified for purposes of this indicator.

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| | | project or program level standards such as the Clean Development Mechanism (CDM), the Verified Carbon Standard (VCS), the Green Climate Fund (GCF) or others. | | | | | |
| PD-143 | | Please also indicate any actions that might not be included in the ISFL ER Program but which could address the drivers of land use change, deforestation, and forest degradation within the Program Area and that are generating ERs that may be transferred to, or be otherwise paid for by, other GHG mitigation initiatives (e.g., improved cook stoves programs under the CDM). | Section 3.6.2 of the ERPD contains a description of any actions that might not be included in the ER Program but which could address the drivers of land use change, deforestation, and forest degradation within the Program Area and that are generating ERs that may be transferred to, or be otherwise paid for by, other GHG mitigation initiatives (e.g., improved cook stoves programs under the CDM). | Confirmed through review of the ERPD and discussions with the program team. | L | B | C |
| PD-144 | | Where the ISFL ER Program, or any part of the Program Area, has been registered under any other GHG mitigation initiative, provide the registration number(s) and details for each of these. | Where the ER Program, or any part of the Program Area, has been registered under any other GHG mitigation initiative[30], the following are provided for each such instance in Section 3.6.2 of the ERPD:<br><br>1. Registration number(s), if relevant.<br>2. Project/Program ID numbers, if relevant.<br>3. Any other details that are important to understand the extent of any potential for double-counting (or references to where such information is publicly available), including the following:<br>a. The spatial extent of the project or Program Area.<br>b. The monitoring or reporting period(s) for which credit issuance has been sought | Confirmed through review of the ERPD and discussions with the program team. | L | B | C |

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| | | | and/or obtained and, for each monitoring or reporting period, the number of credits sought and/or obtained, if known to the Program Entity. | | | | |
| PD-147 | T§3.6.3 | In addition, please indicate the choice and implementation of an ER Transaction Registry to ensure that any ERs from planned actions and interventions under the ISFL ER Program are not accounted for/registered more than once; and that any ER from the planned actions and interventions under the ISFL ER Program sold and transferred to the ISFL are not used again by any entity for sale, public relations, compliance or any other purpose. | Section 3.6.3 of the ERPD identifies the ER Transaction registry to be used and describes the implementation status of such use. | Confirmed through review of the ERPD. | L | B | C |
| PD-148 | PR§3.7.1 | ISFL ER Programs shall work with the host country to select an appropriate arrangement to avoid double counting, including double issuance, double selling/use, or double claiming, in order to track the emission reductions to ensure that any emission reductions that have been generated, monitored and verified under the ISFL ER Program and paid for by the ISFL are not used again by any entity for sale, public relations, compliance or any other purpose unless otherwise agreed by the parties to the ERPA and, where relevant, consistent with any applicable guidance adopted under the Paris Agreement. For this purpose, ISFL | Evidence is provided that an appropriate arrangement has been selected in coordination and consultation with the host country order to fulfill the following objectives:<br>1. Avoid double counting, including double issuance, double selling/use, or double claiming.<br>2. Track the Emission Reductions to ensure that any Emission Reductions that have been generated, monitored and verified under the ER Program and paid for by the ISFL are not used again by any entity for sale, public relations, compliance or any other purpose unless otherwise agreed by the parties to the ERPA and, | Confirmed through review of the ERPD and discussions with the program team. | L | B | C |

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| | | ER Programs will identify a Transaction Registry to register, track, and as appropriate retire or cancel ER units generated under the ISFL ER Program. | where relevant, consistent with any applicable guidance adopted under the Paris Agreement. | | | | |
| PD-149 | | | Confirmed through review of the ERPD and discussions with the program team. | | | | |
| PD-150 | | | There is a good likelihood that the Transaction Registry to be used by the ER Program will be operational by the time of verification. | Confirmed through review of the ERPD and discussions with the program team. | L | P* | I |
| PD-151 | | | The Transaction Registry to be used by the ER Program will have an appropriate procedure in place to address double-counting, such as may occur where voluntary carbon projects may potentially be located within the jurisdiction within which the ER Program is operating. | Confirmed through review of the ERPD and discussions with the program team. | L | P* | I |
| PD-152 | | | The Transaction Registry to be used by the ER Program will encompass all of the necessary sectoral scopes pertaining to the ER Program (e.g., the Transaction Registry permits crediting of Emission Reductions pertaining to both avoided deforestation and livestock management). | Confirmed through review of the ERPD and discussions with the program team. | L | P* | I |
| PD-153 | | | The Transaction Registry to be used by the ER Program will be sufficient, secure and robust. | Confirmed through review of the ERPD and discussions with the program team. | L | P* | I |
| PD-154 | PR§3.7.2 | Based on national needs and circumstances, the Transaction Registry might be complemented with the use of a (national) Program and Projects Data Management System that supports registering of and reporting on projects/programs. | If applicable (i.e., if an ER Program and Project's Data Management System has been or will be implemented), the ER Program and Project's Data Management System is or will be sufficient, secure, and robust. | Confirmed through review of the ERPD and discussions with the program team. | R | P | I |

## Requirements for Greenhouse Gas Reporting and Accounting

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| RA-01 | PR§4.1.1 | ISFL ER Programs shall report on all AFOLU related emissions and removals in the Program Area (ISFL Reporting). | The Program GHG Inventory reports on all emissions and removals associated with each category identified as "AGRICULTURE, FORESTRY, AND OTHER LAND USE" (i.e., with a category code beginning with 3) in Table 8.2, Volume 1, Chapter 8 of the IPCC 2006 Guidelines. | Confirmed through review of the calculation workbook and supporting data. | R | B | C |
| RA-02 | PR§4.1.2, PR§4.1.4 | ISFL ER Programs shall, for the purpose of ISFL Reporting, compile a GHG inventory of all AFOLU categories, subcategories, gases and pools in the Program Area (Program GHG Inventory) ... The Program GHG Inventory should be comparable in its use of definitions, categories and subcategories with national processes such as the national GHG inventory, REDD+ and the Biannual Update Report. The Program GHG Inventory Programs may select definitions, categories, or subcategories that are different from the ones that have been used in national processes, if this increases the likelihood of being able to assess the impacts of ISFL interventions. In that case, an explanation should be provided to clarify how methodological consistency will be maintained with the national GHG inventory so that Program GHG Inventory can be integrated with and inform the national GHG inventory. | If a national-level GHG inventory reporting document[31] exists, either one of the following two options is the case:<br>1. Both of the following are true:<br>a. All categories and subcategories listed in the national-level GHG inventory reporting document are also included in the Program GHG Inventory; and<br>b. The definitions used in the Program GHG Inventory are the same as those used in the national-level GHG inventory reporting document.<br>2. Otherwise, a compelling rationale for any variation relative to the national processes can be provided, unless all of the following are true:<br>a. The variation relative to the national processes increases the likelihood of being able to | Confirmed through review of the calculation workbook, supporting data, and supporting documentation. | R | B | C |

[31] E.g., the National GHG Inventory, the Biennial Report or formally submitted REDD+ readiness documentation such as the Forest Reference Emissions Level.

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| | | | assess the impacts of ISFL interventions[32].<br>b. An explanation has been provided to clarify how methodological consistency will be maintained with the national GHG inventory so that Program GHG Inventory can be integrated with and inform the national GHG inventory (e.g., any definitions used in the Program GHG inventory are consistent with, and/or readily nest into, the definitions used in the national GHG inventory). | | | | |
| RA-03 | PRAnnex1 | ISFL ER Programs may choose to use the terminology from their national greenhouse inventory [in lieu of the table in Annex 1] as long as the principles of these ISFL ER Program Requirements are adhered to (for example the level of aggregation an analysis is performed) and the documents submitted to the ISFL clearly outline the countries' own terminology and different levels of aggregation. | Subcategories are differentiated to at least the level of specificity set out in Annex 1 of the Program Requirements.[33] | Confirmed through review of the calculation workbook, supporting data, and supporting documentation. | R | B | C |
| RA-04 | | | Where subcategories are differentiated to a finer level of detail than is set out in Annex 1 of the Program Requirements, this differentiation has the potential to increase the accuracy and/or completeness of the accounting of emissions and removals. | Confirmed through review of the calculation workbook, supporting data, and supporting documentation. | R | B | C |

[32] E.g., a broad transition category such as Land Converted to Cropland in the national-level GHG inventory reporting document is sub-divided into Forest Land Converted to Cropland (FC) and Grassland Converted to Cropland (GC) in the Program GHG Inventory, thus allowing for more accurate quantification of emissions (this is the example provided in Volume 4, Chapter 3, Section 3.2 of the IPCC 2006 Guidelines).

[33] For example, in respect of enteric fermentation by livestock, it is necessary to discriminate between fermentation by the major types of livestock (e.g., cattle, sheep and swine).

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| RA-05 | PR§4.1.2 | ISFL ER Programs shall, for the purpose of ISFL Reporting, compile a GHG inventory of all AFOLU categories, subcategories, gases and pools in the Program Area (Program GHG Inventory) utilizing existing data that have been collected using best available methods and approaches that are consistent with the most recent IPCC guidance and guidelines. In accordance with the IPCC guidance and guidelines, the Program GHG Inventory should apply the basic principles of transparency, accuracy, completeness, consistency over time and comparability as defined by the IPCC. | The Program GHG Inventory has been compiled in a manner consistent with the IPCC 2006 Guidelines[34]. | Confirmed through review of the calculation workbook, supporting data, and supporting documentation. | R | B | C |
| RA-06 | | | In compiling the Program GHG Inventory, the following<br>inventory quality indicators established by the IPCC 2006 Guidelines[35] are adhered to, as applicable, unless a compelling rationale can be provided to support a deviation from these indicators:<br><br>**Transparency**: There is sufficient and clear documentation such that individuals or groups other than the inventory compilers can understand how the inventory was compiled and can assure themselves it meets the good practice requirements for national greenhouse gas emissions inventories.<br><br>**Completeness**: Estimates are reported for all relevant categories of sources and sinks, and gases. Geographic areas within the scope of the national greenhouse gas inventory are recommended in these Guidelines. Where elements are missing their absence should be | Confirmed through review of the calculation workbook, supporting data, and supporting documentation. | R | P | II |

[34] In this context, "consistent with" means that the selection of subcategories included in the Step 1 selection (see indicators RA-16 through RA-19) is equivalent to the selection that would have resulted had the IPCC 2006 Guidelines been duly followed to the letter. This may require the assessment to independently recompile the inventory according to the guidance of the IPCC 2006 Guidelines and determine whether there is a difference in the Step 1 selection.
[35] Volume 1, Chapter 1, Section 1.4

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| | | | clearly documented together with a justification for exclusion.<br><br>**Consistency**: Estimates for different inventory years, gases and categories are made in such a way that differences in the results between years and categories reflect real differences in emissions. Inventory annual trends, as far as possible, should be calculated using the same method and data sources in all years and should aim to reflect the real annual fluctuations in emissions or removals and not be subject to changes resulting from methodological differences.<br><br>**Comparability**: The national greenhouse gas inventory is reported in a way that allows it to be compared with national greenhouse gas inventories for other countries. This comparability should be reflected in appropriate choice of key categories, and in the use of the reporting guidance and tables and use of the classification and definition of categories of emissions and removals.<br><br>**Accuracy**: The national greenhouse gas inventory contains neither over- nor under-estimates so far as can be judged. This means making all endeavors to remove bias from the inventory estimates. | | | | |
| RA-07 | PR§4.1.3 | The Program GHG Inventory shall utilize best available methods and existing data. This may include the use | In compiling the Program GHG Inventory, the "best available"[36] methods and existing data are utilized. | Confirmed through review of the calculation workbook, | R | B | C |

[36] In this case, "available" means data that were readily available at the time of inventory compilation and did not require substantive additional cost or other resources in order to acquire (this definition supersedes the generalized definition provided in the "General Guidance" section of this checklist, above). It is expected that, in many cases, assessment teams will see data from older GHG inventories utilized in the Program GHG Inventory, and this is acceptable to the intended users in the absence of ready

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| | | of Activity Data Proxies if needed, and IPCC Tier 1 data and methods if no data are available to apply higher Tier methods. | | supporting data, and supporting documentation. | | | |
| RA-08 | PR§4.1.5 | The Program GHG Inventory shall be compiled during ISFL ER Program design and every second year during the ERPA Term following the national GHG inventory process. | A Program GHG Inventory has been compiled during ER Program design. | Confirmed through review of the calculation workbook, supporting data, and supporting documentation. | R | B | C |
| RA-09 | T§4.1.1 | Please provide a short description (maximum three pages) of the approach used to compile the GHG inventory of all AFOLU categories, subcategories, gases and pools in the Program Area (Program GHG Inventory). Please provide… A description of the general approach applied to compile the Program GHG Inventory including:<br>o an overview of the definitions, categories and subcategories used;<br>o a general overview of the type, Tier and vintages of the data sources used (details to be provided in the next section); | A description of the general approach applied to compile the Program GHG Inventory is provided in Section 4.1.1 of the ERPD. | Confirmed through review of the calculation workbook and ERPD. | R | B | C |
| RA-10 | T§4.1.1 | Please provide a short description (maximum three pages) of the approach used to compile the GHG inventory of all AFOLU categories, subcategories, gases and pools in the Program Area (Program GHG Inventory). Please provide… an | An overview description of the definitions, categories and subcategories used to compile the Program GHG Inventory is provided in Section 4.1.1 of the ERPD. | Confirmed through review of the calculation workbook and ERPD. | R | B | C |

availability of more accurate and/or up-to-date data. Activity Data Proxies (see definition of "Activity Data Proxy" in the Program Requirements) or Tier 1 data and methods may be used if more accurate data and methods are not available.

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| | | overview of the definitions, categories and subcategories used; | | | | | |
| RA-11 | T§4.1.1 | Please provide a short description (maximum three pages) of the approach used to compile the GHG inventory of all AFOLU categories, subcategories, gases and pools in the Program Area (Program GHG Inventory). Please provide… a general overview of the type, Tier and vintages of the data sources used (details to be provided in the next section); | A general description of the type, Tier and vintages of the data sources used to compile the Program GHG Inventory is provided in Section 4.1.1 of the ERPD. | Confirmed through review of the calculation workbook and ERPD. | R | B | C |
| RA-12 | T§4.1.1 | Please provide a short description (maximum three pages) of the approach used to compile the GHG inventory of all AFOLU categories, subcategories, gases and pools in the Program Area (Program GHG Inventory). Please provide… If applicable, an overview of definitions, categories, or subcategories that are different from the ones that have been used in national processes and an explanation that clarifies how methodological consistency could be maintained with the national GHG inventory. | If any definitions, categories, or subcategories that are different from the ones that have been used in national processes (as determined in indicator RA-02), an overview of such, and an explanation that clarifies how methodological consistency could be maintained with the national GHG inventory, has been provided in Section 4.1.1 of the ERPD. | Confirmed through review of the calculation workbook, supporting data, and supporting documentation. | R | B | C |
| RA-13 | PR§4.1.7 | The results of the Program GHG Inventory shall at least be reported at the level of subcategories with their associated carbon pools and gases… | The Program GHG Inventory, as reported in Annex 6 of the ERPD, includes estimates of emissions or removals, for the applicable inventory year(s), for every subcategory included in the scope of the Program GHG Inventory. | Confirmed through review of the calculation workbook and the ERPD. | R | B | C |
| RA-14 | PR§4.1.7 | …the activity data, emission factors, methods, information on the underlying assumptions used, and results shall be provided to the | 1. An inventory report document, reporting on the compilation of the Program GHG Inventory in a sufficient level of detail that a reader having | Confirmed through review of the calculation workbook and the ERPD. | R | B | C |

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| | | national government of the program to inform the national GHG inventory as appropriate. | expert knowledge of the IPCC 2006 Guidelines could recompile the inventory based on the information provided, has been presented in Annex 6 of the ERPD.<br>2. Evidence is provided that the contents of Annex 6 of the ERPD have been received by appropriate personnel at the agency or ministry responsible for compiling the national GHG inventory for the host country within which the ER Program is located. | | | | |
| RA-15 | PR§4.3.1, PR§4.3.2 | ISFL ER Programs shall identify the subcategories eligible for ISFL Accounting in an ERPA Phase according to the following 3 steps:<br>Step 1: Initial selection of subcategories;<br>Step 2: Review of the available data and methods for the subcategories from the initial selection against the quality and baseline setting requirements for ISFL Accounting;<br>Step 3: Final selection of the subcategories eligible for ISFL Accounting.<br>The identification of subcategories eligible for ISFL Accounting shall be performed during program design and shall be updated before the start of each ERPA Phase. | Subcategories eligible for ISFL Accounting in an ERPA Phase are identified during ER Program design according to three steps, termed Steps 1-3[37]. | Confirmed through review of the calculation workbook and the ERPD. | R | B | C |
| RA-16 | PR§4.3.3; T§4.1.2 | ISFL ER Programs shall list all the subcategories from the Program GHG Inventory, with the associated carbon | The following procedure, or a different procedure that, in conjunction with other procedures, results in an identical Step 1 | Confirmed through independent recalculation of the | R | B | C |

[37] The outcome of each step is a list of selected subcategories. For each step, this list is referred to as "the Step X selection" in these indicators, where X is the number associated with each step. For example, the list of subcategories that is an outcome of Step 1 is referred to as "the Step 1 selection."

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| | | pools and gases, in order of the relative magnitude of contribution of these subcategories to the absolute level of the total GHG emissions and removals in the Program GHG Inventory. | selection and identical reporting within the ERPD, has been followed:<br><br>1. Using information in the Program GHG Inventory, determine the GHG emissions or removals associated with each subcategory included in the scope of the Program GHG Inventory. This value is the "Net emissions and removals" as referenced in the provided table in Section 4.1.2 of the PD Template (Table 5)[38]. In completing this step, ensure that net emissions are represented as a positive value and net removals are represented as a negative value.[39]<br>2. Identify the greenhouse gases associated with the subcategory and, if any carbon pools[40] are associated with the subcategory, identify those as well.<br>3. Calculate the absolute value of each quantity determined in step (1) above.<br>4. Rank the absolute values calculated in step (3) above, and the associated subcategories, from highest to lowest.<br>5. Sum the absolute values calculated in step (3) above. This sum is the "absolute level of the total GHG emissions and | program GHG inventory and review of the ERPD. | | | |

[38] The table in question is referred to as Table 5 in the PD Template and will be referred to as such within this checklist, for purposes of brevity. If additional tables have been added to the ERPD under assessment, said table may be been assigned a different number.

[39] This is consistent with the convention set out in the IPCC 2006 Guidelines. For example, Section 2.2.3, Chapter 2, Volume 4 of the IPCC 2006 Guidelines states that "…increases in C stocks, i.e. positive (+) stock changes, represent a removal (or 'negative' emission) from the atmosphere, while decreases in C stocks, i.e. negative (-) stock changes, represent a positive emission to the atmosphere."

[40] "Carbon pool," for these purposes, means one of five pools identified in Table 1.1, Section 1.3, Chapter 1, Volume 4 of the IPCC 2006 Guidelines (above-ground biomass, below-ground biomass, dead wood, litter and soil organic matter), noting that it is permissible for the definitions of specific pools used in the Program GHG Inventory to be different from those set out in Table 1.1 (per the guidance provided in Section 1.2.2).

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| | | | removals in the Program GHG Inventory" as referenced in Table 5[41].<br>6. Divide each value calculated in step (3) above by the value calculated in step (5) above and multiply by 100 to convert to a percentage; this value is reported in Table 5 as the "Relative contribution to the absolute level of the total GHG emissions and removals in the Program GHG Inventory."<br>7. Populate Table 5 with the list determined in the above steps. Note the following regarding the "Total" row:<br>a. The value for "Net emissions and removals" must be given as the sum calculated in step (5) above, for consistency with the presentation of information in Section 4.2.1 of the ERPD.<br>b. The value for "Relative contribution to the absolute level of the total GHG emissions and removals in the Program GHG Inventory" must be 100% (any other value indicates a calculation error). | | | | |
| RA-17 | PR§4.3.4; T§4.2.1 | From this list, all ISFL ER Programs shall initially select the following subcategories:<br>i. Any subcategories involving conversions from or to forest land;<br>ii. Forest land remaining forest land; | The following procedure, or a different procedure that, in conjunction with other procedures, results in an identical Step 1 selection and identical reporting within the ERPD, has been followed: | Confirmed through independent recalculation of the program GHG inventory, independent selection of | R | B | C |

[41] This phrase is present both in Section 4.3.3 of the Program Requirements and Section 4.1.2 of the PD Template. It is ambiguously worded, so the assessment team may see different interpretations of it, but SCS has confirmed with the World Bank that the interpretation provided in this indicator is the intended one. It is also the interpretation affirmed in the final sentence of footnote 6 within the PD Template.

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| | | iii. Any subcategories involving conversions between land-use categories other than forest land that, cumulatively with the conversions from or to forest land, amount to 90% of the absolute level of the total GHG emissions and removals associated with all land use conversions in the Program GHG Inventory; and<br>iv. The single most significant of the remaining subcategories in order of the relative magnitude of contribution of these subcategories to the absolute level of the total GHG emissions and removals in the Program GHG Inventory. | 1. From Table 5, identify any subcategories associated with conversions[42] from or to forestland. For each such subcategory, transcribe the information in the two left-most columns in Table 5 to the corresponding columns in the first provided table in Section 4.2.1 of the PD Template (Table 6)[43], preserving the ranking of subcategories as provided in Table 5.[44]<br>2. From Table 5, identify any subcategories associated with conversions between land-use categories other than forest land. For each such subcategory, transcribe the information in the two left-most columns in Table 5 to the corresponding columns in Table 6, preserving the ranking of subcategories as provided in Table 5, as in step (1) above.<br>3. For each subcategory in Table 6, calculate the absolute value of the value in the "Net emissions and removals." Note that this information is not directly reported in Table 6.<br>4. Sum the absolute values calculated in step (3) above. This sum is reported in Table 6 as the "Total absolute GHG emissions and removals associated with all land use conversions in the Program GHG Inventory." | subcategories based on the program GHG, and review of the ERPD. | | | |

[42] "Conversion," as used in this indicator, means a change from one land-use category to another, consistent with the usage of this term on page 3.7, Chapter 3, Volume 4 of the IPCC 2006 Guidelines.

[43] The table in question is referred to as Table 6 in the PD Template and will be referred to as such within this checklist, for purposes of brevity. If additional tables have been added to the ERPD under assessment, said table may be been assigned a different number.

[44] I.e., the ranking of the subcategories in Table 5 must be the same as the relative ranking of those same subcategories in Table 6.

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| | | | 5. Divide each value calculated in step (3) above by the value calculated in step (4) above and multiply by 100 to convert to a percentage; this value is reported in Table 6 as the "Relative contribution to the total absolute GHG emissions and removals associated with all land use conversions in the Program GHG Inventory."<br>6. For each subcategory in Table 6, populate the "Cumulative contribution to the total absolute GHG emissions and removals associated with all land use conversions in the Program GHG Inventory" column by summing, from top to bottom, all values of the "Relative contribution to the total absolute GHG emissions and removals associated with all land use conversions in the Program GHG Inventory" up to and including the subcategory in question.[45]<br>7. Include the following in the Step 1 selection:<br>a. Any subcategories from Table 6 involving conversions from or to forest land.<br>b. Forest land remaining forest land.[46] | | | | |

[45] An example of this operation is given in Table 4.5, Section 4.5, Chapter 4, Volume 1 of the IPCC 2006 Guidelines. Columns F and G in Table 4.5 correspond to the columns entitled "Relative contribution to the total absolute GHG emissions and removals associated with all land use conversions in the Program GHG Inventory" and "Cumulative contribution to the total absolute GHG emissions and removals associated with all land use conversions in the Program GHG Inventory" in Table 6, respectively.

[46] If the subcategory "Forest land remaining forest land" has been further disaggregated in the Program GHG Inventory (e.g., if this subcategory has been disaggregated into subcategories pertaining to forest type), the reference to "Forest land remaining forest land" in this indicator should be read as referring to all of the subcategories that, together, can be aggregated as "Forest land remaining forest land."

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| | | | c. Any subcategories from Table 6 involving conversions between land-use categories other than forest land meeting the following criteria:<br>i. The associated value of "Cumulative contribution to the total absolute GHG emissions and removals associated with all land use conversions in the Program GHG Inventory" is less than 90.000%.<br>ii. The subcategory is the first subcategory encountered in Table 6, when reading from top to bottom, for which the associated value of "Cumulative contribution to the total absolute GHG emissions and removals associated with all land use conversions in the Program GHG Inventory" is greater than or equal to 90.000%.<br>d. The first subcategory encountered in Table 5, when reading from top to bottom, that is not already included in | | | | |

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| | | | the Step 1 selection through application of the above steps. | | | | |
| RA-18 | PR§4.3.5 | Additional non-forest related subcategories may be included at the discretion of the ISFL ER Program if the quality requirements in Section 4.2 are met, provided there is a clear rationale for including these subcategories in terms of improving ISFL ER Program mitigation performance. | If a voluntary decision is made to include any non-forest related subcategories in the Step 1 selection, additional to those included in the Step 1 selection through application of the above indicators, a "justifiable" determination has been made that there is a reasonable expectation that Emission Reductions related to the subcategory will be generated within the ERPA Term. | Confirmed through review of the calculation workbook and the ERPD. | R | B | C |
| RA-19 | T§4.2.1 | For additional non-forest related subcategories included at the discretion of the ISFL ER Program, provide a clear rationale for including these subcategories in terms of improving ISFL ER Program mitigation performance. | The second table in Section 4.2.1 of the PD Template is populated with a list of non-forest related subcategories that have been voluntarily included in the Step 1 selection, along with a justification for such inclusion. | Confirmed through review of the ERPD. | R | B | C |
| RA-20 | PR§4.2.2, PR§4.2.5-4.2.6, PR§4.3.7, PR§4.3.8, PR§4.3.9 | ISFL ER Programs shall review the historic activity data and emission factors available for the subcategories selected in step 1, and the methods used to collect these activity data and emission factors against the quality and baseline setting requirements for ISFL Accounting listed in Section 4.2. ISFL ER Programs shall account for the total net emission reductions across eligible subcategories by estimating the baseline and monitoring emissions and removals for the eligible subcategories using at minimum IPCC Tier 2 methods and data. Subcategories are considered to meet Tier 2 if all the significant pools and gasses are estimated using Tier 2 methods and data. | The following procedure, or a different procedure that, in conjunction with other procedures, results in an identical Step 3 selection, has been followed for each subcategory included in the Step 1 selection, in order to determine whether each subcategory will (a) be retained in the selection (in which case it is termed a "retained subcategory" and considered to have "RET status" or (b) be provisionally considered for removal from the selection (in which case it is termed a "provisionally removed subcategory" and said to have "PREM status"):<br><br>1. Identify the section(s) of Volume 4 of the IPCC 2006 Guidelines that contains guidance required for quantification of emissions or removals related to the | Confirmed through independent review and recalculation of activity data and emission factors. | R | B | C |

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| | | For Subcategories referenced in paragraph 4.3.4ii, jurisdiction-specific Activity Data Proxies may be considered if Tier 2 methods and data are not available to meet the requirement of paragraph 4.2.2.<br>The Emissions Baseline should be constructed based on the average annual historical GHG emissions and removals (or, where legacy effects are significant, the GHG emissions and removals resulting from average annual historic activities if it can be documented that this is more conservative for the relevant subcategory(ies) and the required data is available) over a baseline period (Baseline Period) of approximately 10 years. This Emissions Baseline should be constructed based on at least two data points.<br>The end date for the Baseline Period for each ERPA Phase is the most recent date prior to two years before the submission of the ISFL ER Program document for each ERPA Phase for independent technical assessment. An alternative start-date of the Baseline Period could be allowed only with a convincing justification, and is not | subcategory[47]. For each area where applicable guidance is provided, review the descriptions of higher tier methods[48].<br>2. Note the following requirements for quantification of baseline emissions:<br>a. Data must be available to quantify an average annual estimate of GHG emissions and removals across the Baseline Period[49], using at least two data points, according to one of the following methods:<br>i. Direct quantification of average annual historical GHG emissions and removals within the Program Area during the Baseline Period; or<br>ii. Quantification of GHG emissions and removals resulting from average annual historic activities within the Program Area during the Baseline Period where all of the following criteria apply: | | | | |

[47] For example, for subcategories pertaining to land conversion to cropland, one would refer to Chapter 5.3, "Land Converted to Cropland." One would also refer to other portions of the IPCC 2006 Guidelines as needed. For example, if biomass is burned in the process of converting forest land to cropland, one would refer to Chapter 5, Section 5.3.4 of the IPCC 2006 Guidelines for quantification guidance.

[48] Following IPCC convention, "higher tier" refers to either Tier 2 or Tier 3.

[49] See step (2)(b) below for requirements regarding the determination of the Baseline Period.

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| | | more than 15 years before the end date of the Baseline Period.<br>For Subcategories listed in paragraph 4.3.4iv, if 10 years of historical data are not available at the beginning of the first ERPA Phase to construct the Emissions Baseline, a Baseline Period of 5 years may be considered for the first ERPA Phase with sufficient justification, with the requirement to construct the Emissions Baseline using an approximate 10-year Baseline Period for subsequent ERPA Phases where possible. | 1. Legacy effects[50] are likely to impact the Emissions Baseline.<br>2. Required data are available, following the requirements on data quality set out below, in order to implement the approach.<br>b. The Baseline Period must meet the following temporal requirements:<br>i. The Baseline Period must be approximately[51] 10 years in length, unless all of the following are true:<br>1. The subcategory was added to the Step 1 selection per | | | | |

[50] Legacy effects are emissions during the Baseline Period that are a result of land-use change that occurred before the start of the Baseline Period. Legacy effects are most likely to occur in the below-ground biomass, dead wood and soil organic matter pools, for which emissions attributable to land-use change may occur over extended periods of time.

[51] For the purposes of this indicator, "approximately" refers to a period of time within 365 days of the indicated number of years (e.g., "approximately 10 years" means a period of time that is exactly between 9 and 11 years).

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| | | | indicator step (7)(d) in indicator RA-17.<br>2. Sufficient data for a Baseline Period of approximately 10 years are not available at the beginning of the first ERPA Phase.<br>3. Sufficient data for a Baseline Period of at least 5 years[52] are available at the beginning of the first ERPA Phase.<br>4. The Baseline Period is set to between 5 and 10 years in length.<br>5. A compelling rationale[53] is provided | | | | |

[52] Baseline Periods less than five full years (e.g., in general, five consecutive periods of 365 days) in length are not permitted.

[53] It is expected that the most common reasons that may be given for a shorter Baseline Period will be related to lack of data availability. The assessment team should closely scrutinize any claims made but should be prepared to accept any justifiable explanation for lack of feasibility.

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| | | | regarding the propriety of a Baseline Period of between 5 and 10 years for this subcategory.<br>6. Where possible, a commitment is made to construct the Emissions Baseline using an approximate 10-year Baseline Period for subsequent ERPA Phases.<br>ii. Both of the following must be true regarding the date falling exactly two years before the date of submittal of the ERPD for quality review by the World Bank (referred to in this step (2) as the "date of interest"):<br>1. The Baseline Period must end on or earlier than | | | | |

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| | | | the day just before the date of interest.<br>2. If the Baseline Period does not end on the day just before the date of interest, the Baseline Period must end as recently as possible prior to the day just before the date of interest, and good reason must be provided for why the Baseline Period cannot end on the day just before the date of interest.<br>iii. If the start date of the Baseline Period is not approximately 10 years before the end of the baseline period, | | | | |

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| | | | all of the following are true:<br>1. A compelling rationale can be provided regarding why it would be infeasible[54] for the start of the Baseline Period to be within approximately 10 years of the end of the baseline period.<br>2. The start date of the Baseline Period is not more than 15 years before the end data of the Baseline Period.<br>3. Use the following procedure for determining whether the subcategory "meets Tier 2" (i.e., can be quantified using higher tier methods) and, thus, | | | | |

[54] It is expected that the most common reasons that may be given for lack of feasibility will be related to lack of data availability, but perhaps other reasons may be given for lack of feasibility. The assessment team should closely scrutinize any claims made but should be prepared to accept any justifiable explanation for lack of feasibility.

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| | | | adheres to the requirements of this step (3):<br>a. Refer to Table 5 to identify any greenhouse gases or carbon pools (referred to in the remainder of this indicator as "G/Ps") associated with the subcategory.[55]<br>b. Of the G/Ps identified in step (3)(a) above, assess whether there are any G/Ps for which higher tier methods are not available for the entire process of quantifying both (a) baseline emissions (in consideration of the data requirements for baseline quantification as identified in step (2) above) and (b) monitoring emissions related to the subcategory.<br>c. If no such G/Ps exist, the subcategory meets Tier 2; skip to step (4). Otherwise, the following significance testing procedure must be applied:<br>i. Using information in the Program GHG Inventory, determine the GHG emissions or removals associated with each greenhouse gas or carbon pool identified in step (3)(a) above. | | | | |

[55] For any subcategory with one or more associated carbon pools, the greenhouse gas $CO_2$ must be disregarded for purposes of assessing whether the subcategory meets Tier 2 (double-counting in the significance testing would otherwise result).

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| | | | ii. Calculate the absolute value of each quantity determined in step (3)(c)(i) above.<br>iii. Rank the absolute values calculated in step (3)(c)(ii) above, and the associated G/Ps, from highest to lowest.<br>iv. Sum the absolute values calculated in step (3)(c)(ii) above.<br>v. Divide each value calculated in step (3)(c)(ii) by the value calculated in step (3)(c)(iv) above and multiply by 100 to convert to a percentage. This is the relative contribution to the absolute level of the total GHG emissions and removals in the subcategory.<br>vi. Work through the list of G/Ps in sequential order from top to bottom, adding, for each G/P, the value calculated in step (3)(c)(v) for that G/P to the sum of the corresponding values across all G/Ps that | | | | |

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| | | | are higher-ranked (i.e., that appear higher in the ranked list).[56] The result of this operation, for each G/P, is the calculation of the cumulative contribution of that G/P to the total absolute GHG emissions and removals.<br>vii. Identify all G/Ps meeting at least one of the following criteria (such G/Ps are considered "significant"):<br>1. Having an associated relative contribution to the absolute level of the total GHG emissions and removals in the subcategory, as calculated in step (3)(c)(v) | | | | |

[56] This is the same operation as that set out in Step (6) of indicator RA-17. An example of this operation is given in Table 4.5, Section 4.5, Chapter 4, Volume 1 of the IPCC 2006 Guidelines.

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| | | | above, that is greater than or equal to 25.000%.<br>2. Having an associated cumulative contribution to the absolute level of the total GHG emissions and removals in the subcategory, as calculated in step (3)(c)(vi) above, that is less than 60.000%.<br>3. Being the first G/P encountered, when reviewing the list of values calculated in step (3)(c)(vi) from top to bottom, for which the calculated value is greater than | | | | |

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| | | | or equal to 60.000%.<br>viii. For each G/P identified in step (3)(c)(vii) above, determine whether higher tier methods are available for the entire process of quantifying both (a) baseline emissions (in consideration of the data requirements for baseline quantification as identified in step (2) above) and (b) monitoring emissions related to the subcategory.<br>1. If an affirmative determination is made for each G/P identified in step (3)(c)(vii) above, the subcategory meets Tier 2.<br>2. Otherwise, the subcategory does not meet Tier 2. | | | | |

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| | | | 4. If the subcategory is related to land use change[57], determine whether the following requirements for quantification of activity data, in respect of Approaches 1, 2 and 3 as described in Volume 4, Chapter 3, Section 3.3.1 of the IPCC 2006 Guidelines, can be adhered to for the entire process of quantifying both (a) baseline emissions (in consideration of the data requirements for baseline quantification as identified in step (2) above) and (b) monitoring emissions related to the subcategory:<br>a. Quantification of activity data using Approach 1 is not permitted.<br>b. Activity data using must be quantified using Approach 3, unless this is not possible, in which case Approach 2 may be used, provided that ancillary information is available that allows to land-use conversions to be tracked over time.<br>5. Determine whether the subcategory meets Tier 2, through application of the procedure set out in step (3) above, and adheres to any applicable requirements for land representation as set out in step (4) above.<br>a. If yes, the subcategory is assigned RET status.<br>b. If not: | | | | |

[57] This step is not applicable to subcategories not related to land use change.

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| | | | i. If the sub-category in question is "forest land remaining forest land" and all of the following are true, the sub-category is assigned RET status.<br>1. The only issue is that sufficient activity data[58] are not available to meet the requirements of higher tier methods for each G/P identified in step (3)(c)(vii) above.<br>2. Data from an Activity Data Proxy are available to serve as a substitute for the missing activity data in the implementation of a higher tier method, and are used | | | | |

[58] "Activity data" is defined in Volume 1, Chapter 1 of the IPCC 2006 Guidelines as "information on the extent to which a human activity takes place"; such data are most frequently calculated using units of land area (e.g., hectares).

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| | | | for this purpose.<br>3. In respect of baseline emissions, quantification follows guidance for baseline quantification set out in step (2) above.<br>ii. Otherwise, the subcategory is assigned PREM status.<br>6. The outcome of the above steps is a list of subcategories with a status identifier (either "RET" or "PREM") attached to each); this is termed the Step 2 selection. | | | | |
| RA-21 | PR§4.3.11-4.3.13 | For each ERPA Phase, ISFL ER Programs shall only account for those subcategories for which step 2 has shown that the historic activity data and emission factors available, and the methods used to collect these activity data and emission factors, meet the quality and baseline setting requirements for ISFL Accounting listed in Section 4.2 while taking into account the provisions of paragraph 4.3.8 and 4.3.9.<br>If a subcategory selected in step 1 has historic data available to construct an Emission Baseline over a Baseline Period of approximately 10 years but | The following procedure, or a different procedure that, in conjunction with other procedures, results in an identical Step 3 selection, has been followed for each subcategory included in the Step 2 selection:<br>1. If the subcategory has a status of RET, it is included in the Step 3 selection.<br>2. If the subcategory has a status of PREM:<br>a. If the subcategory was assigned a status of PREM for the sole reason that, while historic data available to construct an Emission Baseline over a Baseline Period of approximately 10 years do | Confirmed through independent review and recalculation of activity data and emission factors. | R | B | C |

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| | | these data do not meet the other quality requirements of Section 4.2, it can only be included for accounting in the ERPA Phase if all the quality requirements can be met through the application of improved methods and data. ISFL ER Programs that intend to include such a subcategory need to ensure that the quality requirements can be met at the latest at the end of the ERPA Phase. In this case, ISFL ER Programs shall provide an interim Emissions Baseline at the beginning of the ERPA Phase using best available data to be able to provide ex-ante estimations of the Emission Reductions.<br>Each relevant subcategory selected in step 1 that does not have sufficient historic data available to construct an Emission Baseline over a Baseline Period of approximately 10-year period at the start of an ERPA Phase (with the exception of the subcategories that meet the requirements of 4.3.9), cannot be included for accounting and the calculation of the emission reductions and removals in that ERPA Phase. In this case the ISFL ER Program shall monitor the emissions for that subcategory in accordance with the quality requirements of Section 4.2 for the ERPA Phase and these monitored data collected during the ERPA Phase (and potentially earlier ERPA Phases) shall be used to estimate the Emissions Baseline during the subsequent ERPA | exist, these data do not meet the requirements set out in steps (3) and (4) of indicator RA-20, the subcategory is included in the Step 3 selection if a "justifiable" determination is made that it will be possible to produce an Emissions Baseline adhering to the requirements of the same steps (3) and (4) by no later than the end of the first ERPA Phase. Otherwise, the subcategory is not included in the Step 3 selection.<br>b. If the subcategory was assigned PREM status because, at least in part, historic data available to construct an emission baseline over a Baseline Period of approximately 10 years do not exist, the subcategory is not included in the Step 3 selection.<br>c. If the subcategory was assigned PREM status for any reason other than given in steps (2)(a)-(b) above, the subcategory is not included in the Step 3 selection. | | | | |

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| | | Phase in order to fulfill the baseline period requirements outlined in Section 4.2 | | | | | |
| RA-22 | T§4.2.2 | For each of the subcategories selected in step 1, provide a summary of the review of the available data and methods for the subcategories against the quality and baseline setting requirements for ISFL Accounting using the table template below. Copy and complete the table for each individual subcategory | For each of the subcategories included in the Step 1 selection, the provided table in Section 4.2.1 of the PD Template is populated (the table is populated uniquely for each such subcategory) with summary information regarding the review of the available data and methods against the quality and baseline setting requirements for ISFL Accounting. | Confirmed through review of the ERPD. | R | B | C |
| RA-23 | TAnnex 7 | For each of the selected subcategories in Section 4.2.1:<br>• Identify the parameters that were used to determine the activity data and emission factors in the calculation of the emissions and removals for that subcategory;<br>• For each parameter used to determine activity data, describe the historic time series available for that parameter including how they relate to the proposed start date and end date of the Baseline Period (see Section 4.4.1);<br>• Provide details on the source of the parameters (e.g., official statistics) or a description of the method for determining the parameter (e.g., for parameters derived from remote sensing images describe the process applied including details such as the type of sensors and the details of the images used). If proxies have been used, describe the data sources | The following information is included in Annex 7 of the ERPD for each of the subcategories included in the Step 1 selection:<br>1. Identification of the "parameters: used to determine the activity data and emission factors in the calculation of the emissions and removals for the subcategory<br>2. For each "parameter" identified in (1) above:<br>a. If the "parameter" is used to determine activity data, a description of the historic time series available for that "parameter", including how the available time series relates to the start date and end date of the Baseline Period<br>b. Details on the data source for the "parameter", following one | Confirmed through review of the ERPD and calculation workbooks. | R | B | C |

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| | | for the proxies and their application to estimate activity data;<br>• Provide details on the spatial level of the parameters (local, regional, national or international) and if they allow for spatially explicit observations of land-use categories and land-use conversions;<br>• Provide an analysis if the parameters comply with the requirements on the use of, at minimum, IPCC Tier 2 methods and data. For parameters used for land use change-related subcategories, also provide an analysis if they data allows for the use of Approach 3 for land representation. | of the below options, as applicable:<br>i. If the "parameter" has been measured, a description of the method for determining the "parameter" (e.g., for "parameters" derived from remote sensing images describe the process applied including details such as the type of sensor and the types of imagery used).<br>ii. If proxies have been used, describe the data sources for the proxies and their application to estimate activity data.<br>iii. For other data sources (e.g., literature or expert judgment), provide a description of the source of the data.<br>c. If the "parameter" is spatial in nature, details on the level to which it applies (local, regional, national or international) and | | | | |

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| | | | clarification as to whether the "parameter" allows for spatially explicit observations of land-use categories and land-use conversions.<br>d. An analysis as to whether the "parameter" complies with the requirements on the use of, at minimum, IPCC Tier 2 methods and data.<br>e. If the "parameter" is used for land use change-related subcategories, an analysis as to whether data provided by the "parameter" allows for the use of Approach 3 for land representation. | | | | |
| RA-24 | T§4.2.3 | Based on the analysis above, complete the table below by listing all subcategories from step 1 and identifying those subcategories for which step 2 has shown that the historic activity data and emission factors available, and the methods used to collect these activity data and emission factors, meet the quality and baseline setting requirements for ISFL Accounting. | In the provided table in Section 4.2.3 of the PD Template, list all subcategories included in the Step 1 selection and populate the table according to its instructions, with those subcategories included in the Step 3 selection (and only such subcategories) being identified as "Eligible for ISFL Accounting"[59]. | Confirmed through review of the ERPD and calculation workbooks. | R | B | C |

[59] The distinction in the provided table between "Emissions Baseline setting requirement(s)," "Methods and data requirement(s)" and "Spatial information requirement(s)" is not clear, so the assessment team should be flexible regarding how these columns are filled out. The factors of primary importance are that all subcategories included in the Step 1 selection are included in the table and that the "Eligible for ISFL Accounting?" column is correctly populated in respect of whether or not each subcategory is included in the Step 3 selection.

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| RA-25 | PR§4.3.1; T§4.3; TAnnex 8 | [For] Each relevant subcategory selected in step 1 that does not have sufficient historic data available to construct an Emission Baseline over a Baseline Period of approximately 10-year period at the start of an ERPA Phase (with the exception of the subcategories that meet the requirements of 4.3.9)… the ISFL ER Program shall monitor the emissions for that subcategory in accordance with the quality requirements of Section 4.2 for the ERPA Phase and these monitored data collected during the ERPA Phase (and potentially earlier ERPA Phases) shall be used to estimate the Emissions Baseline during the subsequent ERPA Phase in order to fulfill the baseline period requirements outlined in Section 4.2.<br>For subcategories that were included in Section 4.2.1 above as part of the initial selection (step 1) but were not eligible for ISFL Accounting, please provide a summary of the time bound plan (approximately 500 words) to increase the completeness of the scope of accounting, improve data and methods and start collecting data to be able to estimate the Emissions Baseline for the subsequent ERPA Phases during the ERPA Term. Also, discuss those subcategories selected in step 1 that have historic data available to | A description of the time-bound plan to increase the completeness of the scope of accounting and improve data and methods for the subsequent ERPA Phases during the ERPA Term is provided in Section 4.3 of the PD Template, and the full plan itself is provided in Annex 8 of the PD Template. The time-bound plan, and the description thereof, have the following attributes:<br>1. For any subcategory included in the Step 1 selection but not included in the Step 3 selection, concrete actions are identified that will meet the following objectives:<br>2. Increase the completeness of the scope of accounting.<br>3. Improve data and methods.<br>4. Start collecting data to be able to estimate the Emissions Baseline for one or more subsequent ERPA Phases during the ERPA Term.<br>5. For any subcategory identified in step (2)(a) of indicator RA-21:<br>6. If the subcategory was included in the Step 3 selection, it is affirmed that all the quality requirements can be met through the application of improved methods and data by the end of the first ERPA Phase[60] and concrete actions are identified that will result in the subcategory being granted RET status, | Confirmed through review of the ERPD, calculation workbooks, and discussions with the program team. | R | B | C |

[60] For such subcategories, this is a precondition for inclusion in the Step 3 selection.

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| | | construct an Emission Baseline over a Baseline Period of approximately 10 years but where these data do not meet the other quality requirements and identify if all the quality requirements can be met through the application of improved methods and data at the latest at the end of the current ERPA Phase.<br>Please include the full-time bound plan in Annex 8 below. | upon application of the procedure set out in indicator RA-20, by the end of the first ERPA Phase.<br>7. If the subcategory was not included in the Step 3 selection, this is clearly stated and the information requested in (1)(a)-(c) above is provided. | | | | |
| RA-26 | | | The time-bound plan to increase the completeness of the scope of accounting and improve data and methods for the subsequent ERPA Phases during the ERPA Term, as described in Section 4.3 of the ERPD and provided in full in Annex 8 of the ERPD, has the following attributes: | | | | |
| RA-27 | | | The time-bound plan is **specific**, with actions to be taken and responsible parties clearly identified. | Confirmed through review of the ERPD and discussions with the program team. | R | P* | I |
| RA-28 | | | The time-bound plan is **measurable**: describing actions to be taken with a sufficient level of detail that it will be possible to objectively measure progress towards any objectives.[61] | Confirmed through review of the ERPD and discussions with the program team. | R | P* | I |
| RA-29 | | | The time-bound plan is **achievable**: feasible given resources that can reasonably be assumed to be available to the Program Entity. | Confirmed through review of the ERPD and discussions with the program team. | R | P* | II |
| RA-30 | | | The time-bound plan is **relevant**, with the largest amount of planned effort granted to subcategories that of the highest priority for eligibility for ISFL Accounting.[62] | Confirmed through review of the ERPD and discussions with the program team. | R | P* | I |

[61] For example, of the two planned actions described below, the second is more measurable than the first.

1. "We will acquire updated medium-resolution imagery for the Program Area."
2. "We will acquire cloud-free medium-resolution imagery from the Landsat-8 sensor as it becomes available, with an objective of having wall-to-wall coverage of the Program Area by 31 March 2019."

[62] The determining of priority is to be made by the Program Entity.

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| RA-31 | | | The time-bound plan is **time-bound**, with specific milestones provided by which key implementation actions will be completed. | Confirmed through review of the ERPD and discussions with the program team. | R | P* | II |
| RA-32 | | | The time-bound plan is likely to increase the completeness of the scope of accounting. | Confirmed through review of the ERPD and discussions with the program team. | R | P* | I |
| RA-33 | | | The time-bound plan is likely to improve data and methods for the subsequent ERPA Phases. | Confirmed through review of the ERPD and discussions with the program team. | R | P* | I |
| RA-34 | PR§1; PR§4.4.1 | For each ERPA Phase, ISFL ER Programs shall determine an Emissions Baseline comprising those subcategories that are eligible for ISFL Accounting in the ERPA Phase as determined by the steps in Section 4.3.<br>ISFL ER Programs are expected to demonstrate conformity with this document and apply general principles of… conservativeness in order to be able to receive result-based finance from the ISFL. | For each subcategory included in the Step 3 selection, the following are true, as applicable, regarding the Emissions Baseline for the first ERPA Phase ("the First Phase Baseline"):<br>1. The First Phase Baseline has been constructed, in respect of the subcategory, following the requirements set out in step (2) of indicator RA-20.<br>2. If the subcategory was determined to meet Tier 2 in step (3) of indicator RA-20, only higher tier methods are used to construct the First Phase Baseline for any greenhouse gases or carbon pools identified in step (3)(c)(vii) of the same indicator (no Tier 1 methods are used for such greenhouse gases or carbon pools).<br>3. If the subcategory is related to land use change, the requirements of step (4)(a)- | Confirmed through review of the ERPD and calculation workbooks. | R | B | C |

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| | | | (b) of indicator RA-20 are adhered to in constructing the First Phase Baseline.<br>4. If step (5)(b)(i) of indicator RA-20 applies to the subcategory, the requirements in step (5)(b)(i)(1)-(3) of the same indicator are adhered to in constructing the First Phase Baseline.<br>5. If step (2)(a) of indicator RA-21 applies to the subcategory, an Interim Emissions Baseline is produced for the sub-category using "best available" data and incorporated into the First Phase Baseline for purposes of ex-ante quantification of Emission Reductions. | | | | |
| RA-35 | | | The First Phase Baseline is constructed through summation of the individual subcategory-specific baselines across all subcategories included in the Step 3 selection. | Confirmed through review of the ERPD and calculation workbooks. | R | B | C |
| RA-36 | | | The following guidance is applied in constructing the First Phase Baseline, as applicable:<br>1. The good practice suggestions of the IPCC 2006 Guidelines.<br>2. The guidance of Sections 3-5 of GFOI. | Confirmed through review of the ERPD and calculation workbooks, and independent recalculation of the baseline. | R | P | I |
| RA-37 | | | The First Phase Baseline has been constructed using conservative methodological assumptions and approaches in order to ensure that Emission Reductions are not over-estimated (i.e., to err on the side of underestimating baseline emissions).[63] | Confirmed through review of the ERPD and calculation workbooks, and independent recalculation of the baseline. | R | P | I |

[63] This language paraphrases Section 3.7 of ISO 14064-2:2006. Note, however, the following:

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| RA-38 | | | Where legacy effects are likely to be present, these have been accounted for in construction of the First Phase Baseline through appropriate implementation of the accounting approach set out in step (2)(a)(ii) in indicator RA-20. | Confirmed through review of the ERPD and calculation workbooks, and independent recalculation of the baseline. | R | P | I |
| RA-39 | | | In constructing the First Phase Baseline, all emissions from the below-ground biomass, dead wood, litter and soil organic matter carbon pools following land-use change are not assumed to be instantaneous or to occur within a short period of time, but are projected using a decay function over a "justifiable" period of time.[64] | Confirmed through review of the ERPD and calculation workbooks, and independent recalculation of the baseline. | R | P | I |
| RA-40 | | | Emissions Baselines for ERPA Phases after the first ERPA Phase, as reported in Section 4.4.2 of the PD Template, are "justifiable" in light of (a) projected trends in average emissions (over future Baseline Periods as relevant to future ERPA Phases) within the Program Area and (b) subcategories that were not included in the Step 3 selection that are predicted to become eligible for ISFL Accounting in respect of future ERPA Phases. | Confirmed through review of the ERPD and calculation workbooks, and independent recalculation of the baseline. | L | P | I |
| RA-41 | PR§4.6.1 | ISFL ER Programs shall systematically identify and assess sources of uncertainty in the determination of the Emissions Baseline… following most recent IPCC guidance and guidelines… | A "justifiable" assessment of sources of uncertainty in the construction of the Emissions Baseline for the first ERPA Phase has been carried out; this assessment has the following attributes: | Forward Action Request #2 (see section 5.2 above) has been issued for this requirement. The audit | R | B | |

1. The principle of conservativeness does not necessarily imply that choices leading to a higher Emission Baseline are made at every turn. It simply requires that, in the face of uncertainty, methodological assumptions and approaches are selected that err on the side of over-estimating the baseline.
2. As referenced in this indicator, the principle of conservativeness does not extend to the selection of data sources, such as emission factors. It is not expected, for example, that where an uncertainty range around an emission factor is provided in the literature, the lower bound of that range will be selected for use in quantification. Uncertainty in data sources will be accounted for in the calculation of the uncertainty set-aside factor, per Section 4.6 of the Program Requirements.

[64] Page 3.9 of Chapter 3, Volume 4 of the 2006 IPCC Guidelines suggests a default time period of 20 years for "dead organic matter and soil carbon stocks to reach equilibrium following land-use conversion" and, therefore, a default time period of 20 years will automatically be considered justifiable for purposes of this indicator. However, time periods other than 20 years may also be justifiable.

| No. | Sec. | Requirement Text | Indicator | Assessment Findings | LA | CT | CC |
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| | | | 1. The assessment is systematic, in that it proceeds in a methodical manner through the various components of the quantification process and assesses uncertainty independently for each component.<br>2. The classification of uncertainties is undertaken using the "eight broad causes of uncertainty" identified in Section 3.1.5 of Chapter 3, Volume 1 of the IPCC 2006 Guidelines; an exhaustive identification of all instances of each of these causes of uncertainty is provided. | team confirmed that an analysis of the source of uncertainty in the Emissions Baseline has been conducted in a systematic way. However, verification of the uncertainty values for each subcategory has not yet been achieved. | | | |
| RA-42 | PR§4.6.1 | ISFL ER Programs shall, to the extent feasible, follow a process of managing and reducing uncertainty in the determination of the Emissions Baseline… | A "justifiable" assessment has been undertaken regarding how uncertainty in the construction of the Emissions Baseline for the first ERPA Phase can be managed and reduced, given the means that can reasonably be made available to the Program Entity. This assessment has been acted upon. | Forward Action Request #2 (see section 5.2 above) has been issued for this requirement. The audit team confirmed that an analysis of the source of uncertainty in the Emissions Baseline has been conducted in a systematic way. However, verification of the uncertainty values for each subcategory has not yet been achieved. | R | B | |
| RA-43 | | | The guidance set out in Section 3.1.6 of Chapter 3, Volume 1 of the IPCC 2006 Guidelines has been duly considered in assessing how uncertainty in the construction of the Emissions | Confirmed through review of the ERPD and supporting data and documentation, and | R | P | I |

| No. | Sec. | Requirement Text | Indicator | Assessment Findings | LA | CT | CC |
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| | | | Baseline for the first ERPA Phase can be managed and reduced. | independent recalculation of the baseline. | | | |
| RA-44 | | | The "best available" data have been used in the construction of the Emissions Baseline for the first ERPA Phase. | Confirmed through review of the ERPD and supporting data and documentation, and independent recalculation of the baseline. | R | P | I |
| RA-45 | T§4.4.1 | Building on the information provided in 4.2 above, please provide a short description (maximum two pages) of the approach used for estimating the Emissions Baseline. Please provide:<br>• A description of the general approach applied to estimate the Emissions Baseline in the current ERPA Phase<br>• Identification and assessment of uncertainty in the determination of the Emissions Baseline.<br>• The Baseline Period(s) used in the construction of the Emissions Baseline for the current ERPA Phase by indicating the start-date and the end-date for the Baseline Period(s). If different Baseline Periods are used for different subcategories, explain how this meets the requirements.<br>• In case an interim Emissions Baseline is provided at the beginning of the ERPA Phase, identify those subcategories that led to the use of the | The following information is provided in Section 4.4.1 of the ERPD:<br>1. A description of the general approach applied to estimate the Emissions Baseline in the current ERPA Phase.[65]<br>2. Identification and assessment of uncertainty in the determination of the Emissions Baseline<br>3. The start date(s) and end date(s) of the Baseline Period(s) used in the construction of the Emissions Baseline for the current ERPA Phase<br>4. If different Baseline Periods are used for different subcategories, clarification regarding how this meets any relevant clauses of the Program Requirements.<br>5. In case an interim Emissions Baseline is provided at the beginning of the ERPA Phase, identification of those subcategories that led to the use of the interim baseline and a description of | Confirmed through review of the ERPD and supporting data and documentation, and independent recalculation of the baseline. | R | B | C |

[65] All references to the "current ERPA Phase" refer to the first ERPA Phase.

| No. | Sec. | Requirement Text | Indicator | Assessment Findings | LA | CT | CC |
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| | | interim baseline and describe how best available data have been used.<br>• Ex-ante estimate, including assumptions made, of how the Emissions Baseline will change in future ERPA Phases. | how "best available" data have been used.<br>6. An ex-ante estimate of how the Emissions Baseline will change in future ERPA Phases (with a description of any assumptions made in producing the estimate). | | | | |
| RA-46 | TAnnex 9 | Please provide a step-by-step calculation of the Emissions Baseline. Provide a transparent, complete, consistent and accurate description of the approaches, methods, and assumptions used and provide an overview of the activity data and emission factors used in a way that is sufficiently detailed to enable the reconstruction of the Emissions Baseline. Identify and asses the sources of uncertainty in the determination of the Emissions Baseline and describe actions that have been taken to manage or reduce uncertainty<br>Attach any spreadsheets, spatial information, maps and/or synthesized data used in the calculation. | A step-by-step calculation of the Emissions Baseline, including the following information, is provided in Annex 9 of the ERPD:<br>1. A transparent, complete, consistent and accurate description of the approaches, methods, and assumptions used<br>2. An overview of the activity data and emission factors used in a way that is sufficiently detailed to enable the reconstruction of the Emissions Baseline.<br>3. An identification and assessment of the sources of uncertainty in the determination of the Emissions Baseline and a description of actions that have been taken to manage or reduce uncertainty.<br>Any spreadsheets, spatial information, maps and/or synthesized data used in the calculation of the Emissions Baseline are incorporated by reference to Annex 9. | Confirmed through review of the ERPD and supporting data and documentation, and independent recalculation of the baseline. | R | B | C |
| RA-47 | T§4.4.2 | Provide the estimate of the Emissions Baseline in the table below. | An estimate of the Emissions Baseline is provided, for each ERPA Phase included in the ERPA Term, in the provided table in Section 4.4.2 of the PD Template. | Confirmed through review of the ERPD and the calculation workbook. | R | B | C |

| No. | Sec. | Requirement Text | Indicator | Assessment Findings | LA | CT | CC |
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| RA-48 | T§4.5.1 | Please provide a description (two pages or less) of the methods and standards for generating, recording, storing, aggregating, collating and reporting data on monitored parameters, including equations if necessary. | Section 4.5.1 contains a description of the methods and standards[66] for generating, recording, storing, aggregating/collating and reporting data on monitored "parameters", including equations if necessary. | Confirmed through review of the ERPD and the calculation workbook. | R | B | C |
| RA-49 | T§4.5.2 | Please provide a description or flow diagram (one page or less) indicating how the monitoring system will operate and who will be responsible for monitoring the parameters. | Section 4.5.2 of the ERPD contains a description or flow diagram indicating how the monitoring system will operate and who will be responsible for monitoring the "parameters". | Confirmed through review of the ERPD. | R | B | C |
| RA-50 | TAnnex 10; PR§4.6.1 | Using the table provided, clearly describe all the data and parameters to be monitored (copy table for each parameter). | Using the table provided[67] in Annex 10 of the ERPD a clear description is provided of all the data and "parameters" to be monitored (copy table for each "parameter"). | Confirmed through review of the ERPD. | R | B | C |
| RA-51 | | ISFL ER Programs shall systematically identify and assess sources of uncertainty in the… monitoring of emissions and removals following most recent IPCC guidance and guidelines… | A "justifiable" assessment of sources of uncertainty in the monitoring of emissions and removals has been carried out and documented in Annex 10 of the ERPD (under "Identification of sources of uncertainty for this "parameter"…"); this assessment has the following attributes:<br>1. The assessment is systematic, in that it proceeds in a methodical manner through the various "parameters" used in quantification and assesses uncertainty independently for each component. | Confirmed through review of the ERPD and calculation workbook, and discussions with the program team. | R | B | C |

[66] The definition of "standard" that applies to here is (from Merriam-Webster): "something set up and established by authority as a rule for the measure of quantity, weight, extent, value, or quality." For example, when speaking of collection of remotely sensed data, a standard for pixel size (such as 30 meters) could be described in the ERPD.
[67] An overly-stringent interpretation of the table in Annex 10 would not be in anyone's best interest. While clarity in how the table is populated is important, brevity should be permitted so long as clarity is not degraded. References to external documents (e.g., if a certain section of a Standard Operating Procedures document is referenced under "Quality Assurance/Quality Control procedures to be applied") should be permitted, so long as the external documents are clearly provided.

| No. | Sec. | Requirement Text | Indicator | Assessment Findings | LA | CT | CC |
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| | | | 2. The classification of uncertainties is undertaken using the "eight broad causes of uncertainty" identified in Section 3.1.5 of Chapter 3, Volume 1 of the IPCC 2006 Guidelines; an exhaustive identification of all instances of each of these causes of uncertainty is provided. | | | | |
| RA-52 | T§4.5.3 | The details on all data and parameters to be monitored in Annex 10 below should also provide a systematic identification and assessment of uncertainty in the data and parameters to be monitored. Based on the information provided in the Annex, indicate how uncertainty will be managed and reduced in the monitoring of emissions and removals (roughly 500 words or less).<br>ISFL ER Programs shall, to the extent feasible, follow a process of managing and reducing uncertainty in the… monitoring of emissions and removals. | A "justifiable" assessment has been undertaken, and documented in Section 4.5.3 of the ERPD, regarding how uncertainty in the monitoring of emissions and removals can be managed and reduced, given the means that can reasonably be made available to the Program Entity. | Confirmed through review of the ERPD and discussions with the program team. | R | B | C |
| RA-53 | | | The guidance set out in Section 3.1.6 of Chapter 3, Volume 1 of the IPCC 2006 Guidelines has been duly considered in assessing how uncertainty in the monitoring of emissions and removals can be managed and reduced. | Confirmed through review of the ERPD and discussions with the program team. | R | P | II |
| RA-54 | | | The "best available" data have been used in the monitoring of emissions and removals. | Confirmed through review of the ERPD and discussions with the program team. | R | P | I |
| RA-55 | | | The following guidance is applied in constructing the monitoring of emissions and removals, as applicable:<br>1. The good practice suggestions of the IPCC 2006 Guidelines.<br>2. The guidance of Sections 3-5 of GFOI. | Confirmed through review of the ERPD and discussions with the program team. | R | P | I |
| RA-56 | PR§4.2.2-4.2.3; PR§4.5.1 | ISFL ER Programs shall estimate all the subcategories and their associated carbon pools and gases included in the scope for ISFL Accounting following the quality requirements in Section 4.2. | For each subcategory included in the Step 3 selection, the following are true, as applicable, regarding the planned monitoring data and methods as described in Section 4.5 and Annex 10 of the ERPD: | Confirmed through review of the ERPD and supporting data and documentation, and independent | R | B | C |

| No. | Sec. | Requirement Text | Indicator | Assessment Findings | LA | CT | CC |
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| | | ISFL ER Programs shall account for the total net emission reductions across eligible subcategories by estimating the baseline and monitoring emissions and removals for the eligible subcategories using at minimum IPCC Tier 2 methods and data.<br>Subcategories are considered to meet Tier 2 if all the significant12 pools and gasses are estimated using Tier 2 methods and data. ISFL ER Programs are encouraged to improve data and methods, and to move to a higher tier over time, as possible.<br>For accounting emission reductions from land use change-related subcategories, Approach 3 should be used for land representation;<br>Approach 2 may be used if this is not possible if ancillary information is available that allows to track land over time. | 1. If the subcategory was determined to meet Tier 2 in step (3) of indicator RA-20, only higher tier methods are planned for monitoring emissions from any greenhouse gases or carbon pools identified in step (3)(c)(vii) of the same indicator (no Tier 1 methods are planned for such monitoring).<br>2. If the subcategory is related to land use change, the requirements of step (4)(a)-(b) of indicator RA-20 are adhered to in monitoring emissions. | recalculation of the baseline. | | | |
| RA-57 | PR§4.5.2 | In estimating the subcategories and their associated carbon pools and gases included in the scope for ISFL Accounting, ISFL ER Programs shall ensure methodological consistency between the Emissions Baseline and the monitored net GHG emissions. Methodological consistency implies that same methods and datasets have been used to calculate the Emission Baseline and the actual GHG emissions and removals. In case methods and/or datasets differs, methodological approaches provided by IPCC | One of the following is true:<br>1. The planned monitoring methods and data as described in Section 4.5 and Annex 10 of the ERPD are identical to the methods and data that have been used to calculate the Emissions Baseline (with the obvious exception that the temporal scope differs: the monitored data will pertain to the ERPA Phase to which the monitoring applies, while the baseline data pertained to the Baseline Period). | Confirmed through review of the ERPD and data/supporting documentation, and through discussions with the program team. | R | B | C |

| No. | Sec. | Requirement Text | Indicator | Assessment Findings | LA | CT | CC |
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| | | Guidelines to ensure time series consistency are applied." | 2. There are differences between the planned monitoring methods and data as described in Section 4.5 and Annex 10 of the ERPD and the methods and data that have been used to calculate the Emissions Baseline, in which case either the description in Section 4.5 contains a commitment to either update the Emissions Baseline to use the same methods and data to be used in monitoring[68], or to use one of the splicing techniques described in Sections 5.3.3-5.3.3.6 of Chapter 5, Volume 1 of the IPCC 2006 Guidelines in order to ensure time series consistency. | | | | |
| RA-58 | PR§4.4.2; PR§4.5.1 | The Emissions Baseline shall be expressed as tonnes of CO2e per year. The measured [monitored] emissions and removals shall be expressed as tonnes CO2e per year. | Each Emissions Baseline reported in the ERPD is expressed as metric tons (i.e., megagrams) of CO2-equivalent per year. Greenhouse gases are converted using 100-year global warming potentials derived from one of the two following sources.<br><br>1. The IPCC's Second Assessment Report, which has the following global warming potentials:<br>a. Carbon dioxide: 1<br>b. Methane: 21<br>c. Nitrous oxide: 310 | Confirmed through review of the ERPD and supporting data and documentation, and independent recalculation of the baseline that the IPCC Second Assessment Report GWPs were applied. | R | B | C |

[68] Noting, however, that revisions to the baseline during the ERPA Phase should be limited to the following:

- Replacement of emission factors used in the construction of the Emissions Baseline by others that have improved accuracy.
- Corrections to historical activity data resulting from improvements in data accuracy.

| No. | Sec. | Requirement Text | Indicator | Assessment Findings | LA | CT | CC |
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| | | | 2. The IPCC's Fourth Assessment Report, which has the following global warming potentials:<br>a. Carbon dioxide: 1<br>b. Methane: 25<br>c. Nitrous oxide: 298 | | | | |
| RA-59 | | | If a process for quantifying monitored emissions in terms of CO2e per year is documented within the ERPD, that process utilizes the same global warming potentials that are used in construction of the Emissions Baseline. | Confirmed through review of the ERPD. | R | B | C |
| RA-60 | T§4.6 | Please provide a simplified ex-ante estimation of the expected Emission Reductions of the ISFL ER Program. Where the calculation requires monitored data that is not available yet, use best estimates based on expected impacts of the ER Program and data that might be available from other actions (either in the country or in other countries). List all assumptions, and provide the values used for each parameter and the sources for these data. Summarize the outcome in the table below. | Section 4.6 of the ERPD contains a simplified ex-ante estimate of the expected Emission Reductions of the ER Program for each year of the ERPA Term, having the following attributes:<br>1. Where the calculation of the ex-ante estimate requires monitored data that are not available yet, best estimates are used based on the expected impacts of the ER Program and/or data from similar circumstances.<br>2. All assumptions are listed.<br>3. For each "parameter" included in the analysis, the value(s) used and data sources are provided.<br>4. The provided table in Section 4.6 is populated. | Confirmed through review of the ERPD and supporting ex-ante calculation workbooks. | R | B | C |
| RA-61 | | | Assumptions regarding the following, as incorporated into the ex-ante estimate | Confirmed through review of the ERPD and supporting ex-ante | L | P* | I |

| No. | Sec. | Requirement Text | Indicator | Assessment Findings | LA | CT | CC |
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| | | | presented in Section 4.6 of the ERPD, are "justifiable":<br>1. The effectiveness of the ER Program in addressing the key drivers of land use change, as identified in indicator PD-27, considering the planned actions and interventions of the ER Program (as assessed in indicators PD-28 through PD-33) and the financing plan (as assessed in indicators PD-34 through PD-58).<br>2. The impact of the ER Program on emissions within the Program Area, considering the factors identified in (1) above. | calculation workbooks, and discussions with the program team. | | | |
| RA-62 | PR§4.5.3 | ISFL ER Programs determine the total net emission reductions across the eligible subcategories by comparing monitored emissions and removals with a baseline as follows:<br>Actual GHG net emissions minus Net Emission Baseline for the Program Area equals Net emission reductions | For each year of the ERPA Term, the total net Emission Reductions are calculated by taking the ex-ante estimate of actual GHG net emissions and subtracting the Emissions Baseline applicable to the corresponding ERPA Phase; the subtraction operation described above is carried out correctly. | Confirmed through independent recalculation and review of the ERPD. | R | B | C |
| RA-63 | PR§4.6.1 | Good practice requires that bias be prevented wherever possible, such as | Sources of bias[69] that can reasonably be projected to impact the estimate of the total net | Confirmed through review of the ERPD and | R | P | I |

[69] In the context of this indicator, a "source of bias" is a factor resulting in divergence between the Emission Reductions that will be calculated for each year of the ERPA Term and the theoretically knowable (but, for practical purposes, unknowable) difference between the following quantities:

1. The emissions from the Program Area during the year in question that are attributable to the subcategories eligible for ISFL Accounting.
2. The average yearly emissions from the Program Area during the Baseline Period(s) that were attributable to the subcategories eligible for ISFL Accounting. In practice, some bias in the constructed Emissions Baseline is inevitable, for a multitude of reasons.

| No. | Sec. | Requirement Text | Indicator | Assessment Findings | LA | CT | CC |
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| | | by using appropriate QA/QC procedures. Where biases cannot be prevented, it is good practice to identify and correct them when developing a mean estimate of the emission reductions. In particular, the point estimate of the emission reductions that is used for requesting payment should be free of biases as much as it is practical and possible. | Emission Reductions are identified, and steps are taken to correct them to the extent practical. | discussions with the program team. | | | |
| RA-64 | T§4.7.1 | Please provide an assessment (roughly 500 words or less) of the anthropogenic and natural risk of Reversals that might affect emission reductions during the ERPA Term and, as feasible, the potential risk of Reversals after the end of the last ERPA Phase. | A "justifiable" assessment of the anthropogenic and natural risk of Reversals that might affect Emission Reductions during the ERPA Term and, as feasible, the potential risk of Reversals after the end of the last ERPA Phase, is provided in Section 4.7.1 of the ERPD. | Confirmed through review of the ERPD and supporting documentation, and discussions with the program team. | R | B | C |
| RA-65 | T§4.7.2; BR§7.2 | Please provide an ex-ante assessment of the level of risk of Reversals, using the ISFL approved risk assessment and buffer tool. | 1. An ex-ante assessment of the level of risk of Reversals is provided in Section 4.7.2 of the ERPD.<br>2. This estimate is calculated as the sum of the reversal set-aside percentages | Confirmed through review of the ERPD and independent recalculation of the reversal set aside. | L | B | C |

The following should be noted:

1. For all practical purposes, bias in the estimated Emission Reductions are inevitable.
2. The focus of this indicator is on bias in the estimated Emission Reductions, rather than on bias in the individual components of that estimate (e.g., in the Emissions Baseline). In theory, if the Emissions Baseline and the monitored emissions were both "off" by the same quantity, the biases would compensate and the estimate of the Emission Reductions would be free from bias.
3. At the time of the assessment, it may not be possible for all sources of bias to be identified and corrected, as only the Emissions Baseline is finalized and the quantification of monitored emissions has yet to occur. Therefore, at this time, the focus should be on identifying and correcting sources of bias in the Emissions Baseline and, to the extent that sources of bias can reasonably be projected to impact the monitoring of emissions based on the monitoring plan as described in Section 4.5 and Annex 10 of the ERPD, such sources of bias are also addressed.

| No. | Sec. | Requirement Text | Indicator | Assessment Findings | LA | CT | CC |
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| | | The Reversal risk assessment tool shall be used to determine the Reversal Set-Aside Percentages based on the two identified risk factors. The risk indicators in the second column of Table 2 below are indicative and non-exclusive and are provided as an example to show how to assess the risk of Reversal for each of the risk factors. The risk of Reversal is assessed for both risk factors (A and B) as high, medium or low with associated Reversal Set-Aside Percentages. The Reversal Set-Aside Percentage for the whole ER Program is calculated as the sum of the Reversal Set-Aside Percentages for both of the Risk Factors. | identified in Result A and Result B of Table 2 in the Buffer Requirements. | | | | |
| RA-66 | | | The reversal set-aside percentages identified in Result A and Result B of Table 2, for purposes of the ex-ante estimate reported in Section 4.7.2 of the ERPD, have been determined in a "justifiable" manner.[70] | Confirmed through review of the ERPD and discussions with the program team. | L | B | C |

[70] Note that the risk indicators provided in Table 2 of the Buffer Requirements are simply examples. The assessment against this indicator should have both an element of (1) assessing the select risk indicators (i.e., assessing whether the selected indicators the applicable indicators in the context of the ER Program) and (2) assessing the level of risk assigned to each risk factor.

## Appendix B: Audit Plan

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| **Program** | Zambia's Eastern Province Jurisdictional Sustainable Landscape Program (EP-ISLP) |
| **Program Entity** | Ministry of Green Economy and Environment (MGEE) |
| **Program Location** | Eastern Province of Zambia |
| **Date last updated** | 12 May 2023 |

# Introduction

This plan provides a description of the assessment services to be performed in respect of the Emission Reductions Program Document (ERPD) submitted for review by SCS Global Services (SCS). The structure of the assessment (e.g., the assessment objectives, scope and criteria), as described in this report, is established in SCS' inception report (version 2-4), which was updated in March 2021 and approved as final by the World Bank Group. The reader is directed to SCS' inception report for further background information.

# Assessment Objectives

The objectives of the assessment are as follows:

- Ensure, according to the applicable level of assurance (see Section 4, below), that the information provided in the ERPD is correct and complete (i.e., not leaving out information that might affect the opinion of the reader)
- Conduct an independent assessment of the conformance against the approved ER Program Requirements and associated guidelines
- Apply expert judgement to evaluate the feasibility of program design aspects and identify areas of improvement to inform the World Bank Group's and ISFL Contributors' review of the ER Program.

# Assessment Scope

The scope of the assessment entails review as required to achieve the above objectives; the following areas will be particularly emphasized. In some cases, consideration of the areas indicated below extends the scope of the assessment beyond a strict assessment for conformance to the assessment criteria.

| Aspect | Expected Scope of the Assessment |
|---|---|
| Drivers of AFOLU emissions and removals | ▪ Correctness and completeness of the analysis on historic and future trends (qualitative and quantitative) in drivers of AFOLU emissions and removals<br>▪ Expert judgement of the analysis, including the barriers to mitigation |
| Description and justification of the ISFL ER Program's planned actions and interventions | ▪ Expert judgement whether the proposed actions and interventions address drivers of emissions and are informed by the contribution of key sources and sinks to the total GHG emissions and removals in the Program GHG Inventory and the analysis of trends<br>▪ Expert judgement of continued private sector engagement achieved or planned in addressing drivers of emissions<br>▪ Expert judgement of risks to implementation and potential benefits of planned actions and interventions |
| Financing plan for implementing the planned actions and interventions of the ISFL ER Program | ▪ Correctness and completeness of information on the transaction costs and the identified funding gaps for the ISFL ER Program and the plan for mitigating gaps<br>▪ Expert judgement whether the identified sources of finance are sufficient to affect the land use activities and drivers of emissions and removals<br>▪ Expert judgement of the financial and economic analyses, discount rates, and flows of funds |
| Analysis of laws, statutes, and other regulatory frameworks | ▪ Correctness and completeness of the information provided in the program document<br>▪ Expert judgement to identify any known legal or regulatory issues in the program area that can affect the program design. |
| Risk for displacement | ▪ Correctness and completeness of the information provided in the analysis of displacement risk<br>▪ Expert judgement on the effectiveness of the proposed strategy to mitigate and/or minimize, to the extent possible, potential Displacement |
| Participation under other GHG initiatives | ▪ Correctness and completeness of the information provided whether parts of the program area, or projects in the program area, are included in other GHG initiatives and if this creates a risk of double counting, and/or double payment |
| Data management and registry systems to avoid multiple claims to ERs | ▪ If applicable, expert judgement whether the Program and Projects Data Management System is sufficient, secure, and robust<br>▪ If the ISFL ER Program is not using the World Bank's transaction registry for FCPF and ISFL ER Programs, expert judgement whether the transaction registry is sufficient, secure, and robust |

| Aspect | Expected Scope of the Assessment |
|---|---|
| | ▪ If applicable, expert judgement of the data management and registry systems to recognize nested projects and avoid multiple claims to ERs |
| ISFL Reporting | ▪ Assess whether the GHG Inventory is comparable in its use of definitions, categories and subcategories with national processes such as the national GHG inventory, REDD+ and the Biannual Update Report<br>▪ Assess whether the best available data sets, methods, models and assumptions have been used in the ISFL Reporting and that the inventory applies the general IPCC principles of transparency, completeness, consistency, accuracy and comprehensiveness |
| Selection of subcategories for accounting | ▪ Correctness and completeness of the data and information provided on the choice of the subcategories<br>▪ Assess whether the quality and baseline setting requirements have been applied correctly and the choice of the subcategories is correct and justified<br>▪ Assess whether all significant pools and sources of greenhouse gas emissions are included. If a major carbon pool/ or gas is excluded, assess whether this has been sufficiently explained and justified, provided it is not a significant pool |
| Emissions baseline | ▪ Assess whether the methods used to construct are in line with the IPCC and best practice approaches as defined, for example by the GFOI<br>▪ Correctness and completeness of the data used to construct the baseline<br>▪ Assess whether the baseline requirements have been applied correctly and the Emissions Baseline estimate is calculated correctly<br>▪ Assess whether the uncertainty in the Emissions Baseline has been correctly identified and assessed in accordance with IPCC good practice |
| Time bound plan to increase the completeness of the scope of accounting and improve data and methods for the subsequent ERPA Phases during the ERPA Term | ▪ Expert judgement whether the proposed plan is feasible, addresses priority subcategories and is likely to increase the completeness of the scope of accounting and improve data and methods for the subsequent ERPA Phases |
| Ex-ante estimation of the emission reductions | ▪ Expert judgement if the assumed effectiveness of the program in addressing the drivers and its impact on the emissions is justified and based on reasonable assumptions |
| Monitoring approach | ▪ Assess whether the data and methods proposed for monitoring are consistent enough with the data and methods used for the determination of the baseline to allow |

| Aspect | Expected Scope of the Assessment |
|---|---|
| | for meaningful comparison and calculation of the emission reductions<br>▪ Assess whether the proposed monitoring methods and arrangements are in place as described in the Program Document and are technically capable of collecting the data<br>▪ Assess whether the uncertainty in the data and parameters to be monitored has been correctly identified and assessed and if the proposed approach to manage and reduce uncertainty reflects good practice |
| Reversals | ▪ Correctness and completeness of the data and assumption used in the assessment of the reversal risk<br>▪ Assess whether the ISFL Buffer Requirements have been applied correctly |

## Assessment Criteria and Good Practice Guidance

The criteria for the assessment are as follows:

- The approved ISFL ER Program Requirements, Version 2.0, April 2021 ("the Program
- The following associated guidelines:
    - ISFL Buffer Requirements, Version 2.0, April 2020 ("the Buffer Requirements")
    - ISFL Program Document Template, Version 2, January 2020[71]

The following guidance documents (or collections of documents) will be considered to contain *good practice* in undertaking the assessment, though said documents are not formally considered to be part of the assessment criteria. Where professional judgment may be applied in assessing against the indicators set out in the checklist set out in Annex A of SCS' inception report ("the assessment checklist"), methodological approaches that appropriately follow *good practice* will automatically be assumed to meet the intent of a given indicator.[72]

- 2006 IPCC Guidelines for National Greenhouse Gas Inventories ("the IPCC 2006 Guidelines")
- The following ISFL Program documents:
    - Guidance Note on the Preparation of Financing Plan of REDD+ and Landscape Emission Reduction Programs, Version 1.0, August 2017 ("the Financing Plan Note")
    - Guidance Note on the Ability of Program Entity to Transfer Title to Emission Reductions, Version 1.0 March 2018 ("the Title Transfer Note")

[71] Noting that any guidance within the PD Template pertaining to brevity or word count will not be considered part of the auditable criteria, though said guidance will be referenced in determination of the level of detail that should be within the ERPD.

[72] This does not necessarily preclude methodological approaches that do not follow good practice. It does, however, mean that additional professional judgment will be required to determine whether such methodological approaches are in conformance with the assessment criteria.

- Guidance Note on Application of IPCC Guidelines for Subcategories and Carbon Pools Where Changes Take Place Over a Longer Time Period, Version 1.0, March 2021 ("the Carbon Pools Note")

- GFOI 2020, Integration of remote-sensing and ground-based observations for estimation of emissions and removals of greenhouse gases in forests: Methods and Guidance from the Global Forest Observations Initiative, Edition 3.0, Food and Agriculture Organization, Rome ("GFOI")

## Level of Assurance

Both a reasonable and limited level of assurance have been selected for the assessment work described in this plan and are determined at the indicator level as set out in the assessment checklist.

## Treatment of Materiality

Where one or more discrepancies are identified during the course of assessment activities, the following criteria will be abled in order to determine whether said discrepancies are material:

- In respect of quantitative matters, discrepancies will be identified and quantified by the audit team based on the audit team's recalculation, based on the guidance found in the indicators in the assessment checklist. Where the methodology used in production of the ERPD does not follow the guidance in the assessment checklist, a discrepancy between the output produced by the audit team and the information reported in the ERPD will likely result, and any such discrepancies will be evaluated for materiality according to the following criteria:
  - A discrepancy in the Program GHG Inventory and/or the process used to select subcategories eligible for ISFL Accounting (including a discrepancy in the ordering of subcategories by total GHG emissions and removals on an absolute basis) will be considered material if it results in an incorrect determination of the subcategories eligible for ISFL Accounting.
  - A 1.00% materiality threshold applies to any over-estimation of the Emissions Baseline.[73]
- Regarding reporting of information in the ERPD:
  - Any errors in the reporting of factual information in the ERPD will be considered material if the incorrectly reported information is directly or indirectly required to be reported in the ERPD by the assessment criteria.

Any discrepancies identified as material through application of the above criteria will be treated as non-conformities in the assessment process. Any discrepancies not identified as material through application

[73] The materiality analysis will be carried out by first calculating the difference between the reported Emissions Baseline and the assessment team's calculation of the same quantity, and then dividing by the reported Emissions Baseline. If the resulting quantity is greater than 1.00%, the discrepancy is considered material. Otherwise, the discrepancy is not considered material. Under-estimation of the Emissions Baseline will not be considered a material discrepancy.

of the above criteria will inherently be considered immaterial. It is possible that discrepancies may be identified that do not need to be corrected immediately but that will require corrective action or mitigation at some later time. Under this situation, a special type of finding, termed an Observation, will be issued by SCS (see "Description of SCS' Findings Process," below, for more information).

# Description of Assessment Process

## Introduction

The planned assessment services will be performed through a combination of document reviews, interviews with relevant personnel, and on-site inspections.

The scope of this assessment has been divided into two phases:

(1) Part 1: GHG elements

(2) Part 2: Non-GHG elements

## Project Kickoff

The assessment process will begin with a "kickoff call" or conference call. This meeting is an opportunity for introductions as well as a chance to ensure that all parties involved are fully informed regarding the basic parameters of the assessment engagement (e.g., scope, criteria, materiality threshold, level of assurance) and to clarify expectations regarding the assessment timeline. A preliminary Gantt chart and logistics regarding milestones as well as any upcoming in-person or remote office meeting(s) and the one site visit will be discussed during the kickoff call. The Gantt chart will be updated throughout the assessment process as it is subject to changes based on the completion of milestones by participants.

The kickoff call was conducted on 29 November 2021.

## Document Review and Desk Review Findings

Upon receipt of relevant project documentation, including the ERPD, a document review will take place. During this phase of the assessment, the assessment team will likely request additional documentation and information to support this review. The objectives of the document review are as follows:

- Assess conformance for any requirements against which it is possible to check conformance as a desk-based exercise, and:
    - Where conformance is confirmed, document such in the assessment checklist
    - Where clear evidence of nonconformance is identified, document such in the assessment findings (see below)

    - Where more information is needed to clarify whether conformance has been attained, the following options may be taken:
        - Issue a finding (see below)
        - Follow up with a more in-depth investigation during subsequent meeting(s) and/or the site visit
- Identify any circumstances that would threaten the integrity of the planned site visit

The outcomes of the document review are the following:

- A round or more of "desk review findings,"[74] highlighting any clearly identified areas of nonconformance or formally identifying any areas in which additional information is required in order to assess conformance
- Inputs to inform the development of the risk assessment and sampling plan (see below)

It is important to note that one possible outcome of the document review is that the assessment team determines that the ER Program is not yet ready for the site visit. In such cases, the assessment team would have identified "red flags" which would lead them to determine that the site visit would be premature. Should this situation arise, the assessment team would promptly alert the ISFL team in the World Bank Group of the "red flag" issues and work with them to develop an appropriate course of action. Examples of issues that could preclude a site visit are as follows:

- Documents submitted by ER Program personnel contain non-conformances of a nature that indicate potential ER Program-wide deficiencies or areas of significant risk.
- Documents submitted by ER Program personnel contain significant areas of incomplete information.
- Documents submitted by ER Program personnel fail to meet professional standards (e.g., poor/unclear organization, writing or translation).

In the absence of such "red flag" issues, the assessment team will alert the ISFL team in the World Bank Group of the intent to proceed with the site visit, and will await approval prior to initiating site visit preparation (e.g., booking airline tickets and coordinating with ER Program personnel). Once clearance is received, there will be a one month to one and a half month window following the delivery of the desk review findings to allow for adequate preparation.

# Office Meetings and Site Visit

**Office meetings**

The office meeting(s) will consist of program personnel being invited to explain various elements of the ERPD and to demonstrate to the assessment team the manner in which assessment criteria have been met. The assessment team will work with personnel being interviewed to identify means of independent

[74] See "Description of SCS' Findings Process," below, for a description of the types of findings issued by SCS.

confirmation of important assertions (in a manner that does not jeopardize the independence of the assessment engagement).[75] This process will proceed most smoothly when personnel being interviewed are ready to actively engage with the assessment team to provide the requested information. In this sense, personnel being interviewed are invited to work collaboratively with the assessment team to demonstrate, based upon the agreed upon level of assurance, that the criteria requirements have been complied with and that the ERPD is free from material discrepancy.

**Site Visit**

It is anticipated that the site visit will take place within approximately one month to one and one-half months after SCS receives the draft phase 2, non-GHG elements. Although the focus of the site visit will be on the Phase 2, non-GHG elements, if the audit team has been unable to reach a reasonable level of assurance on any phase 1, GHG-elements, additional phase 1 elements may be included in the scope of the site-visit.

One site visit will be conducted to accomplish the following objectives:

- Hold office meetings that are most efficiently held in-person.
- Undertake direct physical observations and/or measurements, and/or hold confirmatory interviews with stakeholders.

In planning for the site visit, the assessment team may require different types of assistance as part of this process, including the following:

- Logistical assistance (e.g., transportation, locating safe food and drinking water, and securing safe lodging)
- Assistance facilitating interviews and meeting with stakeholders during the site visit

The assessment team will provide its own accommodation and transport, especially in the main cities.

At the end of the site visit, a closing meeting will be held. The purpose of the closing meeting will be for the assessment team to present their findings and observations, including providing positive feedback, and discuss next steps in the process. The closing meeting will also revisit the Gantt chart and the associated remaining milestones.

Whereas, actual time on site will be ER Program dependent, site visit activities will be limited to the following:[76]

- Interviews with ER Program personnel, including related to identification of any known legal or regulatory issues in the Program Area that can affect the ER Program's design
- Interviews with individuals responsible for conducting stakeholder consultations

[75] For example, if it is asserted that certain emissions data originated from a certain government agency, the assessment team may request assistance in making independent contact with said agency.
[76] Site visits will occur for all ER Programs and an individual ER Program site visit shall not exceed 20 person-days. Additional person-days and/or site visits, if needed, are outside the scope of SCS' proposal.

- Interviews with knowledgeable individuals regarding the agents and drivers of deforestation
- Assessment of the ER Program's planned actions and interventions
- Office meetings to determine conformance with the Program Requirements
- Ground-truthing any data for which remotely sensed imagery has been used in the estimating carbon stocks (Phase 1 element, as needed)
- Field sampling for ER Programs in which physical sampling was employed to estimate carbon stocks (Phase 1 element, as needed)

The assessment teams will not conduct stakeholder interviews regarding the extent or nature of stakeholder consultation,[77] to reduce duplication of efforts (in respect of the World Bank Group's due diligence processes).

## Site Visit Findings

A round of findings, termed the "site visit findings" will be issued after the site visit. In conjunction with the desk review findings, the site visit findings constitute the comprehensive listing of all outstanding issues that have been identified as part of the assessment process. It is anticipated that site visit findings will be issued within approximately one to two weeks after the end of the site visit. (This entails an approximately three and one-half month time period from SCS' receipt of the phase 2, non-GHG elements to issuance of site visit findings.)

## Report Writing

In the assessment report, the assessment team will document how conformance with the assessment criteria has been assessed. The assessment report will be supported with the assessment checklist.

## Technical Review

An independent technical review will be carried out. This technical review is not intended to be a second iteration of the assessment process, but emphasizes review of the assessment team's activities, findings and conclusions, as well as a review of the assessment report. While the review is targeted more at review of the assessment documentation than the ERPD, it is always possible that additional discrepancies could come to light during the technical review, which may result in issuance of new findings.

## Release of Report

Once the technical reviewer has signed off on the assessment report, a draft assessment report and opinion will be submitted to the ISFL team in the World Bank Group. SCS will modify the draft

[77] Per email guidance provided by World Bank Group personnel on 8 February 2019 and 11 February 2019.

assessment report based on feedback from the ISFL team in the World Bank Group and will then submit a final assessment report and opinion. A videoconference with ISFL Contributors to discuss the assessment findings will also take place at this time.

## Description of SCS' Findings Process

## Findings Overview

Findings are the formal mechanism used by SCS to either (a) require corrective action, (b) request additional information, analysis or justification or (c) identify areas of risk or concern. Findings will be issued against the relevant text of the assessment criteria (not necessarily against the specific language of the applicable indicator in the assessment checklist); any additional good practice guidance will also be cited.

The findings are issued to ER Program personnel using a proprietary workbook-based approach, termed the Findings Presentation Workbook. This gives ER Program personnel the opportunity to respond to the findings and allows for efficient and transparent tracking of the current status of each finding. With each round of findings (one from the desk review and one from the site visit), the assessment team will typically go over the findings via conference call or webinar with the entity being assessed to ensure that the findings are understood.

Throughout the engagement, SCS strives to keep ER Program personnel informed of the findings and potential findings as soon as any issue arises. This can be done by phone, e-mail or virtual communication such as Skype and Zoom, but should be documented by sending an updated version of the Findings Presentation Workbook. The assessment team will also communicate the potential impact of material findings to ER Program personnel. ER Program personnel will be given a deadline, based on the agreed upon Gantt chart, for providing a written response. After the response is received, the assessment team will evaluate the submission and determine if adequate information has been provided to correct the non-conformity or if additional findings should be issued.

In special cases, findings may be withdrawn if the assessment team finds that the finding itself is no longer relevant.

Certain circumstances may arise under which the steps set out below (report writing, technical review and release of the assessment report) will be completed even though open findings persist.

Potential triggers for issuance of an assessment report and opinion while findings are open are as follows:

- The assessment team receives communication from the World Bank Group and/or the Program Entity indicating a decision not to respond (or respond further, in the case that a response has already been provided) to one or more open findings.

- It is the judgment of the assessment team, in consultation with other parties to the process, that closure of one or more findings would be infeasible, given the time and resources available to the ER Program personnel.
- One or more findings remain open and the time required for issuance and review of responses to findings exceeds the number of days set out in SCS' financial proposal.

Should this situation arise, SCS will consult with the World Bank Group and the Program Entity regarding whether to proceed with issuance of an assessment report and opinion.[78]

When an assessment report and opinion is issued while findings are open, any outstanding issues will be detailed in a designated section entitled "Potential or Actual Areas of Risk or Concern." Here, the assessment team will document conclusions as they relate to any unresolved findings. This section can be considered a summary description of areas of potential opportunity for improvement as well as areas of current non-conformance or potential risk of non-conformance in the future.

## Categorization of Assessment Findings

The following discusses the types of findings that may arise from the assessment process.

**New Information Requests (NIRs)**

When the assessment team determines that they have not been furnished with sufficient information to make a decision regarding conformance, a New Information Request (NIR) will be issued. After the response is received, the assessment team will evaluate the submission and determine if adequate information has been provided or if additional findings (NIR, NCR, OBS) should be issued.

**Non-Conformity Reports (NCRs)**

When the assessment team has identified (1) a clear non-conformity with respect to a specific indicator (where a given indicator is of the "binary" conformance type) or (2) a material discrepancy (see "Treatment of Materiality", above, for more information), a Non-Conformity Report (NCR) will be issued. Closure of an NCR requires that the assessment team be provided with evidence that the underlying issue resulting in issuance of the NCR has been duly addressed. While SCS' Auditor Code of Conduct precludes consulting as to how to address non-conformities, the assessment team is encouraged to provide a thorough explanation of the basis of any non-conformities or material discrepancies observed, including a detailed explanation regarding (1) the nature of any discrepancies observed and/or (2) how applicable requirements have not been complied with.

**Observations (OBSs)**

An OBS indicates one or more of the following:

[78] However, SCS reserves the right to proceed with issuance of an assessment report and opinion while findings are open at its sole discretion.

- An area where immaterial discrepancies exist between the observations, data testing results or professional judgment of the assessment team and the information reported or utilized (or the methods used to acquire such information) within the ERPD.
- An area where the expert judgement of the assessment team suggests that there are opportunities for improvement in the areas falling within the assessment scope.
- An area which may become a non-conformity in the future.

Where an OBS is written against an indicator of the "professional judgement" conformance type, the OBS will be written when a low (III) or medium (II) conformance rating has been assigned. The General Guidance section in the assessment checklist contains more detail regarding the two conformance types and ratings.

**Forward Action Requests (FAR)**

When the assessment team finds that one or more NIR or/and NCR have not been closed after significant[79] efforts made by the Program Entity to provide sufficient evidence to resolve the underlying issue. A FAR can be issued only after having discussed it with the World Bank and upon the approval of the Fund Manager/FMT. FAR will be turned into World Bank Conditions of Effectiveness that need to be fulfilled by ER Programs during the Conditions Fulfillment period following the signature of the ERPA to ensure the FAR is addressed prior to the submission of the first ER Monitoring Report.

A FAR shall be addressed during the first monitoring event, and a VVB shall provide a positive opinion as part of the first verification report.

# Audit Team

The following audit team has been assembled to provide the audit services described in this plan:

- Lead Auditor: Alexa Dugan
- Auditors: Vanessa Mascorro, Dr. Raleigh Ricart
- In-country Technical Expert: Boniface Mumba
- Technical Reviewer: Dr. Erynn Maynard-Bean

# Dates of Substantive Meetings, Interviews and/or Site Visits

The planned meetings, interviews and/or site visits are listed in the table below. In accordance with SCS' inception report, this table includes the following information:

- Individuals/groups/organizations to be interviewed

[79] Significant effort can be considered when more than three rounds of findings are needed to close one or more NIR or/and NCR or by an ad hoc decision made by the ISFL Fund Manager

- Locations/communities to be visited

| Date(s) | Attendees | Purpose |
|---|---|---|
| 29 November 2021 | World Bank Group, World Bank FMT, Program Participants, SCS | Kick off call: Introductions, scope and criteria review, logistical planning |
| 13 January 2022 | World Bank Group, World Bank FMT, Program Participants, SCS | Data request call |
| 15 February 2022 | World Bank Group, World Bank FMT, Program Participants, SCS | Data/documentation overview and GHG Quantification |
| Various meetings between August 2022-March 2023 | World Bank Group, World Bank FMT, Program Participants, SCS | GHG quantification |
| 2/21/2023-2/24/2023; 2/28/2023-2/29/2023 | World Bank Group, World Bank FMT, Program Participants, SCS | Non-GHG components |

## Meeting and/or Site Visit Agendas

Note: Per the terms of the technical proposal, the following will be met with regard to site visit expectations:

- Sufficient food and water shall be provided for maintenance of the assessment team's comfort and health during all phases of the on-site assessment activities. Food and water that is provided shall not be a cause of illness among the assessment team members
- Assistance with obtaining transportation and lodging shall be provided to the assessment team as necessary to participate in the audit activities set out in the plan
- Assessment team members shall not be placed in life-threatening situations, given all due care and precaution on the part of the assessment team
- Some assessment tasks may take longer than anticipated due to a variety of factors. ER Program personnel shall make themselves available, within reason, to assist with assessment activities in the evening hours as needed to ensure that all assessment activities can be completed during the time of the site visit.

| Tuesday, 15 February 2022; Internet-Based Meeting | |
|---|---|
| Time | Interviews, Document and Data Review (Reference to V9 of ERPD, 18 Nov. 2021) |
| 7:15am | **Emissions Baseline (PR§4.4) – GHG data/documentation**<br>▪ Program personnel to provide an overview of the calculation of the Emissions Baseline, by:<br>o Walking the audit team through the IPCC GHG Database for the selected year of 2012<br>o Demonstrating the source & calculation of key parameters (e.g., the parameter in Tables 27, 28, 29 of section 2.2.2 of Annex 6) such as growing stock levels, emission factors for transitions involving forest (e.g., Table 38 of Annex 6), biomass expansion factors (BCEFr), root to shoot ratios (R), aboveground biomass in forest and nonforest classes, aboveground biomass growth rate in forests, Soil Organic carbon in forest and nonforest (e.g., table 41 of Annex 6), basic wood density, etc. for the various land use classes and transitions present in the program area.<br>o Demonstrating the source of the data on wood removals (Table 40 of Annex 6)<br>o Demonstrate how volumes from ILUA II (Table 18) were converted to biomass used in Database. E.g., in table 27, 28, 29 of section 2.2.2 of Annex 6, table 18 of the ILUA II Report is referenced for many parameters. However, table 18 only contains information on volume. The audit team will need to see any calculations used to convert volume to biomass, or to derive other parameters used.<br>o Explain how the growing stock volumes on both forest and non-forest classes were used to develop emission factors (e.g., used in equation 2.16 of iPCC 2006, vol 4 Ch2). Table 78 of the Annex indicates that biomass carbon in cropland is considered zero.<br>▪ ***Be prepared to share screens and directly point to parameters and key values in the supporting documentation*** |

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| 7:45 | **Emissions Baseline (PR§4.4) – spatial data**<br>▪ Program team to walk the audit team through how Collect Earth datasets were generated to determine land use change during the baseline period. Be prepared to share screens<br>▪ Program team to provide more information regarding the spatial datasets provided such as the source of the boundary data and how it was utilized, the spatial projection utilized by the team for data processing, how the Collect Earth Grid points were distributed within the program area boundary, etc.<br>▪ Demonstrate how the values in tables 36, 37, 55, 77 of Annex 6)<br>▪ ***Be prepared to share screens and directly show audit team how area based LULC change estimates were calculated from the spatial data*** |

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| 8:15 | **Emissions Baseline (PR§4.4)**<br>▪ Program personnel to clarify whether tier 1 or 2 was applied for forestland remaining forestland. Section 3.7.4 of Annex 6 (Pg. 51) indicates a tier 1 equation (Eq2.10) was applied.<br>▪ Program personnel to clarify the selection of the default value of 2.1 years as the time period for land use transition (page 71 of ERPD). How was this default period applied?<br>▪ Program personnel to clarify whether or not the Emissions Baseline assumes that emissions from the below-ground biomass, dead wood, litter and soil organic matter carbon pools occur instantaneously or over a short period of time following land-use change (General question - no reference to ERPD or Annex 6). ISFL Guidance Note on the Application of IPCC Guidelines requires:<br>o Section 2, page 5 : "It shall be assumed that the Soil organic C stock change during the transition to a new equilibrium SOC occurs in a linear fashion over a period of 20 years. "<br>o Section 4, page 13 "For lands converted to Forest Land during the inventory period, ISFL ER Programs may apply equation 2.23 from the IPCC Guidelines for National Greenhouse Gas Inventories, Volume 4, Chapter 2 to estimate the changes in carbon stocks in dead organic matter during the inventory period. In applying this equation, it may be assumed that carbon in dead organic matter pools increases linearly to the value of mature forests over a specified time period (default = 20 years which is the default value provided in Section 2.3.2.2 of the IPCC Guidelines for National Greenhouse Gas Inventories, Volume 4, Chapter 2). For lands converted from Forest Land to any other land-use category during the inventory period, the assumption may be made that carbon in dead organic matter pools is lost in year 1 ."<br>▪ Program personnel to describe how emissions in the new steady state system after conversion from forest were accounted for. The ISFL Guidance Note on Application of IPCC Guidelines requires (note, not described in of Annex 6):<br>o Section 5, page 16 of Guidance note: "For [forest]lands converted to grassland the Guidelines define a two-phase approach. Phase 1 is estimated at the year of conversion and involves the abrupt change in biomass associated with the land-use change. The second phase accounts for gradual biomass loss and gain during a transition period to a new steady-state system."<br>o Section 5, page 16 of Guidance note: "All other ISFL ER Programs, both for ISFL Reporting and ISFL Accounting, shall assume that in the year of conversion, the biomass carbon stocks (including both aboveground and belowground biomass) go instantly from the average biomass carbon stocks in forest to the average biomass carbons stocks in the **new steady** |

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|---|---|---|
| | | **state system**. ISFL ER Programs are also not required to assume transfer of carbon stocks between pools based on a disturbance matrix. Within the context of the ISFL (with ISFL ERPA Phases that are shorter than the 20-year transition period) this may be considered as conservative since it leads to lower emissions in the year of conversion.” |
| 8:45am | Adjourn | |

| 21 February 2023 – 29 February 2023; Internet-Based Meeting<br>Non-GHG Components | |
|---|---|
| Date | Interviews, Document and Data Review |
| 2/22 | **Drivers of AFOLU emissions and removals** - Discuss and provide evidence that:<br>▪ The program team has identified the key **drivers of AFOLU emissions and removals**, by performing a qualitative historical analysis (or quantitative if data are available) to identify those subcategories for which emissions or removals have changed significantly over the base period, and a qualitative analysis of the subcategories likely to show a significant increase of emissions or decrease of removals in the future.<br>▪ Please be prepared to discuss how:<br>▪ the identified drivers of land use change that contribute to GHG emissions and removals associated with AFOLU<br>▪ the key drivers of land use change identified have been considered in design of the ER Program |
| 2/22 | **ER Program's planned actions and interventions**<br>▪ Discuss and describe the planned actions and interventions<br>▪ How proposed actions and interventions address drivers of emissions and are informed by the contribution of key sources and sinks to the total GHG emissions and removals in the Program GHG Inventory and the analysis of trends<br>▪ Describe if and how the private sector is engaged in the planned actions and interventions<br>▪ Risks to implementation and potential benefits of planned actions and interventions |

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| 2/29 | **Financing plan for implementing the planned actions and interventions of the ISFL ER Program**<br>▪ Please outline the financing plan for the ISFL ER Program (note the required financing plan table is not included in the ERPD)<br>▪ Discuss whether a tool was applied for quantifying costs and revenues<br>▪ Discuss the costs of program implementation (sum of implementation costs, institutional costs and transaction costs)<br>▪ Sources of financing (public and private sources, reinvestment of revenue from program and amount of ER revenue proposed for use in program implementation, domestic, international)<br>▪ the identified funding gaps for the ISFL ER Program and the plan for mitigating gaps<br>▪ Discuss how the identified sources of finance are sufficient to affect the land use activities and drivers of emissions and removals<br>▪ Demonstrate the financial and economic analyses, sensitivity analysis, discount rates, and flows of funds (note this is required and is not provided in the ERPD) |
| 2/28 | **Analysis of laws, statutes, and other regulatory frameworks**<br>▪ Discuss how the planned actions and interventions correspond with relevant local, regional and national laws, and international agreements<br>▪ Identify and discuss any potential compliance issues with these regulatory frameworks |
| 2/23 | **Participation under other GHG initiatives**<br>▪ Discuss whether the ER Program or any part of the program area has transferred or is planning to transfer, received or planning to receive payment for, ERs from any other GHG mitigation initiative. Demonstrate how this analysis of other GHG initiatives was conducted.<br>▪ Be prepared to discuss any actions that might not be included in the ISFL ER Program but which could address the drivers of land use change, deforestation, and forest degradation within the Program Area and that are generating ERs that may be transferred to, or be otherwise paid for by, other GHG mitigation initiatives |
| 2/23 | **Data management & Registry systems**<br>▪ describe the selected appropriate arrangement to avoid having multiple claims to ER title generated under the ISFL ER Program – please describe the draft REDD+ Registry (who manages it and enforcing the requirements to utilize it, timeline for establishment, who conducts the cross checks to ensure no double counting).<br>▪ *What is the status of the* Forests (Carbon Stock Management) Regulation, 2021 |

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| 2/28 | **Risk for Displacement** – Discuss and provide evidence that:<br>▪ That for all GHG sources and sinks that may be impacted by the proposal ISFL ER Program, an assessment of their associated risk for displacement has been conducted.<br>▪ Be prepared to discuss the assessment of risk for displacement<br>▪ Be prepared to discuss the Risk for Displacement for GHG sources and sinks<br>▪ A strategy for mitigating and/or minimizing, to the extent possible, potential displacement, prioritizing key sources of displacement risk<br>▪ How the ISFL ER Program's planned actions and interventions have been designed to address displacement |
| 2/28 | **Reversals -**<br>▪ Discuss how the assessment of anthropogenic and natural risk for reversals and the levels of risk was conducted<br>▪ Identify and discuss the key areas of anthropogenic risk and the risk indicators:<br>○ Lack of stakeholder support<br>○ Conflicts over land<br>○ Lack of institutional capacities<br>○ Lack of longterm incentives<br>○ Lack of relevant legal and regulatory environment conducive to addressing key drivers<br>▪ Identify and discuss the key areas of natural risk and the risk indicators:<br>○ Vulnerability to fires, storms, droughts<br>○ Effectively responding to and mitigating natural disturbances |
| 2/21 | **Monitoring Approach** – Discuss and provide evidence that:<br>▪ The data and methods proposed for monitoring are consistent enough with the data and methods used for the determination of the baseline to allow for meaningful comparison and calculation of the emission reductions<br>▪ The proposed monitoring methods and arrangements are in place as described in the Program Document and are technically capable of collecting the data<br>▪ The uncertainty in the data and parameters to be monitored has been correctly identified and assessed and if the proposed approach to manage and reduce uncertainty reflects good practice |
| | Adjourn |

# Client/Responsible Party Contact

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|---|---|
| **Name of Program Entity** | Zambia's Ministry of Green Economy and Environment (MGEE) |
| **Contact Individual** | Mr Noel Muchimba, National Project Coordinator |
| **Contact Information** | muchimbanoel@gmail.com |

# Audit Schedule

An indicative schedule for the assessment, based on the best knowledge currently available to the assessment team, is included below. This timetable is subject to updates during the assessment process, and such updates will be provided directly to program personnel via email.

| Milestone | Start Date | End Date |
|---|---|---|
| Initial GHG documents provided | Friday, November 12, 2021 | Friday, November 12, 2021 |
| Thanksgiving - SCS Closed | Wednesday, November 24, 2021 | Friday, November 26, 2021 |
| Kick Off Call | Monday, November 29, 2021 | Monday, November 29, 2021 |
| Additional data request made (1) | Wednesday, December 8, 2021 | Wednesday, December 8, 2021 |
| SCS issues draft audit plan | Friday, December 10, 2021 | Friday, December 10, 2021 |
| SCS Closed for Holidays | Friday, December 24, 2021 | Sunday, January 2, 2022 |
| Alexa Out of Office | Sunday, January 2, 2022 | Thursday, January 6, 2022 |
| Vanessa out of office (training) | Monday, January 10, 2022 | Friday, January 14, 2022 |
| Additional data request made (2) | Thursday, January 13, 2022 | Thursday, January 13, 2022 |
| MLK Day - SCS Closed | Monday, January 17, 2022 | Monday, January 17, 2022 |
| Requested data submitted to SCS | Thursday, January 13, 2022 | Wednesday, March 9, 2022 |
| SCS Closed - President's Day | Monday, February 21, 2022 | Monday, February 21, 2022 |
| Letty Out of office | Tuesday, February 22, 2022 | Friday, February 25, 2022 |
| Alexa Out of Office | Monday, February 28, 2022 | Tuesday, March 1, 2022 |
| Vanessa out of office | Monday, March 21, 2022 | Wednesday, March 23, 2022 |
| Alexa Out of office (site visit) | Monday, March 28, 2022 | Monday, April 4, 2022 |
| SCS Data and Document Review (GHG) | Wednesday, March 9, 2022 | Friday, April 8, 2022 |
| SCS Issuance of Round #1 findings (GHG) | Friday, April 8, 2022 | Friday, April 8, 2022 |
| Client Response to Round #1 findings (GHG) | Friday, April 8, 2022 | Tuesday, June 28, 2022 |
| Alexa Out of Office | Friday, June 24, 2022 | Tuesday, July 5, 2022 |

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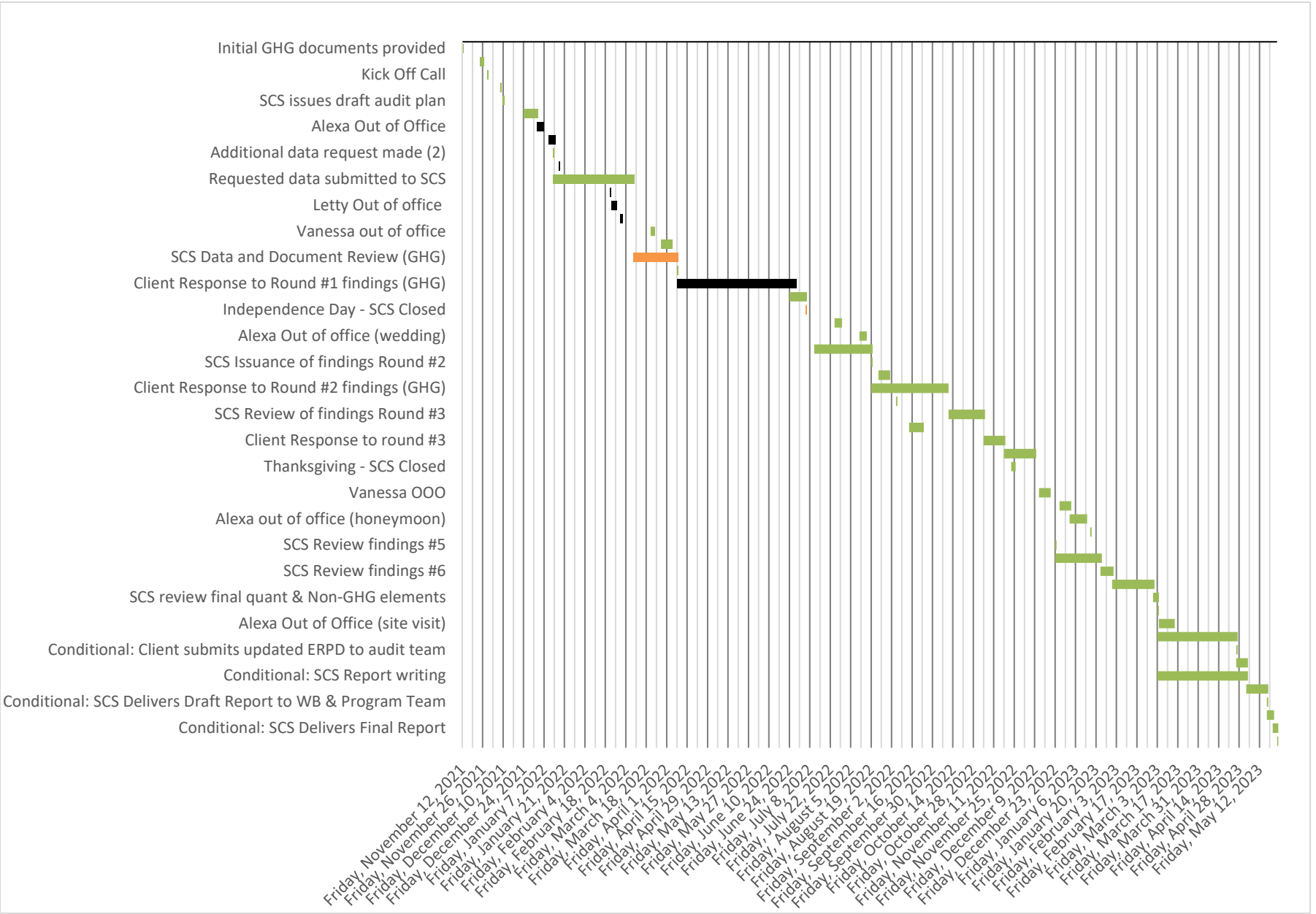
|---|---|---|
| Independence Day - SCS Closed | Tuesday, July 5, 2022 | Tuesday, July 5, 2022 |
| Alexa Out of office (site visit) | Monday, July 25, 2022 | Friday, July 29, 2022 |
| Alexa Out of office (wedding) | Thursday, August 11, 2022 | Monday, August 15, 2022 |
| SCS Review of Responses to Round #1 Findings | Monday, July 11, 2022 | Friday, August 19, 2022 |
| SCS Issuance of findings Round #2 | Friday, August 19, 2022 | Friday, August 19, 2022 |
| Vanessa OOO | Wednesday, August 24, 2022 | Wednesday, August 31, 2022 |
| Client Response to Round #2 findings (GHG) | Friday, August 19, 2022 | Monday, October 10, 2022 |
| Holiday: SCS Closed | Monday, September 5, 2022 | Monday, September 5, 2022 |
| SCS Review of findings Round #3 | Tuesday, October 11, 2022 | Friday, November 4, 2022 |
| Alexa Out on Site Visit | Wednesday, September 14, 2022 | Friday, September 23, 2022 |
| Client Response to round #3 | Friday, November 4, 2022 | Friday, November 18, 2022 |
| SCS Review responses to round #4 | Friday, November 18, 2022 | Friday, December 9, 2022 |
| Thanksgiving - SCS Closed | Wednesday, November 23, 2022 | Friday, November 25, 2022 |
| Client response to findings #4 | Monday, December 18, 2023 | Monday, December 18, 2023 |
| Vanessa OOO | Monday, December 12, 2022 | Monday, December 19, 2022 |
| Winter Holidays - SCS Closed | Monday, December 26, 2022 | Monday, January 2, 2023 |
| Alexa out of office (honeymoon) | Monday, January 2, 2023 | Friday, January 13, 2023 |
| Martin Luther King Day - SCS closed | Monday, January 16, 2023 | Monday, January 16, 2023 |
| SCS Review findings #5 | Friday, December 23, 2022 | Friday, December 23, 2022 |
| Client Response to findings #5 | Friday, December 23, 2022 | Monday, January 23, 2023 |
| SCS Review findings #6 | Monday, January 23, 2023 | Tuesday, January 31, 2023 |
| Client response to findings #6 | Tuesday, January 31, 2023 | Tuesday, February 28, 2023 |
| SCS review final quant & Non-GHG elements | Tuesday, February 28, 2023 | Friday, March 3, 2023 |

| | | |
|---|---|---|
| *Conditional: SCS issuance of final findings #7 (GHG & Non-GHG)* | Friday, March 3, 2023 | Friday, March 3, 2023 |
| Alexa Out of Office (site visit) | Saturday, March 4, 2023 | Tuesday, March 14, 2023 |
| Client Response to remaining Findings #7 | Friday, March 3, 2023 | Wednesday, April 26, 2023 |
| Client submits updated ERPD to audit team | Wednesday, April 26, 2023 | Wednesday, April 26, 2023 |
| Closure of ALL findings | Wednesday, April 26, 2023 | Wednesday, May 3, 2023 |
| SCS Report writing | Friday, March 3, 2023 | Wednesday, May 3, 2023 |
| *Conditional: Technical Review* | Wednesday, May 3, 2023 | Wednesday, May 17, 2023 |
| *Conditional: SCS Delivers Draft Report to WB & Program Team* | Wednesday, May 17, 2023 | Wednesday, May 17, 2023 |
| *Conditional: WB & Program Team comments on Draft* | Wednesday, May 17, 2023 | Sunday, May 21, 2023 |
| *Conditional: SCS Delivers Final Report* | Sunday, May 21, 2023 | Wednesday, May 24, 2023 |
| *Conditional: Closing meeting* | Wednesday, May 24, 2023 | Wednesday, May 24, 2023 |


Initial GHG documents provided
Kick Off Call
SCS issues draft audit plan
Alexa Out of Office
Additional data request made (2)
Requested data submitted to SCS
Letty Out of office
Vanessa out of office
SCS Data and Document Review (GHG)
Client Response to Round #1 findings (GHG)
Independence Day - SCS Closed
Alexa Out of office (wedding)
SCS Issuance of findings Round #2
Client Response to Round #2 findings (GHG)
SCS Review of findings Round #3
Client Response to round #3
Thanksgiving - SCS Closed
Vanessa OOO
Alexa out of office (honeymoon)
SCS Review findings #5
SCS Review findings #6
SCS review final quant & Non-GHG elements
Alexa Out of Office (site visit)
Conditional: Client submits updated ERPD to audit team
Conditional: SCS Report writing
Conditional: SCS Delivers Draft Report to WB & Program Team
Conditional: SCS Delivers Final Report
Friday, November 12, 2021
Friday, November 26, 2021
Friday, December 10, 2021
Friday, December 24, 2021
Friday, January 7, 2022
Friday, January 21, 2022
Friday, February 4, 2022
Friday, February 18, 2022
Friday, March 4, 2022
Friday, March 18, 2022
Friday, April 1, 2022
Friday, April 15, 2022
Friday, April 29, 2022
Friday, May 13, 2022
Friday, May 27, 2022
Friday, June 10, 2022
Friday, June 24, 2022
Friday, July 8, 2022
Friday, July 22, 2022
Friday, August 5, 2022
Friday, August 19, 2022
Friday, September 2, 2022
Friday, September 16, 2022
Friday, September 30, 2022
Friday, October 14, 2022
Friday, October 28, 2022
Friday, November 11, 2022
Friday, November 25, 2022
Friday, December 9, 2022
Friday, December 23, 2022
Friday, January 6, 2023
Friday, January 20, 2023
Friday, February 3, 2023
Friday, February 17, 2023
Friday, March 3, 2023
Friday, March 17, 2023
Friday, March 31, 2023
Friday, April 14, 2023
Friday, April 28, 2023
Friday, May 12, 2023

## Appendix C: List of Findings

Please see Section 3.5 above for a description of the findings issuance process and the categories of findings issued. It should be noted that all language under "Recipient Response" is a verbatim transcription of responses provided to the findings by ER Program personnel.

**NIR 1 Dated 21 Mar 2022**
**Standard Reference**: ISFL ER Program Requirements
**Document Reference**: Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx, Copy of Revised Background Table; Methods and Data Documentation_ Revised_ 14.02.2022; Stock Diffrence Method_17.12.2021(2); Draft Final GHG Baseline_2009_2018_V7; 1. Table_93_Net_CO2_Emissions_from_AFOLU_Subcategories; Table 35_ AFOLU Net CO2 Emissions; Copy of Net_CO2_Emissions_from_AFOLU_Subcategories_Revised; Vol4_Ch2_Box_2.2_equation2.25-Spreadsheet; Vol4_Ch2_Box_2.2_equation2.25-Spreadsheet_CL – FL; Vol4_Ch2_Box_2.2_equation2.25-Spreadsheet_CL _CL; Vol4_Ch2_Box_2.2_equation2.25-Spreadsheet_CL _CL_2009…. Etc
**Finding**: Section 4.1.2 of the ER Program requirements states "In accordance with the IPCC guidance and guidelines, the Program GHG Inventory shall apply the basic principles of Transparency, Accuracy, Completeness, Consistency over time and Comparability as defined by the IPCC." The assessment team has been encountering significant difficulty in tracking the quantification of carbon stocks and emissions between the numerous spreadsheets provided as well as the GHG inventory database. As it currently stands, much of the approach and methodology as presented in the ERPD does not appear to have been carried out in the GHG Inventory database. Likewise, the assessment team is unable to track the values and quantification from the GHG Inventory database within the other workbooks provided. It is unclear which workbooks are out of date and have been replaced with new/updated workbooks. Ultimately the assessment team would like to request a completely new submission of the workbooks/data that only includes the final datasets used, plus a detailed workflow describing the purpose of each workbook and how it was used. This would be highly useful for the assessment team's review. Lastly, the assessment team would like to request that all the calculations be in a single excel spreadsheet with active cell formulas demonstrating the calculations for baseline emissions of each of the subcategories and pools, rather than in the IPCC GHG database. These above requests would be of value and make this audit process most efficient for all parties.
**Project Personnel Response**: A detailed workflow has been provided for the program GHG Inventory to track the quantification of carbon stocks and emissions between the GHG inventory database, Activity data and Emission factor spreadsheets, Summary Background spreadsheets, Methods and Data documentation and ERPD Report for each of the AFOLU subcategories and pools. Only final Datasets have been provided to the assessment team and these supercedes any other previous worksheets. The GHG calculations worksheet has been placed in a folder Final AFOLU GHG Spreadsheet.
**Auditor Response**: Thank you for providing this detailed workflow, for providing onlythe datasets needed, and for providing the single workbook of all the calculations. This finding has been satisfied.
**Bearing on Material Misstatement or Conformance (M/C/NA):** NA

**NIR 2 Dated 21 Mar 2022**
**Standard Reference**: ISFL ER Program Requirements
**Document Reference**: Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx; 1. Table_93_Net_CO2_Emissions_from_AFOLU_Subcategories.xlsx, Table 35_ AFOLU Net CO2 Emissions.xlsx; Draft Final GHG Baseline_2009_2018_V7
**Finding**: This finding relates to finding #1 above. Section 4.1.2 of the ER Program requirements states "In accordance with the IPCC guidance and guidelines, the Program GHG Inventory shall apply the basic principles of Transparency, Accuracy, Completeness, Consistency over time and Comparability as defined by the IPCC." The assessment team has been unable to track the subcategory net CO2 emissions between the IPCC GHG Inventory database, the ERPD, and the summary workbooks provided (1. Table_93_Net_CO2_Emissions_from_AFOLU_Subcategories.xlsx, Table 35_ AFOLU Net CO2 Emissions.xlsx). For instance, for the year 2012, subcategory forestland remaining forestland, the IPCC GHG database shows net emissions of 5,223.88 Gg CO2e. However, the worksheets referenced here indicate emissions of 5230.63 Gg. Table 145 in the ERPD also shows 5230.63 Gg. For Land converted to cropland in 2012, the IPCC GHG database shows net emissions of 1777.74 Gg CO2e. However, the worksheets referenced here indicate emissions of 3101.95 Gg CO2e and the ERPD shows 1806.84 Gg. Overall, it appears that there are inconsistencies between the database, workbooks, and ERPD. The assessment team requests that consistent documentation and calculations be provided.

Furthermore, as stated in the above finding, due to the lack of transparency in the GHG database as well as these inconsistencies between documents, the assessment team is overall having trouble tracking the emissions, calculations, datasets, etc. and continues request a new submission of only the relevant and most up-to-date documents and workbooks.
**Project Personnel Response**: A new comprehensive GHG calculations excel worksheet has been submitted for each of the AFOLU subcategories and pools that can be used to easily track the baseline, uptake and Net CO2 emissions from various subcategories and pools. The program GHG inventory Net CO2 Emissions from all the categories, subcategories and pools have been demonstrated according to the emission sources based on the methodology and approach. The final datasets and workbooks are provided to the assessment team. The new GHG calculations are in folder Final AFOLU GHG spreadsheet.
**Auditor Response**: Thank you for providing this excel worksheet. The assessment team has now been able to track the emissions for each of the pools to the ERPD. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NIR 3 Dated 21 Mar 2022**
**Standard Reference**: ISFL ER Program Requirements
**Document Reference**: 4. Eastern_Province_Activity_Data_Collection_Technical_Report_29122019.pdf, Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx, CE_Grid_Data_Eastern_all_plots_at_4x4km.xlsx, CE_Grid_Data_Eastern_all_plots_at_4x4km.shp
**Finding**: Section 4.1.3 of the ER Program Requirements states "The Program GHG Inventory shall utilize best available methods and existing data." Section 3.0 of the Eastern Province Activity Data Collection Technical Report indicates that "There were 15 main land use conversions identified in 3,618 sample plots across Eastern province. Using the provincial area extent of 5,097,587 hectares, the expansion factor of 1408.952 was produced by dividing the total number of sample plots assessed over Eastern Province into the provincial area extent." Section 1.3 indicates that "The sample plots are designed in a systematic grid at an equidistance of 4 x 4 kilometers." However, Annex 6 (section 2.2.2) of the ERPD states "There were 3,516 sample plots (SP) assessed and activity data collected for Eastern Province. The sample plots are designed in a systematic grid at an equidistance of 4 x 4 kilometres over Eastern province. The sample size of 3,516 sample plots was determined based on a second phase sampling system extracted using the boundary extent of Eastern Province from a grid sampling frame of 4 x 4 km distance." Furthermore, in the shapefile of sample plots in the 4x4 km grid submitted to the assessment team, there are only 3,158 sample plots. Thus there appears to be inconsistency in the number of plots. Second, in order for the assessment team to confirm the land use land cover change mapping using the Collect Earth program, we need more information regarding the starting land use, the ending land use, and the date of the land use change for each of the sample plots. As a result, the assessment team requests the following information:

1. Please explain why there are only 3,158 sample plots in the shapefile provided and not 3,618 or 3,516 sample plots in. Please provide more information regarding which is the correct number of plots and the correct expansion factor applied.
2. Please provide an updated spatial dataset or an excel sheet that indicates the plot id, the plot coordinates, and the relevant land use change information including the starting land use, year of land use change (if it occurred) and ending land use, such that the assessment team can replicate the data presented in Table 3, of section 3.0 in the Activity Data Collection Technical Report, which we are assuming contains the values intended to be used for this analysis.

**Project Personnel Response**: 1) The correct number of sample plots is 3618 and not the sample plot count (3158) indicated in the shapefile that was submitted to the assessment team. The sample plot count indicated in the shapefile was mainly for the systematic grid at an equidistance of 4 x 4 kilometers designed for eastern province. This sample plot count did not include the additional 460 randomly selected sample plots that were used as quality control points from the country assessment that was conducted using a systematic grid at an equidistance of 8 x 8 kilometers.

Based on the 3618 sample plots, the correct estimate of the expansion factor is 1408.952 as indicated in the Eastern Province Activity Data Collection Technical Report, p10.

2) The dataset for the Collect Earth output has been provided in the attached excel sheet (Refer to the Collect Earth Landuse Change Activity Data – Verified and updated Excel Sheet). This output was aggregated and processed in Saiku (an extension analysis tool integrated in Collect Earth) showing the plot id, coordinates and land use change information.

METHODOLOGY

The activity data was collected using Open Foris Collect Earth (CE) through the assessment of 3618 sample plots. The sample plots were designed in a systematic grid at an equidistance of 4 x 4 kilometers with the additional 460 randomly selected quality control points from the country assessment that was conducted using a systematic grid at an equidistance of 8 x 8 kilometers. Each sample plot measured 70 x 70 meters in size and has 49 control points which were used for assessing the land use categories. Data in each of these plots was assessed from the period 2000 to 2018/19. A new worksheet of verfied Collect Earth output with 15 main land use conversion were identified in the 3,618 sample plots across Eastern province and is provided in folder 3B Land dataset _ verified _CE_landuse _data_15.05.2022 folder.

REFERENCES

1. Eastern Province Activity Data Collection Technical Report_29_12_2019, p 5-10.
2. Open Foris - Collect Earth: https://github.com/openforis/collect-earth.
3. Collect Earth Landuse Change Activity Data – Verified and updated Excel Sheet.

**Auditor Response**: Thank you for this explanation of the number of sample plots. SCS was also provided with a shapefile of the 3618 Collect Earth points. We confirmed that these points match the Collect Earth Land Use Change Activity Data excel sheet. However, we found the following issues:
(1) In reviewing the Collect Earth data points provided by the program team in both the tabular workbook (Abel2022_EP_Reviewed_and_Analyzed_AD_for_Eastern_Province_20191230_v1) and the shapefile, the audit team confirmed that there are 3618 records, but found that many of these records are duplicates. For instance, plot IDs 10736_17200, 10736_17196, 10776_17184 are a few examples. Thus it is actually quite a bit less than 3618 unique points. Therefore the expansion factor that was calculated is not accurate.

(2) Annex 6 section 4 of the ERPD states "There were 3,618 sample plots (SP) assessed and activity data collected for Eastern Province. The sample plots are designed in a systematic grid at an equidistance of 4 x 4 kilometers over Eastern province. The sample size of 3,618 sample plots was determined based on a second phase sampling system extracted using the boundary extent of Eastern Province from a grid sampling frame of 4 x 4 km distance. " the assessment team found that 89 of the 3618 Collect Earth points fall outside of the official Eastern Province boundary (Eastern_prov.shp). As a result, we have been unable to verify the expansion factor applied. The expansion factor for the collect earth points must be for the same exact area in which the Collect Earth grid was established and which the points are used to represent.

The audit team continues to request additional information and corrected data demonstrating that all the collect earth points utilized in this analysis fall within the program area boundary and that they are unique, non-duplicated points. This finding remains open.
**Project Personnel Response 2**: All duplicate IDs in the clipped sample point file were dropped off, and the remaining sample points inside of the new shapefile were used to generate the latest expansion factor (1593) against 5,097,587ha upheld as the correct EP land area. The revised observation units reduced from 3,618 to 3,200 once "duplicate ID numbers" are removed from the results file. See Revised_ERPD_26.09.22_fin\E. Raw_Data_sept_2022\3B. LAND DATASET\Collect Earth Dataset folder

**Auditor Response 2**: The audit team confirmed that a new excel file has been sent showing 3200 Collect Earth records: EP_Filtered_and_Analyzed_AD_final_24.09.22.xlsx. The assessment team then confirmed that these 3200 points fall completely within the Eastern_province.shp. Assuming the provincial boundary area is 5,097,587 ha, we confirmed that the expansion factor of 1593 ha is accurate. As indicated in our response to NIR 4, we have found. We found that the area of this shapefile (Eastern_prov.shp) is 5,097,577 ha which is approximately 10 ha smaller than the area utilized for the quantification. It is unclear if this will result in a material. This results in an expansion factor that is nearly identical. As a result this finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NIR 4 Dated 21 Mar 2022**
**Standard Reference**: ISFL ER Program Requirements
**Document Reference**: Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx; Eastern_BND.shp
**Finding**: The ER Program Requirements states that "The Program GHG Inventory shall utilize best available methods and existing data." Section 2.1.1 (Table 1) indicates that "The EP-JSLP area is Eastern Province of Zambia covering 5,097,587 hectares." Later in annex 6 it states "Using the provincial area extent of 5,097,587 hectares, the expansion factor of 1408.952 was produced by dividing the total number of sample plots assessed over Eastern Province into the provincial area extent." The program team has provided several shapefiles, one being the "eastern_BND.shp" which we assume is the areal extent of the eastern region. However, all of the shapefiles provided lack projection information. When utilizing the WGS1984 Zone 35S projection, the assessment team calculated an area of 5,156,778 ha for the eastern_BND.shp", which differs significantly from the 5,097,587 ha reported. The assessment team requests additional information including:
(1) The projection information used by the program team for their spatial analyses.
(2) How the area of 5,097,587 ha was determined and if it represents the official area of the Eastern Region.
(3) How the expansion factor was determined---Which number of plots were used to determine this expansion factor (see related finding above).
**Project Personnel Response**: 1) The area extent for Eastern Province is not based on administrative boundary shapefile. However, the shapefiles shared to the assessment team was only meant for geo-visualization of Eastern Province in relation to the collect earth sample distribution. The official area of the province was obtained from the delimitation information by local government following the new realignment of provinces and districts in Zambia (Refer to the district and provincial realignment).
2) The 5,097,587 hectares is the official area estimate for Eastern Province as reported in the realignment of provinces and districts in Zambia.

3) Using the provincial area extent of 5,097,587 hectares, the expansion factor of 1408.952 was produced by dividing the total number of sample plots assessed (3618) over Eastern Province into the provincial area extent.

METHODOLOGY
The expansion factor was determined by dividing the total number of sample plots assessed (3618) over Eastern Province into the Provincial area extent (5,097,587 hectares). The Provincial area extent for Eastern Province was determined from the official area estimate as reported in the realignment of provinces and districts.

REFERENCES
1. Integrated Land Use Assessment Phase II – Report for Zambia. The Food and Agriculture Organization of the United Nations and the Forestry Department, Ministry of Lands and Natural Resources, Lusaka, Zambia. Table 47, pp 62

**Auditor Response**: The assessment team was provided with the shapefile Eastern_prov.shp. We found that the area of this file is 5,097,577 ha which is approximately 10 ha smaller than the area utilized for the quantification. It is unclear if this will result in a material.
As indicated in the finding above, about 89 of these collect earth points fall outside of the Eastern_prov.shp and thus it is not accurate to use this points to determine the expansion factor of the collect earth points. This finding is closed because the information requested has been provided.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NIR 5 Dated 21 Mar 2022**
**Standard Reference**: ISFL ER Program Requirements
**Document Reference**: Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx; Methods and Data Documentation_ Revised_ 14.02.2022; Draft Final GHG Baseline_2009_2018_V7; Latest_Comments_SCS Global.docx; Stock Diffrence Method_17.12.2021(2).xlsx
**Finding**: The ER Program Requirements states that "The Program GHG Inventory shall utilize best available methods and existing data." Aboveground forest biomass values from ILUA I were used for quantification. These are shown in Table 4.4 of the ILUA II Technical Report on page 30. Above this table it states "Application of the ExpF tended to give higher values than those based on the log model. What is surprising is that all these estimates are much lower than those given in the ILUA I report. It appears that the IPCC BCEF that was used in the biomass estimation using ILUA data greatly overestimated biomass density. Wirth et al. (2004) demonstrated that application of Biomass Expansion Factors (BEFs) to the same forest inventory database using BEFs from the IPCC default database (2003) and from five other sources resulted in biomass estimates that differed by as much as 40%. The differences between estimates using the log allometric equation and ExpF ranged from 25–38% in this study. Perhaps a significant proportion of the observed differences in biomass estimates given in the ILUA report can be attributed to the use of the IPCC BCEF. Kamelarczyk (2009) also found that AGB estimated by use of the average BCEF was 2.2 times greater than the estimate made by allometric equations using dbh for miombo woodland, and was similarly 2.24 times greater for deciduous forest."

Table 20 of the ILUA II Final Report shows lower biomass values than reported by ILUA I in table 4.4 of the ILUA II Technical Report. For example, a value of 37.2 tons/ha for aboveground biomass is reported for dry deciduous forest in ILUA II Final Report Table 20. However, a value of 61.2 tons/ha for aboveground biomass is reported from ILUA 1 (Table 4.4 in ILUA II Final Report). It is unclear how the use of outdated values and methodologies from ILUA I represent the best available data, when more up-to-date and conservative values have been published in the ILUA II Final Report Table 20. The assessment team made this comment to the program team in the document Methods and Data Documentation, and in the document "Latest_Comments_SCS Global.docx" the program team has responded "Values have been revised based on the final report ILUA II Final Report, (2016) , Table 20 : mean biomass and carbon stocks distribution by vegetation and other areas." However, it does not appear that the values have been revised. In the IPCC GHG database (e.g., 3.B.2.b.i), it continues to apply the ILUA I values (e.g., 61.2 dm.ha for dry deciduous forest, etc). In the workbook Stock Diffrence Method_17.12.2021(2).xlsx, it shows that the growing stock volume values from ILUA II (Table 18) which were used to derive the values in table 20 of that report were applied. Please clarify which biomass values are intended to be used and update all documentation and calculations accordingly such that there is consistency between documentation.
**Project Personnel Response**: The program GHG inventory has used the lastest available referenced information in tracking the quantification of carbon stocks and emissions and use of higher tiers. The biomass values that have been used have been obtained from the latest available data from ILUA II ( 2016) Final Report, Table 20: Mean Biomass and Carbon Stocks distribution by vegetation and other areas. The new biomass values used are in the new calculations worksheet_ Land Use Emission Factors - Cell C21 to Cell C26.
**Auditor Response**: The assessment team confirmed that the aboveground biomass and carbon stock values from the most recent ILUA II report (table 20) have now been applied. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NIR 6 Dated 21 Mar 2022**
**Standard Reference**: ISFL ER Program Requirements; 2003 IPCC Good Practice Guidance for LULUCF
**Document Reference**: Methods and Data Documentation_Revised_14.02.2022; Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx; Draft Final GHG Baseline_2009_2018_V7
**Finding**: Section 4.2.3 of the ER Requirements states "ISFL ER Programs shall account for the Total Net Emission Reductions across eligible subcategories by estimating the baseline and monitoring Emissions and Removals for the eligible subcategories using at minimum IPCC Tier 2 methods and data. Subcategories are considered to meet Tier 2 if all the significant pools and gasses are estimated using Tier 2 methods and data. ISFL ER Programs are encouraged to improve data and methods, and to move to a higher tier over time, as possible." Section 4.2.2 of the ERPD indicates that for the forestland remaining forestland subcategory "Data used for this subcategory does comply with IPCC tier 2 or higher methods and data." In the document "Methods and Data Documentation_Revised_14.02.2022" it states that "Average annual aboveground biomass growth – Annex 3A.1 Biomass Default Tables for Section 3.2 Forest Land - Table 3A.1.5 and 1.6 - Average annual increment in aboveground biomass in natural regeneration by broad category and Plantations – Pages 3.163 and 3.164 (growing stock volume m3/ha)." A value of 0.9 was selected as representing the average annual increment in aboveground biomass in natural regeneration for natural forest groups, a value of 3.3 for forest plantations (pinus) and a value of 5.1 was selected for forest plantations (eucalyptus). The assessment team confirmed that these values represent the most relevant and conservative value from table 3A.1.5 of the 2003 IPCC Good Practice Guidance for LULUCF document from 2003. However, Section 3.2.2.1.1.2 of this IPCC Good Practice Guidance for LULUCF document indicates that "The Tables 3A.1.5 and3A.1.6 in Annex 3A.1 represent default average annual increment values in aboveground biomass of intensively and extensively managed forests (referred as plantations and naturally regenerated forests)" and that these values constitute tier 1 data. Thus, it appears that the forestland remaining forestland subcategory uses tier 1 data and therefore may not meet the minimum requirements for ISFL accounting. The assessment team requests additional information regarding why tier 1 data has been used and if there are other available tier 2 datasets available to allow for ISFL accounting of the average annual increment of biomass. Please provide additional information.

**Project Personnel Response**: The country specific figures that should be used to calculate the annual growth rates/hectare/ for Eastern Province are as follows:
• 2.73 m3/ha/year for Natural Forests (indigenous),
• 5.89 m3/ha/year for Pine and
• 9.11 m3/ha/year for Eucalyptus.

METHODOLOGY
The country specific annual growth rates for both natural forests and plantations were extracted from the GRZ, 1996_ Zambia Forest Action Programme (ZFAP) Volume 1 document.
For natural forests: The growth rate was calculated by adding the weighted averages for National parks, open areas, protected forest areas and game management areas that were extracted from the GRZ, 1996_ Zambia Forest Action Programme (ZFAP) Volume 1 document data sheets for the estimates of Eastern Province.
For Plantations: The annual growth rates for both pine and eucalyptus were estimated at 15 m3/ha/year according to the GRZ, 1996_ Zambia Forest Action Programme (ZFAP) Volume 1 document for Eastern Province. Tier 2 methodology has been applied in the new calculations worksheet - Final AFOLU GHG spreadsheet in the tab Land use Emission Factors - Average Net Annual Increment for specific vegetation type(m3 ha yr) (IV) - Cell B6 - Cell B8

REFERENCE
1. GRZ, 1996_ Zambia Forest Action Programme (ZFAP) Volume 1: Key Master Plan for the Forestry Sector in Zambia for a period of 20 years, Ndola Press, Ndola, p36-41.

**Auditor Response**: The assessment team reviewed the document provided via email on 8/2/2022 (Zambia_Foretry_Action_Plan_1999_ZFAP.pdf). We have been unable to locate these growth rates within the document. Please provide additional information to support the tier 2 annual growth rates applied for the project area. This finding remains open.
**Project Personnel Response 2**: The reference provided for the annual growth rates for natural forest has been adjusted based on a reference from GRZ, 1996_ Zambia Forest Action Programme (ZFAP) Volume II for Eastern Province, Table 2.1.8 of 1.3m3/ha/year. Initially the growth rate used was 1.8m3/ha/year which was based on expert judgement from Forestry Department operating in Eastern Province. For this reason, the revised net baseline emissions estimates will increase due to the use of an adjusted growth rate factor of 1.3m3/ha/year.

For plantations, a growth rate of 15 m3/ha/year for Pine and 15 m3/ha/year for Eucalyptus was used for estimations was extracted from the GRZ, 1996_ Zambia Forest Action Programme (ZFAP) Volume II for Eastern Province.

REFERENCE
1. GRZ, 1996_ Zambia Forest Action Programme (ZFAP) Volume 1: Key Master Plan for the Forestry Sector in Zambia for a period of 20 years, Ndola Press, Ndola, p36-41.

**Auditor Response 2**: The audit team confirmed the growth rates as extracted from table 2.1.8 from the Zambian Forest Action Programme Volume 1. This request for new information has been satisified.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NIR 7 Dated 21 Mar 2022**
**Standard Reference**: ER Program Requirements; 2006 IPCC Guidelines
**Document Reference**: Methods and Data Documentation_Revised_14.02.2022; Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx; Stock Diffrence Method_17.12.2021(2).xlsx; Draft Final GHG Baseline_2009_2018_V7
**Finding**: The ER Program Requirements states that "The Program GHG Inventory shall utilize best available methods and existing data." Table 7 of the document "Methods and Data Documentation_Revised_14.02.2022" indicates that the source of the root to shoot ratio as follows: "Ratio of below ground biomass to aboveground biomass and Carbon fraction of dry matter – UNREDD Report – Carbon Stock Assessment and Modelling in Zambia (2009): Table 4: Carbon Pools and Associated Methods for Carbon Stock estimations, page 11." The assessment team reviewed Table 4 on page 11 if the UNREDD Report – Carbon Stock Assessment and Modelling in Zambia (2009) report and found that it states "Look-up tables and correlations with above biomass applied as provided in the IPCC 2006 guidelines for tier level 1 estimations. Below/above ground biomass fraction = 0.28 for tropical dry forest with above ground biomass > 20tonnes/ha. Calculated for all land use categories." The assessment team also looked at table 4.4 of the IPCC 2006 report and found that this value of 0.28 is in fact the default ratio of below-ground biomass to above-ground biomass (R). However, in the latest GHG Database (v7), the assessment team found that the root to shoot ratio used was 0.219 for the forestland remaining forestland class and other subcategories involving conversion to forestland. However, in the new workbook Stock Diffrence Method_17.12.2021(2).xlsx, a value of 0.28 is used. It is unclear why a value of 0.219 was utilized or if the intention is to use the value of 0.28. Please provide additional information regarding the source of the value 0.219 utilized as the ratio of belowground to above ground biomass and/or indicate if it is the intention to use the value of 0.219 or 0.28 as the root to shoot ratio for forestland remaining forestland and other subcategories involving transitions to forestland. If the intention is to use a value of 0.28, please update all calculations and documentation accordingly.
**Project Personnel Response**: The Ratio of below-ground biomass to above-ground biomass for a specific vegetation type, in tonne has been revised in the new calculation worksheet - Final AFOLU GHG spreadsheet, Land Use Emissions Tab - Cell D6 - 0.28 . The reference for this factor is UNREDD Report, Carbon Stock Assessment and Modelling in Zambia(2009): Table 4: Carbon Pools and associated methods for carbon stock estimations, page 11. The report is in the folder Land_ Landuse remaining same Land Use_Forestland remaining Forestland_ Emission Factor folder.
**Auditor Response**: The audit team confirmed that the root to shoot ratio from this report has been applied. This finding is closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NIR 8 Dated 21 Mar 2022**
**Standard Reference**: ISFL ER Program Requirements
**Document Reference**: Methods and Data Documentation_Revised_14.02.2022; Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx; Draft Final GHG Baseline_2009_2018_V7
**Finding**: The ER Program Requirements states that "The Program GHG Inventory shall utilize best available methods and existing data." Section 4.2.2 of the ERPD states that "Activity Data on timber harvest obtained from Forestry Department annual Reports (Table 19), fuelwood for firewood and charcoal production obtained from Compendium of Environmental Data prepared by the Central Statistics Office (Table 22), and area affected by disturbances from Fires and Fraction of biomass burnt from disturbance obtained from ZEMA Forest Fire Database (Table 25) for estimating annual decrease in biomass carbon stocks due to losses for Forestland remaining Forestland was obtained Forestry Department Provincial Annual Reports (2009 – 2018) and CSO Environment Statistics Compendium (2015) Report." In the latest IPCC GHG Database provided (v7), values are reported for the annual wood removal (m3/yr) and annual fuelwood removal. For instance, a value of 89 m3/yr for dry deciduous forest and a value of 581 for dry evergreen forest for the year 2012 for wood removal. Likewise, the database includes values on the annual volume of fuelwood removal for whole trees. For instance, in 2012 dry deciduous forest had fuelwood removals totaling 2735 m3/yr. In order to verify the annual values used for the wood removals and fuelwood removals in the ISFL accounting, the assessment team requests that these annual reports and databases used to derive the wood removal and fuelwood removal be provided and asks that the program team identify exactly where in the reports these values originate or if/how further calculations were done from these reports to derive these values.

**Project Personnel Response**: The datasets for wood and fuel wood removals were extracted from CSO, 2018: Zambia Compendium on Environment Statistics, p41-42 and Provincial annual reports from Forestry Department (see attached excel sheet for the provincial annual report extracts (2008-2018) on the annual production returns for the issuance of permits (for charcoal, firewood and timber)).

The estimates for fuel wood removals for charcoal production were erroneously calculated and these only accounted for the percentage recovery of 18.1% of the earth kilns (Jussi Ranta, 1988). However, this anomaly has been rectified to take into account the 81.9% of the wood that is lost in-situ in the production of charcoal. Hence the assumption is that the correct estimate for CO2 emissions for wood fuel removals from charcoal production should include the total wood biomass stacked in an earth kiln and baked to produce the 18.1% captured in wood consumption. (Refer to the excel sheet on the computation (2b Eastern Province Wood-fuel Consumption UPDATED DATA v4 13.05.22))

METHODOLOGY
The estimates were made based on the input data using interpolation and extrapolation. Given that the Forestry Department only accounts for the licensed timber, charcoal and fire wood. The unlicensed estimates for the forest products (wood, charcoal, firewood) where estimated from the Wood Consumption Surveys that are conducted by the Department of Energy which are contained in the CSO Report, 2018: Compendium on Environment Statistics, 2015 p41-42. The methdology that was used to deduce the statistics of wood removals from the annual reports has been explained in the methods and data documentation template under Table 6 _ Activity Data for Forestland remaining Forestland - Loss of biomass and carbon from wood removals (timber harvesting), Loss of biomass and carbon from fuelwood removal, Loss of biomass and carbon from disturbance. The provincial annual reports extracts from forestry _13.05.2022 worksheets in the folder Land _Land use remaining in the same Land use category _ Forestland remaining Forestland _Actvity data folder were used to deduce the annual values in the Land Use Activity Data Tab Cell C5 to C11 upto Cell M5 to M11. In the Provincial Forestry Department Annual reports, Timber is reported in three units as poles, bundles and cubic meters while Fuel Wood is reported in cords, headloads and cubic meters. All the units have to be converted in one reporting unit for both timber and fuel wood which is cubic meters.

Additional notes:
In the Provincial Forestry Department Annual reports, Timber is reported in three units as poles, bundles and cubic meters while Fuel Wood is reported in cords, headloads and cubic meters. All the units have to be converted in one reporting unit for both timber and fuel wood which is cubic meters.
For Timber (Conversions)
• A pole with an average diameter of 9.25 and length of 3.4 produces an average of 0.001827856 cubic meters
• One (1) bundle has an average number of Fifteen (15) poles therefore the volume of a bundle of timber is 0.02741784 cubic meters
For Fuel Wood (Conversions)
• If 1000kg of airdry wood is equal to 3 cubic meters, then 9kg (female headload) is 0.027 cubic meters, 12kg (male headload) is 0.036 cubic meters.
• Cord to cubic meters; 1m*1m*3m which is equal to 3 cubic meters

REFERENCES

1. CSO, 2018: Compendium on Environment Statistics,2015, 04 April 2018. p41-42
2. Jussi Ranta 1988: Traditional Charcoal Making in Maposa Forest Area, Technical Note No. 30.
3. Provincial Annual report extracts from Forestry Department, excel sheet for the period 2008-2018.
4. Karumiana, 1996: Study of the Demand of fire wood and charcoal, Copperbelt province, p2; Technical Report: Natural Capital account for Forests, 2020, p 18-21
5. 2b. Eastern_Province_Woodfuel_Consumption_UPDATED_DATA_v4_13.05.22

**Auditor Response**: The goal of this finding is to assist the audit team in verifying the values in the sheet Land Activity Data_ Wood _Fuel of the Final AFOLU GHG Inventory-ZILFP.xlsx workbook. We have not been able to verify these values from the information and data provided. For example:
(1) The audit team reviewed the CSO, 2018: Zambia Compendium of Environmental Statisticals (p41-42) and did not see anything related to wood and fuel removals. Please tell us exactly which tables and pages are of relevance in this document.
(2) We have not been able to locate the Provincial Annual reports from the Forestry Department. Please provide these reports for the baseline years 2009-2018.
(3) we have not been able to verify the percentage recovery values because we have not been provided with the the Jussi Ranta 1988 reference. Please provide this document for our review.

In the findings repsonse you indicate that "The estimates were made based on the input data using interpolation and extrapolation." Please demonstrate the interpolation and extrapolation procedure used to determine these estimates. In addition to the requested information in points 1-3 above, the assessment team also requests that you provide us with an excel workbook with active cell formulas such that we can trace the values and the procedure applied. This finding remains open.

**Project Personnel Response 2**: Response 1: The workbook 2b. Eastern_Province_Woodfuel_Consumption_UPDATED_DATA_v4_13.05.22.xlsx is NOT calculated with figures on the wood fuel data in the EP annual report, and it shouldn't be used as a reference document for workbook 2b. Normally, the annual reports for FD contains and reports production returns collected in various units i.e. headloads, logs, cords, and volumes based on records captured under licenses, and may not be comprehensive hence not relibale due to very low compliance levels (0.16%) by extractors of the wood fuels.

Response 2: The records of the wood fuels in workbook 2b is an extract of the calculated wood fuel figures extracted from the Wood Consumption Survey (2020) by the Department of Energy and harmonized by the ILUAII wood removal calculations from the biophysical data (www.zmb-nfms.org/portal). Therefore, workbook has woodfuel estimates reported in kg, vol and tons values with the appropriate conversion factors used in the excel sheets shared as a data documentation file for referencing.

**Auditor Response 2**: The audit team is still not able to verify the values reported in the workbook 2b. Eastern_Province_Woodfuel_Consumption_UPDATED_DATA_v4_13.05.22.xlsx. The audit team requests teh following:
(1) Please share with us the Wood Consumption Survey (2020). It is unclear if the document titled National Woodfuel Study 2021.pdf is what you are referring to.
(2) Point us to the exact location of the wood removal values (e.g., page number, table etc) in the Wood Consumption Survey.
(3) Furthermore, demonstrate your calculation of these values and the procedure of harmonizing by the ILUIAII wood removal calculations, using active cell formulas in excel.
Please note that the audit team must verify these values through replication of the calculations, and we are not able to do this with the limited information provided. This NIR has not been satisfied.
**Project Personnel Response 3**: Firewood and charcoal consumption for 2015 were extracted from the National Wood fuel report. Using 2015 figures and growth factors, estimates of charcoal and firewood consumption for the rest of the years were calculated. The National Woodfuel Study has been shared in Revised_ERPD_22Nov22_fin\G. Reference_Materials_Nov_2022\National Woodfuel Study 2021. The figures used are found in Table 13 on page 57 of the report. In addition, demonstration of how calculations were made has been provided by way of active formulae in Revised_ERPD_22Nov22_fin\C. Inventory_DB_Nov_2022\GHG Emissions estimates\Final AFOLU GHG Inventory 27112022 workbook. Additional reference materials used in the estimations have been included: (1) Manual for Charcoal Production in Earth Kilns in Zambia; (2) Zambian Charcoal Production; Miombo Woodland Recovery -Emmanuel N. Chidumayo; (3) Ferdinand Handavu, Stephen Syampungani, Gudeta W. Sileshi & Paxie W. C. Chirwa (2021): Aboveground and Belowground Tree Biomass and Carbon stocks in the Miombo Woodlands of the Copperbelt in Zambia, Carbon Management.
**Auditor Response 3**: We have fun out of columns for this finding, thus the audit team has closed this finding and re-opened it as finding #48 below.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NIR 9 Dated 21 Mar 2022**
**Standard Reference**: ISFL ER Program Requirements
**Document Reference**: Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx; Draft Final GHG Baseline_2009_2018_V7; 6.11B_ Forest_Fires_2019.pdf.
**Finding**: The ER Program Requirements states that "The Program GHG Inventory shall utilize best available methods and existing data." Section 3.7.3 of Annex 6 of the ERPD indicates that "The area affected by disturbances was calculated based on statistics of fire frequency and occurrence in Eastern province and the ratio of actual area that is disturbed due to fires. The source of fire due to disturbance is from natural occurrences." The document Eastern Province Fire Report, Zambia Environmental Management Agency (2015) is referenced in a footnote. The only document provided regarding fires is the 6.11B_ Forest_Fires 2019.pdf. The assessment team requests that this Eastern Province Fire Report be provided and it be demonstrated exactly where in the report the annual area affected by disturbances were derived.
**Project Personnel Response**: The annual area affected by fire disturbances in the new calculations worksheet - Final AFOLU GHG spreadsheet under the Land Activity data _ Disturbances Tab from Cell C13 to Cell C16 upto Cell M13 to Cell M16 were derived based on this rational - From the Forestry expert judgement and knowledge approximately 21% of Eastern Province experiences fire between January and December. This is in line with the literature review of the fire occurrence recorded in the Fire Management Assessment of Eastern Province report p 18. However, the assumption is that only the fires that occur within the fire danger seasons in the months (August, September, October, November) are regarded as disturbances (Chidumayo, 1997a) and fire occurrences for the rest of the months are forest management regimes. From the total fire occurrences recorded for the Province only the fires that occur in forested areas are regarded as disturbances out of which only approximately 25% of the biomass is susceptible to fires comprising mainly of under growth (savanna grasslands, litter and twigs).
The assumption is that the Fraction of Disturbance (FD) value is equivalent to dead dry biomass and undergrowth (grass, twigs, litter) and approximately 0.25 is taken as the fraction of the actual biomass that burns from the 21% of area of Eastern Province that experiences fires. The reference on Fire Management Assessment for Eastern Province in Zambia (2015) and effects of accidental fire on miombo woodland has been provided in folder Land _Land use category remaining in the same land use category_Foretland remaining Forestland _Activity data_ Refernces
**Auditor Response**: The assessment team has found it difficult to understand this finding response and the support for the rational. By reviewing the Chidumayo 1997, we confirmed that the majority of damaging fires occur during the late dry season or the "fire danger months".
(1)However, in the workbook Final AFOLU GHG Inventory-ZILFP.xlsx, sheet Land Activity Data Disturbance, it appears that there is an assumption that only 21% of the area burns—e.g. calculations n cells C13-M16. It is unclear where this assumption that only 21% of the area burns comes from. Please provide additional information and justification for this assumption.
(2) The worksheet also lists the area burned by fire season in cells D22-D24. However it does not appear that these values were used in the analysis. Please provide more information about the source of this data as well as if/how it has been utilized in the analysis.
(3) It remains unclear how this fraction of 0.25 was determined. Please provide evidence and support for this fraction.
Ultimately the assessment team must be able to verify all values and assumptions used and we have not be able to verify the fire activity data with the information provided. This finding remains open.

**Project Personnel Response 2**: Approximately 20% of EP's area experinces fires, out of which about 354,290 hectares of EP's total land area experiences late-season fires (August through November), which contribute to disturbance. It is worth noting only the fires that occur within the fire danger seasons in the months of August, September, October, November cause disturbances (Chidumayo, 1997a) and fire occurrences for the rest of the months are forest management regimes. The findings are recorded in a technical report p16 Hollingsworth et al (2015). From the total fire occurrences, only the fires that occur in forested areas are regarded as disturbances. The fraction of biomass consumed during the late fires depends on the fuel and fuel moisture conditions. Based on Day et al, section 1.6.6, page 8 this is estimated to be 0.25 comprising mainly of under growth (savanna grasslands, litter and twigs). .

Reference

1. Day, M., Gumbo, D., Moombe, K.B., Wijaya, A. and Sunderland, T., 2014. Zambia country profile: Monitoring, reporting and verification for REDD+ (Vol. 113). CIFOR.
2. Hollingsworth, L.T., D. Johnson, G. Sikaundi, S. Siame. 2015. Fire Management Assessment of Eastern Province, Zambia. Washington, D.C.: USDA Forest Service, International Programs.

**Auditor Response 2**: The audit team continues to have questions and doubts about this calculation which we describe here:
(1) The audit team sees that this calculation of the 20% of the forest area burning in the workbook Final AFOLU GHG Inventory-ZILFP_25092022 workbook.xlsx Land Activity Data Disturbance, cells C13-M17. However, the forested areas in cells C5-M9 do not match the forested areas in the other worksheets (e.g., sheet Land Activity data Areas). For instance the sheet Land Activity Data Disturbance shows the area of dry evergreen forest in 2009 is 180,278 ha, but in the worksheet Land Activity data Area the area of dry evergreen forest in 2009 is 180,879 ha. Please explain the reason for this discrepancy.
(2) It is unclear how this area of 354,290 ha burning in August, September, Oct, November was determined. The value is simply pasted in the workbook and the audit team requires additional demonstration of how this value waas calculated.
(3) It is also unclear if this area of 354,290 ha (burning in August, September, Oct, November) is even used in the calculations. For instance, in the Forest remaining Forest sheet, the calculations reference the areas in cells D14-M16 (total forested area * 20%). Thus, please explain how the burning in August, Sept., Oct. and November was accounted for.
Again, the audit team must be able to replicate these values and at this point we are still unable to do so. This finding remains open.

**Project Personnel Response 3**: The GHG inventory team takes note of the observations and have revised areas accordingly in Revised_ERPD_22Nov22_fin\C. Inventory_DB_Nov_2022\GHG Emissions estimates\Final AFOLU GHG Inventory 27112022 workbook, which are now matching with other worksheets.
The factor used for area burnt is 20%, as reported on p16 Hollingsworth et al (2015). The fraction of biomass consumed during the late fires depends on the fuel and fuel moisture conditions. Based on Day et al, section 1.6.6, page 8 this is estimated to be 0.25 comprising mainly of under growth (savanna grasslands, litter and twigs).

Reference
1. Day, M., Gumbo, D., Moombe, K.B., Wijaya, A. and Sunderland, T., 2014. Zambia country profile: Monitoring, reporting and verification for REDD+ (Vol. 113). CIFOR.
2. Hollingsworth, L.T., D. Johnson, G. Sikaundi, S. Siame. 2015. Fire Management Assessment of Eastern Province, Zambia. Washington, D.C.: USDA Forest Service, International Programs.
**Auditor Response 3**: Thank you for providing the requested information. The audit team was able to verify these values and confirmed the corrected forested area was used in the calculations. However, in reviewing the Day et al. 2014 reference as well as the previous response to this finding indicating that only 25% of the biomass burns, mainly the under growth (savanna grassland, litter and twigs), the audit team has arrived at a new NIR. Please see below.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NIR 10 Dated 21 Mar 2022**
**Standard Reference**: ISFL ER Program Requirements
**Document Reference**: Methods and Data Documentation_Revised_14.02.2022; Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx; Stock Diffrence Method_17.12.2021(2).xlsx; Latest_Comments_SCS Global.docx; Net_CO2_Emissions_from_AFOLU_Subcategories_Revised; Draft Final GHG Baseline_2009_2018_V7
**Finding**: The ER Program Requirements states that "The Program GHG Inventory shall utilize best available methods and existing data." In the latest GHG database provided (v7) a value of 0.613 is applied for the parameter BCEFr which is the "biomass conversion expansion factor" for forestland remaining forestland and other subcategories involving conversion to forestland. It is unclear what the source of this expansion factor is. In the document "Methods and Data Documentation_Revised_14.02.2022," it states that the source is the "ILUA II Technical Report (2016), Biomass Volume Calculations Table 4.3 Biomass expansion factors (ExpFs) for biomass estimated by the product of volume and specific wood density using different methods for miombo woodland trees, page 29." However, in the document "Latest_Comments_SCS Global" the project team responded "BCEFr has been revised and was obtained from ILUA II Technical Report (2016), Biomass Volume Calculations Table 4.3 Biomass expansion factors (ExpFs) for biomass estimated by the product of volume and specific wood density using different methods for miombo woodland trees, page 29." And in the new workbook Stock Diffrence Method_17.12.2021(2).xlsx, in column G it appears you are using a BCEFr of 1.38. However, the previous biomass expansion factor of 0.613 is still being applied in the IPCC GHG database and is therefore used to derive the values in the ERPD and the workbook Net_CO2_Emissions_from_AFOLU_Subcategories_Revised.xlsx. It is unclear which value for BCEFr the program team intends to use. Please provide additional information and update all documents and calculations with the intended value for BCEFr.
**Project Personnel Response**: In the new calculations worksheet - Final AFOLU GHG spreadsheet under the Land Use Emissions Tab the BCEFr applied is 1.38 - Cell C6. The source of this value is from ILUA II Technical report (2016) - Table 4.3 Biomass Expansion Factors for biomass estimated by the product of volume and specfic wood density using diffrent methods for miombo woodland trees.
**Auditor Response**: The audit team requests a copy of the ILUA II Technical Report 2016. We have not been able to access the report online and cannot verify this value without the report. This finding remains open.
**Project Personnel Response 2**: The reference document with the BCEFs used are in the ILUAII Technical Paper No. 3 "Assessment of Existing Models for Biomass Volume Calculations, by Prof. E. N. Chidumayo". The BCEF are in Table 4.3 on p. 28 of this report.

Forestry Department (2016), Ministry of Lands Natural Resources and Environmental Protection, Integrated Land Use Assessment Phase II - Technical Paper 3, Assessment of Existing Models for Biomass Volume Calculations. Food and Agricultural Organization of the United Nations, Ministry of Foreign Affairs Finland. Lusaka, Zambia
**Auditor Response 2**: Thank you for sharing this. The audit team confirmed that the value of 1.38 is reported for the BCEF for growing stock in the IllUA II technical paper. However, this value is being applied to the BCEFi and BCEFr. As a result, this finding has been closed and 2 new additional findings have been opened.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NIR 11 Dated 21 Mar 2022**
**Standard Reference**: ISFL ER Program Requirements
**Document Reference**: Methods and Data Documentation_Revised_14.02.2022; Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx; Latest_Comments_SCS Global.docx; Draft Final GHG Baseline_2009_2018_V7; Net_CO2_Emissions_from_AFOLU_Subcategories_Revised
**Finding**: The ER Program Requirements states that "The Program GHG Inventory shall utilize best available methods and existing data." In the document Latest_Comments_SCS Global.docx, the program team indicates that "Wood density has been revised and was obtained from ILUA II Technical Report (2016), Biomass Volume Calculations - Table 2.4 The Smalian's model: Specific wood density of trees in drier and wetter miombo woodland in Zambia. - page 22." Table 2.4 of the ILUA II Technical Report shows many wood densities for various species in the drier miombo class. Please clarify which species is/are to be used for the wood density, or if the 'all drier miombo species' value of 0.602 is intended to be used for the wood density. Also, the previous wood density value of 0.65 is still being applied in the IPCC GHG database (v7) and is therefore used to derive the values in the ERPD and the workbook Net_CO2_Emissions_from_AFOLU_Subcategories_Revised.xlsx. It is unclear which value the program team intends to use. Please provide additional information and update all documents and calculations with the intended value for wood density.
**Project Personnel Response**: In the new calculations worksheet - Final AFOLU GHG spreadsheet under the Land Use Emissions Tab the Wood density applied is 0.602 - Cell D17. The source of this value applied is from ILUA II Technical Report (2016) Biomass Volume Calculations - Table 2.4 The Smalian's model - specfic wood density of trees in drier and wetter miombo in Zambia page 22( value applied is for all dirier miombo species)
**Auditor Response**: The audit team requests a copy of the ILUA II Technical Report 2016. We have not been able to access the report online and cannot verify this value without the report. This finding remains open.
**Project Personnel Response 2**: The reference document with the BCEFs used are in the ILUAII Technical Paper No. 3 "Assessment of Existing Models for Biomass Volume Calculations, by Prof. E. N. Chidumayo". The BCEF are in Table 4.3 on p. 28 of this report.

Forestry Department (2016), Ministry of Lands Natural Resources and Environmental Protection, Integrated Land Use Assessment Phase II - Technical Paper 3, Assessment of Existing Models for Biomass Volume Calculations. Food and Agricultural Organization of the United Nations, Ministry of Foreign Affairs Finland. Lusaka, Zambia
**Auditor Response 2**: This finding is in reference to the Wood Density values and not the BCEF. The audit team confirmed that the drier Miombo wood density is being applied from the ILUAII report. This finding has been satisified.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NIR 12 Dated 21 Mar 2022**
**Standard Reference**: ISFL ER Program Requirements
**Document Reference**: Methods and Data Documentation_Revised_14.02.2022; Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx; Latest_Comments_SCS Global.docx; Net_CO2_Emissions_from_AFOLU_Subcategories_Revised; Draft Final GHG Baseline_2009_2018_V7
**Finding**: The ER Program Requirements states that "The Program GHG Inventory shall utilize best available methods and existing data." Section 3.7.4 of the ERPD states that "Country specific Reference Soil Organic Carbon and area of forestland remaining forestland was used to estimate the annual change in carbon stocks in mineral soils in forestland remaining forestland. The source of data for reference soil organic carbon was obtained from the Zambia Agriculture Research Institute." Table 50 then shows a value for SOC ref 38.59 t C ha-1 for forestland. First, the assessment team requests specific evidence of where the SOCref value for forestland was sourced from or how it was calculated. Please point us to the exactly location in the reference documentation. Second, in the latest version of the IPCC GHG Database, in the Land Type Manager, it shows that a value of 0.0 t C/ha is applied for the SOCref in Forestland. It is unclear if the value of 38.59 is intended to be used here for the calculations. Please clarify this and updated all calculations and documentation accordingly.
**Project Personnel Response**: The program GHG inventory has provided reference and an explanatory note on how the SOC ref of 38.59 t C ha was obtained. In the new calculations - Final AFOLU GHG spreadsheet. The specific reference of the SOC value used for SOC ref Forestland, SOC ref Grassland and SOC ref Cropland applied in Cell D193, 194 and 195 were sourced from the ZIFLP 2020 - Carbon Stock Worksheet _ Soil Survey for Eastern Province provided by ZARI. The carbon stock worksheet can be found in the folder Land _ Soil Organic Carbon. The SOCRef 38.59 t C/ha was obtained from the ZIFL Soils Report. All the calculations of emissions from SOC for land remaining land and land converted to another land use were estimated using a spreadsheet as guided by the IPCC 2006 methodologies in the improved guidance. Using Volume 4 Box 2.2 SOC estimation template ISFL guidelines. Reference: Soil Survey Report of The Eastern Province Zambia. Zambia Intergrated Forestry and Land Scape Project (ZIFL). 2020 National Soil Survey Program, ZARI Soils Research.
Chapoto, A., Chabala, L.M. and Lungu, O.N., 2016. A Long History of low productivity in Zambia: Is it time to do away with blanket recommendations?. Zambia Social Science Journal, 6(2), p.6. 6. Integrated Land Use Assessment Phase II – Report for Zambia. The Food and Agriculture Organization of the United Nations and the Forestry Department, Ministry of Lands and Natural Resources, Lusaka, Zambia.

**Auditor Response**: Thank you for this information and for providing the source data. However, when comparing values in the workbook Carbon STock EP EXcel9.xlsx, which demonstrates the calculation of SOCref for the beginning and end of the baseline period, to the values applied for SOCref in the workbook Final AFOLU GHG Inventory-ZILFP.xlsx, sheet Land Emissions Factors, the assessment team found the following discrepancies which require additional information:
(1) Forestland: In the Carbon STock EP EXcel9.xlsx, for the year 2009 a SOCref of 33.67 was calculated, but in the sheet Land Emissions Factors a value of 37.53 (which correspond to the year 2000). Please justify why 2000 data and not 2009 data was applied.
(2) Cropland: In the Carbon STock EP EXcel9.xlsx, for the year 2009 a SOCref of 35.99 was calculated, but in the sheet Land Emissions Factors a value of 45.87 (which correspond to the year 2000). Please justify why 2000 data and not 2009 data was applied.
(3) For the year 2018 in the sheet Land Emissions Factors, for cropland, the 2016 value of 28.31 was applied, but for forestland the 2019 value of 38.59 was applied. Unclear why each land use applied a different year.
(4) Grassland: No grassland SOC appears to have been calculated, thus forestland SOC was applied to this land use. Please provide justification for this.
This finding remains open.
**Project Personnel Response 2**: The program GHG inventory took note of the finding and has since adjusted the SOCref for Forestland, Grasslnad and Cropland in accordance with the reference earlier provided. In the new calculations - Final AFOLU GHG Inventory-ZILFP_25092022 workbook, the specific reference of the SOC value used for SOC ref Forestland, SOC ref Grassland and SOC ref Cropland applied were sourced from the ZIFLP 2021 - Carbon Stock Worksheet _ Soil Survey for Eastern Province provided by ZARI. The carbon stock worksheet can be found in the folder Land _ Soil Organic Carbon. The SOCRef was obtained from the ZIFL Soils Report. All the calculations of emissions from SOC for land remaining land and land converted to another land use were estimated using a spreadsheet as guided by the IPCC 2006 methodologies in the improved guidance. Using Volume 4 Box 2.2 SOC estimation template ISFL guidelines.
Reference: Soil Survey Report of The Eastern Province Zambia. Zambia Intergrated Forestry and Land Scape Project (ZIFL). 2021 National Soil Survey Program, ZARI Soils Research.
Chapoto, A., Chabala, L.M. and Lungu, O.N., 2016. A Long History of low productivity in Zambia: Is it time to do away with blanket recommendations? Zambia Social Science Journal, 6(2), p.6. 6. Integrated Land Use Assessment Phase II – Report for Zambia. The Food and Agriculture Organization of the United Nations and the Forestry Department, Ministry of Lands and Natural Resources, Lusaka, Zambia.
**Auditor Response 2**: Thank you for clarifying this and for providing updates. The audit team confirmed these values in the reference provided. However, in the workbook Final AFOLU GHG Inventory-ZILFP_25092022 workbook.xlsx, sheet Land Emission Factors, row 212, it states "SOC ref for forestland was used for grassland, because grassland is refered to as wooded grassland. According to ILUA II report, "Table 1: Land categories and vegetation classification" grassland is classified as Wooded grasslands (including pans and shrubs with some trees) contains Termitary vegetation and bush groups, Shrubs / thickets." However, it appears that this is not true. Rather the SOCRef from cropland is being applied to grassland. Please provide justification from the use of the cropland SOC for grassland.

**Project Personnel Response 3**: The statement in row 212 was included to assist the inventory team with narrative on the figures. However, it was overtaken in the latest assessment and was supposed to haven deleted. The statement has since been deleted in the updated workbook. The SOCref applied from cropland was applied to grassland because characteristics are close to cropland. This is because there are no SOCRef values for grassland and the GHG inventory team determined that the SOCRef were close enough and could be used

**Auditor Response 3**: Thank you for clarifying that the SOC ref values for cropland are being applied to grassland. This finding has been closed. However, please see finding below regarding the soil carbon values.

**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NIR 13 Dated 21 Mar 2022**
**Standard Reference**: ISFL ER Program Requirements
**Document Reference**: Methods and Data Documentation_Revised_14.02.2022; Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx;
Net_CO2_Emissions_from_AFOLU_Subcategories_Revised; Draft Final GHG Baseline_2009_2018_V7
**Finding**: The ER Program Requirements states that "The Program GHG Inventory shall utilize best available methods and existing data." Table 19 of the Methods and Data Documentation_ Revised_ 14.02.2022 indicates that for mineral soil carbon emission factors the following references are applicable:
"- Volume 4 Chapter 2 Box 2.2, Equation 2.25 - Tier 1: Default Stock Change Factor Method for estimating SOC
Chapter 5 - Table 5.5 Relative stock change factors (FLU, FMG, and FI) (over 20 years) for different management activities on cropland, page 5.17".
In section 3.7.6 of Annex 6 of the ERPD, it indicates that "The cropland Reference soil organic carbon was 21.263 (t C ha)." In the latest version of the IPCC GHG Database, in the Land Type Manager, it shows that a value of 0.0 t C/ha is applied for the SOCref in all Cropland types. Similarly for category 3.B.2.b.i the SOCref is shown as zero and the emissions associated with the conversion of forestland to cropland is calculated as zero in the database. The assessment team requests the following information:
-Please provide more information regarding the source of the SOCref for cropland (21.263 t C ha)
-Please provide more information regarding why SOCref and all soil calculations are not conducted in the GHG inventory database.
-Please demonstrate the soil pool calculations for the various subcategories.
**Project Personnel Response**: The SOC ref for Cropland is revised in the new calculations Final AFOLU GHG Spreadsheet under the Land Use Emissions Tab - Cell D195 and the value applied is 45.87 tC/ha based on the reference provided by ZARI on the Soil Organic Carbon Stocks for EP worksheet. Further the SOC for all land remaining in the same category and land converted to other land use have been demonstrated in the worksheet_Carbon STock EP EXcel9. All the calculations were guided by the IPCC in the improved guidance and not from the GHG database.
Reference: Soil Survey Report of The Eastern Province Zambia. Zambia Intergrated Forestry and Land Scape Project (ZIFL). 2020 National Soil Survey Program, ZARI Soils Research.
Chapoto, A., Chabala, L.M. and Lungu, O.N., 2016. A Long History of low productivity in Zambia: Is it time to do away with blanket recommendations?. Zambia Social Science Journal, 6(2), p.6. 6. Integrated Land Use Assessment Phase II – Report for Zambia. The Food and Agriculture Organization of the United Nations and the Forestry Department, Ministry of Lands and Natural Resources, Lusaka, Zambia.

**Auditor Response**: Thank you for this information and for providing the source data. However, when comparing values in the workbook Carbon STock EP EXcel9.xlsx, which demonstrates the calculation of SOCref for the beginning and end of the baseline period, to the values applied for SOCref in the workbook Final AFOLU GHG Inventory-ZILFP.xlsx, sheet Land Emissions Factors, the assessment team found the following discrepancies which require additional information:
(1) Forestland: In the Carbon STock EP EXcel9.xlsx, for the year 2009 a SOCref of 33.67 was calculated, but in the sheet Land Emissions Factors a value of 37.53 (which correspond to the year 2000). Please justify why 2000 data and not 2009 data was applied.
(2) Cropland: In the Carbon STock EP EXcel9.xlsx, for the year 2009 a SOCref of 35.99 was calculated, but in the sheet Land Emissions Factors a value of 45.87 (which correspond to the year 2000). Please justify why 2000 data and not 2009 data was applied.
(3) For the year 2018 in the sheet Land Emissions Factors, for cropland, the 2016 value of 28.31 was applied, but for forestland the 2019 value of 38.59 was applied. Unclear why each land use applied a different year.
(4) Grassland: No grassland SOC appears to have been calculated, thus forestland SOC was applied to this land use. Please provide justification for this.
This finding remains open.
**Project Personnel Response 2**: The program GHG inventory team took note of the finding and has since adjusted the SOCref for Forestland, Grasslnad and Cropland in accordance with the reference earlier provided. In the new calculations - Final AFOLU GHG spreadsheet. The specific reference of the SOC value used for SOC ref Forestland, SOC ref Grassland and SOC ref Cropland applied in Cell D193, 194 and 195 were sourced from the ZIFLP 2021 - Carbon Stock Worksheet _ Soil Survey for Eastern Province provided by ZARI. The carbon stock worksheet can be found in the folder Land _ Soil Organic Carbon. The SOCRef was obtained from the ZIFL Soils Report. All the calculations of emissions from SOC for land remaining land and land converted to another land use were estimated using a spreadsheet as guided by the IPCC 2006 methodologies in the improved guidance. Using Volume 4 Box 2.2 SOC estimation template ISFL guidelines. See
Reference: Soil Survey Report of The Eastern Province Zambia. Zambia Intergrated Forestry and Land Scape Project (ZIFL). 2021 National Soil Survey Program, ZARI Soils Research.
Chapoto, A., Chabala, L.M. and Lungu, O.N., 2016. A Long History of low productivity in Zambia: Is it time to do away with blanket recommendations? Zambia Social Science Journal, 6(2), p.6. 6. Integrated Land Use Assessment Phase II – Report for Zambia. The Food and Agriculture Organization of the United Nations and the Forestry Department, Ministry of Lands and Natural Resources, Lusaka, Zambia.
**Auditor Response 2**: Thank you for clarifying this and for providing updates. The audit team confirmed these values in the reference provided. However, in the workbook Final AFOLU GHG Inventory-ZILFP_25092022 workbook.xlsx, sheet Land Emission Factors, row 212, it states "SOC ref for forestland was used for grassland, because grassland is refered to as wooded grassland. According to ILUA II report, "Table 1: Land categories and vegetation classification" grassland is classified as Wooded grasslands (including pans and shrubs with some trees) contains Termitary vegetation and bush groups, Shrubs / thickets." However, it appears that this is not true. Rather the SOCRef from cropland is being applied to grassland. Please provide justification from the use of the cropland SOC for grassland.

**Project Personnel Response 3**: The statement in row 212 was included to assist the inventory team with narrative on the figures. However, it was overtaken in the latest assessment and was supposed to be deleted. The statement has since been deleted in the updated workbook. The SOCref applied from cropland was applied to grassland because characteristics are close to cropland. This is because there are no SOCRef values for grassland and the GHG inventory team determined that the SOCRef were close enough and could be used
**Auditor Response 3**: Thank you for clarifying that the SOC ref values for cropland are being applied to grassland. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NIR 14 Dated 21 Mar 2022**
**Standard Reference**: ISFL ER Program Requirements
**Document Reference**: Methods and Data Documentation_Revised_14.02.2022; Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx; Stock Diffrence Method_17.12.2021(2).xlsx; Latest_Comments_SCS Global.docx; Net_CO2_Emissions_from_AFOLU_Subcategories_Revised; Draft Final GHG Baseline_2009_2018_V7
**Finding**: The ER Program Requirements states that "The Program GHG Inventory shall utilize best available methods and existing data." When asked why the tier 1 option for equation 2.10 was applied, the project team responded in the document "Latest_Comments_SCS Global.docx" that "Tier 2 method will be used to estimate the annual increase in biomass carbon stocks (Equation 2.4 – IPCC 2006 Guidelines)." It also references "Chapter 2: Generic Methodologies Applicable To Multiple Landuse Categories, 2006 IPCC Guidelines Equation 2.8 Annual Change in Carbon Stocks in Biomass in Land Remaining in The Same Land-Use Category (Stock-Difference Method) ΔCB= Ct2 - Ct1 / T2 - T1; C = Σij {Ai j *Vi j *BCEFSij*(1+ Ri j) * CFi j)} Page 2.12." This suggests that the program team intends to apply the stock change approach. Page 2.12 of Ch2 of the 2006 IPCC Guidelines also states that "The Stock-Difference Method requires biomass carbon stock inventories for a given land area, at two points in time." It later states on page 2.13 "The Stock-Difference Method will be applicable in countries that have national inventory systems for forests and other land-use categories, where the stocks of different biomass pools are measured at periodic intervals. The stock-difference method requires greater resources and many countries may not have national inventory systems for forests and other land-use categories. This method is suitable to countries adopting a Tier 3 and in some cases a Tier 2 approach, but may not be suitable for countries using a Tier 1 approach due to limitations of data. It is important to make sure that inventory system generates data on gains and losses of biomass carbon pools." Overall, the stock change approach requires repeated inventory data, which it does not appear that the Zambia or the program has or is utilizing to apply this approach correctly. Furthermore, the IPCC GHG database provided (v7) still shows that a gain-loss approach is being applied. The tier 2 method in the IPCC 2006 Guidelines points to the second equation listed for equation 2.10 on page 2.15. However, in the IPCC GHG Database (v7) provided, the tier 1 equation to calculate the average annual biomass growth above and below-ground. For Tier 2 Gtotal is calculated as the Net annual increment data are used to estimate GW by applying a biomass conversion and expansion factor. Please clarify which approach is to be used and provide complete calculations and update all documentation to demonstrate the approach applied.
**Project Personnel Response**: In the new calculations - Final AFOLU GHG spreadsheet under the Land Use Emissions Tab - Cell E3, 4 Tier 2 method has been applied to estimate the annual increase in biomass carbon stocks according to Chapter 2 Generic methdologies applicable to multiple land use categories; Equation 2.8 page 2.12 of the IPCC 2006 guidelines using the Average annual biomass growth rate above and below ground (tonnes / ha*yr) - G Total = IV *BCEF*(1+R)
**Auditor Response**: By reviewing the updated calculation workb audit team has confirmed that the tier 2, gain loss method for forest remaining forest has been applied. This finding is closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NIR 15 Dated 21 Mar 2022**
**Standard Reference**: ISFL ER Program Requirements
**Document Reference**: Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx; Draft Final GHG Baseline_2009_2018_V7
**Finding**: The ER Program Requirements states that "The Program GHG Inventory shall utilize best available methods and existing data." Table 28 in Annex 6 of the ERPD shows that Average Above ground biomass of cropland (maize) is 3 t d.m/ha. However, in the latest version of the GHG database, the aboveground biomass value for cropland (maize) is 5 t d.m/ha, as shown when clicking the Land Type Manager. In addition to the biomass stock value, Table 28 in the ERPD shows the Refence SOC value for cropland is 21.263 t C/ha. However, the latest version of the GHG database shows a value of 0.0 t C/ha for cropland SOCref. Lastly table 28 shows the soil stock change factors (Flu, Fmg, Fi) as 0.58, 1, and 0.95 respectively. The latest version of the GHG database shows that these relative stock change factors for soil are all 0. It is unclear which values are intended to be used for the quantification of transitions involving cropland. Similarly for grassland, the assessment team found similar differences between the values reported in table 29 of the ERPD and the values utilized in the latest version of the IPCC GHG inventory database. Please provide clarification on the correct values and update all documents and quantification to reflect the intended values. Please also provide the clear references to the source documentation and justification for the values utilized.
**Project Personnel Response**: The SOC Stock change factors for cropland in the new calculations worksheet - Final AFOLU GHG spreadsheet in the Land Emission Factor tab cell E195,(0.58), F195(1) and G195 (0.95 ( FLU, FMG and FI) were default stock change factors obtained from Chapter 5, Cropland Table 5.5 Relative stock change factors (FLU, FMG, and FI) (over 20 years) for different management activities on cropland page 5.17. The SOC Stock change factor for grasslands in the new calculation - Final AFOLU GHG spreadsheet in the Land Emission Factors cell E194(1), F194(0.97) and G194(1) were deafult stock change factor obtained from Table 6.2 Relative stock change factors for grassland management page 6.16
**Auditor Response**: The audit team confirmed by reviewing the updated calculation workbook that the SOC stock change factors for both cropland and grassland have been sourced from the IPCC stock change factor tables and are applied accordingly for the calculation of soil carbon emissions during transitions. This finding has been closed. However see finding 13 above for further questions related to the SOC reference for the various land uses classes.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NIR 16 Dated 21 Mar 2022**
**Standard Reference**: ISFL ER Program Requirements, IPCC 2006 Guidelines, ISFL Guidance note on application of IPCC Guidelines
**Document Reference**: Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx; Draft Final GHG Baseline_2009_2018_V7
**Finding**: The ER Program Requirements states that "ISFL ER Programs shall, for the purpose of ISFL Reporting, compile a GHG inventory of all AFOLU categories, subcategories, gases and pools12 in the Program Area (Program GHG Inventory) utilizing existing data that have been collected using best available methods and approaches that are consistent with the most recent IPCC guidance and guidelines." Chapter 2 of the IPCC 2006 Guidelines indicates that for tiers 2 and 3, for estimating change in carbon stocks in biomass, equations 2.15 and 2.16 shall be applied. Equation 2.16 calculates the initial change in biomass carbon stock on land converted to another land category and is based on the biomass stock immediately before the conversion (Bbefore) and the biomass stock immediately after conversion.

Furthermore, Section 5 of the ISFL Guidance note on application of IPCC Guidelines indicates that for forest lands converted to cropland or grassland states "For lands converted to grassland the Guidelines define a two-phase approach. Phase 1 is estimated at the year of conversion and involves the abrupt change in biomass associated with the land-use change. The second phase accounts for gradual biomass loss and gain during a transition period to a new steady-state system." It later states that "for both for ISFL Reporting and ISFL Accounting, shall assume that in the year of conversion, the biomass carbon stocks (including both aboveground and belowground biomass) go instantly from the average biomass carbon stocks in forest to the average biomass carbons stocks in the new steady state system. ISFL ER Programs are also not required to assume transfer of carbon stocks between pools based on a disturbance matrix. Within the context of the ISFL (with ISFL ERPA Phases that are shorter than the 20-year transition period) this may be considered as conservative since it leads to lower emissions in the year of conversion."

In the latest version of the IPCC GHG database (V7), for conversions of forestland to grassland and forestland to cropland, the biomass stock after the conversion is listed as 0. However, as indicated in the above finding, it appears that the biomass stock of cropland may be 5 t d.m/ha (GHG Database) or 3 t d.m/ha (ERPD). It is unclear why the biomass stock for grassland is listed as zero. If the biomass stock of cropland is 5 tdm/ha then in the year of transition, the emission factor would be the forest carbon stock minus the cropland carbon stock. Therefore, it does not appear that the ISFL Guidance note is being followed in that the biomass carbon stocks of forestland are not transitioning immediately to the average biomass carbon stocks of the new steady state system (cropland or grassland). It also does not appear that the biomass in the new steady state which includes annual gains and losses is being tracked overtime after the transitions. The gains and losses refers to the annual carbon stock change in cropland or grassland systems. Thus the assessment team requests the following information:
-Please indicate why for conversions from forestland to cropland and grassland, the program assumes that all carbon is lost immediately and that the new steady state contains zero carbon. Is there no evidence of aboveground biomass (trees) in grassland or cropland systems?
-Please demonstrate how after the transition from forest to cropland or grassland, the steady state system is accounted for overtime (gradual biomass gains and losses)

**Project Personnel Response**: In the new calculation worksheet the average carbon stocks for Forestland converted to Cropland were estimated at -186,771 tonnes C/yr in the Tab Forestland converted to Cropland Cell D13. For Forestland converetd to Grassland it was estimated at -28,237 tonnes C/yr in the Tab Forestland converted to grassland Cell D13 and Foretsland converetd to settlements Tab were estimated at -10,540 tonnes C/yr Cell D13. The biomass stocks before the conversion were obtained from ILUA II Report (2016) Table 17 page 59
**Auditor Response**: Thank you for the updated calculations and for pointing this out. The audit team confirmed, by reviewing the updated calculation workbook, that the carbon stock in the nonforest land use is now being applied in the calculation of the conversion from forest to nonforest. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NIR 17 Dated 21 Mar 2022**
**Standard Reference**: ISFL ER Program Requirements, IPCC 2006 Guidelines, ISFL Guidance note on application of IPCC Guidelines
**Document Reference**: Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx; Draft Final GHG Baseline_2009_2018_V7
**Finding**: Section 3.2 of the ISFL Guidance note on application of IPCC Guidelines states that "The net annual CO2 removals shall be calculated using equations 2.15 and 2.16 from the 2006 IPCC Guidelines, Volume 4, Chapter 2. These equations shall be simplified by assuming that during the conversion from non-forest to forest, carbon stocks will go from average carbon stocks in non-forest to average carbon stocks in forests during a period of time. This calculation shall consider the maximum carbon stocks in different forest types and it shall be ensured that the estimated forests carbon stocks will not continue growing beyond this maximum value. A conservative default period of 20 years is suggested for the forest to grow from the carbon stock levels of non-forest to the level of biomass, stable soil and litter pools of the average forest. Alternative periods may be used but shall be justified and this justification shall also consider the maximum carbon stocks in different forest types." In reviewing the latest version of the IPCC GHG database (v7) it does not appear that equations 2.15 or 2.16 are being applied for conversions from nonforest land to forest land or that there is any accounting for the conversion of cropland to forestland. The guidance note requires that the average carbon stock in the post-transition class (forest) be tracked and accounted for. The transition is required to take 20 years. Please demonstrate how the program is tracking the average carbon stock in the post transition forest class overtime.
**Project Personnel Response**: ISFL guidance that states that for transitions from non-forest to forest, average carbon stocks can be used. The average carbon stock of cropland converted to forestland was estimated at 77,505 tonnes C/yr. The biomass carbon stocks before the conversion were obtained from ILUA II (2016) Table 17, page 59
**Auditor Response**: It does not appear that this finding was understood or addressed. Given the complexity of this finding and the multiple parts of the quantification it pertains to, the assessment team has closed this finding and opened up several NIRs (26 and 27 below). This finding was closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NIR 18 Dated 21 Mar 2022**
**Standard Reference**: ISFL ER Program Requirements
**Document Reference**: Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx; Draft Final GHG Baseline_2009_2018_V7
**Finding**: The ER Program Requirements states that "The Program GHG Inventory shall utilize best available methods and existing data." Section 3.7.7 of Annex 6 of the ERPD indicates that "Given in table 72 is country specific activity data for area of cropland in the Eastern province (2009 – 2018). The analysis had limitations in estimating annual change in carbon stocks in biomass due to the classification of the land use maps. Data was obtained from the Forestry Department and own analysis was undertaken to deduce areas of cropland that were inputted into the IPCC software." In the IPCC GHG database, it shows various areas (ha) of cropland for the different crop types. For instance, in 2012 bambara nuts were 530 ha, burley tobacco was 6052 ha and so on. In order to verify the areas of cropland during the baseline period, the assessment team requests more information regarding exactly how these areas of cropland were derived for each crop type.

**Project Personnel Response**: The area of Cropland for each crop type was adapted from the Post-Harvest Survey (PHS) Report as captured by the Zambia Statistical Agency (formerly Central Statistics Office, CSO). According to the Zambia Statistical Agency (Zamstat), the PHS covers households engaged in crop and livestock production and other agricultural activities in order to provide data on agricultural production and practices. Data collection activities usually takes place during the months of October and November of each farming year (Central Statistical Office, 2008-2018).

It should be noted that the PHS data for 2008, 2009, 2010, 2011, 2016, 2017 and 2018 is not available. For these years the Crop forecast survey (CFS) data has been used. Both the CFS and PHS are undertaken by the Ministry of Agriculture and Zamstat. The survey methodologies for both PHS and CFS is similar and it is highlighted below.

Survey Methodology
The sample designs are based on a probability sample of 13,600 agricultural households selected from 680 standard enumeration area (SEAs) in which small and medium scale farming households are interviewed. The samples are selected country-wide from every district to produce nationally representative results. The sampling frame of (SEAs) for the PHS are then constructed using the national Census of Population and Housing data. Within each district, the SEAs are then stratified by predominant crop in order to ensure it is representative sample of each crop. The SEAs are then sorted by geographic codes to ensure that geographic distribution of the SEAs are also representative.

A two stage random stratified cluster sampling method is used. The primary sampling units (PSUs) are individual SEAs. Therefore, at the first stage, a proportionally allocated number of PSUs which are standard enumeration areas, in each province and district are selected using Probability Proportional to Size (PPS) selection procedure. The measure of size for the selection of SEAs with PPS within each stratum is the number of agricultural households enumerated in the national Census of Population and Housing (Central Statistical Office, 2008-2018).

Adjusted Cropland
The adjusted area estimates for cropp land covered by different crops were derived from PHS results for EP using the land cover and land use map information depicting the forestland converted to cropland over the period under review. Therefore, the total cropland results from the PHS were recomputed, extrapolated and aligned to converted cropland using the ratios of each crop recorded for EP.

Dummy note: Maize = 1,000 ha
Cassava = 50 ha
Sorghum = 35 ha
Millet = 25 ha
Cowpeas = 15 ha
Soya beans = 10 ha
Total = 1,135 ha (PHS)

Adjustments: (Forestland converted to cropland 2008) = 500,000 ha

Dummy response: Maize = 440,529 ha
Cassava = 22,026 ha

Sorghum = 15,419 ha
Millet = 11,013 ha
Cowpeas = 6,608 ha
Soya beans = 4,405 ha
Total = 500,000 ha (PHS)

REFERENCE
1. Central Statistical Office, Post-Harvest Survey Reports 2008-2018, Lusaka
https://www.zamstats.gov.zm/publications

**Auditor Response**: While this information provided is useful, in the current calculation workbook provided Final AFOLU GHG Inventory-ZILFP.xlsx, it does not appear that the area of forest converted to cropland is divided up by the different cropland types as it was in the previous iteration of the submission. Thus we are confused by the response as it does not appear that any of these values are actually used. Please point us to where in the calculation workbook, these values of the different crop types are actually utilized in the determination of cropland emissions. This finding remains open.

**Project Personnel Response 2**: The Programme GHG Inventory team had data available for area according to crop types for the baseline period, 2009-2018 which was derived from the PHS and CFS. In addition, information on areas of different forest types converted to cropland was available. However, the information on how to apportion the forestland converted to cropland into specific crop types is not available, because the spatial data obtained using Colect Earth does not disaggregate according to specific crop types. For this reason, different types of forestland converted to cropland area was used in estimating emissions.
**Auditor Response 2**: Thank you for the clarification on this point. This new information request has been satisfied.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NCR 19 Dated 21 Mar 2022**
**Standard Reference**: ISFL Emission Reductions (ER) Program Document (PD) Template V2.0
**Document Reference**: Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx;
**Finding**: Section 4.1.2 of the ERPD template state "Using the table below, provide a summary of the Program GHG Inventory. When completing the table, please list the subcategories in order of the relative magnitude of contribution of these subcategories to the absolute level of the total GHG emissions and removals in the Program GHG Inventory, starting with the subcategory that makes the largest contribution." The Table 5 that follows in the ERPD template contains 4 columns: Subcategory, net Emissions and removals, relative contribution to the absolute level of the total GHG emissions and removals in the program GHG inventory (%), and associated carbon pools and gases." In section 4.1.2 of the ERPD submitted, table 9 includes 4 columns, except 1 of which is the "Cumulative Contribution to the absolute level of the Total GHG Emissions and Removals in the Program GHG Inventory (%)" and not the required column of "associated carbon pools and gases." Thus, the table is not in conformance with the requirements of the ERPD template as it does not correspond exactly to the columns in Table 5 of the Template.
**Project Personnel Response**: Table 5 corresponds to Table 9 and starts on page 55 in the ERPD. The table has been revised accordingly to comform with the ERPD template requirements. Table 9 has been revised to list the subcategories in order of the relative magnitude of contribution of these subcategories to the absolute level of the total GHG emissions.
**Auditor Response**: It appears that table 11 in the ERPD is now the table in question. We confirmed that this table conforms to the requirements of the the ERPD template. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NCR 20 Dated 21 Mar 2022**
**Standard Reference**: ISFL Emission Reductions (ER) Program Document (PD) Template V2.0
**Document Reference**: Zambia Eastern Province ISFL - ERPD ver 10 - EDITED(1).docx;
**Finding**: Section 4.2.3 of the ERPD Template requires the following: "Based on the analysis above, complete the table below by listing all subcategories from step 1 and identifying those subcategories for which step 2 has shown that the historic activity data and emission factors available, and the methods used to collect these activity data and emission factors, meet the
quality and baseline setting requirements for ISFL Accounting. [Corresponds to ISFL ER Program Requirement 4.3.11]." In section 4.2.2 of the ERPD provided, it states "Table 14 lists all subcategories from step 1 and identifies those subcategories for which step 2 has shown that the historic activity data, the emission factors available and the methods used to collect these activity data meet the quality and baseline setting requirements for ISFL Accounting" and then table 14 is displayed. However, table 14 is shown in section 4.2.2 and not in section 4.2.3. In fact there is no section 4.2.3 in the ERPD and thus the ERPD is not in conformance with the template requirements.
**Project Personnel Response**: Table 12 as Final selection of the subcategories eligible for ISFL Accounting is now shown as Section 4.2.3 on Page 77 of the ERPD Report version 11 Dated 18 June 2022 Submitted.
**Auditor Response**: Confirmed that table 16 (final selection of subcategories) is shown in section 4.2.3 of the ERPD. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NIR 21 Dated 18 Aug 2022**
**Standard Reference**: ISFL ER Program Requirements
**Document Reference**:
Abel2022_EP_Reviewed_and_Analyzed_AD_for_Eastern_Province_20191230_v1; Final AFOLU GHG Inventory-ZILFP.xlsx
**Finding**: Section 4.3 of the ER Program Requirements states "ISFL ER Programs shall list all the subcategories from the Program GHG Inventory, with the associated Carbon Pools and gases, in order of the relative magnitude of contribution of these subcategories to the absolute level of the total GHG Emissions and Removals in the Program GHG Inventory." The collect earth data summarized in the workbook Abel2022_EP_Reviewed_and_Analyzed_AD_for_Eastern_Province_20191230_v1.xlsx shows on sheet Saiku Data that the analysis indicated otherland remaining otherland, wetland remaining wetland, settlement reamining settlement, and wetland converted to grassland subcategories were found across the program area. However, in the workbook, Final AFOLU GHG Inventory-ZILFP.xlsx, it does not show any calculations for these 4 land use subcategories. Furthermore, in the table in section 4.1.2 of the ERPD, these land use classes are also not listed (i.e., CO2 from wetland remaining wetland). Please provide more information regarding why these land use subcategories have been excluded from the analysis.
**Project Personnel Response**: The Programme GHG Inventory team acknowledges the observations made by the Assessment Team and the adjustments have been made to include the missing subcategories. See Final AFOLU GHG Inventory-ZILFP_25092022 workbook.
**Auditor Response**: The audit team is still not seeing all of these missing subcategories in the workbook. For instance, in the sheet 'Summary of prog inventory', we see some wetland-wetland CH4 and N20 subcategories, but do not see otherland remaining otherland or settlement remaining settlement. It appears that with the new set of collect earth data the wetland converted to grassland subcategory is no longer present. Note that this finding is not suggesting that these subcategories must be included in the GHG inventory, but we are simply asking for a justification regarding why these land use subcategories which exist on the landscape have been excluded for the total inventory, if that is the case. This NIR has therefore not been addressed.
**Project Personnel Response 2**: There are no country specific emission factors and SOCRef for deadwood and litter in wetlands and other land to estimate emissions in these categories. Thus CH4 and NO2 from wetlands burning and other land have been removed since emissions were not estimated as they are not present in the Land Use Category
**Auditor Response 2**: Section 4.1.3 of the ISFL requires the following "The Program GHG Inventory shall utilize best available methods and existing data. This may include the use of Activity Data Proxies if needed, and IPCC Tier 1 data and methods if no data are available to apply higher Tier methods. ISFL ER Programs are encouraged to apply higher Tiers over time, as possible." Not having country-specific (tier 2) data available for land use or subcategory does not preclude it from inclusion in the initial GHG inventory. The wetland remaining wetland and other remaining other category are present on the landscape but no accounting has been provided for these categories. Please demonstrate accounting of these subcategories utilizing the best available data (even if that is tier 1 data). This finding remains open.

**Project Personnel Response 3**: Emissions have been estimated for flooded land remaining flooded land under wetlands Remaining Wetlands using Equation 3A.1 . Default emission factors of (i) P (ice-free period, days yr-1) and (ii) E(CH4)diff (averaged daily diffusive emissions, kg CH4 ha-1 day-1) were used. The methodology is from Appendix 3 vol 4

For Other Land Remaining Other land Soil carbon, deadwood wood and litter and biomass are zero.This is consistent with the Otherland definition in the ILUA II, where it is defined as “Barren land covered by natural bare earth / soil such as sandy dunes, beach sand, rocky outcrops and may include old open quarry sites for mines and related infrastructure outside settlements”.

**Auditor Response 3**: The audit team confirmed that these subcategories have been calculated using the tier 1 default data and assumptions. This finding has been closed.

**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NIR 22 Dated 18 Aug 2022**
**Standard Reference**: ISFL ER Program Requirements
**Document Reference**: Final AFOLU GHG Inventory-ZILFP.xlsx
**Finding**: The ER Program Requirements states that "The Program GHG Inventory shall utilize best available methods and existing data." In the calculation workbook as well as the ERPD, it shows that the forestland category is divided into 4 forest types: dry evergreen forest, dry deciduous forest, moist evergreen forest, and woodlands. It is unclear to the assessment to exactly how the area of forestland and the conversions to and from each of these forest types has been determined. This is not explained in the annex 6 of the ERPD or in section 4.2.2 of the ERPD. Please provide more information regarding this analysis so that it can be replicated by the assessment team.
**Project Personnel Response**: Section 4.5.3 in the main report explains that Activity Data for Land use change in the area of Forestland and Conversion to and from other forest types was determined by Collect Earth Method, which is described in depth in Annex 6 Report in Section 2.1. The four broad classes are derived from published literature on vegetation types in Zambia Day et al (2014) and comparing it to the rasterised vegetation map of Zambia clipped to the Eastern Province extent. See map attached in the "E. Raw Data_sept_2022" folder. The classes are as follows:

| Class | Feature in the Raster |
|---|---|
| Dry deciduous forest | Baikaea forest and deciduous thicket |
| Dry evergreen forest | Parinari forest |
| Moist evergreen forest | Riparian, swamp |
| Woodland (semi evergreen) | Miombo, Mopane and Munga woodlands |

**Auditor Response**: The audit team has not been able to confirm or replicate the areas of the different forest type classes. As described by the Eastern province team during a call on 11/1/2022, the area of each forest class es determined by overlaying the 3200 collect earth points on the EP_vegn_sept.shp and counting the number of points that were classified as forest at the start (2009) that fell within each of the classes. We followed this approach and found that there are only 4 points in the dry decidious forest type out of 1838 collect earth points classed as Forest in the year 2008. If we calculated a percentage that would be 4/1838 * 100 = 0.218%. If we then multiply that percentage by the total hectares in forestland in 2008 (2927926.533125 ha), the resulting area would be 6,372 ha. In the workbook Final AFOLU GHG Inventory-ZILFP_25092022 workbook.xlsx, sheet LU-BY-MAJOR-VEGET (2) it shows that there are 228,743 ha in the dry deciduous group, thus we are far off in our estimate. We also note that the shapefile provided (EP_vegn_sept.shp) and your explanation does not include the 2 plantation land covers. Furthermore, it is unclear how the forest areas after year 1 were calculated. We had assumed you subtracted out any area of forest loss for each year, but it is unclear how the forest loss by forest type class was determined. Please provide more information including clear demonstration in excel or with screenshots of images/your process and a step by step explanation, showing how the areas of these 4 indigenous forest types and 2 forest plantation types were calculated at the start of the baseline period and for all years of the baseline. The audit team notes that in the workbook LULUCF_Analysis_24.09.2022.xlsx, sheet Land Activity data Areas, it shows that there are several ratios used to calculate the areas and that the ratios change by year, but it is unclear how these ratios were derived. Please note that the audit team must be able to replicate these areas and thus request all information to enable us to do so. This finding remains open.

**Project Personnel Response 2**: Vegetation classes were extracted for forestland using the vegetation map in GIS sofware. In total there were 8 classes. Missing data points were reclassified using images in google earth and basemaps in GIS software. These 8 classes were further recalssified into four broad vegetation types. The four broad classes are based on published literature on vegetation types in Zambia (Day et al (2014) (Zambia country profile - Monitoring, reporting and verification for REDD+, Table 1, page 6) and comparing it to the vegetation map of Zambia clipped to the Eastern Province extent. See map in Revised_ERPD_22Nov22_fin\E. Raw_Data_Nov_2022\3B. LAND DATASET\Final vegtn class_EP. The vegetation classes were reclassified as follows:

| Class | Feature in the Vegetation Raster |
|---|---|
| Dry deciduous forest | Baikiaea forest and deciduous thicket, mopane, munga |
| Dry evergreen forest | Parinari and Copperbelt Chipya |
| Moist evergreen forest | Riparian Forest, Main River (wide) |
| Woodland (semi evergreen) | Miombo woodland on plateau, escarpment and valley soils |

A work book is included in Revised_ERPD_22Nov22_fin\E. Raw_Data_Nov_2022\3B. LAND DATASET\Final vegtn class_EP\vegtn_class_final which shows how the ratios for the vegetation classes were finally determined.
Plantation data was obtained from Forestry Department records. The document is located in Revised_ERPD_22Nov22_fin\G. Reference_Materials_Nov_2022\FD_Plantation Data_28.11.22
**Auditor Response 2**: Thank you for the information. The audit team has been able to replicate the areas of forest types in the Eastern Province. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NIR 23 Dated 18 Aug 2022**
**Standard Reference**: ISFL ER Program Requirements
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 11__ZEMA_edits_18.06.22 ver 2_clean
**Finding**: Section 4.3.3 of the ER Program Requirements states " ISFL ER Programs shall list all the subcategories from the Program GHG Inventory, with the associated Carbon Pools and gases, in order of the relative magnitude of contribution of these subcategoriesto the absolute level of the total GHG Emissions and Removals in the Program GHG Inventory. " Next section 4.3.4 states " From this list, all ISFL ER Programs shall initially select the following subcategories:
i. Any subcategories involving conversions from or to forest land;
ii. Forest land remaining forest land;
iii. Any subcategories involving conversions between land-use categories other than forest land that, cumulatively with the conversions from or to forest land, amount to 90% of the absolute level of the total GHG Emissions and Removals associated with all land use conversions in the Program GHG Inventory; and
iv. The single most significant of the remaining subcategories in order of the relative magnitude of contribution of these subcategories to the absolute level of the total GHG Emissions and Removals in the Program GHG Inventory." In table 12 in section 4.2.3 of the ERPD, it lists 7 subcategories that are eligible for ISFL accounting. These include all subcategories involving conversions from or to forest land (i of 4.3.4), forest land remaining forest land (ii of 4.3.4), and cropland remaining cropland which is the single most signficiant of the remaining subcategories (iv. of 4.3.4). However, in table 14 of section 4.4.2, 8 subcategories are included in the baseline, as grassland remaining grassland has been included. Sectyion 4.3.5 of the ER Program requirements states that "Additional non-forest related subcategories may be included at the discretion of the ISFL ER Program if the quality requirements in Section 4.2 are met, provided there is a clear rationale for including these subcategories in terms of improving ISFL ER Program mitigation performance." The assessment team requests a clear rationale for the inclusion of the grassland remaining grassland subcategory in the ISFL baseline.
**Project Personnel Response**: The Programme GHG Inventory Team notes the observations of the Assessment Team and Grassland Remaining Grassland has now being removed and new ISFL Baseline calculated.
**Auditor Response**: We are confused. The ERPD shows that grassland remaining grassland is being included in the baseline. Please clarify your response to this finding. This finding therefore remains open.
**Project Personnel Response 2**: This issue has been addressed in the latest version of the workbook. Grassland remaining grassland is included in the workbook as current dataset shows grassland remaining grassland is present in Eastern Province.
**Auditor Response 2**: Thank you for this clarification. The audit team will await the update to the ERPD to evaluate this finding.
**Project Personnel Response 3**:
**Auditor Response 3**: This finding is encompassed within finding # 52, thus this has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NCR 24 Dated 18 Aug 2022**
**Standard Reference**: ISFL ER Program Requirements
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 11__ZEMA_edits_18.06.22 ver 2_clean
**Finding**: Section 4.2.6 of the ER Program Requirements states " The Emissions Baseline shall be constructed based on the average annual historical GHG Emissions and Removals over a historical period (Baseline Period) of approximately 10 years. This Emissions Baseline shall be constructed based on at least two data points." Table 15 in section 4.4.2 of the ERPD shows the Emissions Baseline estimate for 10 years. However, this shows that the value changes annually. It appears that year 1 corresponds with the value for the year 2009 in Table 14. Year 2 then corresponds with year 2010 in Table 14 and so on through year 2018. This is not in conformance with the requirements of section 4.2.6 which indicates that the emissions baseline should be an average of all years in the baseline period.
**Project Personnel Response**: The Programme GHG Inventory acknowledges the observation with auditors and has revised Table 18 on page 78 of the main report accordingly.
**Auditor Response**: The audit team confirmed that the emissions baseline in Table 18 of the ERPD shows the same average value for each year. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NCR 25 Dated 18 Aug 2022**
**Standard Reference**: ISFL ER Program Requirements, IPCC 2006 Guidelines, ISFL Guidance note on application of IPCC Guidelines
**Document Reference**: Final AFOLU GHG Inventory-ZILFP.xlsx
**Finding**: Section 3.2 of the ISFL Guidance note on application of IPCC Guidelines states that "The net annual CO2 removals shall be calculated using equations 2.15 and 2.16 from the 2006 IPCC Guidelines, Volume 4, Chapter 2. These equations shall be simplified by assuming that during the conversion from non-forest to forest, carbon stocks will go from average carbon stocks in non-forest to average carbon stocks in forests during a period of time. This calculation shall consider the maximum carbon stocks in different forest types and it shall be ensured that the estimated forests carbon stocks will not continue growing beyond this maximum value. A conservative default period of 20 years is suggested for the forest to grow from the carbon stock levels of non-forest to the level of biomass, stable soil and litter pools of the average forest. Alternative periods may be used but shall be justified and this justification shall also consider the maximum carbon stocks in different forest types." The assessment team confirmed that the average biomass carbon stocks were sourced from ILUA II (2016). However, in the latest workbook provided, Final AFOLU GHG Inventory-ZILFP.xlsx, sheet Land Emission Factors, cells M35-M38, cells K47-K50, etc, it does not appear that equations 2.15 or 2.16 of the IPCC 2006 Guidelines has been applied correctly. Equation 2.16 calculations the initial change in biomass on land converted. The parameter Bbefore is the biomass carbon stock on the land before conversion and the parameter Bafter is the biomass carbon stock immediately after the conversion. This equation requires that the Bbefore is subtracted from Bafter. However, in the workbook, sheet Land Emission Factors, a value of zero was applied for Bafter. Table 17 and Table 20 in IlUA show the total carbon stock value for aboveground and belowground live tree carbon in the different land uses (forest, cropland, grassland, settlement, etc). It is unclear why these values were not used for the Bafter parameter. But in the other sheets like "Cropland to Forest", "Forest to Cropland" the Bafter biomass was utilized. Please provide more information about the zero value applied to Bafter in the sheet Land Emission Factors.

**Project Personnel Response**: Cells M35-M38 and K47-50 were not used in the calculations and have since been deleted. The formulas are embedded in respective worksheets dealing with conversions from one landuse to another. See Final AFOLU GHG Inventory-ZILFP_25092022 workbook.
**Auditor Response**: Thank you for clarifying this. We have confirmed that these values have been deleted and are not used in the calculations. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NIR 26 Dated 18 Aug 2022**
**Standard Reference**: ISFL ER Program Requirements, IPCC 2006 Guidelines, ISFL Guidance note on application of IPCC Guidelines
**Document Reference**: Final AFOLU GHG Inventory-ZILFP.xlsx
**Finding**: Section 3.2 of the ISFL Guidance note on application of IPCC Guidelines states that “For the purpose of ISFL Accounting, ISFL ER Programs shall apply section 4.3 from the 2006 IPCC Guidelines, Volume 4, Chapter 4 considering the general guidance provided below (including guidance provided in box 2 in the form of an example):...
-The net annual CO2 removals shall be calculated using equations 2.15 and 2.16 from the 2006 IPCC Guidelines, Volume 4, Chapter 2. These equations shall be simplified by assuming that during the conversion from non-forest to forest, carbon stocks will go from average carbon stocks in non-forest to average carbon stocks in forests during a period of time. This calculation shall consider the maximum carbon stocks in different forest types and it shall be ensured that the estimated forests carbon stocks will not continue growing beyond this maximum value. A conservative default period of 20 years is suggested for the forest to grow from the carbon stock levels of non-forest to the level of biomass, stable soil and litter pools of the average forest. Alternative periods may be used but shall be justified and this justification shall also consider the maximum carbon stocks in different forest types.” Section 1 of the guidance provides further explanation that "This means that in a particular year, GHG emission and removals associated with land use are not just the result of the land use changes occurring in that year but also of emission and removals resulting from land use changes that occurred in previous years (for the purpose of this guidance we will refer to these emissions and removals resulting from land use changes in previous years as “legacy emission/removals”)." Lastly section 2.3.1.2 of the 2006 IPCC indicates that "the land affected by conversion should remain in the conversion category for 20 years or other period used in the inventory. "
(1) It does not appear that these requirements are being applied. For instance, in the workbook, sheet Land Activity Data Conversions it shows that between 2008-2019 26,770 ha were converted from cropland to forest land, spread over 10 years that is 2677 ha per year. Then in the sheet Cropland to Forestland, it does not show that the transition of that 2677 ha takes 20 years. There is no division by 20 in any of the biomass cells (row 6). Please demonstrate that a 20 year transition period for biomass pools has been applied for nonforest to forest transitions.
(2) Second, given that it takes 20 years to transition to forestland after the year of conversion, the land must remain in that conversion class for 20 years. For instance if 20 ha converted from cropland to forestland in 2009, they would not be counted as forestland until 20 years later 2029. At this point, it is unclear how the total area in each land use class and each forest type class have been derived (sheet LU-BY-MAJOR-VEGET (2)) for each year, thus the audit team cannot determine if the program team is accounting for a 20 year transition period of nonforest land to forest land. Therefore, request a demonstration through the use of clear, transparent calculations (with active cell formulas in excel) exactly how the areas of each land use class are calculated for each year. Because the areas have been pasted directly into the excel file, we have been unable to track exactly how the areas have been calculated for each year or determine if a 20 year transitin period for nonforest to forest land has been applied.
(3) given that when nonforest land transitions to forestland, it remains in a transition class for 20 years, these transition classes would contain less biomass carbon and thus it does not appear likely that they would be harvested or disturbed at the same rate or intensity that forestland classes would. Please provide more information regarding how the disturbances and harvesting of nonforest-forest transition land is considered or differs from the rates/intensities of disturbances and harvesting on forestland.

**Project Personnel Response**: The inventory team takes note of the observations and conversion cropland to forestland has been removed since it did not reach the 20 year equilibrium period. The areas were restored to cropland instead and estimates were made accordingly. Revisions have since been made in the ERPD and in Final AFOLU GHG Inventory-ZILFP_25092022 workbook.

**Auditor Response**: Part 1 and 2: It appears that this finding was not understood as the approach of removing croplanded converted to forestland transitions (even though it was found during the collect earth analysis), is not accurate, conservative, or in conformance with the requirements, nor was it justified in the findings response. During a call with the program team on 1 November 2022, it was explained that these lands are actually fallow croplands that may be transitioning to forestland (slowly) or may revert back to active cropland as part of the crop rotation. We discussed three options to proceed here: (1) provide justification with data supporting that these lands are in fact not going to transition to forest, but are rather remaining as cropland, (2) a more accurate emission factor for fallow cropland could be used, (3) the most conservative approach (highest baseline removals) is to classify these lands as cropland convrted to forest land. At this point, the assumption that 13 points identified as cropland converting to forest, then remain as cropland and that the 1 point of settlement converted to forestland remains as settlement, as shown in the workbook 1. Abel2022_EP_Filtered_and_Analyzed_AD_for_Eastern_Province_final_24.09.22.xlsx, sheet Saiku Data is not in conformance with the ISFL or IPCC accounting requirements.

This initial finding indicates that it takes 20 years for the biomass accumulation (transition from nonforest to forest) to be complete. Thus there is a steady increase in biomass over a 20 year period in the area that is converting from cropland to forestland. To restate the original finding ---In the PREVIOUS calculation workbook, sheet Land Activity Data Conversions it showed that between 2008-2019, 26,770 ha were converted from cropland to forest land, spread over 10 years that is 2677 ha per year. Then in the sheet Cropland to Forestland (where the emissions are calculated), it does not show that the transition of that 2677 ha takes 20 years. Box 2 of the ISFL Guidance Note demonstrates exactly how this calculation shall be carried out. Essentially it shows that if 2,250 ha of cropland converts to forestland over a 10 year baseline (225 ha/year), and the cropland contains 4 tCO2e and forestland contains 44 tCO2e, the annual increase of carbon would be 2 tonnes Co2e per year (44-4/20), and it should take 20 years for those removals to be completed.

- Thus in year 1 the removals are 225 * 2 tCO2e = 450 tCO2e
- In year 2 they are (225ha* 2 tCO2e) + (225 * 2 tCO2) = 900 tCOe (this is because the emissions take 20 years to complete, so year 2 includes planting from year 2 emissions + planting from year 1 emissions)
- In year 3 they are 225 * 2 CO2e) = (this is because the emissions take 20 years to complete, so year 3 includes planting from year 3 emissions + planting from year 2 emissions + planting from year 1 emissions)
- At year 20, the year 1 emissions drop off (they have been completed). At year 2021, the year 1 and the year 2 emissions have been completed. Of course for this baseline being 10 years, none of the removals are actually completed during the 10 years and the transition will continue on into the future till year 2029 (which is not quantified in the baseline).
- This calculation is all shown quite clearly in Box 2 of the ISFL Guidance Note and in a cascade format which is often helpful for visualization and tracking the quantification

Please demonstrate that a 20 year transition period for biomass pools has been applied for nonforest to forest transitions. Please play close attention to section 3.2 (specifically Box 2) in the 'ISFL Guidance note on application of IPCC guidelines for subcategories and carbon pools where changes take place over a longer time period,' which explicitly demonstrates how to calculate the Change in biomass carbon stocks (above-ground biomass and below-ground biomass) for land (nonforest) converted to forest land. This finding remains open.

Part 3 of this finding was also, subsequently not addressed: "given that when nonforest land transitions to forestland, it remains in a transition class for 20 years, these transition classes would contain less biomass carbon and thus it does not appear likely that they would be harvested or disturbed at the same rate or intensity that forestland classes would." Basically these transition lands are not "forestland remaining forestland" yet. They are in transition, thus cannot be accounted for as forestland and cannot have the forestland growth rate, disturbance rate, harvesting, etc applied to them. In the previous calculation workbook, it showed the land transitioned from cropland to forestland entering into the forestland estate immediately, which was not in conformance with the IPCC or ISFL guidelines. This component of the finding will also need to be addressed when items 1 and 2 are updated.

**Project Personnel Response 2**: Under the baseline, there is a likelihood- that the crop land lying under no-till would return to crop land. As indicated in the findings of the report on. IAPRI,2019: "Climate-Smart Agriculture, Cropland Expansion, and Deforestation in Zambia: Linkages, Processes, and Drivers by Hambulo Ngoma, Johanne Pelletier, Brian P Mulenga, and Mitelo Subakanya) - section 4.1 page 8. For this reason, land converted to forest was considered as non-occuring. See report in Revised_ERPD_22Nov22_fin\G. Reference_Materials_Nov_2022\IAPRI, 2019 wp151_CSA_and_deforestation

**Auditor Response 2**: The audit team continues to have concerns and questions about this assumption. First and foremost the ISFL requirements state "ISFL ER Programs are expected to demonstrate conformity with this document and apply general principles of environmental integrity and conservativeness in order to be able to receive result-based finance from the ISFL." The assumption that cropland converted to forestland subcategories will revert back to cropland in the future and thus are assumed to be cropland remaining cropland is a nonconservative assumption. This would suggest that during the monitoring period, any lands that convert from cropland to forestland can not be included in the analysis and considered as emission reductions.

Furthermore, the audit team has analyzed a sample of these points classified as cropland converted to forestland during the baseline period and we have found the following:

- 11048_17188: imagery from 2010 and 2019 appear to show that the majority of the land is forest remaining forest.
- 10792_17164: imagery from 2010 and 2019 suggests that this land may have been forestland remaining forestland
- 10772_17196: imagery from 2012 and 2019 suggest that this area has been forestland remaining forestland
- 10884_17148: imagery from 2009 and 2016 shows the area is clearly forestland remaining forestland
- 10940_17172: imagery from 2013 and 2019 suggest the area was cropland is in the process of converting to forestland.
-10996_17220: imagery from 2009, 2013, and 2019 shows the area has converted from cropland to forestland during the baseline period.

Overall, the analysis of several of these points calls into question the original classification of these 11 points as several appear to be forestland remaining forestland. The audit team requests demonstration of the imagery utilized and classification of these 11 points. This finding remains open.

**Project Personnel Response 3**: The Program team takes note of the observation and the points were reanalysed as follows:

Find attached the accompanying imagery used in the classification.

**Auditor Response 3**: This finding was responding to outside the cover of this workbook. We confirmed that these points have been reclassified and that conversions from cropland to forestland have been added to the calculation workbook. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NCR 27 Dated 18 Aug 2022**
**Standard Reference**: ISFL ER Program Requirements, IPCC 2006 Guidelines, ISFL Guidance note on application of IPCC Guidelines
**Document Reference**: Final AFOLU GHG Inventory-ZILFP.xlsx
**Finding**: The ER Program Requirements states that "ISFL ER Programs shall, for the purpose of ISFL Reporting, compile a GHG inventory of all AFOLU categories, subcategories, gases and pools12 in the Program Area (Program GHG Inventory) utilizing existing data that have been collected using best available methods and approaches that are consistent with the most recent IPCC guidance and guidelines."Section 2.3.12 of the 2006 IPCC Guidelines states "The CO2 emissions and removals on land converted to a new land-use category include annual changes in carbon stocks in above-ground and below-ground biomass. "However, it does not appear that belowground biomass is utilized in the computation of carbon stock change due to conversion. For instance, in Annex 6, section 4.0 of the ERPD it states "The emission factors used to estimate the annual changes in carbon stocks in biomass are given in Table 53. The biomass stocks before the conversion are dry evergreen forest 67.8 t/ha, dry deciduous forest 37.2 t/ha, moist evergreen forest 34.2 t/ha and woodlands 43.1 t/ha. The biomass stocks after the conversion were 6.2 t/ha for all the forest type subcategories (ILUA II 2016 Report, Table 17)." The values reported there and that were used in the Land Emission Factors sheet are only the aboveground live tree biomass, and do not include belowground biomass. For instance, the ILUA II table 20 shows that the belowground biomass for dry evergreen forest is 19 t/ha, and for dry deciduous forest is 10.4 t/ha. None of these belowground biomass values were used though. In an email on August 2nd 2022, the program team indicated that belowground biomass was not utilized in the quantification of conversion emissions. This is not in conformance with the IPCC requirements.
**Project Personnel Response**: The inventory team takes note of the observations made. Below ground biomass has now been included in estimating emissions from carbon stock change due to conversions. Revisions have since been made in the ERPD and in Final AFOLU GHG Inventory-ZILFP_25092022 workbook.
**Auditor Response**: The audit team confirmed that the belowground biomass has been added to the carbon accounting. This finding has been resolved.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NCR 28 Dated 18 Aug 2022**
**Standard Reference**: ISFL ER Program Requirements, IPCC 2006 Guidelines, ISFL Guidance note on application of IPCC Guidelines
**Document Reference**: Final AFOLU GHG Inventory-ZILFP.xlsx
**Finding**: Section 4 of the ISFL Guidance note on application of IPCC Guidelines states that "For lands converted to Forest Land during the inventory period, ISFL ER Programs may apply equation 2.23 from the IPCC Guidelines for National Greenhouse Gas Inventories, Volume 4, Chapter 2 to estimate the changes in carbon stocks in dead organic matter during the inventory period. In applying this equation, it may be assumed that carbon in dead organic matter pools increases linearly to the value of mature forests over a specified time period (default = 20 years which is the default value provided in Section 2.3.2.2 of the IPCC Guidelines for National Greenhouse Gas Inventories, Volume 4, Chapter 2). For lands converted from Forest Land to any other land-use category during the inventory period, the assumption may be made that carbon in dead organic matter pools is lost in year 1 ." Equation 2.23 in the IPCC also indicates that for parameter Ton (time period of the transition from old to new land-use category), the default is 20 years for carbon stock increases and 1 year for carbon losses. However, in the workbook Final AFOLU GHG Inventory-ZILFP.xlsx, sheet Land Emission Factors, it shows that the time period of the transitions from the old to new land use category is 10 years for both transitions from forest to nonforest and from nonforest to forest. This transition period of 10 years is not in conformance with the IPCC requirements.
**Project Personnel Response**: The inventory team takes note of the observations. Revisions have since been made in the ERPD and in Final AFOLU GHG Inventory-ZILFP_25092022 workbook.
state.

**Auditor Response**: This finding was partially addressed. It appears that for transitions from nonforest to forestland, a deadwood emission factor transition of 20 years has been applied in the Land Emission Factors tab of the calculation workbook for BOTH nonforest to forestland (though these transitions were deleted, finding 26 above) and forestland to nonforest land transitions. However the following issues remain:
(1) It appears that the deadwood emission factor for transitions of forestland to nonforestland are also being divided b 20 years. As previously stated, the ISFL Guidance Notes states "For lands converted from Forest Land to any other land-use category during the inventory period, the assumption may be made that carbon in dead organic matter pools is lost in year 1 ." The application of a 20 year transition period for forest losses results is not in conformance with the IPCC or ISFL guidelines. This finding remains open.

(2) Although the transitions of nonforest to forestland have been incorrectly removed from this current iteration of the submission (Final AFOLU GHG Inventory-ZILFP_25092022 workbook) (finding 26 above), it appears that the application of a 20 year transition was not correctly applied to other pools and was not correctly applied in the previous iteration of the submission. Box 3 in the ISFL Guidance Note on the Application of IPCC" demonstrates how a 20 year transition shall be accounted for in deadwood for transitions from nonforest to forestland. In this example, the deadwood C stock in nonforest land is 0 t C/ha and for forestland it is 5 t C/ha. Thus the annual increase in carbon in the dead organic carbon pool is (5-0)/20 = 0.25 t C/ha. The example include a 10 year baseline with 2,000 ha planted, which is 200 ha/year. At the end of 20 years that 200ha will have sequestered 1000 t C (5 tC/ha * 200 ha). Thus in year 1 the deadwood emissions are 0.25 * 200 ha = 50, in year 2 they would 50 t C + 50 tC, and so on.  It does not appear that this sort of calculation was previously conducted for lands converting to forestland as the same deadwood emission was shown for every year (1,017 tC). This component of the finding remains open as it will need to be addressed in conjunction with finding #26 above.
**Project Personnel Response 2**: This has been addressed accordingly in the latest version of the emissions estimates in the workbook. New worksheets have been added to the workbook on SOCRef, deadwood and litter which estimate emissions from these sources based on ISFL guidelines

**Auditor Response 2**: This finding has only partially been addressed, and new errors have been introduced in the calculation, thus I will restate the remaining issues and detail the new accounting issues that have been introduced. As a result, the audit team has issued a new NCR to summarize all the deadwood emissions issues together. This finding has therefore been closed.
(1) Forest to Nonforest: As previously stated, the ISFL Guidance Notes states "For lands converted from Forest Land to any other land-use category during the inventory period, the assumption may be made that carbon in dead organic matter pools is lost in year 1 ." It appears that the deadwood emission factor for transitions of forestland to nonforestland are also being divided by 20 years, which is not in line with these requirements. For example, in the worksheet Deadwood Forest to Cropland, it shows that the loss in deadwood C stock for land transitioning occurs over a 20 year period, rather than all of the deadwood carbon being lost in year 1 (the year of the transition). The application of a 20 year transition period for forest losses results is not in conformance with the IPCC or ISFL guidelines.
(2) Nonforest to Forest: The audit team confirmed that the quantification of deadwood in nonforest to forest--however these classes have been removed.
(3) Nonforest transitions: Section 4 of the ISFL Guidance note on IPCC Guidelines states "when it comes to conversions of one land use to another, Tier 1 methods assume that litter and dead wood pools are zero in all non-forest categories and therefore transitions between non-forest categories involve no carbon stock changes in these two pools" It later states "This means that under Tier 1, the dead organic matter pool does not lead to emissions and removals and therefore would always be considered an insignificant pool under paragraph 4.2.2 of the ISFL ER Program Requirements."

**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NIR 29 Dated 18 Aug 2022**
**Standard Reference**: ISFL ER Program Requirements, IPCC 2006 Guidelines, ISFL Guidance note on application of IPCC Guidelines
**Document Reference**: Final AFOLU GHG Inventory-ZILFP.xlsx
**Finding**: The ER Program Requirements states that “ISFL ER Programs shall, for the purpose of ISFL Reporting, compile a GHG inventory of all AFOLU categories, subcategories, gases and pools12 in the Program Area (Program GHG Inventory) utilizing existing data that have been collected using best available methods and approaches that are consistent with the most recent IPCC guidance and guidelines.” Furthermore section 2.1 of the ISFL Guidance note on IPCC states "For the purpose of ISFL Reporting, estimation of changes in the Soil Organic Carbon (SOC) pool in mineral soils associated with conversion of Forest Land to other land categories will be calculated for the inventory period following Equation 2.25 from the 2006 IPCC Guidelines, Volume 4, Chapter 2." Equation 2.25 in the 2006 IPCC Guidelines indicates that the parameter D is " Time dependence of stock change factors which is the default time period for transition between equilibrium SOC values, yr. Commonly 20 years, but depends on assumptions made in computing the factors FLU, FMG and FI. If T exceeds D, use the value for T to obtain an annual rate of change over the inventory time period (0-T years)." Likewise section 2.2 of the ISFL Guidance note states " It shall be assumed that the Soil organic C stock change during the transition to a new equilibrium SOC occurs in a linear fashion over a period of 20 years." Both the IPCC guidelines and the ISFL guidance note point to a transition period of 20 years. Section 4.5.5 of Annex 6 of the ERPD indicates that the value for D is 20 years, but table 38 in Annex 6 shows a value of 10 years. Furthermore, in the calculation workbook, sheet Land Emission Factors, a period of 10 years is applied for each land use. Please provide a justification for the use a shorter time dependence (10 years) than the default (20 years).
**Project Personnel Response**: The inventory team takes note of the observations. Revisions have since been made in the ERPD and in Final AFOLU GHG Inventory-ZILFP_25092022 workbook.
**Auditor Response**: Similar to finding #27 above, it does not appear that this finding was addressed. Box 1 in the guidance note provides a description and example of this calculation. All transitions from forestland to nonforest land and nonforest to forest require that soil pool transitions take 20 years. While it appears that the emission factor was divided by 20 in the calculation workbook, it does not appear that the addition of subsequent years was carried out. For example, in the tab 'Forest land to Cropland' row 27, it shows that in 2009 13,540 ha were converted to cropland and 5% (1/20) of those emissions occured in 2009. It will take 20 years to complete those emissions (so by 2028). However, in 2010 ANOTHER 13,540 ha were converted to cropland, thus in 2010 there must be 5% of the emissions from the 2009 conversion and 5% of the emissions from conversion in 2010 should be accounted for. In 2011, it should account for emissions from 2009 and 2010 conversions as well as 5% of the emissions from 2011. Accounting of the soil emissions has not been conducted in accordance with the IPCC and ISFL guidance note. This finding remains open.

Please note that this approach to soil carbon over 20 years applies to land use conversions (forest to nonforest, nonforest to forest, and land remaining as land). It is currently not being correctly carried out for any of these subcategories.
**Project Personnel Response 2**: This has been addressed accordingly in the latest version of the emissions estimates in the workbook. New worksheets have been added to the workbook on SOCRef, deadwood and litter which estimate emissions from these sources based on ISFL guidelines

**Auditor Response 2**: This finding pertains to soil organic carbon accounting only. The audit team has confirmed that the accounting of soil emissions in the land use change categories has been carried out to account for the 20 year transition period. However, these calculations were conducted incorrectly resulting in double counting and subsequent nonconformities. As a result, the NIR was addressed but now NCRs were opened below. This finding is closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NIR 30 Dated 18 Aug 2022**
**Standard Reference**: ER Program Requirements
**Document Reference**:
Abel2022_EP_Reviewed_and_Analyzed_AD_for_Eastern_Province_20191230_v1
**Finding**: The ER Program Requirements states that "The Program GHG Inventory shall utilize best available methods and existing data." Annex 6 section 4 of the ERPD states "There were 3,618 sample plots (SP) assessed and activity data collected for Eastern Province. The sample plots are designed in a systematic grid at an equidistance of 4 x 4 kilometers over Eastern province. The sample size of 3,618 sample plots was determined based on a second phase sampling system extracted using the boundary extent of Eastern Province from a grid sampling frame of 4 x 4 km distance." In reviewing the Collect Earth data points provided by the program team in the the shapefile, the assessment team found that for the most part the collect earth points fall in a 4x4km grid. However, we found that this grid is missing plots and there are holes in it. For instance, east of plot Id 10964_17260 there is a hole in the grid. Likewise, east of plot 10892_17216 is another hole. We found numerous holes in this grid. Please provide more information as to why these points are missing.
**Project Personnel Response**: Missing points were generated at 4km x 4km and have since been added to the final grid. See Revised_ERPD_26.09.22_fin\E. Raw_Data_sept_2022\3B. LAND DATASET\Collect Earth Dataset\LUC_Dataset\analysed_pts_shp
**Auditor Response**: The audit team confirmed that the points that were removed have been added back such that there is a complete 4x4km grid. This finding has been resolved.
**Bearing on Material Misstatement or Conformance (M/C/NA):** NA

**NIR 31 Dated 18 Aug 2022**
**Standard Reference**: ER Program Requirements
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 11__ZEMA_edits_18.06.22 ver 2_clean; Final AFOLU GHG Inventory-ZILFP.xlsx; Abel2022_EP_Reviewed_and_Analyzed_AD_for_Eastern_Province_20191230_v1
**Finding**: The ER Program Requirements states that “The Program GHG Inventory shall utilize best available methods and existing data.” Section 4.2.2 of the ERPD states "Emissions and removals in Cropland Remaining Cropland were estimated for the 2009-2018 period. Activity Data which was used for determining annual change in carbon stocks from mineral soils in Cropland remaining Cropland and were obtained using Collect Earth Method." The audit team must be able to verify the calculation of the total area of each land use class that is shown in the workbook Final AFOLU GHG Inventory-ZILFP.xlsx, sheet LU-BY-MAJOR-VEGET (2). For instance, in 2008 a total cropland area of 1,331,459 ha is shown in cell C5 of the sheet LU-BY-MAJOR-VEGET (2). The audit team must verify this area as well as all areas shown in row 5. We have not been able to do so. For instance, in the workbook Abel2022_EP_Reviewed_and_Analyzed_AD_for_Eastern_Province_20191230_v1, sheet Saiku Data it shows an area of 1,275,101 ha for cropland remaining cropland, 19725 ha for cropland converted to forest, 11,272 ha for cropland converted to grassland, and 1,409 ha for cropland converted to settlement, as calculated by the program team from the Collect Earth data. The total area of cropland from the start would then be 1,307,507 ha. This differs from the 1,331,459 ha shown in the workbook for 2008 area of cropland. Similarly for Settlement an area of 81,719 ha is shown sheet LU-BY-MAJOR-VEGET (2) for 2008. But in the workbook Abel2022_EP_Reviewed_and_Analyzed_AD_for_Eastern_Province_20191230_v1, sheet Saiku Data it shows an area of76,083 ha for settlement remaining settlment, an area of 1,409 for settlement converted to forest and therefore a total settlement area of 77,492 ha. This differs from the 81,719 ha value in the inventory workbook. The audit team requests more information with a clear demonstration (active cell formulas and all referenced documentation provided) of how the area of the different land use classes were derived for each year.
**Project Personnel Response**: The Inventory Team acknowledges the observations and the areas have been harmonised in both Saiku data sheet and the Inventory workbook. See Final AFOLU GHG Inventory-ZILFP_25092022 workbook and EP_Filtered_and_Analyzed_AD_final_24.09.22
**Auditor Response**: The audit team has confirmed that the starting areas in 2008 match those from the Saiku datasheet. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NIR 32 Dated 18 Aug 2022**
**Standard Reference**: ISFL ER Program Requirements, IPCC 2006 Guidelines
**Document Reference**: ambia_Eastern_Province_ISFL_ERPD_ver 11__ZEMA_edits_18.06.22 ver 2_clean; Final AFOLU GHG Inventory-ZILFP.xlsx;
**Finding**: The ER Program Requirements states that “ISFL ER Programs shall, for the purpose of ISFL Reporting, compile a GHG inventory of all AFOLU categories, subcategories, gases and pools12 in the Program Area (Program GHG Inventory) utilizing existing data that have been collected using best available methods and approaches that are consistent with the most recent IPCC guidance and guidelines.” Section 4.2.3.1 of the IPCC 2006 Guideline states "Due to incomplete scientific basis and resulting uncertainty, it is assumed in the Tier 1 method that forest soil C stocks do not change with management. Furthermore, if using Approach 2 or 3 activity data (see Chapter 3), it is not necessary to compute C stock changes for mineral soils (i.e., change in SOC stocks is 0)." The project applies approach 2 for activity data for forestland remaining forestland and uses tier 1 emission factors for the soil carbon pool, thus according to the IPCC guidance soil C stock changes do not need to be quantified. Despite this, in the workbook Final AFOLU GHG Inventory-ZILFP.xlsx, sheet Forestland remaining forestland, row 64 shows the calculation of C stock change in soils. This is not in agreement with the IPCC guidance. If you intend to include the soil C stock change in forestland remaining forestland, provide a justification for doing so.
If the intention is to continue to account for C stock change in soils, please note that the equation has not been carried out correctly (see finding below related to cropland).
**Project Personnel Response**: In estimating soil C stock, Tier 2 was using equation 2.25. Country specific reference carbon stock were used. This is in line with IPCC 2006 Guidelines section 4.2.3.1 page 4.24 para. 2.
**Auditor Response**: The audit team confirmed that country-specific reference soil carbon stock values have been used. However, the forestland remaining forestland calculation is not correct as it does not take into account the gradual transition. This finding was closed but a new NCR was opened accordingly.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NCR 33 Dated 18 Aug 2022**
**Standard Reference**: ISFL ER Program Requirements, IPCC 2006 Guidelines
**Document Reference**: Final AFOLU GHG Inventory-ZILFP.xlsx;
**Finding**: The ER Program Requirements states that “ISFL ER Programs shall, for the purpose of ISFL Reporting, compile a GHG inventory of all AFOLU categories, subcategories, gases and pools12 in the Program Area (Program GHG Inventory) utilizing existing data that have been collected using best available methods and approaches that are consistent with the most recent IPCC guidance and guidelines.” Section 5.2.3.1 of the IPCC 2006 Guideline states"For mineral soils, the estimation method is based on changes in soil organic C stocks over a finite period following changes in management that impact soil organic C. Equation 2.25 (Chapter 2) is used to estimate change in soil organic C stocks in mineral soils by subtracting the C stock in the last year of an inventory time period (SOC0) from the C stock at the beginning of the inventory time period (SOC(0 –T)) and dividing by the time dependence of the stock change factors (D)." The audit team replicated the Equation 2.25 calculation and found that the calculation shown in the workbook Final AFOLU GHG Inventory-ZILFP.xlsx, sheet Cropland remaining cropland, cell D6 is incorrect. The first year of the inventory must be subtracted from the last year of the inventory. It appears that the order of operations has not been carried out in conformance with equation 2.25. Please note that this finding also pertains to forestland remaining forestland in which the equation has not been carried out correctly. Please also see finding number 13 and 33 above which is also relate to soil carbon quantification.
**Project Personnel Response**: A minus sign was put at the beginning of the equation to achieve the same results even if the order was switched. However, in the current revision, the order of operation in the equation has been changed accordingly and a minus sign has been removed at the begining of the equation
**Auditor Response**: Thank you for clarifying this. The assessment team confirmed that the order of operations for calculating the change in soil carbon in cropland remaining cropland has been carried out correctly. However, finding number 29 above documents other issues related to the quantification of the soil carbon pool. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NIR 34 Dated 18 Aug 2022**
**Standard Reference**: ER Program Requirements
**Document Reference**: Eastern_Province_Activity_Data_Collection_Technical_Report_29122019 (1)
**Finding**: The ER Program Requirements states that "The Program GHG Inventory shall utilize best available methods and existing data." the assessment team randomly selected a sample of the 3618 collect earth points to verify the land use classification conducted. While we understand that we only have the centroids of the 3,618 sample points, the audit team placed a 70x70m plot around each point to visually evaluate the likely land use classification for each point. For the majority of the sample points selected, we confirmed the land use classification. However, for the following points, we could not verify the classification made by the program team. The audit team thus requests justification for the land use classification as well as screenshots of the imagery and collect earth/control points used to classify each of the points listed here:
(1) ID: 10792_17240 G-G: Appears to be forested in 2013 and semiforested in 2020.
(2) ID 10820_17156 – F > C: Not confirmed – appears to be cropland in 2002 and forestland in 2018.
(3) ID: 10884_17140 – F > C: Not confirmed, appears to be cropland in 2009. Forest starts to come back in 2016, and is a mix of forestland and cropland in 2018.
(4) ID: 10900_17192 – C > F: Non confirmed, appears forestland in 2002, and cropland in 2016 and 2018.
(5) ID: 10924_17176 – F > C: Appears to be a mix of cropland and forestland in both 2002 and 2019, with no obvious change in land use during the period.
(6) ID: 10948_17216 – F > C: Appears to maintain cropland throughout the baseline period, no obvious change in land use.
(7) ID: 10964_17128 – S > F: Appears to be grassland/barren in 2004 and forestland at the end of the period.
(8) ID: 10976_17112 – F > C: Appears to maintain forestland in 2004, 2013, and 2019 with no change in land use.
(9) ID: 10984_17160 – C > F: Forested in 2003, Cropland and settlement in 2013 and 2019.
(10) ID: 10984_17216 – F > C: Clearly cropland in 2012 and 2019 (though need earlier imagery)
Please provide the imagery/screenshots and justification for the land use classification for the 10 points listed above.

**Project Personnel Response**: (1) ID: 10792_17240 G-G: Appears to be forested in 2013 and semi-forested in 2020.

Response: The plot was reanalysed and reclassified as forest remaining forest (F>F) (see the file EP_Filtered_and_Analyzed_AD_final_24.09.22 and attached screenshots of imagery).

(2) ID 10820_17156 – F > C: Not confirmed – appears to be cropland in 2002 and forestland in 2018.

Response: The plot was reanalysed and observed to be Forestland remaining Forestland (see the file EP_Filtered_and_Analyzed_AD_final_24.09.22 and attached screenshots of imagery).

(3) ID: 10884_17140 – F > C: Not confirmed, appears to be cropland in 2009. Forest starts to come back in 2016, and is a mix of forestland and cropland in 2018.

Response: The plot was reanalysed and reclassified as cropland remaining cropland (C>C), based on the protocol for classification (see the file EP_Filtered_and_Analyzed_AD_final_24.09.22 and attached screenshots of imagery).

(4) ID: 10900_17192 – C > F: Non confirmed, appears forestland in 2002, and cropland in 2016 and 2018.

Response: In 2008, the plot was observed to be a forest area, however, cropland began emerging from 2014 expanding until 2018. The plot was reclassified as Forest to cropland (F>C) (see the file EP_Filtered_and_Analyzed_AD_final_24.09.22 and attached screenshots of imagery).

(5) ID: 10924_17176 – F > C: Appears to be a mix of cropland and forestland in both 2002 and 2019, with no obvious change in land use during the period.

Response: The plot was reanalysed and reclassified as Forest remaining Forest (F>F) (see the file EP_Filtered_and_Analyzed_AD_final_24.09.22 and attached screenshots of imagery).

(6) ID: 10948_17216 – F > C: Appears to maintain cropland throughout the baseline period, no obvious change in land use.

Response: The plot was reclassified as C>C (see the file EP_Filtered_and_Analyzed_AD_final_24.09.22 and attached screenshots of imagery).

(7) ID: 10964_17128 – S > F: Appears to be grassland/barren in 2004 and forestland at the end of the period.

Response: Maintained as S > F. See the attached screenshots of imagery.

(8) ID: 10976_17112 – F > C: Appears to maintain forestland in 2004, 2013, and 2019 with no change in land use.

Response: The plot was observed to be Forest remaining Forest (F>F) and has been reclassified accordingly (see the file EP_Filtered_and_Analyzed_AD_final_24.09.22 and attached screenshots of imagery).

(9) ID: 10984_17160 – C > F: Forested in 2003, Cropland and settlement in 2013 and 2019.

Response: Based on the protocol for classification the plot was observed to be Forest remaining Forest (F>F), and has been reclassified accordingly (see the file EP_Filtered_and_Analyzed_AD_final_24.09.22 and attached screenshots of imagery).

(10) ID: 10984_17216 – F > C: Clearly cropland in 2012 and 2019 (though need earlier imagery)

Response: The was reanalysed and reclassified to cropland remaining cropland (i.e. C>C) see the file EP_Filtered_and_Analyzed_AD_final_24.09.22 and attached screenshots of imagery).

**Auditor Response**: Response (1) ID: 10792_17240 - The audit team agrees with the client's revision to F>F based on the imagery provided. Please update spreadsheet (Abel2022_EP_Filtered_and_Analyzed_AD_for_Eastern_Province_final_24.09.22.xlsx, hereafter referred to as "spreadsheet") accordingly.

Response (2) ID 10820_17156 - The audit team disagrees with the client's revision to F>F based on the imagery provided. The first image appears to be cropland and not forestland. Please provide more evidence to confirm the correct land use type.

Response (3) ID: 10884_17140 - The audit team agrees with the client's revision to C>C based on the imagery provided. Please update spreadsheet accordingly.

Response (4) ID: 10900_17192 - The audit team agrees with the client's revision to F>C based on the imagery provided. Please update spreadsheet accordingly.

Response (5) ID: 10924_17176 - The audit team agrees with the client's revision to F>F based on the imagery provided. Please provide dates to confirm imagery. Please update spreadsheet accordingly.

Response (6) ID: 10948_17216 - The audit team agrees with the client's revision to C>C based on the imagery provided. Please provide dates to confirm imagery. Please update spreadsheet accordingly.

Response (7) ID: 10964_17128 - The audit team agrees with the client's revision to F>F based on the imagery provided. Please provide dates to confirm imagery. Please update spreadsheet accordingly.

Response (8) ID: 10976_17112 - The audit team agrees with the client's revision to F>F based on the imagery provided. Please provide dates to confirm imagery. Please update spreadsheet accordingly.

Response (9) ID: 10984_17160 - The audit team agrees with the client's revision to F>F based on the imagery provided. Please provide dates to confirm imagery. Please update spreadsheet accordingly.

Response (10) ID: 10984_17216 - The audit team agrees with the client's revision to C>C based on the imagery provided. Please provide dates to confirm imagery. The spreadsheet has been updated correctly.

This finding remains open.

**Project Personnel Response 2**: Id. No. 10820_17156 F>F

The provided imagery is for 2002, 2015 and 2018 respectively while the Bing Maps image shows the start and end period of the acquisition (2010-2016). The cluster in May, 2002 (image not shown) shows 51% (25 dots) as cropland and the rest is fallow. Note that the assessment period is between 2008 and 2018 and the year 2002 is used to show the trend. A similar trend is observed in August, 2002 with 22% cropland (first image). In June, 2015 (second image) the cluster is completely forested with a small proportion of cropland (about 16%) while in April, 2018 (third image) only a small portion remains as cropland (14%). Note that between 2002 and 2015 there is no very high-resolution imagery available in Google Earth. The cluster is analysed based on the 2018 image and the Collect Earth plot statistics which shows a single segment in the Continuous Change Detection Classification (CCDC) Temporal segmentation based on Landsat 7 and 8. This was therefore classified F>F

| Plot Id # | Imagery/ Screenshots | | | |
|---|---|---|---|---|
| | Image 1 | Image 2 | Image 3 | Image 4 |
| 5. | 11/2002 | 10/2013 | 10/2019 | - |
| 6. | 9/2004 | 7/2013 | 2/2016 | 10/2018 |
| 7. | 9/2004 | 11/2014 | 6/2016 | 4/2018 |
| 8. | 9/2004 | 5/2022 | 5/2019 | - |
| 9. | 5/2003 | 12/2014 | 8/2018 | 3/2019 |

**Auditor Response 2**: Thank you for this clarification. The audit team agrees with this assessment and has been able to confirm these points have been updated and utilized to determine the expansion factor and land use change areas. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NCR 35 Dated 18 Aug 2022**
**Standard Reference**: ISFL Emission Reductions (ER) Program Document (PD) Template v2.0, 2020-
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 11__ZEMA_edits_18.06.22 ver 2_clean
**Finding**: Section 4.2.1 of the ERPD Template Requirements states "Based on Section 4.1.2 and the analysis above, complete the table [7] below by selecting the following subcategories:
• Any subcategories involving conversions from or to forest land;
• Forest land remaining forest land;
• As identified in the analysis above, any subcategories involving conversions between land-use categories other than forest land that, cumulatively with the conversions from or to forest land, amount to 90% of the absolute level of the total GHG emissions and removals associated with all land use conversions in the Program GHG Inventory;
• The largest of the remaining subcategories based on the relative magnitude of contribution of the subcategories to the absolute level of the total GHG emissions and removals in the Program GHG Inventory as determined in Section 4.1.2;
• Additional non-forest related subcategories included at the discretion of the ISFL ER Program;
• Any subcategories that were accounted during previous ERPA Phase(s), where applicable.
For additional non-forest related subcategories included at the discretion of the ISFL ER Program, provide a clear rationale for including these subcategories in terms of improving ISFL ER Program mitigation performance. [Corresponds to ISFL ER Program Requirements 4.3.3 – 4.3.6]." The Table below these instructions (table 7) has not been included in the ERPD.
**Project Personnel Response**: The Inventory Team acknowledges the observations and the areas have been harmonised in both Saiku data sheet and the Inventory workbook. See Final AFOLU GHG Inventory-ZILFP_25092022 workbook and EP_Filtered_and_Analyzed_AD_final_24.09.22
**Auditor Response**: The response to this finding does not address the finding nor is related to the finding. Nonetheless we confirmed that this table has been added. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NIR 36 Dated 18 Aug 2022**
**Standard Reference**: ISFL Emission Reductions (ER) Program
Document (PD) Template v2.0, 2020-
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 11__ZEMA_edits_18.06.22 ver 2_clean
**Finding**: Section 4.5.1 of the ERPD Template requires the following "Please provide a description (two pages or less) of the methods and standards for generating, recording,
storing, aggregating, collating and reporting data on monitored parameters, including equations if necessary.Provide details on all data and parameters to be monitored in Annex109 below. [Corresponds to ISFL ER Program Requirements 4.5.1 – 4.5.3]." In section 4.5.1 of the Eastern Province ERPD, information is included on the collection of ground inventory measurements, remote sensing for dead matter, remote sensing and ground measurements for mineal soil/SOC, and soil sampling for SOC. However there is no discussion on the monitoring of other drivers of forest emissions including harvesting and the removal of wood for fuel. Please provide more information regarding if and how these parameters are monitored.
**Project Personnel Response**: The inventory team acknowledges the observations and the report has been updated accordingly. See section 4.5 of the main report.
**Auditor Response**: The audit team confirmed that the requested information has been added to the ERPD Annex 6. This finding has been satisified.
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NCR 37 Dated 2 Nov 2022**
**Standard Reference**: ER Program Requirement; IPCC 2006 Guidelines
**Document Reference**: Final AFOLU GHG Inventory-ZILFP_25092022 workbook.xlsx
**Finding**: The ER Program Requirements states that “ISFL ER Programs shall, for the purpose of ISFL Reporting, compile a GHG inventory of all AFOLU categories, subcategories, gases and pools12 in the Program Area (Program GHG Inventory) utilizing existing data that have been collected using best available methods and approaches that are consistent with the most recent IPCC guidance and guidelines." The IPCC Guidelines requires the use of equation 2.23 to calculate the annual change in carbon stocks in deadw wood and litter due to land conversion. The parameter Co is the 'dead wood/litter stock, under the old land-use category, tonnes C ha-1' and the parameter Cn is the 'dead wood/litter stock, under the new land-use category, tonnes C ha-1'. Both of these parameters are in units of carbon. The program team has indicate that they used dead wood biomas carbon stock factors from Table 30 of the ILUAII report. This table reports values in biomass (tons/ha) and in carbon (tons C/ha). In the GHG inventory workbook Final AFOLU GHG Inventory-ZILFP_25092022 workbook.xlsx, sheet Land Emission Factors, cells G78-H81 shows that the biomass values from ILUA Table 30 were applied and NOT the carbon values (nor did the team convert the biomass values to carbon). This is the same for the other forestland to nonforest subcategories calculated. This is not in conformance with the IPCC. Please also see related finding #28 which pertains to the IPCC default time period of the transition (1 year for forest to nonforest, and 20 years for nonforest to forest).
**Project Personnel Response**: The correct parameters with units of carbon from Table 30 ILUA II report have been used and the emission estimations have been revised accordingly.
**Auditor Response**: The audit team confirmed that the deadwood biomass values have been applied in the Land Emission Factors sheet. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NIR 38 Dated 2 Nov 2022**
**Standard Reference**: ER Program Requirement; IPCC 2006 Guidelines
**Document Reference**: Final AFOLU GHG Inventory-ZILFP_25092022 workbook.xlsx
**Finding**: Footnote 13 of the ER Program Requirements states that “Significant here refers to the individual pools or gases that make up at least 25% of the absolute level of the total GHG Emissions and Removals in the subcategory, and the pools and gases that, when listed in the relative magnitude of contribution to the Emissions of the overall subcategory, contribute to 60% of the cumulative Emissions.." Page 71 of the ERPD states "Emissions estimating annual change in carbon stocks due to dead organic matter and mineral soils in Forestland Converted to Cropland and settlement are insignificant - 4.68% and 1.58%, of the total emissions from the subcategories, and therefore meets the ‘’Significant criteria’’ of individual pools or gases that make up at least 25% of the absolute level of the total GHG Emissions and Removals in the subcategory." However, as explained in finding #29 above, the soil carbon emissions were calculated incorrecty for all subcategories (forest to cropland, forest remaining forest, nonforest to forest, etc) as the legacy emissions have been excluded and the calculations only consider emission occuring in the year of conversion. As a result the mineral soil emissions are much higher than has been demonstrated in the workbook. Furthermore, the emissions from settlement have not been calculated in the workbook, Final AFOLU GHG Inventory-ZILFP_25092022 workbook.xlsx, sheet Forest land to settlements. For subcategories where soil carbon has been excluded due to the "significant" criteria, please demonstrate in the calculation workbook that the emissions are in fact insignificant. For forestland conversions to settlement see section 8.3.3.2 of the 2006 IPCC Guidelines.
**Project Personnel Response**: This has been addressed accordingly in the latest version of the emissions estimates in the workbook. New worksheets have been added to the workbook on SOCRef, deadwood and litter which estimate emissions from these sources including forestland to settlements based on ISFL guidelines
**Auditor Response**: This finding has been addressed as the forest converted to settlement soil emissions have been accounted for and are no longer excluded. However, the quantification of these soil emissions has been carried out inaccurately, resulting in double counting of soil emissions and ultimately a nonconformity with the IPCC and ISFL requirements. Nonetheless the NIR has been addressed, thus this finding is closed, but NCR 45 has been opened.

**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NCR 39 Dated 3 Nov 2022**
**Standard Reference**: ER Program Requirement; IPCC 2006 Guidelines
**Document Reference**: Final AFOLU GHG Inventory-ZILFP_25092022 workbook.xlsx
**Finding**: The ER Program Requirements states that “ISFL ER Programs shall, for the purpose of ISFL Reporting, compile a GHG inventory of all AFOLU categories, subcategories, gases and pools12 in the Program Area (Program GHG Inventory) utilizing existing data that have been collected using best available methods and approaches that are consistent with the most recent IPCC guidance and guidelines." To calculate removals on forestland remaining forestland, the IPCC applies equations 2.10 and 2.9. These equations are carried out in the calculation workbook, Final AFOLU GHG Inventory-ZILFP_25092022 workbook.xlsx, sheet 'Forestland remaining forestland', cells C5-L11. In reviewing these calculations, the audit team found that equations 2.10 and 2.9 were not applied correctly to the Eucalyptus and Pinus Plantations. For instance, the Root to shoot Ratio is multipled directly by the BCEF rather than BCEF multipled by (1+R) as the equation requires. This error has resulted in an underestimation of the removals from plantation lands.
**Project Personnel Response**: This has been addressed accordingly in the latest version of the emissions estimates in the workbook and the correct equation has been used.
**Auditor Response**: The audit team confirmed that equations 2.10 and 2.9 were applied correctly as far as the order of operations are concerned. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NIR 40 Dated 3 Nov 2022**
**Standard Reference**: ER Program Requirement; IPCC 2006 Guidelines
**Document Reference**: Final AFOLU GHG Inventory-ZILFP_25092022 workbook.xlsx
**Finding**: This finding relates to NIR#10 above. The ER Program Requirements states that “ISFL ER Programs shall, for the purpose of ISFL Reporting, compile a GHG inventory of all AFOLU categories, subcategories, gases and pools12 in the Program Area (Program GHG Inventory) utilizing existing data that have been collected using best available methods and approaches that are consistent with the most recent IPCC guidance and guidelines." is important to note that there are various BCEF values used for different purposes. Page 4.14 of the Ch4 of the 2006 IPCC states "BCEF or BEF that apply to growing stock and net annual increment are different. In this document, the following symbols are used:
-BCEFS: biomass conversion and expansion factor applicable to growing stock; transforms merchantable volume of growing stock into above-ground biomass.
-BCEFI: biomass conversion and expansion factor applicable to net annual increment; transforms merchantable volume of net annual increment into above-ground biomass growth.
- BCEFR: biomass conversion and expansion factors applicable to wood removals; transforms merchantable biomass to total biomass (including bark). BCEFR and BEFR for wood and fuelwood removal will be larger than that for growing stock due to harvest loss (see Annex 4A.1 Glossary)."

As shown in the calculation workbook and the response to finding #10, the programteam is applying a value of 1.38 for the BCEFi. In reviewing the ILUA II documentation, it appears that the BCEF of 1.38 corresponds to the BCEFS which is 'biomass conversion and expansion factor applicable to growing stock' and not to the BCEFi or BCEFr.

According to the IPCC guidelines, equation 2.12 is applied for calculating emissions due to wood removals. It applies the parameter BCEFr which is the 'biomass conversion and expansion factors applicable to wood removals.' Under equation 2.12 of the IPCC it states "biomass conversion and expansion factor for conversion of removals in merchantable volume to biomass removals (including bark), tonnes biomass removal (m3 of removals)-1, (see Table 4.5 for Forest Land). If BCEFR values are not available and if the biomass expansion factor for wood removals (BEFR) and basic wood density (D) values are separately estimated, then the following conversion can be used: BCEFr = BEFr * D; Biomass Expansion Factors (BEFR) expand merchantable wood removals to total aboveground biomass volume to account for non-merchantable components of the tree, stand and forest. BEFR is dimensionless." Please justify the use of the value for the BCEFs (1.38) for the BCEFr.
**Project Personnel Response**: BCEFr values have been derived by dividing BCEFS by 0.9. IPCC 2006 Guidelines, V4_04_Ch4_Forest_Land, Page 4.52 and Page 4.14
**Auditor Response**: Thank you for clarifying and for providing a justification for the conversion of the BCEFs value to BCEFr. This finding has been addressed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NIR 41 Dated 3 Nov 2022**
**Standard Reference**: ER Program Requirement; IPCC 2006 Guidelines
**Document Reference**: Final AFOLU GHG Inventory-ZILFP_25092022 workbook.xlsx
**Finding**: This finding relates to NIR#10 above. The ER Program Requirements states that “ISFL ER Programs shall, for the purpose of ISFL Reporting, compile a GHG inventory of all AFOLU categories, subcategories, gases and pools12 in the Program Area (Program GHG Inventory) utilizing existing data that have been collected using best available methods and approaches that are consistent with the most recent IPCC guidance and guidelines." is important to note that there are various BCEF values used for different purposes. Page 4.14 of the Ch4 of the 2006 IPCC states "BCEF or BEF that apply to growing stock and net annual increment are different. In this document, the following symbols are used:
-BCEFS: biomass conversion and expansion factor applicable to growing stock; transforms merchantable volume of growing stock into above-ground biomass.
-BCEFI: biomass conversion and expansion factor applicable to net annual increment; transforms merchantable volume of net annual increment into above-ground biomass growth.
- BCEFR: biomass conversion and expansion factors applicable to wood removals; transforms merchantable biomass to total biomass (including bark). BCEFR and BEFR for wood and fuelwood removal will be larger than that for growing stock due to harvest loss (see Annex 4A.1 Glossary)."

As shown in the calculation workbook and the response to finding #10, the programteam is applying a value of 1.38 for the BCEFi. In reviewing the ILUA II documentation, it appears that the BCEF of 1.38 corresponds to the BCEFS which is 'biomass conversion and expansion factor applicable to growing stock' and not to the BCEFi or BCEFr.

According to the IPCC guidelines, equation 2.10 is applied for calculating removals due to growth (average annual increment in biomass). It applies the parameter BCEFi which is the 'bbiomass conversion and expansion factor for conversion of net annual increment in volume (including bark) to above-ground biomass growth for specific vegetation type.' It further states 'If BCEFI values are not available and if the biomass expansion factor (BEF) and basic wood density (D) values are separately estimated, then the following conversion can be used:
BCEFI = BEFI * D
Biomass Expansion Factors (BEFI) expand merchantable volume to total above-ground biomass volume to account for non-merchantable components of increment. BEFI is dimensionless." Please justify the use of the BCEFs (1.38) as the BCEFi.
**Project Personnel Response**: BCEFr values have been derived by dividing BCEFS by 0.9. IPCC 2006 Guidelines, V4_04_Ch4_Forest_Land, Page 4.52 and Page 4.14

**Auditor Response**: The response to this finding is for the parameter BCEFr. However, in an email from the program team on December 9th, it was indicated that the country does not BCEFi values thus the IPCC default value of 0.55 would be applied. The ISFL Program Requirements (4.1.3) states "The Program GHG Inventory shall utilize best available methods and existing data. This may include the use of Activity Data Proxies if needed, and IPCC Tier 1 data and methods if no data are available to apply higher Tier methods. ISFL ER Programs are encouraged to apply higher
Tiers over time, as possible." In reviewing ancillary reports and data, the audit team found that in Pelletier et al. 2018 it states "To account for carbon sequestration from forestlands, we used the stable forestland area from 2000–2014 published in ILUA II [63] that we multiplied by the biomass increment or growth rate values calculated from the difference between ILUA I and ILUA II." This suggests that the country potentially has data available to derive the BCEFi parameter. Please justify the use of the IPCC default parameters (tier 1) over the use of ILUA I and II data to develope this parameter.

Furthermore, section 4.2.3 of the ISFL indicates that "ISFL ER Programs shall account for the Total Net Emission Reductions across eligible subcategories by estimating the baseline and monitoring Emissions and Removals for the eligible subcategories using at minimum IPCC Tier 2 methods and data. Subcategories are considered to
significant13 meet Tier 2 if all the pools and gasses are estimated using Tier 2 methods and data. ISFL ER Programs are encouraged to improve data and methods, and to move to a higher tier over time, as possible." By utilizing the IPCC default BCEFi value, this consitutes a tier 1 data and would preclude the inclusion of the forestland remaining forestland subcategory unless demonstrated that the removals pool is not significant according to footnote 13. If the program team intends to include the forestland remaining forestland subcategory, and use the tier 1 BCEFi, please provide a demonstration of absolute significance of this pool.
**Project Personnel Response 2**:
**Auditor Response 2**: A response to this finding was provided outside the cover of this workbook. The audit team confirmed that the a BCEFi value of 1.18 has been calculated and applied for the increment of biomass growth. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NCR 42 Dated 4 Nov 2022**
**Standard Reference**: ER Program Requirement; IPCC 2006 Guidelines; ISFL Guidance not on IPCC Guidelines (SOC calculation details.xlsx)
**Document Reference**: Final AFOLU GHG Inventory-ZILFP_25092022 workbook.xlsx
**Finding**: This finding relates to finding #29 above. The ER Program Requirements states that "ISFL ER Programs shall, for the purpose of ISFL Reporting, compile a GHG inventory of all AFOLU categories, subcategories, gases and pools12 in the Program Area (Program GHG Inventory) utilizing existing data that have been collected using best available methods and approaches that are consistent with the most recent IPCC guidance and guidelines." The audit team found that the the forestland remaining forestland, cropland remaining cropland, and grassland remaining grassland calculations for SOC are not correct as they do not take into account the gradual transition from the higher soil carbon value in 2009 to the lower value in 2018, for FL-FL, CL-CL, and GL-GL. Please review the spreadsheet provided by Marco Van der Linden on 11/2/2022, titled SOC calculation details.xlsx, sheet Baseline. For example, for FL-FL, row 6 of the workbook SOC calculation details.xlsx, sheet Baseline shows the area of forestland decreasing as a result of the various land use transitions. Therefore, this row corresponds to the area of forestand remaining forestland in the program team's workbook, Final AFOLU GHG Inventory-ZILFP_25092022 workbook.xlsx, sheet, Land Activity Data areas (row 7). Next, Row 30 in Marco's workbook shows the SOC/ha in forestland. In Marco's example the SOC/ha is 77 tCha-1 for every year. But for the case of forestland in Zambia, it appears that that SOC/ha decreased from 35.61 t C ha-1 to 33.67 t C ha-1 over a 9 year period. By following the steps as Marco shows yields the annual soil carbon stock in forestland remaining forestland (he multiplys the annual emission factor by the area of forestland remaining forestland). Note that Marco's example does not show the final step of calculating the emissions as the difference in stocks between two years. Currently the approach taken by the program team is not in conformance with IPCC, ISFL guidance (and example demonstrated y Marco from the WB).
**Project Personnel Response**: This has been addressed accordingly in the latest version of the emissions estimates in the workbook.
**Auditor Response**: Thank you the response. Given the multiple soil emission findings, some of which are related, the audit team has closed this finding and opened a new NCR (44 below) documenting all the remaining SOC accounting issues. This finding has therefore be closed for organization purposes.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NCR 43 Dated 9 Dec 2022**
**Standard Reference**: ER Program Requirement; IPCC 2006 Guidelines; ISFL Guidance on IPCC Guidelines
**Document Reference**: Final AFOLU GHG Inventory_ZIFLP_ 27112022.xlsx

**Finding**: Please see related finding #28 above for additional context. Section 4 of the ISFL Guidance note on the application of IPCC Guidelines provides further description of the challenges with applying tier 2 methods for accounting for dead organic matter (DOM) pools and provides additional guidance, allowing for the softening of the IPCC guideslines for ISFL accounting. For all categories, it is important to note that the ISFL guidelines state "Changes in carbon stocks in dead organic matter shall only be considered for subcategories involving lands converted from Forest Land to any other land-use category (carbon losses) and for lands converted to Forest Land (carbon gains) in accordance with the guidance below. When considering dead organic matter for these subcategories, paragraph 4.2.2 of the ISFL ER Program Requirements shall still be applied to determine the significance of this pool." We provide a summary here of what these guidelines indicate for all subcategory types along with findings for each.

(1) Forest to Nonforest: As previously stated, the ISFL Guidance Notes states "For lands converted from Forest Land to any other land-use category during the inventory period, the assumption may be made that carbon in dead organic matter pools is lost in year 1." It appears that the deadwood emission factor for transitions of forestland to nonforestland are also being divided by 20 years, which is not in line with these requirements. For example, in the worksheet Deadwood Forest to Cropland, it shows that the loss in deadwood C stock for land transitioning occurs over a 20 year period, rather than all of the deadwood carbon being lost in year 1 (the year of the transition). The application of a 20 year transition period for forest losses results is not in conformance with the IPCC or ISFL guidelines.

(2) Nonforest to Forest: The audit team confirmed that the quantification of deadwood in nonforest to forest--however these classes have been removed. Thus no further issues here.

(3) Nonforest transitions (e.g., C>G, G>C, C>S): The guidance note indicates that deadwood emissions shall not be considered for these subcategories. However, in the calculation workbook, for the transitions of cropland to grassland and grassland to crop, it shows accounting of these deadwood emissions, which is allowed, but not required.

(4) Stable classes (e.g., F-F, G-G, C-C, S-S): Again, according to the ISFL guidance note, only transitions to and from forestland require accounting of dead organic matter emissions. Thus, in all land remaining land subcategories (forest remaining forest, grassland remaining grassland, etc), deadwood emissions can be considered zero. However, the calculation workbook shows accounting of emissions from deadwood pools for all stable land use classes. This accounting has been carried out incorrectly, resulting in double counting of the emissions associated with the area in transitions. Furthermore, the data provided from ILUA shows that the dead wood stocks in these land use classes are being applied in what appears to be equation 2.23 of the IPCC. But the IPCC requires equation 2.18 be applied to calculate annual changes in dead wood/litter in land remaning land. This equation requires inputs of DOMin (average annual transfer of biomass) and DOMout (average annual decay). In summary, the DOM in stable land use classes does not need to be accounted for, but if it is accounted for equation 2.18 must be applied, which is not currently being done. Furthermore, the DOM emissions due land use transitions are also being accounted for in the stable classes which results in double counting with the land use classes and is ultimately not in conformance with the IPCC requirements.

In summary, across the subcategories there remains accounting errors, double counting, and nonconformities with regards to the DOM accounting.

**Project Personnel Response**: Changes have been effected. However during the call the Program Team submitted the following:
For all categories, it is important to note that the ISFL guidelines state "Changes in carbon stocks in dead organic matter shall only be considered for subcategories involving lands converted from Forest Land to any other land-use category (carbon losses) and for lands converted to Forest Land (carbon gains) in accordance with the guidance below.

Forest to Nonforest- carbon in dead organic matter pools is lost in year 1 and therefore was divided by 10 instead of 20 years
Nonforest to Forest: For deadwood we used methodology similar to estimating biomass or soc in cropland to forestland. Emissons are more resonable using this approach

Nonforest transitions (e.g., C>G, G>C, C>S): The guidance note indicates that deadwood emissions shall not be considered for these subcategories. This will give rise to underestimation of emissions from these sources
For Stable classes deadwood emissions was set to zero
**Auditor Response**: The audit team confirmed that a 20 year timespan has been considered for deadwood for nonforest to forest transitions and that a 1 year timespan has been applied for forest converted to nonforest. We confirmed that for nonforest-nonforest transitions, deadwood is not being considered. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NIR 44 Dated 9 Dec 2022**
**Standard Reference**: ER Program Requirement; IPCC 2006 Guidelines; Day et al. 2014, Hollingsworth 2015, and Chidumayo (2013)
**Document Reference**: Final AFOLU GHG Inventory_ZIFLP_ 27112022.xlsx
**Finding**: This finding relates to NIR 9 above. In reviewing the Day et al. 2014, Hollingsworth 2015, and Chidumayo (2013) references, as well as the response from the program team that the fires only burn 25% of the cover, mainly undergrowth (grasses, twigs, etc), the audit team has additional inquiries regarding the parameters used for equation 2.14.

For instance, Hollingsworth 2015 states "The primary fuels available to burn are made up of an herbaceous (grassy) understory. As a result, fire intensity and fire frequency are thought to be directly correlated to rainfall, grazing intensity that removes herbaceous fuels thus reducing fire spread, and canopy closure (Chidumayo 1995)." Thus while Day et al. may indicate that 25% of the cover is removed, the question is whether this "cover" includes the woody tree cover (forest aboveground biomass) or rather just the herbaceous understory. In the response to finding #9 above, it is suggested that "mainly the under growth (savanna grassland, litter and twigs)" are burned. If this is true than emissions in woody biomass due to fires would be near zero or lower than reported. Likewise, if the only or mostly the herbaceous understory is removed from these fires and not the woody overstory biomass, this also calls into question whether the belowground woody biomass burns and has emissions. Equation 2.14 of the 2006 IPCC (for accounting for disturbance emissions) indicates that the parameter "R" is the "ratio of below-ground biomass to above-ground biomass, in tonne d.m. below-ground biomass (tonne d.m. above-ground biomass)-1. R must be set to zero if no changes of below-ground biomass are assumed (Tier 1)." The program team has applied an R value of 0.28 for fires indicating that the tree roots experience equal mortality due to fire as the aboveground woody biomass.

Furthermore, in reviewing the forestland remaining forestland quantification, the forest biomass emissions from fires are so high that they outweigh the removals from forest growth, causing the forests to ultimately be a significant carbon source. Please provide additional information and justification that these fires in fact remove 25% of the woody aboveground biomass and woody belowground biomss (roots), resulting in the forests in the Eastern Province to be a source.

**Project Personnel Response**: The programme team used conservative estimates 20% of total area burnt and 25% as total biomass burnt. Chidumayo (2013) estimated that fire caused 25%–77% of total biomass loss at five permanent sample plots in miombo woodland in central Zambia (Day et al 2014, p. 9)

Further Day et al, 2014 estimates that over 50% of the land area in Zambia is affected by fire, with approximately 25% of the total land cover burnt annually. Page 8. Section 1.6.6
**Auditor Response**: The audit team confirmed that the values from the literature have been applied correctly. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NCR 45 Dated 9 Dec 2022**
**Standard Reference**: ER Program Requirement; IPCC 2006 Guidelines
**Document Reference**: Final AFOLU GHG Inventory_ZIFLP_ 27112022.xlsx
**Finding**: This finding relates to several of the soil carbon emission/removal findings above (29, 32, 33, and 42)
The audit team confirmed the soil carbon quantification of land use change subcategories now includes a tracking of the gradual loss/gain of soil carbon over a 20 year period, as shown in the workbook Final AFOLU GHG Inventory_ZIFLP_ 27112022. However, the accounting of soil carbon emissions and gains includes errors resulting in double to triple counting of emissions and ultimately nonconformity with the requirements. The nonconformities associated with the soil carbon accounting are described here:
(1) Forest to Nonforest classes (forest to cropland, forest to settlement): For these subcategories the program team has included accounting of 1) soil emissions due to the loss of forestland area, and 2) soil emissions/removals due to the change in the SOCref value for forestland remaining forestland (increase from 33.67 tC/ha to 35.61 tC/ha between 2009 and 2019). Note that these soil emissions associated with the loss of forestland area (item #1) are also being accounted for in the forestland remaining forestland' worksheet, thus there is double counting of emissions across the subcategories, which is not in conformance with the IPCC requirements. Please note that these same accounting errors are present in the nonforest transition subcategories and nonforest remaining nonforest subcategories as well, (e.g., SOC Cropland to Settlement, SOC Grassland remaining grassla, etc). The emissions associated with the increase in SOCref in the stable pools has implications for the accounting of transitional classes as well. For instance, if the forestland is gaining carbon then the emission factor in 2010 for the forest to cropland will be different than the emission factor in 2009 as the forestland SOC is higher in 2010 than it was in 2009. Thus a full accounting across pools must be considered if the program team opts assume nonstable carbon stocks.
2) Forest to Nonforest classes (forest to cropland, forest to settlement): There is a mismatch in the years. Thus sheets SOC Forestland to Cropland and SOC Forest to Settleme do not show that any hectares of forestland were converted in 2009 (e.g., cells C8 are blank). However, the Land Activity Data Conversions supported by the Collect Earth analysis indicates that conversion began in 2009 at the start of the baseline period. This results in an accounting error as there are no SOC emissions for forest converted to nonforest in 2009. Please note that these same accounting errors are present in the nonforestland use transitions as well, (e.g., SOC Cropland to Settlement).
3) Forest remaining forest: As previously mentioned, the forestland remaining forestland SOC emissions due to the increase in SOCref (increase from 33.67 tC/ha to 35.61 tC/ha between 2009 and 2019) is being accounted for in multiple places-- in the SOC Forestland to Cropland sheet and the SOC Forest to Settleme sheet. In an email from December 9, 2022 the program team indicated the intention to keep forestland remaining forestland SOCref stable. If this is true there would be zero emissions in the forestland remaining subcategory. If this was also true, then the C stocks in the transition classes (e.g., row 32) would be stable. These same trends are true in other stable subcategories (e.g., C-C, G-G, etc). The program team's assumption that land remaining land (e.g., cropland remaining cropland, forestland remaining forestland) SOCrefs is not stable introduces significant complexity to the quantification and tracking of emissions to ensure that there is no double counting. Currently these calculations are not being conducted accurately resulting in double or triple counting of emissions.

**Project Personnel Response**: The Program team takes note of the observation and out of the two options of either assuming stable carbon stocks in land remaining in the land use or opting to assume nonstable carbon stocks, we have opted to assume nonstable carbon stocks. This is supported by a study by Wutzler and Reichstein 2007 which found that very small current accumulation rates cause big changes in theoretical equilibrium stocks, which can virtually approach infinity. They are argued that model calibrations to current carbon stocks that assume equilibrium state, overestimate the decay rate of the slowest pool. Further, spinup runs (simulations until equilibrium) overestimate stocks of recently disturbed sites. The study concludes that observed soils might be far away from equilibrium because of possible very long turnover times of stable compounds and disturbances by fire, erosion, land use or land use change, as the case is in Eastern Province, hence, we soil carbon stocks of many sites that have been disturbed several centuries ago are not in equilibrium but in a transient state because of the slowly ongoing accumulation of the slowest pool.

Upon careful analysis and consultantions, therefore, we have opted to assume nonstable carbon stocks in land remaining land and we have considered a full accounting of all carbon pools.

Wutzler, T. and Reichstein, M., 2007. Soils apart from equilibrium–consequences for soil carbon balance modelling. Biogeosciences, 4(1), pp.125-136.

**Auditor Response**: It does not appear that this finding response applies anymore. The program team has demonstrated the assumption of stable soil carbon stocks in forest remaining forest and other land remaining land subcategories in the latest version of the calculation workbook and the intention to assume stable stocks has been explained during a call with the program team in December 2022. Thus this finding has been closed.

**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NIR 46 Dated 9 Dec 2022**
**Standard Reference**: ER Program requirements
**Document Reference**: ZIFLP_2021_SOC_ZARI; Final AFOLU GHG Inventory_ZIFLP_ 27112022.xlsx
**Finding**: Section 4.1.3 of the ER Program Requirements states "The Program GHG Inventory shall utilize best available methods and existing data." The program team has provided the draft report ZIFLP_2021_SOC_ZARI.docx which table 16 shows that the forestland SOCref increases from 33.67 t C ha in 2009 to 35.61 t C ha in 2019. Over email the program team indicated there has been a decline in SOCref in forestland due to degradation and disturbance such as fire. However, this data shows an increase. The audit team requests additional information regarding the validity of these claims and what factors have resulted in an increase in soil carbon stocks on forestland.
**Project Personnel Response**: The ZARI Report estimated soil carbon show deficient to low carbon results in all the three landscapes. Under normal conditions, there will be more soil carbon under forest, wildlife and agriculture. However, the low values recorded in Eastern Province could be due to possible forest degradation and climatic conditions. One of the factors causing forest degradation would be fires which could likely cause loss of SOC in the three landscapes. Further, the wildlife landscape is located in the valley where it is dry and in this landscape forest regeneration is very low; and the landscape also experiences continuous degradation due wildlife activities. The report does not indicate increase or decrease in SOC over the baseline period.

**Auditor Response**: This finding was discussed with the program team during a call. It is clear that the report does show increases and decreases in soil carbon over the baseline period across the different land use classes. Given the discussions via meetings and the calculations in the latest version of the workbook, this finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NIR 47 Dated 9 Dec 2022**
**Standard Reference**: ER Program requirements
**Document Reference**: Final AFOLU GHG Inventory_ZIFLP_ 27112022.xlsx
**Finding**: Section 4.1.3 of the ER Program Requirements states "The Program GHG Inventory shall utilize best available methods and existing data. This may include the use of Activity Data Proxies if needed, and IPCC Tier 1 data and methods if no data are available to apply higher Tier methods." Section 4.2.3 of the ISFL states "ISFL ER Programs shall account for the Total Net Emission Reductions across eligible
subcategories by estimating the baseline and monitoring Emissions and Removals for the eligible subcategories using at minimum IPCC Tier 2 methods and data. Subcategories are considered to meet Tier 2 if all the significant13 pools and gasses are estimated using Tier 2 methods and data. ISFL ER Programs are encouraged to improve data and methods, and to move to a higher tier over time, as possible." Section 8.3.3.1 of the 2006 IPCC, Ch 8 indicates that for tier 2 "The Tier 2 approach for mineral soils also uses Equation 2.25 in Chapter 2, but involves country- or regionspecific reference C stocks and/or stock change factors and possibly more disaggregated land-use activity and environmental data. Removal, translocation or burial of soil C during development is a particular issue for settlements. To the extent that soil C is not decomposed during the development phase and resides deeper in the profile, is translocated to another area, or possibly used as a commodity. It is good practice for Tier 2 stock change factor to be adjusted to reflect the reduction in loss of C to the atmosphere as CO2." The ZIFLP_2021_SOC_ZARI does not provide soil organic carbon values for settlement. The program team has applied the cropland soil organic carbon and stock change factors to settlement subcategories indicating that there are no tier 2 soil organic carbon stocks available for this land use class. Please provide a detailed justification of the applicability of the cropland SOC and stock change factors for the settlement land use.
**Project Personnel Response**: Settlements are associated with cropland because homesteads are within farming areas. Further, Eastern Province is predominantly agricultural area, hence the Team applied the SOC for cropland in estimations of SOC in settlements
**Auditor Response**: Thank you for this explanation. In review of aerial imagery, the audit team has confirmed that the settlements generally coincide with cropland conditions. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NIR 48 Dated 9 Dec 2022**
**Standard Reference**: ER Program requirements
**Document Reference**: Final AFOLU GHG Inventory_ZIFLP_ 27112022.xlsx; Firewood charcoal growth rates_calculations_091222
**Finding**: This is a continuation of finding #8 above and is only being reissued as we have run out of response cells. Thank you for providing the requested information regarding the assumptions and calculations of the wood removal data. The audit team has been able to verify most of these values. However, as described during the email correspondence, for the charcoal consumption growth rate calculated as 3.2% (cell P31 of the sheet Land Activity Data_Fuelwood), the program team has excluded relevant data available in the natioanl woodfuel study for 2018 and 2019 which shows the rate of change in the growth of consumption is zero. However, these data points which show stable charcoal consumption were ignored resulting in an overestimation of the rate of charcoal consumption which results in less conservative baseline. If these years are not to be included, please provide a justification.
**Project Personnel Response**: Growth rates have been re-evaluated to include all the years for both charcoal and firewood
**Auditor Response**: The audit team confirmed that the rates of increase in charcoal and fuelwood use across all years in the study have been applied. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NCR 49 Dated 9 Dec 2022**
**Standard Reference**: ER Program Requirement; IPCC 2006 Guidelines; ISFL Guidance on IPCC Guidelines
**Document Reference**: Final AFOLU GHG Inventory_ZIFLP_ 27112022.xlsx
**Finding**: The ER Program Requirements states that "ISFL ER Programs shall, for the purpose of ISFL Reporting, compile a GHG inventory of all AFOLU categories, subcategories, gases and pools12 in the Program Area (Program GHG Inventory) utilizing existing data that have been collected using best available methods and approaches that are consistent with the most recent IPCC guidance and guidelines." The audit team has discovered several errors pertaining to the cropland converted to settlement subcategory:
(1) Biomass: Section 8.3 of the IPCC (ch.8) states "Depending on the magnitude of carbon stocks in the previous land-use category, land converted to Settlements may experience a relatively rapid loss of carbon in the first year, followed by a more gradual increase in carbon pools subsequently. Forest Land converted to Settlements, for example, would normally be characterized by this abrupt change followed by a gradual increase in carbon stocks. If carbon stocks in the previous land use were lower than in settlements, this abrupt transition would not take place in the first year. For example, abandoned Cropland converted to Settlements would experience only the gradual carbon stock increase and not the initial abrupt transition." In the calculation workbook, the cropland to settlement subcategory shows an abrupt increase in carbon in which the biomass carbon stocks shift in the year of conversion. Given that there is significantly greater biomass in the settlement land use than cropland, as the IPCC suggests, this increase in carbon is expected to be gradual. The IPCC default for transitions is 20 years unless a different period is justified. This has not been applied.
(2) Deadwood: As mentioned in finding 43 above, "changes in carbon stocks in dead organic matter shall only be considered for subcategories involving lands converted from Forest Land to any other land-use category (carbon losses) and for lands converted to Forest Land (carbon gains)." Despite this, the changes in deadwood in the cropland converted to settlement has been accounted for, assuming a transition period of 20 years. The transition occuring in 2009 has been omitted resulting in inaccurate accounting.
(3) Soil: Like the deadwood pool, the soil carbon emissions shown in the calculation workbook omit the conversion of cropland to settlement in 2009. As indicated in finding #45, the accounting of soil carbon for this transition has resulted in double counting of the area of transition.
Overall, the accounting of this subcategory is not in conformance with the requirements.
**Project Personnel Response**: Cropland converted to settlement and Cropland to Grassland, experience gradual carbon stock increase and the IPCC default for transitions of 20 years was used. SOC for cropland to grassland has been estimated using SOC estimate employed during estimates of moving from lower carbon pool to higher carbon pool.

**Auditor Response**: (1) The audit team has confirmed that a gradual increase in biomass carbon has been applied for conversions from cropland to grassland and from cropland to settlement. However, for these two subcategories, the biomass values have been used but have not been converted to carbon, which is required by equation 2.16 of the IPCC. For instance the value for cropland of 7.9 t/ha was applied and the value for settlement 20.8 t/ha was applied, but these values were never converted to carbon equivalents, thus resulting in overestimation of removals and a nonconformity with the IPCC equation. Please check that all biomass values have been converted to carbon for each of the subcategories.
(2) For the cropland to settlement subcategory, this transition entails an increase in biomass from 7.9 t/ha to 20.8 t/ha. This indicates a removal from the atmosphere which must be reflected by a negative value. However in the calculation workbook, sheet Detailed Summary GWP, this increase in carbon is shown as an emission (positive value). Thus a nonconformity exists. Please ensure that for all transitions the correct sign (-/+) is being applied.
**Project Personnel Response 2**: GHG Inventory Team takes note of the observation.
1) The biomass values in the two subcategories cropland to grassland and cropland to settlement have now been converted to carbon in conformance to the 2006 IPCC Guidelines.
2) The correct sign (-ve) has been assigned for the cropland to settlement subcategory in the Detailed Summary GWP worksheet.
Kindly refer to the Final GHG Inentory Workbook
**Auditor Response 2**: The audit team has reviewed the updated calculation workbook. We confirmed that the biomass values have been converted to carbon and that the correct sign is now being applied to the biomass. However, for the soil carbon pool, the 2009 cropland SOC is 19.83 is applied, while for settlement the 2018 cropland SOC of 15.59 is applied. This indicates a decline in SOC and therefore an emission to the atmosphere (positive value). Yet in the sheet Detailed summary GWP, row 44, the cropland to settlement SOC is being shown as a removal from the atmosphere, which is not accurate. This finding remains open. However, please see related finding #54 below regarding the selection/application of consistent SOCrefs.
**Project Personnel Response 3**: The GHG inventory team takes note of the observation and has revised the SOC value accordingly in the Final AFOLU GHG Inventory 13022023_SOC measured_V3. An average SOC value of 30.86 has been used for cropland and settlements.
**Auditor Response 3**: This finding did not pertain to the entire SOC calculation but rather the application of the SOCref value which is one component of equation 2.25 of the IPCC. The audit team confirmed that the average SOCref value for both cropland and settlement has been used, but we now found that the soil stock change factors (flu, Fmg, Fi) have completely been removed from the quantification. As a result, this finding has been closed, but a new finding on the stock change factors has been opened.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NCR 50 Dated 18 Jan 2023**
**Standard Reference**: ISFL Program Requirements, IPCC 2006
**Document Reference**: Final AFOLU GHG Inventory 12012023
**Finding**: Section 4.1.3 of the ER Program Requirements states "The Program GHG Inventory shall utilize best available methods and existing data." Furthermore, the ISFL requirements state "ISFL ER Programs are expected to demonstrate conformity with this document and apply general principles of environmental integrity and conservativeness in order to be able to receive result-based finance from the ISFL." In reviewing the latest version of the calculation workbook, the audit team found that the deadwood carbon stock (2.3 tC/ha) for the dry evergreen forest type is being applied to all other forest types for conversions from forest to nonforest and nonforest to forest. This is not conservative (particulary for forest to nonforest transitions) as the other forest types have lower dead wood carbon stock values. Furthermore, by using only one of the available forest type deadwood values, this does not represent the use of best available data as other values for the other forest types exist. This results in a nonconformity with the requirements.
**Project Personnel Response**: The GHG Inventory Team takes note of the observation.
The deadwood carbon stocks for different forest types have been applied to respective forest types.
Kindly refer to the Final GHG Inentory Workbook
**Auditor Response**: The audit team confirmed that for conversions from forestland to nonforest, the deadwood carbon stock for the respective forest types has been applied which is in conformance and more conservative. For the conversions from nonforest to forest, the highest deadwood carbon stock value of the different forest types has been applied, which is most conservative. This finding has therefore been satisfied.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NIR 51 Dated 18 Jan 2023**
**Standard Reference**: ISFL Program Requirements, IPCC 2006
**Document Reference**: Final AFOLU GHG Inventory 12012023
**Finding**: Section 4.1.3 of the ER Program Requirements states "The Program GHG Inventory shall utilize best available methods and existing data." In the sheet Detailed summary GWP, for Forestland Converted to Settlement, you are showing values of “NE” for deadwood and soil carbon although you have calculated emissions for these pools. We also found that for the subcategoriy, Cropland converted to settlement, you show a value of NE for the soil carbon, but values for this pool were calculated. Please provide additional information regarding why these have been set to NE. Please check that all emissions calculations are feeding into the final baseline emission calculations.
**Project Personnel Response**: The GHG Inventory Team takes note of the observation.
1) In the Detailed Summary GWP worksheet, "NE" has been removed for the subcategory Forestland converted to Settlement and has been replaced by correct values.
2) All emissions calculations have been linked to the final baseline emissions calculations.
Kindly refer to the Final GHG Inentory Workbook
**Auditor Response**: The audit team confirmed that in this latest version of the calculation workbook, the values that have been calculated on the individual subcategory sheets are now shown in the Detailed Summary GWP and NE has been removed. This finding has therefore been resolved.
**Bearing on Material Misstatement or Conformance (M/C/NA):** NA

**NIR 52 Dated 18 Jan 2023**
**Standard Reference**: ISFL Program Requirements
**Document Reference**: Final AFOLU GHG Inventory 12012023
**Finding**: Section 4.3.13 of the ER Program Requirements states "For each ISFL ERPA Phase, ISFL ER Programs shall only account for those subcategories for which step 2 has shown that the historic Activity Data and Emission Factors available, and the methods used to collect these Activity Data and Emission Factors, meet the quality and baseline setting requirements for ISFL Accounting listed in Section 4.2 while taking into account the provisions of paragraph 4.3.10 and 4.3.11." In the calculations workbook, sheet Baseline Emissions and uptake, the emissions/removals from all subcategories, even those that are not eligible, have been included in the baseline calculation. Pleae demonstrate the final subcategory selection and the final baseline emissions calculation for only the eligible and selected ISFL subcategories.
**Project Personnel Response**: The GHG Inventory Team takes note of the observation. however, kindly note that as indicated in our earlier submission in November 2022, our considered view is that all audit queries relating to estimations are cleared prior to conducting a KCA and thereby picking eligible categories. Therefore the KCA will be conducted once audit queries relating to estimations are cleared.
**Auditor Response**: Thank you for this explanation. As discussed on our call on 30 January 2023, the audit team will review the updated ERPD once all the remaining quantification findings have been resolved. Thus, this finding will remain open until then.
**Project Personnel Response 2**: KCA has bee conducted and incorporated in the updated ERPD and the folder: Updated_ERPD_27Mar23_final\C. Inventory_DB_Mar_2023\KCA_Baseline_Graphs_ISFL_Graphs.
**Auditor Response 2**: The audit team confirmed that the ERPD has been updated with the latest baseline calculations and with the subcategory selection. However, we found several nonconformities regarding the reporting of the baseline that has been validated, thus see related nonconformity findings below.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NCR 53 Dated 30 Jan 2023**
**Standard Reference**: ISFL Program Requirements, IPCC 2006
**Document Reference**: Final AFOLU GHG Inventory 20_01_2023_MSe
**Finding**: The ER Program Requirements states that "ISFL ER Programs shall, for the purpose of ISFL Reporting, compile a GHG inventory of all AFOLU categories, subcategories, gases and pools12 in the Program Area (Program GHG Inventory) utilizing existing data that have been collected using best available methods and approaches that are consistent with the most recent IPCC guidance and guidelines." In reviewing the latest version of the calculation workbook, the audit found the that program is now accounting for SOC emissions in the cropland-remaining cropland category. In this category, there is an increase in area of cropland due to transitions from other land uses. However, we found that there is double counting of the SOC emissions in the CL-CL subcategory because these emissions associated with the change in area are already being accounted for the other subcatories (e.g., Forest to cropland, settlement to cropland, etc). The emissions associated with the transition of land are from other land uses to cropland or vice versa are already being accounted for in other sheets. For example, in the sheet SOC_Forestl to Cropland, there are emissions associated with the annual conversion of 13,063 ha of forestland to cropland. Likewise, in the sheet SOC cropland remaining crop, these emissions/removals are therefore being double counting and a material error in the quantification. During a call with the program team on 30 January 2023, it was expressed that the program team intends to rectify this error by  instead assuming stable cropland remaining cropland SOC, similar to the FL-FL subcategory.
**Project Personnel Response**: The GHG Inventory Team takes note of the observation and has revised the workbook accordingly. A stable SOC has been assumed for cropland remaining crpoland and an average SOC value was used. See Final AFOLU GHG Inventory 13022023_SOC measured_V3.
**Auditor Response**: The audit team has confirmed that the project has reverted back to the original assumption of stable SOC pool for cropland remaining cropland and has applied an average SOCref value. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NIR 54 Dated 30 Jan 2023**
**Standard Reference**: ISFL Program Requirements, IPCC 2006
**Document Reference**: Final AFOLU GHG Inventory 20_01_2023_Mse; ZIFLP_2021_SOC_ZARI
**Finding**: The ER Program Requirements states that "ISFL ER Programs shall, for the purpose of ISFL Reporting, compile a GHG inventory of all AFOLU categories, subcategories, gases and pools12 in the Program Area (Program GHG Inventory) utilizing existing data that have been collected using best available methods and approaches that are consistent with the most recent IPCC guidance and guidelines." We have found that for each of the subcategories & land use classes, there are often different approaches to which SOC value is selected for application. For example:
-Average Value from 2009 and 2018: During various meetings with the project team, it has been indicated that stable SOC will be assumed for land remaining land and that a single, stable SOC value will be applied for each land use (e.g., and average, a single year) from the ZIFLP_2021_SOC_ZARI (table 16). In the calculation workbook, sheetSOC forestland remaining forest, it appears that an average between the 2009 value (33.67 t C/ha) and the 2018 value (35.61 tC/ha) has been applied, yielding a stable SOC of 34.64 for the baseline period.
- Application of the 2009 AND 2018 values: A different approach was applied for the cropland converted to forest (and other transition subcategories). Rather than assuming a stable FL SOC of 34.64 like you did for the FL-FL subcategory, you have applied the 2018 SOC value of 35.61 t C ha for FL. For Cropland, you have assumed the 2009 SOC value of 35.99 (again rather than assuming the stable CL SOC value as a average between the 2009 and 2018 values. This assumption is also being applied to other transition subcategories, e.g., Cropland to settlement.
In order for achieve the IPCC principle of consistency among each land use class and the subcategories, consistent assumptions in the SOCref value must be applied across subcategories (i.e., average SOCref among year, a single SOCref is selected, etc.) Please provide a justification for the SOCref values applied and indicate how there is consistency amount subcategories.
**Project Personnel Response**: The GHG inventory team takes note of the observation and has revised SOC values accordingly in the Final AFOLU GHG Inventory 13022023_SOC measured_V3. Average SOC values were consistently used.
**Auditor Response**: The audit team has confirmed that the average SOCref values have been applied for the accounting of soil carbon. However, see finding #55 below as these SOCref parameters are no long multipled by the soil stock change parameters are required. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**OBS 55 Dated 1 Mar 2023**
**Standard Reference**: ISFL Program Requirements, IPCC 2006
**Document Reference**: Final AFOLU GHG Inventory 13022023_SOC measured_V3
**Finding**: This finding pertains to several of the SOC findings previously issued. The ER Program Requirements states that “ISFL ER Programs shall, for the purpose of ISFL Reporting, compile a GHG inventory of all AFOLU categories, subcategories, gases and pools12 in the Program Area (Program GHG Inventory) utilizing existing data that have been collected using best available methods and approaches that are consistent with the most recent IPCC guidance and guidelines." In the latest iteration of the calculation workbook (Final AFOLU GHG Inventory 13022023_SOC measured_V3), the audit team has found that accounting of changes in the SOC pool is no longer in conformance across subcategories. The IPCC requires that the SOC pool be calculated using equation 2.25 or 2.26 which both contain 2 parts. The equations require that the SOCref parameter be multipled by stock change factors (Flu, Fmg, Fi). In previous iterations of the workbook, the team correctly multipled the SOCref by these parameters. However, in the latest version, all stock change factors have been removed and only the SOCref parameter is utilized. While this is not in conformance with the IPCC guidelines, it ultimately results in a more conservative emissions baseline and therefore this finding is only being issued as an OBS that does not need to be addressed.
**Project Personnel Response**: Noted
**Auditor Response**:
**Bearing on Material Misstatement or Conformance (M/C/NA):**

**NCR 56 Dated 3 Mar 2023**
**Standard Reference**: ISFL ER Template Requirements
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 12_final 10Oct22
**Finding**: The PD Template requires the following for Annex 10: “Using the table provided, clearly describe all the data and parameters to be monitored (copy table foreach parameter).” Furthermore, section 4.5.3 of the PD template states “The details on all data and parameters to be monitored in Annex 10 below should also provide a systematic identification and assessment of uncertainty in the data and parameters to be monitored.” In the Program’s Annex 10, it only discusses the uncertainty of some of the subcategories, but does not provide any of the required monitoring tables, detailing ALL data and parameters that will be monitored. This is not in conformance with the requirements.
**Project Personnel Response**: All the subcategories have now been included, and parameters to be monitored have been included in Annex 11 of the document accordinly
**Auditor Response**: The ERPD Template requires that Annex 10 be the location of the Data and Parameters to be Monitored. The ERPD submitted shows this informatin in Annex 11 which is not in conformance with the template requirements.

Second, the instructions for this annex state "Using the table provided, clearly describe all the data and parameters to be monitored (copy table for each parameter)." In the ERPD submitted, you have combined all parameters under single subcategories. For instance, the table shows the parameter as "3B2 Cropland: 3B2a Cropland remaining Cropland" and then for the description it lists each indiviedual parameter to be monitored (e.g., area under cropland remaining cropland, Type and variety of perenniual crops, etc." However, the annex requires each parameter have a separate table. It also appears that some key parameters to be monitored or fixed at validation could be missing. For instance, for FL-FL—What about the net increment of growth (Iv), fd (% biomass lost in fires), wood density, R (root to shoot ratio), BCEFs, BCEFi, BCEFr, carbon fraction? These tables must include all parameters used for the quantification and provide information regarding whether they will be monitored or fixed. When we conduct the verification audits, we will go back to these tables and ensure that the parameters monitored are in line with what was set in the tables. As a result the Data and Parameters to be Monitored section is not in conformance with the template requirements and this finding remains open.
**Project Personnel Response 2**: The Annexes have been aligned to the ISFL ERPD template and individual tables have been prepared for the parameters to be monitored. See Annex 10.
**Auditor Response 2**: The audit team confirmed that Annex 10 has been updated and is in conformance with the requirements of the template. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NCR 57 Dated 3 Mar 2023**
**Standard Reference**: ISFL ER Template Requirements
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 12_final 10Oct22
**Finding**: The PD Template requires the following for Annex 8 (A.2): "Using the table below, please list all the entities that have agreed to the implementation of this plan. Add rows as necessary." While the required table is included in Annex 8 (A.2), the table does not list the names of entity representatives for all entities, nor does it list the job title of the entity representative. Therefore, this table is not in conformance with the requirements.
**Project Personnel Response**: The table has been updated in the ERPD. See Annex 9.
**Auditor Response**: The audit team confirmed that the names and positions of the relevant representatives have been included in the ERPD table.
However, this table is required to be listed in Annex 8, not annex 9, according to the template requirements. This is not in conformance with the ERPD Template and thus this finding remains open.
**Project Personnel Response 2**: The Annex has been aligned to the ISFL ERPD template. See Annex 8.
**Auditor Response 2**: The audit team confirmed that the annex has been changed to Annex 8 in conformance with the requirements of the template. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NIR 58 Dated 3 Mar 2023**
**Standard Reference**: ISFL Program Requirements, IPCC 2006
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 12_final 10Oct22; Final AFOLU GHG Inventory 13022023_SOC measured_V3
**Finding**: Section 4.6.1 of the ER Program Requirements states "ISFL ER Programs shall systematically identify and assess sources of uncertainty in the determination of the Emissions Baseline and the monitoring of Emissions and Removals following the most recent IPCC guidance and guidelines." Section 4.6.2 states "ISFL ER Programs shall, to the extent feasible, follow a process of managing and reducing uncertainty in the determination of the Emissions Baseline and the monitoring of Emissions and Removals."

The audit team requests a detailed and transparent demonstration of the uncertainty analysis described in section 4.5.3 of the ERPD. Please demonstrate how all relevant data and parameters have been included in the uncertainty estimations for each subcategory. For example, please demonstrate how the uncertainty regarding the area burned (20% of the forest area), percent of biomass burned (25% of biomass), total charcoal removal, total fuelwood removals, and forest growth were included in the forestland remaining forestland subcategory. Please provide such a demonstration for all ISFL eligible subcategories.
**Project Personnel Response**: Uncertainty analysis has been included in the document accordinly and results are provided in Table 85. Further details are in the folder: Updated_ERPD_27Mar23_final\D. Uncertainty Analysis

**Auditor Response**: Thank you for this uncertainty analysis provided (UNCERTAINTY ASSESSMENT NARRATIVE.docx; Uncertainity Calculations_2008_2018.xlsx). However, the audit team has found the finding was not fully address and has found some discrepancies as follows:
(1) The finding explicitly states “The audit team requests a detailed and transparent demonstration of the uncertainty analysis described in section 4.5.3 of the ERPD. Please demonstrate how all relevant data and parameters have been included in the uncertainty estimations for each subcategory. For example, please demonstrate how the uncertainty regarding the area burned (20% of the forest area), percent of biomass burned (25% of biomass), total charcoal removal, total fuelwood removals, and forest growth were included in the forestland remaining forestland subcategory. Please provide such a demonstration for all ISFL eligible subcategories.” The response/data provided also does not address the uncertainty of these baseline assumptions included in the forest remaining forest subcategory (fire, charcoal removal, fuelwood removal, etc). It appears that only the collect earth uncertainty (activity data) and the uncertainty of emission factors (aboveground and belowground biomass) are considered, but the uncertainty of all other parameters impacting the baseline for forest remaining forest have not been considered. The audit team will require clear demonstration and justification of these key baseline assumptions/datasets in the forestland remaining forestland subcategory.
(2) The information provided is not transparent enough for us to confirm the baseline uncertainty for each subcategory and the combined total uncertainty. For example, in the document UNCERTAINTY ASSESSMENT NARRATIVE.docx provided, it states “Data for estimating emissions in the Land category was obtained from the ILUA data in the Eastern Province Analyzed spreadsheet with Activity uncertainty of ±5% and ±3% for emission factor uncertainty. Uncertainty levels for Collect Earth dataset was estimated at ±1.4% as show in the file: EP_Filtered_and_Analyzed_AD_final_16.12.22.” It remains unclear how these values of +-5% or +-3% were derived. For instance in the file EP_Filtered_and_Analyzed_AD_final_16.12.22.xlsx, the Fl-FL uncertainty appears to be +-2.6%. However, for other land use transitions, the error is much higher. For instance, FL-CL shows an uncertainty of +-17.9% and FL to SL has an uncertainty of +-73.5%. Thus it is unclear how a +-5% was derived for the activity data for each individual land use class. For the emission factors, a value of +-3% is indicated for each land use subcategory, but it is unclear how this was determined and whether it considered all pools (biomass, dead wood, and soil organic carbon). The audit team will require clear demonstration and justification of these land emission factors, including a justification of why it is appropriate to apply the same uncertainty level to all land subcategories and pools.
(3) The values in the workbook Uncertainty Calculations_2008_2018.xlsx provided do not match those in table 85 in Annex 6 of the ERPD, nor is the calculation of the combined uncertainty for each subcategory demonstrated in the Uncertainty Calculations_2008_2018.xlsx. The audit team will request this demonstration of the total baseline uncertainty for each subcategory as well as the overall uncertainty of all subcategories included.
(4) Section 4.6 of the ERPD states "Considering the overall uncertainty in LULUCF sector of 15%, the uncertainty set aside factor equals 3%. Considering the overall uncertainty in Forestland Remaining Forest Land (where most of the emissions are emanating), of 2.92%, Forestland converted to Cropland 18.61% and Cropland remaining cropland 50.2%, the uncertainty set aside factor equals 3% being the aggregate uncertainty of emission reductions between 15% and 30%." However, Annex 6, section 6 shows different uncertainty values for these classes. For instance, it shows a total uncertainty of 5.83% for forest remaining forest. Also, there is no demonstration of how an overall uncertainty of 15% was quantified. The audit team requests such a demonstration. Second, according to section 4.6.4 of the ER Program requirements, the uncertainty set-aside factor associated with a 15%-30% uncertainty is 4% (not 3% as stated in the ERPD). Note that this uncertainty set-aside factor is independent of the Reversal Set-Aside Percentages (section 4.7 of the Program Requirements).

Please see the ISFL Buffer Requirements which clearly distinguishes that there are 2 separate set-aside percentages (Uncertainty Set-Aside and Reversal Set-Aside).
This finding has not been sufficiently addressed. However, the audit team concludes that these items can be addressed by the Program Team with additional time and attention. Thus, we will issue a Forward Action Request corresponding to this finding.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NCR 59 Dated 3 Mar 2023**
**Standard Reference**: ISFL ER Template Requirements
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 12_final 10Oct22
**Finding**: Section 4.6 of the PD Template Requirements states “Please provide a simplified ex-ante estimation of the expected Emission Reductions of the ISFL ER Program. Where the calculation requires monitored data that is not available yet, use best estimates based on expected impacts of the ER Program and data that might be available from other actions (either in the country or in other countries). List all assumptions, and provide the values used for each parameter and the sources for these data. Summarize the outcome in the table below. [Corresponds to ISFL ER Program Requirements 4.6.3 and 4.6.4].”

Currently, the ERPD provides details about the methodologies that are applied to generate ex-ante emission reduction estimates for the four program activities. However, it does not list all assumptions (e.g., the level of implementation of each activity over time) or provide the values for each parameter and the sources for these data. As a result, this section of the ERPD is not in conformance with the requirements.
**Project Personnel Response**: Ex-ante estimates of emissions reduction has been provided in section 4.6 of the ERPD. Further, an Emission Reduction Report is included in the submission. The report is found in C: Updated_ERPD_27Mar23_final\C. Inventory_DB_Mar_2023\ER Estimates. Furthermore emission reduction efforts in CSA are explained in Annex 15.
**Auditor Response**: This finding did not ask for the ex-ante estimates of emissions reductions. Rather this finding pertains to template conformance. We confirmed the ERPD was updated, however, it still does not list all the ex-ante assumptions (e.g., the level of implementation of each activity over time) or provide the values for each parameter and the sources for these data. As a result, this section of the ERPD is not in conformance with the requirements. The template requires "List all assumptions, and provide the values used for each parameter and the sources for these data." This has still not be complied with. Relevant assumptions might include the following: The level of implementation per year (# of cookstoves, hectares under forest management, hectares under CSA, areas/number of woodlots) or other key parameters related to the activities implemented (efficiency of cookstoves, types of crop varieties, relative reductions in fertilizers, types of soil inputs, changes to crop rotations, etc). Note these are just examples and do not represent the full range of assumptions. Overall, little to no information is provided in the ERPD regarding these assumptions and parameters. As a result this finding remains open.

Please also note that the values reported in Table 21 are inaccurate. They do not reflect the average emission baseline of ISFL eligible subcategories. The emissions baseline value should be identical for each year and should ONLY include eligible subcategories for this first ERPA phase. It should match the value reported in Table 18 (which is also in accurate, as demonstrated in findings below).
**Project Personnel Response 2**: The detailed assumptions have been included. See Subsections 4.6.1-4.6.4 on pages 110-114 of the ERPD.
**Auditor Response 2**: The audit team confirmed that sections 4.6.1-4.6.4 have been updated to more transparently provide assumptions regarding the emissions reductions estimates associated with the project activities. This finding has been resolved.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NIR 60 Dated 3 Mar 2023**
**Standard Reference**: ISFL Program Requirements, IPCC 2006
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 12_final 10Oct22; Final AFOLU GHG Inventory 13022023_SOC measured_V3
**Finding**: This finding relates to the two findings above. Section 4.6.3 of the ER Program Requirements states "ISFL ER Programs shall quantify the uncertainty of the emission reductions using a Monte Carlo simulation21. The uncertainty of the emission reductions shall be combined into a single combined uncertainty estimate and reported at the two-tailed 90% confidence level." Section 4.6.4 of the ER Program Requirements states "ISFL ER Programs shall set aside a portion of emission reductions calculated in Section 4.5.3 in a buffer reserve22 to reflect the level of uncertainty associated with the estimation of emission reductions during the ISFL ERPA Phase." While this set aside factor is only an estimate based on the estimated ERs (and thus does not require that a Monte Carlo analysis be conducted for ex-ante), the table in section 4.6 of the PD Template requires that the "Estimation of expected set-aside to reflect the level of Uncertainty associated with the estimation of ERs during the Term of the ERPA" be provided. In the ERPD submitted, you indicate a 3% uncertainty set aside factor. Please demonstrate how this factor was calculated. Please update the uncertainty analysis and buffer set aside if these values have been updated.
**Project Personnel Response**: Details on the determination of uncertainty are in the documents in the folder: Updated_ERPD_27Mar23_final\D. Uncertainty Analysis
**Auditor Response**: No demonstration of quantification of a 3% uncertainty set-aside has been provided. See the response to finding #58 above and the corresponding FAR requesting this demonstration. This finding has therefore been closed, though a FAR has been issued.
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NIR 61 Dated 3 Mar 2023**
**Standard Reference**: ISFL ER Template Requirements
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 12_final 10Oct22
**Finding**: Section 4.1.3 of the ER Program Requirements states "The Program GHG Inventory shall utilize best available methods and existing data. This may include the use of Activity Data Proxies if needed, and IPCC Tier 1 data and methods if no data are available to apply higher Tier methods. ISFL ER Programs are encouraged to apply higher Tiers over time, as possible." Section 4.3 of the ERPD states "The ZIFL Programme intends to include Direct N2O Emissions from managed soils in subsequent ERPA phases should the relative magnitude of contribution to the absolute level of the total GHG Emissions and Removals in the Program GHG Inventory be significant. The ZIFL Programme will ensure that the quality requirements will be met at the latest at the end of the ERPA Phase."

Annex 8 of the ERPD requires more detail on this time-bound plan. Please provide the following information regarding this time-bound plan:
1. When will the baseline data for estimating direct N20 from managed soils be completed? Will the N emission factors be applicable to the historical baseline period?
2. Will this dataset cover the entire baseline period 2009-2018, making it eligible for inclusion in the ISFL baseline. Please indicate how?
**Project Personnel Response**: The studies to update the emission factors are planned. However, timeline for the completion will be during the first term of the ERPA. Therefore, this subcategory will not be part of the baseline during the first phase of the ERPA term, after the first monitoring period in 2023-2025. However, it is expected that after the implementation of this plan, this subcategory could be included in the baseline estimation for the subsequent ERPA phases and will cover entire the baseline period 2009-2018. The information has been updated in Annex 9 of the ERPD.
**Auditor Response**: Please note that this information on the Time-bound plan is required to be presented in Annex 8 of the ER PD template (not annex 9). See NCR #57 above.

Otherwise, the information required has been specified in the ERPD. The audit team has closed this finding.

**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NIR 62 Dated 3 Mar 2023**
**Standard Reference**: ISFL Program Requirements
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 12_final 10Oct22
**Finding**: Section 4.7.2 ISFL ER Program Requirements states that "Programs shall set aside a portion of emission reductions calculated in Section 4.5.3 in a buffer reserve, appropriate for the ISFL ER Program's assessed level of risk of Reversals, which in the event of a Reversal during the ISFL ERPA Term will be used to cover such Reversals. The portion to be set aside shall be determined using an ISFL approved risk assessment and buffer tool.

For the risk category 'Vulnerability of the ISFL ER Programme Accounting Area to fire, storms, droughts, etc.', the ERPD states "The ZIFL areas for CFM and Conservation agriculture are vulnerable to natural and anthropogenic disturbances such as fire. The other natural drivers of deforestation are climate change, droughts, pests and diseases, and floods in some areas."…"Level of Risk – Medium 10%."

The audit team requests more information/justification on how this risk score was reached. More specifically, the audit team is unclear whether this is the accurate risk score for this section, considering the significance of forest fires quantified in the emissions baseline as the most significant source of emissions.

During the calls, the team referenced mitigation activities as the central reason for natural risk reduction. However, how is the extent of implementation of project activities going to be sufficient to counteract the effects of severe flooding, fire, droughts, and other likely natural disasters that are projected to increase under a changing climate.

The projected implementation levels as demonstrated in the document "Emission Reduction-revised.docx":

- around 300,000 ha will be in Conservation Agriculture by 2030
- around 350,000 ha will be in sustainable forest management by 2030
- Cookstoves around 200,000 by 2030"

Given the size and population of the Eastern Province (~5 mill ha and 2 million ppl), it is unclear that these activities are sufficient to reduce the reversal risks associated with natural disturbances/climate.

Please provide additional justification for risk level of 10%.

**Project Personnel Response**: The ERPD, section 4.7 assessment of anthropogenic and natural risk reversals states that the programme area does not experience significant risks due to natural events such as pests, extreme weather events and other natural risks, except possible medium risk of forest fires. Table 21 in the second to last row covers: Exposure and vulnerability to natural disturbances. The vulnerability is described relating to a level of risk as medium with 10% reversal risk.

This medium risk scoring relates to the fact that the JSLP is not a new programme with new mitigation measures, but a follow on of a series of projects across the Province focussing on sustainable land management issues, specifically community management of land areas and natural resources, with a significant area under community forest management. The legal framework in Zambia for the transfer of rights to forest resources including forest carbon as a major forest product requires the community institution to enter into a range of obligations for controlling access and use including protection from damaging late season fires (see Form IV of the Community Forestry Management Regulations of 2018). Community Forest Management Groups across the province are conducting maintenance of boundaries, fire breaks and conducting prescribed burning in order to reduce the fuel load and therefore mitigate the potential impacts of late season fires in the drier months. Already over 1.2 million hectares are under community control and new groups are being encouraged to instigate CFM fire management interventions, through an ER performance related scheme in advance of carbon monetary benefit sharing under JSLP. Further, on agricultural lands, improved management of crop residues is being promoted as this is a source of fires in the landscape.

Further, through recent investments from ZIFLP, the Forestry Department has conducted early prescribed burning in the state forest reserves, combined with boundary marking, signposting and maintaining/replacing boundary beacons. The Forestry Department Annual reports indicated fire management in protected forest areas in 2022 covered 216,986 ha.

Future mitigation measures under JSLP include entering into a Chiefdom Emissions Reduction Performance Agreement (CERPA), eventually covering every Chiefdom in the Province. This agreement will set out the profile of the Chiefdom, identify the key ER issues and drivers of deforestation and forest degradation and other unsustainable land management and cultivation practices. These indicate that sustainable land management is core to generating emissions reductions in the Province. The CERPA will identify the key forest assets and allocate responsibilities including permitted and non-permitted practices which contribute to GHG emissions in the Chiefdom. The Agreement will form the basis of assigning performance criteria and responsibilities as well as the benefit sharing mechanism.

CERPA performance measures: One of the key performance indicators relates to the main ISFL key categories of Forest remaining Forest: with a key measure being reduced incidence from late season fires and improved control and protection, plus restoration of previously degraded areas. The BSP Performance Based Payments will therefore, only be paid to beneficiaries for delimited geographic areas if they have met the performance criteria, fire being one of these criteria.

Under a centralised nested approach, existing ER related projects will be recognised and incentivised to deliver ERs based on performance indicators as defined in a Nested Emission Reduction Performance Agreement (NERPA). These projects were not included in the target of 350,000 ha to be in sustainable forest management by 2030 as this figure is for new areas brought under management by the programme as opposed to current areas under sustainable forest management.

The total forest area under SFM will therefore be: BCP 741,014ha + COMACO 102,380 + 350,000 (new) = 1,193,314ha protected forest combined total. This represents 42.4% of the forest area of Eastern Province. Further areas including National Parks managed by the Department of Wildlife and National Parks are subject to fire management regimes. It is therefore the view of the project team that these activities sufficient to reduce the reversal risks associated with natural disturbances/ climate in Eastern Province.
**Auditor Response**: Thank you for this additional description and justification for the level of risk assigned. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NIR 63 Dated 3 Mar 2023**
**Standard Reference**: ISFL Validation and Verification requirements
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 12_final 10Oct22
**Finding**: Section 8.3(37c) of the ISFL Validation and Verification Requirements indicates that "
The criteria for Validation and Verification are:" … "Guidelines contained in the ISFL ER Program Document Template."
During the Non-GHG calls held with the program team during the last 2 weeks of February, it was expressed to the audit team that several sections of the ERPD are out of date and may need to be updated. For instance, it was expressed that updates to all sections and annexes related to financing are necessary. Likewise, there have been significant changes to the emissions baseline, uncertainty (pending), and potentially to the subcategory selection. Thus, in order to fully assess the ERPD and its conformance with the PD Template, the audit team requests that the program team ensure that all sections of the ERPD are up to date with any new data, values, and or explanatory information.
**Project Personnel Response**: The ERPD has been updated.
**Auditor Response**: Thank you for updating the ERPD. We have confirmed many of the updates were made. However, we found the several errors and nonconformities which are outlined in findings below. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NIR 64 Dated 3 Mar 2023**
**Standard Reference**: ISFL Program Requirements
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 12_final 10Oct22
**Finding**: Section 4.5.2 of the ER Program Requirements states "In estimating the subcategories and their associated Carbon Pools and gases included in the scope for ISFL Accounting, ISFL ER Programs shall ensure Methodological Consistency between the Emissions Baseline and the monitored net GHG Emissions."

First, in the ERPD, Section 4.5.1 states that the data collection for monitoring will include "
- Data collection under forestry will measure change of land use (deforestation) and selective removal of trees in an area (forest degradation). The loss of forests to crop land, Grassland and settlements is deforestation, while under forest land remaining forest land forest degradation (Timber, firewood, Charcoal harvesting) will be monitored. Deforestation will be measured by undertaking landcover assessment using remote sensing and GIS tools. Measurement of forest degradation will be undertaken by assessing the legally harvested forest produce, using sample plots and checking on illegal activities especially harvests.
- Using intensified collect earth (CE) sampling over very high-resolution satellite images/photos to detect possible net reductions from intervention combating the gross forest loss over the areas of interest: 350,000 hectares under Community Forest Management (CFM) some Protected Forest Areas (PFA).
- Using unmanned aerial vehicles (UAV) to collect images showing activities related to the Project Interventions. A selected network of some collect earth points can be used as ground control points (GCPs) for collecting activity data over the target project sites. From which computed NDVIs can be produces to show where and how much net reductions are realised from different interventions.
- Produce the latest (more recent), one-off LU/LC map showing the resource distribution which highlights where the net reductions have been realised and to map areas requiring implementation of future interventions by the project. The "base map" for such LU/LC maps would be the NDVI thematic images from designated areas of intervention by the project.."

During our calls with the ISFL team, the audit team learned that the Collect Earth Method includes other ancillary sources, including Google Earth, which may not be available during the monitoring periods. The ISFL team also indicated that they have consulted with current private carbon projects in the province to learn how they acquire remote sensing data. Finally, the ISFL team references a "Forest Data Partnership", organized through WRI, which the ISFL project intends to join. The ERPD mentions the use of UAV (drones), but this was not mentioned during the calls with the audit team.

The audit team requests that the ERPD be updated accordingly to include the most up to date information regarding the collect earth monitoring approach. Also please provide justification that intensified collect earth sampling over the CFM and PFA areas will result in methodological consistency with collect earth approach/ sampling grid applied to derive the emissions baseline.
**Project Personnel Response**: Section 4.5.2 has been enhanced to provide consistent information for monitoring.

**Auditor Response**: This finding was in reference to section 4.5.1 which appears to have been updated and most of our inquiries have been addressed.

However, Section 4.5.1 now states "The same methodology for data analysis explained in section 4.5 will be used." However, this is section 4.5, so this statement referencing the current section does not make sense. This may be a type-o. Do you mean to refer to section 4.2.2 in which the data for determining emissions and reductions is outlined? Please specify which section is the correct reference and/or update to provide additional clarity.

**Project Personnel Response 2**: This has been revised. See section 4.5.1
**Auditor Response 2**: The audit team confirmed that section 4.5.1 of the ERPD has been updated to make reference to section 4.2.2 of the ERPD. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** NA

**NIR 65 Dated 3 Mar 2023**
**Standard Reference**: ISFL Program Requirements
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 12_final 10Oct22
**Finding**: Section 4.7.1 of the ER program requirements states, "ISFL ER Programs shall undertake an assessment of the anthropogenic and natural risk of Reversals that might affect emission reductions during the ISFL ERPA Term and, as feasible, the potential risk of Reversals after the end of the last ISFL ERPA Phase."

After communicating with the ISFL team, the audit team learned that the existing private carbon projects in the Eastern Province, namely COMACO and BioCarbon, were informed that, once the ISFL program was enacted, that the carbon projects would include their crediting regime in the ISFL program. This merger helps verify that the ISFL program will not double count credits. The audit team requests documentation that confirms this agreement between the ISFL program and the private carbon offset programs.
**Project Personnel Response**: proof of engagement and collaboration is found in the folder: Updated_ERPD_27Mar23_final\I. Consultations with Private REDD+ Projects. The folders contains letter and minutes of meetings where important decisions regarding the jurisdiction were made. Information in the documents include:
1. 2017 Letter from Director of Forestry providing approval for REDD project (LCFP) in Eastern Province confirming requirement to conform to new forest carbon regulations once they are approved.
2. 2019 Confirmation following participation in ZIFLP supported meeting (11 Sept 2019) on Emissions Reduction that Eastern Province would become a jurisdiction and would require that project and beneficiaries are informed and comply.
3. Private carbon offset programs participation and consultation in the development of the Forest Carbon Stock Management Regulations from 2016 to 2021 when approved into the legal framework. These were combination of in person meetings and virtual.
4. Private carbon offset programs participation in various in person meetings and virtual sessions
5. Participation in MRV meeting in Petauke Dec 2021. Draft ERPD and BSP shared. Minutes available
6. Virtual meeting with ISFL and VERRA confirming that multiple standards could not operate in the same jurisdiction.
7. Formation of the Harmonisation Technical Working Group post Petauke with first meeting in March 2022.
8. MRV harmonisation meeting in person in August 2021. Harmonisation discussed and centralised nesting approach discussed and agreed.
9. Letter from PS MGEE to both REDD+ project Jan 2023 confirming Government intentions and arrangements.
10. In person meeting of the HTWG in February 2023, Petauke, including discussion on benefit sharing in a jurisdictional programme.

**Auditor Response**: Thank you for providing this valuable documentation in reference to the benefit sharing and avoidance of double counting. The audit team has reviewed the documentation and it is now clear that these project entities have been made aware of the jurisdictional program they will be nested into and that they are being included in the decision-making regarding the benefit sharing. This finding has therefore been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** NA

**NCR 66 Dated 3 Mar 2023**
**Standard Reference**: ISFL ER Template Requirements
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 12_final 10Oct22
**Finding**: In the ER Template, "Annex 9: Estimation of the Emissions Baseline - Please provide a step-by-step calculation of the Emissions Baseline. Provide a transparent, complete, consistent and accurate description of the approaches, methods, and assumptions used and provide an overview of the activity data and emission factors used in a way that is sufficiently detailed to enable the reconstruction of the Emissions Baseline. Identify and asses the sources of uncertainty in the determination of the Emissions Baseline and describe actions that have been taken to manage or reduce uncertainty Attach any spreadsheets, spatial information, maps and/or synthesized data used in the calculation."

Annex 9 of the ERPD does not include many of the elements outlined in the template, such as the step-by-step calculations of the emissions baseline. Therefore, this section is not in conformance with the requirements.
**Project Personnel Response**: Step by step calculation is provided for in Annex 6. This information is also suplemented by algorithms provided for in the Inventory workbook. Annex 10 references to detailed reports, the Baseline Report in Annex 6 and the Emission Reduction Report in the folder: Updated_ERPD_27Mar23_final\C. Inventory_DB_Mar_2023\ER Estimates
**Auditor Response**: The audit team confirmed that a reference is made to Annex 6 and to the Mitigation Report which does include details on the data and calculations. However, we have identified the following issues:
(1) this section does not make reference to the Baseline Inventory workbook or indicate that it is included as an attachment. Please ensure that reference is made to this inventory workbook (Final AFOLU GHG Inventory_27032023.xlsx).
(2) Table 1 in section 9.1 shows several errors. For instance the forestland converted to grassland subcategory is shown (this subcategory does not exist in the project area), and it appears to be a duplicate of the Forestland converted to settlement subcategory.
(3)Table 2 in Annex 10 shows the emissions baseline increases overtime and therefore is not an average which is required by ER Program Requirements section 4.2.6. Overall, this emissions baseline referenced in Annex 10, table 2 does not match the emissiosn baseline presented in table 18 (section 4.4.2). Please correct this to ensure consistency.

Also as mentioned in finding #58, the template sections must be strictly followed. Therefore, Annex 9 must refer to the Estimation of the Emissions Baseline (not Annex 10). Please update accordingly to ensure conformance.
**Project Personnel Response 2**: The observation is noted and revisions have been made as follows:
1. Annex 9 references Annex 6 for detailed Step by step calculation. This information is also suplemented by algorithms provided in the Inventory workbook.
2. Tables 1 and 2 in Annex 9 have been revised
3. The Annex Number has been aligned to conform to the template.

**Auditor Response 2**: The audit team confirmed the following:
1. Annex 9 references annex 6 for the calcuilations and also provides a reference to the calculation workbook.
2. Tables 1 and 2 are now accurate.
3. The annex number conforms to the template (annex 9).
This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NIR 67 Dated 3 Mar 2023**
**Standard Reference**: ISFL Program Requirements
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 12_final 10Oct22; Hollingsworth et al. 2015, Chidumayu 2013
**Finding**: Section 4.1.3 of the ER Program Requirements states "The Program GHG Inventory shall utilize best available methods and existing data. This may include the use of Activity Data Proxies if needed, and IPCC Tier 1 data and methods if no data are available to apply higher Tier methods. ISFL ER Programs are encouraged to apply higher Tiers over time, as possible."

The current calculations show that forest fires account for ~67% of all emissions in the Eastern Province ISFL baseline. Fire accounts for more emissions than deforestation, wood removal or charcoaling. In the forestland remaining forestland subcategory alone, forest fires account for ~87% of the emissions.

The 2 key fire assumptions made by the ISFL Team are as follows:
- 20% of all forestland (all forest types) burn annually. (citing Hollingsworth 2015)
- 25% of all woody biomass (trees and roots) burn in each fire (all forest types). (citing Chidumayu 2013)

Hollingsworth 2015 reports that 20% of the total land area in Eastern Province burns annually. It does not say 20% of all forest land or all forest types. The paper acknowledges that the majority of the fires do occur in Miombo woodlands, but does not appear to mention of the impacts of fire on other forest types (dry deciduous, dry evergreen, moist evergreen).

Furthermore, the audit team confirmed that the Chidumayu paper does indicate that their study in the miombo woodlands of the Central Province, fires resulted in the loss of 25-77% of biomass in the plots sampled. It does not mention these other forest types present in the Eastern Province.

The audit team requests evidence supporting the application of these two fire assumptions for the other three forest types in the Eastern Province.

**Project Personnel Response**: The GHG Inventory Team endeavoured to provide the best available country specific data. This is consistent with the IPCC Guidelines 2006.
Justification 1: The forest types in Eastern Province and Zambia at large are predominantly savanna woodlands making up the Miombo-Mopane ecozone. The two forest types; Dry deciduous forests and Woodlands (semi-evergreen forests) fall under the Miombo-Mopane ecozone (Moura et al 2017). This zone makes up 98.98% of the vegetation found in Eastern Province (See floristic composition as detailed in the vegetation workbook). Therefore, it is justifiable to apply the fraction of biomass burnt of 0.25 derived from the study by Chidumayo (2013) to both forest categories. Furthermore, both Day et al (2014), and Archibald et al (2010), estimate that approximately 25% of the total land cover is burnt annually in Zambia.
Justification 2: Numerous studies show that anthropogenic fires are frequent not only in Zambia but in Africa, and contribute significantly to global GHG emissions. Roberts et al (2009) estimates that African fires are responsible for an average of 30 to 50% of the total amount of vegetation burned globally each year, making Africa, on average, the single largest biomass burning emissions source (Hoffa et al 1999). In addition, according to Scholes et al (2011), about 50% of global gas emissions to the atmosphere resulting from burning of biomass originate from sub-Saharan Africa – the region where Zambia is located, and in this region, wildfires account for the highest emissions. Another work estimates that African savannas account for more than half of the annual global burned area (Ryan and Williams 2011). Yet another study by Hoffa et al (1999) states that in southern Africa (the region where Zambia is located), savanna fires account for more than 40% of biomass burned globally, resulting in a significant release of greenhouse gases. Furthermore, the area burnt in Eastern Province, in the localised study by Hollingsworth et all (2015) contextually refers to the proportion of land that is burnt relative to the total area of the Province, irrespective of land use. Therefore, the fraction is proportional to the land area of the Province and in the context of our area of interest; this is specifically the area of forest that burns. Another localised and more recent study specific to Eastern Province is that by Wathum et al (2016), which estimates that an average of 678,048 hectares (which is about 22%) of forest area is burnt in Eastern Province annually. Furthermore Day et al (2014), and Archibald et al (2010), estimate that over 50% of the land area in Zambia is affected by fire, with approximately 25% of the total land cover burnt annually. Therefore, the estimation that 20% of the forest area in Eastern Province is burnt annually is consistent with these studies and is conservative.
Additional notes: The study by Wathum et al (2016), found that forest fires generate the most emissions in Eastern Province (which is predominantly rural), followed by fuelwood extraction and agricultural expansion. Fires affect large forest areas annually, largely due to fire being an important tool in rural communities. Among many other uses, fire is used to clear vegetation for agricultural cultivation, improve pasture land for livestock grazing, burn crop residues and prepare fields for future cultivation. It is also used as a traditional way to collect honey. Further, fire is also used by hunters to hunt small animals such as mice. Often fires use for the activities described above are not adequately controlled, and thus fire quickly spreads to forest areas. Furthermore, Shea et al (1996) estimates that woody debris accounts for 43% of the total fuel load in the woodlands of Zambia. In addition, Scholes et al (1996) estimates that substantial volumes of biomass of about 177± 87 Tg DM/yr are burnt annually in southern Africa and it is estimated that half of the burning takes place in the broad-leaved, low-nutrient-status savanna woodlands.
Therefore, the estimations of emissions from fire in the context of the Eastern Province GHG inventory are considered realistic
**Auditor Response**: The audit team has reviewed the response and has concluded that the justification is sufficient. This finding has been closed.

**Bearing on Material Misstatement or Conformance (M/C/NA):** M

**NCR 68 Dated 3 Mar 2023**
**Standard Reference**: ISFL Program Requirements
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 12_final 10Oct22; Biennial Update Report
**Finding**: Section 4.1.3 of the ER Program Requirements states "The Program GHG Inventory shall utilize best available methods and existing data. This may include the use of Activity Data Proxies if needed, and IPCC Tier 1 data and methods if no data are available to apply higher Tier methods. ISFL ER Programs are encouraged to apply higher Tiers over time, as possible."

The Biennial Update Report (BUR) states the following: "The subcategory with highest emissions contribution in 2016 was Forest Land with 55.93% (i.e. 28.3% is from firewood and charcoal production while 27.6% is from wood removal for timber)" but does not mention the impact of fire. The BUR separates fire as the sub-category 'Emissions from Biomass Burning' in forest, cropland and grassland and indicates biomass burning accounts for 8.09% of total emissions. Thus overall, the fire emissions are much lower than the firewood and charcoal production according to the BUR. Note, we understand that this is for all of Zambia and not just the Eastern Province, and the BUR includes non AFOLU subcategories as well.

Please provide clarification as to why the Eastern Province fire emissions are much more significant than those for the whole of the country as presented in the BUR.
**Project Personnel Response**: In the BUR, we used the IPCC Software to estimate the emissions using a lower Tier (Tier 1). Only emissions estimates from "biomass burning in forest lands" under "Aggregate sources and non-CO2 emissions sources on land" were estimated. Under this sub category only Methane(CH4 and Nitrous Oxide N2O) emissions are considered as per the IPCC software. CO2 emissions are not included in the estimates under "biomass burning in forest lands". In case of disturbances from fires under forestland remaining forestland, emissions estimates from Carbon are provided for in the software and N2O and CH4 are not included.
Loss of carbon from fire disturbances under Forest land remaining forestland was not estimated. Because of this there was as serious under reporting of emissions from forest fires since loss of carbon from fires was not included. Hence the low value of percentage contribution of forest fires to overall emission.
**Auditor Response**: The audit team has reviewed the response and has concluded that the justification is sufficient. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NCR 69 Dated 13 Apr 2023**
**Standard Reference**: ERPD Template Requirements
**Document Reference**: 20230410 Zambia_Eastern_Province_ISFL_ERPD_ver 14
**Finding**: Section 4.2.1 of the ERPD Template Requirements states "Using the table below, please analyze the subcategories involving conversions between land-use categories following the steps below.
• Based on Section 4.1.2, select any subcategories involving conversions between land-use categories.
• Populate the table below by first listing conversions from or to forest land in order of the relative magnitude of net contribution of these subcategories to the absolute level of the total GHG emissions and removals in the Program GHG Inventory (See Section 4.1.2).
• Add conversions between land-use categories other than forest land and list them in order of the relative magnitude of net contribution of the subcategories to the absolute level of the total GHG emissions and removals in the Program GHG Inventory.
• Calculate the absolute total net GHG emissions and removals associated with all land use conversions in the Program GHG Inventory.
• For each subcategory in the table, calculate the relative and cumulative contribution to the absolute total GHG emissions and removals associated with all land use conversions in the Program GHG Inventory."
The audit team has found the followings and nonconformities pertaining to Table 12 of the ERPD:
(1) Table 12 does not show the correct Forestland to Settlement baseline emissions. The value shown excludes the change in deadwood and change soil stocks that we have verified in the workbook Final AFOLU GHG Inventory_27032023.xlsx.
(2) Table 12 does not first list conversions from or to forest land in order of the relative magnitude of net contribution of these subcategories to the absolute level of the total GHG. For example, if it did, the cropland converted to forest land subcategory would be listed above subcategory 3B2bii.
(3) Table 12 does not show the Total ABSOLUTE GHG emissions and removals associated with all land use conversions in the program inventory. This requires taking the absolute value of all subcategories and summing them together.

**Project Personnel Response**: The audit finding has been noted. The tables have been revised accordingly.
**Auditor Response**: The audit team reviewed the ERPD and subcategory selection process and concluded:
1. Table 12 has been updated with the correct forest to settlement emissions from the baseline. This is in conformance.
2. Table 12 lists the subcategories in the order required by the template.
3. Table 12 shows the total absolute GHG emissions. This is in conformance.
This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NCR 70 Dated 13 Apr 2023**
**Standard Reference**: ERPD Template Requirements
**Document Reference**: 20230410 Zambia_Eastern_Province_ISFL_ERPD_ver 14
**Finding**: Section 4.2.1 of the ERPD Template States "Based on Section 4.1.2 and the analysis above, complete the table below by selecting the following subcategories:
• Any subcategories involving conversions from or to forest land;
• Forest land remaining forest land;
• As identified in the analysis above, any subcategories involving conversions between land-use categories other than forest land that, cumulatively with the conversions from or to forest land, amount to 90% of the absolute level of the total GHG emissions and removals associated with all land use conversions in the Program GHG Inventory;
• The largest of the remaining subcategories based on the relative magnitude of contribution of the subcategories to the absolute level of the total GHG emissions and removals in the Program GHG Inventory as determined in Section 4.1.2;
• Additional non-forest related subcategories included at the discretion of the ISFL ER Program;
• Any subcategories that were accounted during previous ERPA Phase(s), where applicable." The audit team has found the following nonconformities and errors pertaining to table 13 (Initial selection of subcategories) in the ERPD:
(1) Table 13 does not show the correct Forestland to Settlement baseline emissions. The value shown excludes the change in deadwood and change soil stocks that we have verified in the workbook Final AFOLU GHG Inventory_27032023.xlsx.
(2) Tables 13 does not show the cropland converted to forestland subcategory. As required by the template and section 4.3.4(i) the ISFL ER Programs shall select “Any Subcategories involving conversions from or to forestland”
(3) Table 13 does not show any subcategory for the “The single most significant of the remaining subcategories in order of the relative magnitude of contribution of these subcategories to the absolute level of the total GHG.” – Table 11 shows this as 3A1a. Note that it is a requirement to list the subcategory, even if it does not ultimately get selected.
(4) Table 13 does not show the Cropland remaining cropland subcategory OR the grassland converted to cropland subcategory which is are “Additional non-forest related subcategories may be included at the discretion of the ISFL ER Program if the quality requirements in Section 4.2 are met, provided there is a clear rationale for including these subcategories in terms of improving ISFL ER Program mitigation performance”. The Program Team shows the inclusion of these subcategories in Table 15 below.
(5) The ERPD is missing the Template Table 7, which is for the justification for non-forest related subcategories. The cropland remaining cropland subcategory, the grassland converted cropland subcategory, and the 3C4: N2O  Emissions (Direct ) from Agricultural soils subcategory must be included here and justified in the table if there is any intention to include them as baseline subcategories now or in the future.
Please address these nonconformities.
**Project Personnel Response**: The audit finding has been noted. The tables have been revised accordingly.

**Auditor Response**: The audit team reviewed the ERPD and subcategory selection process and concluded:
1. Table 13 shows the correct Forest to settlement emissions baseline.
2. Table 13 now shows the cropland converted to forestland subcategory.
3. For item iv. in table 13, it listes 3C4. However, the emissions from enteric fermentation are greater, thus it is not in conformance to list subcategory 3C4 under this condition.
4. confirmed that for condition v., table 13 now lists several nonforest subcategories to be included at the discretion of the program team.
5. Table 14 was added to provide a justification for why these non-forest subcategories are to be included.
As a result this finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NCR 71 Dated 13 Apr 2023**
**Standard Reference**: ERPD Template Requirements
**Document Reference**: 20230410 Zambia_Eastern_Province_ISFL_ERPD_ver 14
**Finding**: Section 4.1.2 of the ERPD Template states "Using the table below, provide a summary of the Program GHG Inventory. When completing the table, please list the subcategories in order of the relative magnitude of contribution of these subcategories to the absolute level of the total GHG emissions and removals in the Program GHG Inventory, starting with the subcategory that makes the largest contribution." The audit team has found the following nonconformities with this section:
(1) The subcategories are note listed in order of the relative magnitude of contribution of these subcategories to the ABSOLUTE level of the total GHG emissions/removals. For example, in table 11 subcategories 3B3bii, 3B5bii, and CO2 from Cropland to forestland are listed at the very bottom because the program team has not considered the relative magnitude to the absolute level of total emissions (i.e., the magnitude of the removals from the cropland to forestland is relatively larger than the emissions from of subcategory 3A2a.)
(2) Table 11 does not show the correct Forestland to Settlement baseline emissions. The value shown excludes the change in deadwood and change soil stocks that we have verified in the workbook Final AFOLU GHG Inventory_27032023.xlsx.
As a result this section is not in conformance.
**Project Personnel Response**: The table has been adjusted accordingly.
**Auditor Response**: The audit team confirmed that
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NCR 72 Dated 13 Apr 2023**
**Standard Reference**: ERPD Template Requirements
**Document Reference**: 20230410 Zambia_Eastern_Province_ISFL_ERPD_ver 14
**Finding**: Section 4.2.2 of the ERPD Template states "For each of the subcategories selected in step 1, provide a summary of the review of the available data and methods for the subcategories against the quality and baseline setting requirements for ISFL Accounting using the table template below. Copy and complete the table for each individual subcategory. Please provide the details of the full review in Annex 7 below. [Corresponds to ISFL ER Program Requirements 4.2.1 – 4.2.6 and 4.3.7 – 4.3.10]." The audit team has found the following non-conformities with section 4.2.2 of the ERPD:
(1) section 4.2.2 is missing a summary review of the folowing subcategories that are required to be selected in step 1 or that the program team has indicated they would like to select: (a)3C4: N2O Emissions(Direct ) from Agricultural soils, (b)cropland converted to forestland subcategory; (c) CH4 Emissions from Enteric Fermentation in Domestic Livestock (Non - Diary Cattle), grassland converted to cropland (shown in table 15)
(2) section 4.2.2 includes the grassland remaining grassland subcategory, which was not included per the step 1 selection.
(3) The Table in section 4.2.2 differs from the one presented in Annex 9 (table 2) resulting in an inconsistency.
**Project Personnel Response**: Section 4.2.2 and Annex 9 have been revised accordingly.
**Auditor Response**: Confirmed that section 4.2.2 now contains descriptions of N20 Emissions (direct) from agricultural (managed) soils, cropland converted to forestland, and enteric fementation. Confirmed, that section 4.2.2 does not report grassland remaining grassland. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NCR 73 Dated 13 Apr 2023**
**Standard Reference**: ERPD Template Requirements
**Document Reference**: 20230410 Zambia_Eastern_Province_ISFL_ERPD_ver 14
**Finding**: Section 4.2.3 of the ERPD Template states "Based on the analysis above, complete the table below by listing all subcategories from step 1 and identifying those subcategories for which step 2 has shown that the historic activity data and emissionfactors available, and the methods used to collect these activity data and emission factors, meet the quality and baseline setting requirements for ISFL Accounting. [Corresponds to ISFL ER Program Requirement 4.3.11]"
The audit team has found the following nonconformities pertaining to Table 15 of the ERPD:
(1) It does not list all subcategories from step 1 (table 13) or that are required to be listed in 1 (see finding NCR70 above). For example, it does not list the following required subcategories: the cropland converted to forestland subcategory, CH4 Emissions from Enteric Fermentation in Domestic Livestock (Non - Diary Cattle), or the 3C4: N2O Emissions(Direct ) from Agricultural soils.
(2) It lists the grassland converted to cropland subcategory which is not listed in Step 1 as a selected subcategory.

**Project Personnel Response**: Section 4.2.3 and the corresponding table in Annex 8 have been revised accordingly.
**Auditor Response**: Confirmed that section 4.2.3 has been revised and is in conformance with the requirements. Finding closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NCR 74 Dated 13 Apr 2023**
**Standard Reference**: ERPD Template Requirements
**Document Reference**: 20230410 Zambia_Eastern_Province_ISFL_ERPD_ver 14
**Finding**: Section 4.4.2 of the ERPD Template states "Provide the estimate of the Emissions Baseline in the table below." In the ERPD provided, the team included 2 tables in this section which is not a problem. However, the audit team found the following errors/nonconformities with this section:
(1) Table 17 is missing the cropland converted to forestland subcategory which is required for inclusion per the ER Program Requirements.
(2) Table 17 includes a forestland converted to grassland subcategory which does not exist in the project area and the emissions reported in the table appear to be a duplicate of the forestland converted to settlement emissions, which is an error. Note that section 4.4.1 also makes a reference to the inclusion of this subcategory that does not exist.
(3) Below Figure 7 in this section, it states "The following subcategories are eligible for ISFL in the first phase: Forestland Remaining Forestland, Forestland converted to Cropland, and Forestland Converted Settlement and Cropland Remaining Cropland including CSA." This statement is inaccurate as it does not include the grassland converted to cropland subcategory, which the program team has indicated they intend to include (as shown in Table 15 and Table 17). It also does not mention the inclusion of the cropland converted to forestland subcategory which is a requirement.
(3) Furthermore, the total emissions baseline presented in table 18 is also inaccurate per the errors found in Table 17.
(4) Figure 7 is inaccurate as it does not show the correct emissions baseline (only ISFL eligible subcategories). It does not correspond to Table 17 or 18.
(5) please note that the above inaccuracies in Table 17 are also present in Annex 10, section 9.1 Table 1.
**Project Personnel Response**: Section 4.4.2 and the corresponding tables in Annex 9 have been revised accordingly.
**Auditor Response**: Confirmed that table 16 (final selection of subcategories) is shown in section 4.2.3 of the ERPD. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NCR 75 Dated 13 Apr 2023**
**Standard Reference**: ER Program Requirements
**Document Reference**: 20230410 Zambia_Eastern_Province_ISFL_ERPD_ver 14
**Finding**: Section 4.2.6 of the ER Program Requirements states " The Emissions Baseline shall be constructed based on the average annual historical GHG Emissions and Removals14 over a historical period (Baseline Period) of approximately 10 years. This Emissions Baseline shall be constructed based on at least two data points." Table 21 in section 4.6 of the ERPD (and table 2 in Annex 10) does not show the Emissions baseline as the average annual historical GHG emissions and removals over the historical period, but rather shows the annual emissions per year of the baseline (2009-2018). This is not in conformance with the requirements, making the estimation of emissions reductions as demonstrated in Table 21 inaccurate. It appears that the baseline represented in table 21 (and table 2 in Annex 10) includes ALL subcategories, many of which are not eligible for inclusion in ISFL.
**Project Personnel Response**: The tables have been revised accordingly.
**Auditor Response**: Confirmed that the table as been updated to correct and intended baseline. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NCR 76 Dated 13 Apr 2023**
**Standard Reference**: ERPD Template Requirements
**Document Reference**: 20230410 Zambia_Eastern_Province_ISFL_ERPD_ver 14
**Finding**: Section 3.1.3 of the ERPD template states "Please briefly describe the following (roughly 150 words or less):
i. Financial and economic analysis (e.g., NPV, IRR)
ii. Sensitivity analysis (to assess the influence of changes in costs, revenues, funding sources and discount rates on program financing)
iii. Proposed fund flow arrangements"
These 3 components are not described in section 3.1.3 of the template.
**Project Personnel Response**: The text has been enhanced and Table 6 has been revised.
**Auditor Response**: Confirmed that section 3.1.3 of the ERPD has been updated with additional text regarding the required financial analysis. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NCR 77 Dated 13 Apr 2023**
**Standard Reference**: ERPD Template Requirements
**Document Reference**: 20230410 Zambia_Eastern_Province_ISFL_ERPD_ver 14
**Finding**: The requirements for Annex 2 of the ERPD template states "Please include the summary financing plan according to the template below." The table then includes 7 distinct items that must be addressed: (1) costs, (2) Sources of finance, (3) Surplus/gap, (4) options to reduce gap, (5) Sensitivity,(6) Identification of financing risks and (7) proposed measures. In Annex 2 of the ERPD submitted, it appears that several required items are missing. For instance, items 4 and 5 are not included. Also, under the Surplus/Gap item, it appears that other information perhaps related to the sensitivity are listed. Note that all components of this table are required including the sensitivity analysis. This table is not in conformance with the template requirements.
**Project Personnel Response**: The Table has been revised. See Annex 2.
**Auditor Response**: The audit team confirmed that annex 2 has been updated to include options to reduce the gap and a sensitivity analysis. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NCR 78 Dated 13 Apr 2023**
**Standard Reference**: ERPD Template Requirements
**Document Reference**: 20230410 Zambia_Eastern_Province_ISFL_ERPD_ver 14; EP_Filtered_and_Analyzed_AD_final_16.12.22,

**Finding**: Annex 6 of the ERPD requires "Please attach the full Program GHG Inventory." The audit team has found some inconsistencies and reporting errors in Annex 6 which we describe here:
(1) Annex 6, section 4.5 states "There were 13 main land use conversions identified in 3,200 sample plots across Eastern Province." However according to the workbook EP_Filtered_and_Analyzed_AD_final_16.12.22, 12 main land use conversions were identified.
(2) Table 11 in Annex 6 section 4.5 does not match the table in workbook EP_Filtered_and_Analyzed_AD_final_16.12.22.xlsx, sheet LU Change Matrix which shows a total forest area of 2,810,045 in 2018.
(3) Annex 6, section 4.6 states "The gross emissions for Land category were 19,720,374 tCO2 eq. in 2009. The emissions increased by 16 % to 22,868,111 tCO2 eq. in 2018. On the other hand, gross removals decreased by 4.0% from -9,967,649.3 tCO2 eq. in 2009 to -9,564,444.7 tCO2 eq. in 2018. " However, the GHG inventory workbook Final AFOLU GHG Inventory_27032023, sheet Baseline Emissions and uptake shows different values. For instance, the gross land emissions shown are 19,204,242 (cell D20) and not 19,720,374 (cell C2) which are the land, livestock, and aggregate sources emissions on land.
(4) Annex 6, table 12 Summary emission for land category (tCO2 eq.) excludes the category 3.B.4 which does have some emissions. The Gross Baseline Emissions column and the Net Baseline Emissions column in this table includes all emissions for land, agriculture, and aggregate sources, thus is not accurately represented as "land category".
(5) Annex 6, table 13 and table 16 in section 4.7 reports the aboveground biomass growth for pine and eucaplytus plantations as 1.3 tdm/ha/yr. However, in the calculation workbook, a value of 15 tdm/ha/yr was used. Note that the average annual biomass growth rate (column 5) of table 6 should be different for the two forest plantation subcategories.
(6) Annex 6, table 13, Table 19, and table 22 in section 4.7 reports the BCEFr as 1.38, but that is the BCEFs value. The BCEFr applied by the 1.53 according to the calculation workbook.
(7) Annex 6, Table 15 - The values reported are actually for 2008-2017 and not the baseline period of 2009-2018. The values in table 14 and table 15 should be identical.
(8) Annex 6, Table 16, Column 3 reports the biomass conversion and expansion factor for conversion of net annual increment in volume (BCEFi) as 1.38. However, the value used in the calculation workbook for BCEFi is 1.18, thus this table is not accurate.
(9) Annex 6, Table 36 and Table 46 reports the emission factors for dead organic matter, but for Co and Cn it reports the biomass values not the carbon values. However, the column headers use the units tons C/ha, which is not accurate.
(10) In Annex 6, table 38 you present the SOC emission factors with the stock change factors. and state "Country specific values were used for reference carbon stock for climate and soil combination and default values for stock change factor for land use system, management regime and C inputs at the start and end of the year of the inventory, respectively." This is not accurate as you have not included the stock change factors in the calculation of emission factors (see OBS 55 above). The table also specifies a Year as 10 year, but a 20 year transition period was actually applied per the IPCC requirements. Thus this table is not accurate.
(11) Annex 6 table 46 indicates that the DOM transition period for the forest to nonforest conversion is 20 years. However, this transition period is 1 year (as was applied in the calculation workbook as is required by the IPCC guidelines), thus this table is not accurate.
(12) Annex 6, Table 51 and 59 show the biomass for grassland and cropland. However, these are only the aboveground biomass stocks and does not include the belowground, thus this table is not accurate as the belowground biomass was incorporated into the quantification.

(13) Annex 6, Table 55 - This table is confusing as it does not specify a grassland aboveground biomass (says zero) and there is no Reference SOC. It also references the IPCC software manager which was not utilized here. This table is inaccurate.
(14) Annex 6, table 64 - This table shows the biomass values but the table columns list them as tons C/ha. Also the tim period of 10 years is not accurate. Rather a time frame of 20 years was applied.

**Project Personnel Response**: The final analysis shows 12 land use conversions. The text has been revised.
**Auditor Response**: The audit team reviewed the updates to Annex 6 and confirmed:
1. The correct number of land use conversions is identified.
2. The change matrix in the ERPD matches the one validated.
3. the emissions and removals from the land described in 4.6 of the annex are correct.
4. Table 12 emissions/removals are only for the land.
5. The growth rates for plantations have been corrected in table 13.
6. The BCEF rates are all shown and are accurately reported.
7. The values in table 15 have been corrected.
As a result, this finding has been closed!
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NCR 79 Dated 11 May 2023**
**Standard Reference**: ERPD Template Requirements
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 14_02.05.23.
**Finding**: Section 4.3.14 of the ER Program Requirements states "If a subcategory selected in step 1 has historic data available to construct an Emission Baseline over a Baseline Period of approximately 10 years but these data do not meet the other quality requirements of Section 4.2, it can only be included for accounting in the ISFL ERPA Phase if all the quality requirements can be met through the application of improved methods and data. ISFL ER Programs that intend to include such a subcategory need to ensure that the quality requirements can be met at the latest at the end of the ISFL ERPA Phase. In this case, ISFL ER Programs shall provide an interim Emissions Baseline at the beginning of the ISFL ERPA Phase using best available data to be able to provide ex-ante estimations of the emission reductions." Table 16 in section 4.2.3 of the ERPD indicates that for the subcategory Direct N2O Emissions from managed soils, there is historic data available to construct an Emission Baseline over a Baseline Period of approximately 10 years, but that the other quality requirement (tier 2) data is not available (i.e., as indicated in Annex, "There are no country specific emission factors for N2O emissions from anthropogenic N – inputs from N synthetic fertilisers, N animals and compost manure, N in crop residues and N in mineral soils that is mineralized). However, table 3 in Annex 8 section 3 indicates that improvements are planned to develop this data and that these improvements will be complete by December 2023. As a result, per the requirements of 4.3.14, this subcategory is required to be included as part of the "an interim Emissions Baseline at the beginning of the ISFL ERPA Phase." Currently, this subcategory is not included in the interim baseline shown in Annex 9 and Section 4.4.2 of the ERPD. This is not in conformance with the ER Program Requirements.
**Project Personnel Response**: The GHG Inventory Team has taken note. Direct N2O emissions from managed soils have now been included in the baseline emissions. See Table 18 on page in Section 4.4.2 on page 97.
**Auditor Response**: The auditors confirmed that the emissions from Direct N20 have been included in the interim baseline. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NIR 80 Dated 11 May 2023**
**Standard Reference**: ERPD Template Requirements
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 14_02.05.23.
**Finding**: Section 4.3.14 of the ER Program Requirements states "If a subcategory selected in step 1 has historic data available to construct an Emission Baseline over a Baseline Period of approximately 10 years but these data do not meet the other quality requirements of Section 4.2, it can only be included for accounting in the ISFL ERPA Phase if all the quality requirements can be met through the application of improved methods and data. ISFL ER Programs that intend to include such a subcategory need to ensure that the quality requirements can be met at the latest at the end of the ISFL ERPA Phase. In this case, ISFL ER Programs shall provide an interim Emissions Baseline at the beginning of the ISFL ERPA Phase using best available data to be able to provide ex-ante estimations of the emission reductions." Table 16 in section 4.2.3 of the ERPD indicates that for the subcategory CH4 Emissions from Enteric Fermentation in Domestic Livestock (Non - Dairy Cattle), it does not meet the baseline setting requirements or any of the other requirements. Similarly, the table in section 4.2.2 appears to suggest that the 10 years of baseline data is not available. Therefore, it would not be included in the interim baseline, per 4.3.14. However, Annex 8 Table 2 and Table 3 indicate that the Enteric fermentation does meet the baseline setting requirements. Please clarify whether the enteric fermentation subcategory meets the baseline setting requirements (10 years of baseline data). If this subcategory does meet this requirement, and can meet the other quality requirements (tier 2) before the end of the ERPA phase, it must be included as part of the interim baseline per the requirements of 4.3.14. Please provide more information regarding the data available for this subcategory and ensure there is consistency between Annex 8 and the other sections of the ERPD.
**Project Personnel Response**: The GHG Inventory Team has taken note. CH4 emissions from enteric fermentation in domestic livestock (Non-Dairy Cattle) have now been included un the baseline emissions. See Table 18 on page in Section 4.4.2 on page 97. Further the information has been updated in Table 16 on pages 90 and 91 accordingly.
**Auditor Response**: The auditors confirmed that the emissions from enteric fermentation (domestic non-dairy cattle) have been included in the interim baseline. We confirmed that the ERPD has been upated accordingly. This finding has been closed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** M/C

**NCR 81 Dated 11 May 2023**
**Standard Reference**: ERPD Template Requirements
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 14_02.05.23.
**Finding**: The PD Template Requirements states that Annex 7 of the ERPD requires the following: "For each of the selected subcategories in Section 4.2.1:
• Identify the parameters that were used to determine the activity data and emission factors in the calculation of the emissions and removals for that subcategory;
• For each parameter used to determine activity data, describe the historic time series available for that parameter including how they relate to the proposed start date and end date of the Baseline Period (see Section 4.4.1);
• Provide details on the source of the parameters (e.g. official statistics) or a description of the method for determining the parameter (e.g. for parameters derived from remote sensing images describe the process applied including details such as the type of sensors and the details of the images used). If proxies have been used, describe the data sources for the proxies and their application to estimate activity data;
• Provide details on the spatial level of the parameters (local, regional, national or international) and if they allow for spatially explicit observations of land-use categories and land-use conversions;
• Provide an analysis if the parameters comply with the requirements on the use of, at minimum, IPCC Tier 2 methods and data. For parameters used for land use change-related subcategories, also provide an analysis if they data allows for the use of Approach 3 for land representation."

The audit team has found two nonconformities:
(1) First, Annex 7 does not conform to the template requirements. Overall Annex 7 is intended to go into greater detail for each subcategory is included in the tables in section 4.2.2. For instance, section 4.2.2 requires that for each subcategory selected in step 1, “provide a summary of the review of the available data and methods for the subcategories against the quality and baseline setting requirements.” Section 4.2.2 states “Please provide the details of the full review in Annex 7 below.” Thus Annex 7 should include greater details about each parameter used in the activity data and emission factors for each subcategory, including the time series available, the source and methods, the spatial level, etc, whereas section 4.2.2 just provides a summary. As a result Annex 7 does not conform to the template requirements
(2) Table 2 in annex 7 presents the initial selection of subcategories. However, this table does not match Table 13 in section 4.2.1 of the ERPD. Through review of the data and subcategory selection process, the audit team concludes that Table 13 in section 4.2.1 is accurate, and that Table 2 in Annex 7 does not conform to the subcategory selection process in section 4.2 of the ER Program Requirements.
**Project Personnel Response**: The GHG Inventory Team takes note. A detailed description of available data and methods for the subcategories from the initial selection against the quality and baseline setting requirements for ISFL Accounting has been provided in Annex 7. Table 2 in Annex 7 has been rectified
**Auditor Response**: The auditors reviewed Annex 7 and confirmed that it is now in conformance with the template requirements. This finding has been addressed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NCR 82 Dated 11 May 2023**
**Standard Reference**: ISFL Validation and Verification Requirement; ERPD Template Requirements
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 14_02.05.23.; Final AFOLU GHG Inventory_26.04.23.xlsx
**Finding**: Section 6 of the ISFL Validation and Verification Requirements indicate that the " The Validation and Verification Body shall adhere to the following principles in its Validation/Verification:… c) consistency: enable meaningful comparisons in ISFL ER Program-related information." Section 4.2.2 of the PD Template requires the following: For each of the subcategories selected in step 1, provide a summary of the review of the available data and methods for the subcategories against the quality and baseline setting requirements for ISFLAccounting using the table template below. Copy and complete the table for each individual subcategory." In section 4.2.2 of the Eastern Province ERPD, for the Forest land remaining forest land subcategory, it states "Country Emission Factors for estimating annual carbon loss due to biomass removals from timber harvesting and carbon loss due to fuelwood removals and Country Emission Factors to determine annual other losses of carbon mainly attributed to fire disturbances is and were all obtained from Forestry Compendium (2013) and Integrated Forest Land Use Assessment Report (2015)." This is not accurate. For fire disturbances, the main sources of data provided (as described in the Final AFOLU GHG Inventory_26.04.23.xlsx and the findings responses) are from Hollingsworth 2015 and Chidumayu 2013. Likewise, for fuelwood, and wood removals, the National Woodfuel Study was used along with several other sources shown in sheet Land Activity Data_Fuelwood of the Final AFOLU GHG Inventory_26.04.23.xlsx workbook. Therefore the information provided in this table is not consistent with the actual data sources utilized to quantify these emissions, resulting in a nonconformity.
**Project Personnel Response**: The GHG Inventory Team takes note. Hollingsworth et al 2015 and Chidumayo 2013 references have been included as sources of data.
**Auditor Response**: The auditors confirmed that section 4.2.2 has been updated with the correct references for fire and woodfuel. This finding has been adequately addressed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** C

**NIR 83 Dated 11 May 2023**
**Standard Reference**: ISFL Validation and Verification Requirement; ERPD Template Requirements
**Document Reference**: Zambia_Eastern_Province_ISFL_ERPD_ver 14_02.05.23; Final AFOLU GHG Inventory_26.04.23.xlsx
**Finding**: Section 6 of the ISFL Validation and Verification Requirements indicate that the " The Validation and Verification Body shall adhere to the following principles in its Validation/Verification:… c) Consistency: enable meaningful comparisons in ISFL ER Program-related information." Annex 10 (Data and Parameters to be Monitored) requires information on 'Source of data ormeasurement/calculation methods and procedures to be applied,' 'Fixed value or monitored? If monitored, frequency of monitoring/recording', QA/QC Procedures, 'Identification of sources of uncertainty', and 'Process for managing and reducing uncertainty associated with this parameter.'

It was observed that in Annex 10 of the Eastern ProvinceERPD, many of the parameter descriptions appear to have contradictory entries. As examples, the components of measuring belowground biomass are not included (e.g., direct measurement is given and unlikely). IPCC methods include direct measurement, allometric equations, and root-to-shoot ratios - the later of which is indicated in the Final AFOLU GHG Inventory_26.04.23.xlsx workbooks. Many of the parameters are cut-and-paste without logical/accurate source data. Other examples include Carbon Fraction, basic wood density, Emission factors, and vegetation classification, which are indicated as fixed values (not monitored) in the tables. If that is the case, no measures could be taken to reduce uncertainty. Overall, several of the parameters indicate 'fixed value' and then go on to indicate how uncertainty would be reduced, which is not accurate or consistent with the inherent nature of a fixed (not monitored) value. Please provide a justification for the process of managing a reducing uncertainty with a fixed parameter or update the tables in Annex 10 accordingly.
**Project Personnel Response**: The GHG Inventory Team takes not and have made revisions, where necessary. However, please note that Annex 10 contains the description of all the data and parameters to be monitored and the proposed frequency and manner of monitoring. Currently the MRV System for the ISFL Progamme is underdevelopment and this is being incorporated in the plan. Therefore, the proposed frequency and manner in which monitoring will be done has been retained for most of the parameters.
**Auditor Response**: Thank you for the explanation. The auditors confirmed that Annex 10 has been updated with more logical explanations about monitoring for uncertainty for only monitored variables. This finding has been addressed.
**Bearing on Material Misstatement or Conformance (M/C/NA):** NA

## Appendix D: Responses to Contributor Comments

Written comments by the ISFL Contributors were submitted to the audit team prior to the outset of the assessment process. Where relevant, all such comments were taken into due account during the assessment process. The below table provides a brief description, for each comment received, of (1) how the comment was addressed during the assessment process, if said comment was deemed relevant by the assessment team, or (2) if said comment was deemed not relevant by the assessment team, the assessment team's reasons for this determination.

| No. | Comment Type | Contributor | Text of Comment | Audit Team Response |
|---|---|---|---|---|
| 1 | Major | Unknown | Can the ERPD progress with these funding gaps and how likely is it that there will be delays as a result? Is the programme still on track to be financially viable by year 4 given issues of agreements with GRZ and nesting?<br>Without any other sources of funding besides carbon to cover all the new activities that are planned under the EP-JSLP, the Program has a financing gap. The government is seeking to fill the financing gap in the early years of the Program, through securing unused funds from the ZIFL program of US$ 8 million which will cover implementation and management costs until year 4 when carbon revenue is expected to make<br>the Program financially viable.<br>We note the funding flows appear quite complex. Does the WB have assurance of financial management and accounting systems to reduce fiduciary risk of these complex funding flows? | The audit team confirmed that the ZIFL program received an extension which reduced the funding gap significantly. The program also received a commitment from the government to cover some of the implementation and management costs until carbon revenue is achieved. The projected revenue from the emissions reductions has increased some since the initial iteration of the ERPD, which helps to offset the funding gaps as well. The<br><br>The financial analysis and funding flows were developed by a third-party who has well known expertise in carbon project and carbon program development in the region.<br><br>The audit team considers this to be low risk. See section 4.2.3 above. |

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| 2 | Major | Unknown | Are there any concerns with how the 2021 Forest Regulation will affect the ISFL and nested projects? Will we know how these rules will be implemented?<br>*Rules regarding nesting of projects and programs, including that project in areas within a jurisdictional programme cannot sell carbon independently as they must sell through the jurisdictional program (section 18 (2)) unless approval is given under 18(3). Rules regarding nesting are covered in section 18 (1) such that an approved Jurisdictional programme shall take precedence over a project that is encompassed within the Jurisdiction.*<br>We are conscious that this may not be an easy process as BCP and COMACO have 30-year agreements with communities and carbon credit buyers and will likely be unwilling to relinquish control of price setting or revenue flows. For nesting of existing projects in Eastern Province BCP and COMACO) how is this being managed? How are stakeholder interactions being handled? Will GoG be developing and agreeing a nesting strategy/protocol?<br>With the projects becoming part of the jurisdictional project within 3 years of the programme's registration – when is the programme expecting to be registered & what is the step-wise process within those 3 years? How will projects be accounted for/nested in this time? | The audit team reviewed documentation regarding the stakeholder meetings and agreements that are in place with the BCP and COMACO carbon projects that have existed within the Eastern Province for several years. We confirmed that these projects are in agreement with the EP JSLP. We have also confirmed that the benefit sharing agreement includes payments to these projects to account for their work in implementing and continuing to implement successful emissions reductions projects in the region. We consider this to be a low risk. See section 4.3.2 and 4.3.3 of this report for more information. |

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| 3 | Major | Unknown | Our understanding is that project assumes that 100% of the biomass will be destroyed after a fire on page 184 (fd =1). However, there is no justification for this assumption, and it has a significant impact on the total emissions (around 9 MT CO2-eq). Also, it is the same assumption for all forest types, where different forest types will most likely withstand fires. Therefore, we need a justification for why fd = 1 is selected. | Through the audit finding process, this assumption has been revised to assume that 25% of the biomass is consumed in wildfires and not 100%. According to the peer-reviewed literature, this is a conservative assumption. We issued several findings pertaining to the fire assumptions, including one regarding the various types of forest in the program area. We concluded that most fires occur in the miombo woodlands and the dry deciduous forest types, which are the dominate vegetation in the region. The audit team reached a reasonable level of assurance regarding the fire assumptions after extensive discussions with the program team and an independent assessment of the literature. See findings 44, 67, 68. |
| 4 | Minor | Unknown | Harvesting also has a significant impact on emissions from forests. With the assumption that 50,000 hectares are burnt yearly, some of the burnt forests will be harvested. Is there a risk for double accounting? | The amount of biomass consumed in a fires was reduced from 100% to 25% through the findings process. Thus, forests could conceivably still be harvested after a burn as the majority of the biomass is still standing. The audit team found there is sufficient forest resources even after fire to fulfill the harvesting needs. Overall, we conclude that the risk of double-counting is low. See findings 44, 67, 68. |

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| 5 | Minor | Unknown | The emission from forest remaining forest is the largest source of emissions. However, it is unclear what monitoring will be implemented to improve the estimate. We would suggest using NFI to estimate better the damage from forest fires and loss due to harvest. | Through meetings with the program team, we confirmed that forest monitoring of degradation (harvesting, fires, etc) will occur through the inventory/sampling based approach. The MRV system also includes conducting household based surveys to understand firewood and charcoal usage. |
| 6 | Minor | Unknown | ISFL uses methodology that accounts for avoided unplanned deforestation, but not degradation – is this correct? What are the reasons for this?<br>How do methodology differences interact with nested projects? Will ISFL be covering trees on farms/agricultural land? I.e., will it be possible for project ERs to come from trees planted on agricultural land? | Confirmed that the program accounts for deforestation as well as degradation (forestland remaining forestland). The program also considers trees on farms and agricultural lands in the live tree biomass pools for the non-forest land uses. So yes ERs can be derived from additional trees on agricultural land. This could be captured in the monitoring if the program intends to account for this sort of activity. However, the program activities do not focus on enhancing forest cover on agricultural lands. |
| 7 | Minor | Unknown | States: *It is expected that a large portion of the carbon revenue will be provide to these VCS projects…..* – Is this the carbon revenue of the ZIFL-P and if so, useful to understand how much and how this is calculated. Does this assume VCS projects are nested or that they continue to operate / sell credits independently under 18 (3) of SI? (this question may be answered above)<br>How will the VCS projects become part of the jurisdictional programme? | The audit team reviewed this as part of the financial plan and benefit sharing plan. We consider this be a low risk. See response to comment 2 above. |

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| 8 | Minor | Unknown | From SI Forest Carbon Management, it is suggested section 18(3) *supersedes* the section on nesting and "grandparenting", I think this requires some further evaluation. | See above comments 2 and 7. |
| 9 | Minor | Unknown | There is no mention of biodiversity conservation or other environmental services in this section – why is that? We anticipated that there would be, especially with the associated GEF grant.<br>Can any more of these benefits be included in the non-carbon benefits section, with indicators?<br>Is there any link up with NBSAP / biodiversity conservation planning in EP? Could this be included<br>I add the same comment I did to Ethiopia ERPD:<br>Considering the importance of nature / biodiversity as well as other environmental services, can there be reference to / indicators for biodiversity, as well as ecosystem services and their role in supporting resilience to climate impacts, in the co-benefits section. Clear recommendation from mid-term evaluation that there are biodiversity targets. With degradation of natural forest such a big source of emissions, I think this is important. There is no mention of NBSAPs.<br>Strengthening this will help the ERPD convey the idea of sustainable forest landscapes. I think more linkage and explicit mention of nature and biodiversity would greatly improve the ERPD. | The biodiversity conservation and other ecosystem services aside from emissions reductions are outside of the scope of our assessment. Given our expert knowledge working within the carbon offset space and our experience with biodiversity standards, the audit team expects likely co-benefits on biodiversity and other ecosystem services associated with forest conservation. |

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| 10 | Minor | Unknown | "The Forestry Department is required to keep a register of all community forest agreements (Forests Act, 2015, section 35)" The word 'register' is used in a section on the REDD+ Registry, but it is not the same thing, therefore confusing. | The assessment team reviewed the community forest agreements that have been registered with users. We understand that these are then included in the REDD Registry. We consider these to be low risk components of the project. |
| 11 | Minor | Unknown | "Emission factors (…) for Land from ILUA I and II." I would like to see these data, which ILUA report, what page etc. | The audit team verified all emission factors from the ILUA reports and conducted independent quantification of the emissions baseline. See section 4.4.1 above. |
| 12 | Minor | Unknown | Harvested products are not included – only fuelwood, so emissions from forests remaining forest are underestimated. What is the likely magnitude? How will this be addressed? Remeasurement of permanent plots is one approach. | The audit team confirmed the subcategories eligible for inclusion in the ISFL. We found that harvested wood products are not eligible given data limitations. See section 4.1.2 above for more information on the subcategory selection process. |
| 13 | Minor | Unknown | Why is "Forest converted to Grasslands" is not higher placed in the sequence? | This subcategory was not found within the program area. The majority of forest conversions are to cropland or settlement. The audit team conducted an independent assessment of the land use change mapping through the Collect Earth system. See section 4.4.1 above. |

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| 14 | Minor | Unknown | It states that "Collect Earth has been used to determine annual increase in biomass carbon stocks due biomass growth within Forest remaining Forest". How?<br>There doesn't seem to be an increase: Table 15 shows an increase in emissions, presumably due to forest degradation. | The audit team confirmed that this statement is no longer in the ERPD. Collect Earth was used to assess land use change and determine the area of land remaining within each land use category. |
| 15 | Minor | Unknown | "The country specific emission factors used to determine annual increase in biomass carbon stocks due to biomass increment in Forestland remaining Forestland Subcategories are given in table 17". Table 17 does not state emission factors, just emission reductions from specific interventions. It would be interesting to see these Emission Factors. | The audit team confirmed that the emission factors are presented in Annex 6 as is required by the template. |
| 16 | Minor | Unknown | Cropland Remaining Cropland uses Tier 1 Emission Factors – does this meet ISFL requirements? | The audit team confirmed that cropland remaining cropland satisfies the ISFL inclusion requirements, one of which is to use tier 2 data. It only includes the soil pool as all other pools are considered to be stable. Note the soil pool is stable in the baseline as well, but the program has opted to include this subcategory due to expected emissions reductions. |
| 17 | Minor | Unknown | It is unclear how the following provides estimates of net reductions unless the points are permanent ground plots with tree and other measurements: "Using unmanned aerial vehicles (UAV) to collect images showing activities related to the Project Interventions. A selected network of some collect earth points can be used as ground | The audit team confirmed that the program intends to apply the same collect earth approach as used for the baseline for the monitoring. However, given the potential lack of imagery, they indicated they would utilize remotely sensed information or aerial detection equipment |

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| | | | control points (GCPs) for collecting activity data over the target project sites. From which computed NDVIs can be produces to show where and how much net reductions are realized from different interventions." | (drones) as needed to supplement the aerial imagery. See section 4.4.2 above. |
| 18 | Minor | Unknown | Forests remaining forest are the single largest emitter, so why are no forest monitoring plots planned? An NFI is described in 4.5.2 on p 84.<br>How will the LU change map be used vs. the Activity Data estimates from Collect Earth? They will differ. | The audit team confirmed during discussions with the program team that there are plans to conduct monitoring of forest remaining forest. The MRV system includes monitoring of forest fires as well as sample surveys of households to determine charcoal and firewood usage. |
| 19 | Minor | Unknown | It is not clear what the "Collect Method" means here. Collect Earth measurements of permanent points is not an NFI, since it only provides Activity Data. The methods for sampling wood removal are not given, so it is unclear if sampling is used nor whether the uncertainty of the estimates can be ascertained. | Through discussions with the program team, they have indicated that their MRV system includes monitoring of forest remaining forest degradation from fire, collection of fuelwood and charcoal. |
| 20 | Minor | Unknown | Good that you are using Collect Earth, but it is unclear how the UAVs will be used in conjunction – all points or just those that are in question.<br>It is unclear how the national level will ensure the quality and consistency of the provincial data. | See response to number 17 above. |

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| 21 | Minor | Unknown | "… a stratified sampling method should be applied, installing proportionally samples in land use and land use classes with reduced area or in area of land-use change." A base systematic sample of permanent plots is good. Additional samples targeting areas (categories) with high variance via stratification is a further enhancement. Neyman allocation can be used to optimize the sample sizes. See *Integrating remote-sensing and ground-based observations for estimation of emissions and removals of greenhouse gases in forests: Methods and Guidance from the Global Forest Observations Initiative. Edition 3.0.* www.reddcompass.org/download-the-mgd | The audit team confirmed that a systematic sampling grid of 3200 points was applied for the land use assessment using Collect Earth. We consider this to be a statistically valid approach. |
| 22 | Minor | Unknown | Ag sector could elaborate on CSA practices, as the ISFL project invests a lot in this. | The ERPD now contains greater detail about the Climate Smart Agriculture Activities that will be implemented as part of the program. |
| 23 | Minor | Unknown | A 4x4 km grid would yield an expansion factor of approximately 1600 ha/point. It is unclear how you got a factor of 1408.952. It seems like you had too many points or too small an area estimate. | Through the findings process as well as independent recalculation, the expansion factor was corrected and the audit team verified this. |
| 24 | Minor | Unknown | While the methods for wood removals are shown, there is no data source given. While this is consistent with assumptions listed in Section 4, it should be noted here that there is no current source. Is there a plan for filling this gap, such as using NFI data? | Through the findings process as well as meetings with the program team, the auditors verified the data sources and methods for quantifying the emissions due to wood removals. The program is implementing an MRV system that entails |

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| | | | | direct field-based sampling to assess degradation. |
| 25 | Minor | Unknown | Fig. 11 has the years reversed. The trend should show decreasing disturbance losses. Fig. 12 is correct for total loss. | The figures have been updated and the audit team confirmed the ERPD is accurate and free of material errors. |
| 26 | Minor | Unknown | Table 65 includes annual growth and changes in DOM and mineral soils, but it doesn't seem to include Conversion or Losses. If they are assumed to be 0, then should state as such (perhaps I missed that). | Through independent review of data source and re-calculation the audit team confirmed that the emissions in DOM and soil are free of material errors. Significant updates have been made to the quantification through the findings process. |
| 27 | Minor | Unknown | If the results for Settlement to Forest should parallel that for Crop to Forest, the annual change in mineral soil C should be included, as well as Conversion and Loss (as above). | Through independent assessment of the land use change mapping, the audit team confirmed that the settlement to forest subcategory does not exist within the program area. |
| 28 | Minor | Unknown | Seems like Table 102 (and all previous SOC tables) shows the cumulative losses rather than the annual losses. This would seem to greatly overestimate the total emissions from SOC. | Through independent review of data source and re-calculation the audit team confirmed that the emissions from the soil pool are free of material errors. Significant updates have been made to the quantification through the findings process. |
| 29 | Minor | Unknown | In Table 113 (and 114) average biomass density is in tonnes of biomass, not C. This needs to be multiplied by 0.47, so last column is about double what it should be. | The figures and tables in the ERPD have been updated and the audit team confirmed the ERPD is accurate and free of material errors. |

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| 30 | Minor | Unknown | There are some mistakes in the calculation in Annex 6. We did not have time to control all the calculations. Therefore, we give a general recommendation to do some additional quality and control the tables and estimates. For instance, in table 114, the annual loss of biomass is not multiplied by the carbon factor of 0.47 | The figures and tables in the ERPD have been updated and the audit team confirmed the ERPD is accurate and free of material errors. |
| 31 | Minor | Unknown | Please note that there are several mistakes and lay-out errors throughout the document which makes it difficult to navigate and may cause confusion as some of the text is missing. | The ERPD has been updated and the audit team confirmed that it is in conformance with the PD template requirements. |
| 32 | Minor | Unknown | "The EP-JSLP will engage communities throughout the province with a particular focus on these near forests including Game Management Areas and Forest Reserves." Note: the document would benefit from a thorough grammatical review. | The ERPD has been updated and the audit team confirmed that it is in conformance with the PD template requirements. |
| 33 | Minor | Unknown | *"The government is seeking to fill the financing gap in the early years of the Program, through securing unused funds from the ZIFPL program of US$ 8 million which will cover implementation and management costs until year 4 when carbon revenue is expected to make the Program financially viable".* How large is the risk of additional delays to the Program (and its financial viability), and are there any additional mitigation measures that can be utilised? | See comment 2 above. |

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| 34 | Minor | Unknown | It is unclear what the products of SFM will be. Seems like a sustainable fuelwood supply should be a primary goal. The benefits to the community are unclear (to me). | Through discussions with the program team and review of documentation the audit team confirmed that the sustainable forest management project activity includes a range of activities, many of which are already underway. These are described in the ERPD. |
| 35 | Minor | Unknown | Budget for monitoring? | See comment 2 above. |
| 36 | Minor | Unknown | Under 2.1.4 in the second row of the financing table it mentions 'this includes carbon revenue from ISFL and carbon revenue from private sector buyers, which can be secured.' Could we have more detail on private sector buyers? How are these intending to be secured? | |
| 37 | Minor | Unknown | "The SI (see full text in" – something is missing | The ERPD has been updated and type-o's corrected. |
| 38 | Minor | Unknown | "*The government of Zambia is in the process of developing the charcoal regulations*"<br>In what way will this mitigate the risk outlined/ affect the Program? | The audit team understands that these regulations are still in process. Nonetheless, a key program activity is to reduce charcoal emissions through energy efficient stoves, development of sustainable woodlots, and more sustainable charcoal technologies. Additional charcoal regulations could further enable the project to reduce emissions from charcoaling. |

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| 39 | Minor | Unknown | The ERPD mentions that “the very nature of a dual tenure system, the Eastern Province will be subject to implementation risks associated with unclear and overlapping claims that may impact the effectiveness of the Program.” How is the World Bank managing these risks that arise from the dual tenure system? Resettlement and conflict risk management – ERPD does not provide much detail on this, how will the programme manage/mitigate against this risk? | The auditors confirmed that the risk associated with land tenure and conflicts are outlined in the Reversal section of the ERPD. The program intends to address such risks through community forest agreements, as well as the benefit sharing mechanisms. Also see section 4.3.4 above. |
| 40 | Minor | Unknown | When will we see the full benefit sharing plan?<br>When can we expect to see benefits first flowing to communities?<br>How will nested projects be integrated/considered within benefit sharing? | The auditors confirmed the benefit sharing plan has been completed as is described in the ERPD. Through discussions with the program team, we found that the program activities are already underway and communities are experiencing benefits through the ZIFLP. The nested projects are included in the benefit sharing plan through agreements in which they receive payments from the program through their emission reductions within the nested project areas. See section 4.3.2 above. |
| 41 | Minor | Unknown | Could we have timelines for application of SI (I.e., application for a permit proposing to engage in forest carbon management) how long is this likely to take and will it impact on ERPA negotiations timelines? | Through discussions with the program team, the auditors found that the applications for the permitting process are at advanced stages and will not pose a risk to the program. |

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| 42 | Minor | Unknown | *"Please note that the REDD+ Registry is a Data Management System only, and not a Transactional Registry".*<br>Reference is made to the REDD+ registry for data management, but the text does not state whether CATS will be used as the Transactional Registry. | As indicated in the ERPD, ERs generated are planned to be processed through the World Bank/Biocarbon Fund Transactional Registry. |
| 43 | Minor | Unknown | REDD+ registry will be used for data management, will CATS be used as the Transactional Registry? | See above comment. |
| 44 | Minor | Unknown | CEEZ (Center for Energy, Environment and Engineering of Zambia) | Confirmed correction made to ERPD |
| 45 | Minor | Unknown | This seems to contradict the statement that "Harvested wood products were not calculated because of insufficient data." Do you mean for timber products vs fuelwood? | Confirmed that harvested wood products is a separate subcategory that was not included in the ISFL due to insufficient data. Removals from the forest due to charcoaling or fuelwood collection have been accounted for in the forest remaining forest subcategory as degradation. |
| 46 | Minor | Unknown | Emissions from forestland remaining forest land appear to be significantly higher than other transitions, is this correct?<br>Is this due to degradation? If so should there be a method set in place to account for this? | The auditors confirmed the emissions due to degradation in forest land remaining forestland through interviews with the program team, review of datasets, and recalculation of emissions. We confirmed |

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| | | | | that the MRV system will consider monitoring of these emissions. |
| 47 | Minor | Unknown | "Annual biomass growth in Forest land converted to cropland is zero."<br>"…are insignificant - 4.68 %, 0.88 % and 1.58 %, respectively, of the total emissions from the respective subcategories, and therefore does not meets the ''Significant criteria'' of individual pools or gases…" | The auditors confirmed the baseline emissions for forestland converted to cropland through independent recalculation. The conversion results in a loss of carbon and transition to steady state aboveground biomass in the new cropland land use. |
| 48 | Minor | Unknown | "Activity data was country specific and qualifies as Tier 2 and was obtained using the Collect Earth Tool. Emission Factors…" | The auditors verified the activity data which was generated from the Collect Earth Tool through independent review of a sample of Collect Earth points which were located within the program area. |
| 49 | Minor | Unknown | Based on approach 1, uncertainty for forest is estimated at approxiomately 3%. This seems low, particularly as uncertainty related to forest fire is high. We would recommend gathering further documentation for estimating uncertainty and looking into the potential of utilising approach 2. | The auditors have issued a Forward Action Request pertaining to uncertainty. See section 5.2 of this report. |
| 50 | Minor | Unknown | There is a significant spike in emissions in 2010, what is the reason for this? | The subcategories included in the ISFL baseline do not contain such a spike. The audit team confirmed the emissions baseline through review of the datasets and independent recalculation. |

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| 51 | Minor | Unknown | In the summary on page 8 the emission reduction is estimated to be around 30 million tons. However, on page 89 table 18 it is estimated around 25 million tons. The reason for why the estimates differ should be explained. | The program must account for both uncertainty set-aside and for the reversal set-aside. Note that there is a forward action request pertaining to the uncertainty set-aside emissions. |
| 52 | Minor | Unknown | Why aren't any conversions from grasslands considered? | There were no conversions from forest to grassland found during the Collect Earth analysis, which the audit team confirmed through independent checks on a sample of points. Conversion from grassland to cropland is a selected subcategory. |
| 53 | Minor | Unknown | What is the justification for excluding grassland remaining grassland when estimating the baseline? | Through the ISFL subcategory selection process, the audit team confirmed that the grassland remaining grassland subcategory is not required and the program does not intend to include it. |
| 54 | Minor | Unknown | It is unclear where the numbers in "Table 16. Emissions Baseline estimate" come from. | The audit team confirmed that the ERPD is accurate and in conformance with the PD Template requirements. |
| 55 | Minor | Unknown | To estimate the reference trajectory, a linear projection has been made. We see no immediate problems with the projection, though the emissions from forests appear to be overestimated, which will affect the level. | The audit team confirmed the emissions baseline is accurate and free from material error through review of the datasets and independent recalculation. |
| 56 | Minor | Unknown | Not sure I understand – some columns have the same value in each year others vary. | The audit team confirmed that the ERPD is accurate and in conformance with the PD Template requirements. |

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| 57 | Minor | Unknown | How is uncertainty accounted for? | The auditors have issued a Forward Action Request pertaining to uncertainty. See section 5.2 of this report. |
| 58 | Minor | Unknown | Last column in table 17 should be “Total Emission Reductions (Tonnes) | The audit team confirmed that the ERPD is accurate and in conformance with the PD Template requirements. |
| 59 | Minor | Unknown | The data on emissions from livestock seems to be somewhat uncertain. If possible, better activity data for livestock could significantly improve the estimates. | The livestock subcategories have not been included within the ISFL yet. There are improvement plans to include a few of the livestock subcategories. See section 4.1.3 above. |
| 60 | Minor | Unknown | Row 3B2ai – should be “Tier 1 (Emission factors (Soils, Dead Organic Matter and Litter)” | The audit team confirmed that the ERPD is accurate and in conformance with the PD Template requirements. |
| 61 | Minor | Unknown | Table numbers in text do not correspond to the table captions, e.g. Table 18 in text is Table 39. | The audit team confirmed that the ERPD is accurate and in conformance with the PD Template requirements. |
| 62 | Minor | Unknown | Figure 8 shows the growth by year and not the carbon stock by year. The text and captions should be changed. | The audit team confirmed that the ERPD is accurate and in conformance with the PD Template requirements. |
| 63 | Minor | Unknown | This information conflicts with 4.1.2 p 62 stating that “Harvested wood products were not calculated because of insufficient data.” | Confirmed that harvested wood products is a separate subcategory that was not included in the ISFL due to insufficient data. Removals from the forest due to charcoaling or fuelwood collection have been accounted for in the forest remaining forest subcategory as degradation. |

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| 64 | Minor | Unknown | "Figure 9 shows the annual carbon loss due to biomass removals from timber harvesting with 952.12 tonnes C in 2018 and 1,442.74 tonnes C in 2009 showing an annual decrease of 33.1% and 3.3% over the 10-year period." However, the choice of these two years is somewhat misleading since it includes just two (low) endpoints. A trendline might be more helpful. | The audit team confirmed that the ERPD is accurate and in conformance with the PD Template requirements. |
| 65 | Minor | Unknown | think it is worth noting in "The CO2 emissions from Forestland remaining Forestland is attributed to loss of biomass carbon from wood and fuelwood removals, and disturbances as a result of forest fires." that over 90% of the emissions are from fire. Is it true that all fires are stand replacing fires? This is certainly not the case in the US. | See response to comments 3 and 4 above. |
| 66 | Minor | Unknown | Can drop the repeated sentence: "Tier 1 methods assume that litter and dead wood pools are zero in all non-forest categories and therefore transitions between non-forest categories<br>involve no carbon stock changes in these two pools." | The audit team confirmed that the ERPD is accurate and in conformance with the PD Template requirements. |
| 67 | Minor | Unknown | It would be good to state the assumptions about what is included and what is not in Cropland to Cropland, e.g., only mineral soil gains and no losses are included. | The audit team confirmed the assumptions for all subcategories included in the analysis. For the baseline scenario, all carbon pools are assumed to be stable for cropland remaining cropland. This is in conformance with the ISFL requirements. |

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| 68 | Minor | Unknown | Is the assumption that mineral soil C is unaffected by the change from grass to crops? | The auditors confirmed that there is a reduction of soil carbon due to the conversion from grassland to cropland. |
| 69 | Minor | Unknown | So the only emission in Settlements is due to organic soils, if they occur? | Soil carbon in settlement remaining settlement is assumed to be stable. |
| 70 | Minor | Unknown | In Table 114, it is unclear how the second to the last column of numbers (annual change) was derived. | The audit team confirmed that the ERPD is accurate and in conformance with the PD Template requirements. |
| 71 | Minor | Unknown | Why do the results not include loss of SOC? | The audit team confirmed the emissions baseline through independent review of the datasets and assumptions, and recalculation of emissions. Conversions between land uses result in a loss or gain in SOC. |
| 72 | Minor | Unknown | In Table 131, not sure what basal fertilizer is. It seems that urea is used as top dressing and is the only source in Fig. 24. | The audit team will validate subcategories related to nitrogen fertilization once the improvement plan has been completed and they will meet the ISFL data requirements. |
| 73 | Minor | Unknown | It might be of interest to see the component parts of the N2O results because the opportunities to manage the parts differ. | The audit team will validate subcategories related to nitrogen fertilization once the improvement plan has been completed and they will meet the ISFL data requirements. |
| 74 | Minor | Unknown | EF4 and EF5 are not defined. | The audit team confirmed that the ERPD is accurate and in conformance with the PD Template requirements. |

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| 75 | Minor | Unknown | Table 139 – columns 3 and 4 are redundant. | The audit team confirmed that the ERPD is accurate and in conformance with the PD Template requirements. |
| 76 | Minor | Unknown | Table 146 – how was the Combined Uncertainty computed? | The auditors have issued a Forward Action Request pertaining to uncertainty. See section 5.2 of this report. |
| 77 | Minor | Unknown | Description of coordination between entities involved in ISFL ER Programs: doesn't state how BCP and COMACO would fit within the jurisdictional program. | See response to comment 2 above. |