REQUEST FOR PROPOSALS

Development of Jurisdictional Activity Data and Forest Cover Benchmark Maps for VCS
Avoiding Unplanned Deforestation Projects
17 April 2023

1   INTRODUCTION

Verra is a global leader helping to tackle the world's most intractable environmental and social challenges. As a mission-driven non-profit organization, Verra is committed to helping reduce greenhouse gas emissions, improve livelihoods, and protect natural resources across the private and public sectors. We support climate action and sustainable development with standards, tools, and programs that credibly, transparently, and robustly assess environmental and social impacts. We also enable funding for sustaining and scaling projects that verifiably deliver these benefits. We work in any arena where we need clear standards, a role for market-based mechanisms, and an opportunity to generate significant environmental and social value.

Verra is issuing this request for proposals (RFP) for the production of jurisdictional activity data (AD) and forest cover benchmark maps (FCBMs) to be used for developing Verified Carbon Standard (VCS) Avoiding Unplanned Deforestation projects.

2   PROJECT BACKGROUND AND OBJECTIVE

Verra is finalizing the development of a consolidated REDD methodology to be published in July-September 2023. The new methodology will be developed in a stepwise manner, starting with the M0184, Methodology for Reducing Emissions from Deforestation and Forest Degradation and the Module for Estimating Emissions Reductions from Avoiding Unplanned Deforestation (AUDef)[1]. In the future, modules will be added to address activities that reduce emissions from planned deforestation and unplanned forest degradation.

A key component of this REDD methodology is that Verra supports project baseline construction by allocating jurisdictional deforestation activity data (AD) to projects in proportion to the relative risk of deforestation in project areas. In this RFP, AD refers to the area deforested (measured in hectares) over a given period.

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[1] While still undergoing assessment by a validation/verification body, these documents are available for reference on Verra's website at the links provided.

Verra will establish jurisdictional AD by contracting data service providers (DSPs). The figure below sets out the steps DSPs must follow to develop jurisdictional deforestation AD and allocate it to project areas (PAs) and leakage belts (LBs).

Step 1: Estimate areas of unplanned deforestation that took place in the jurisdiction during the historical reference period (HRP)

- Step 1.1: Develop a historical land cover/land cover change dataset for each included activity data category (deforestation, stable forest, stable non-forest, forest regrowth)
- Step 1.2: Create maps of identified exclusions
- Step 1.3: Estimate the total historical area of each AD category using a sample-based approach
- Step 1.4: Calculate the uncertainty of the estimates of historical areas of each AD category

Step 2: Determine the jurisdictional baseline AD for unplanned deforestation

- Step 2.1: Calculate the start and end dates of the HRP
- Step 2.2: Calculate the average annual rate of deforestation over the HRP
- Step 2.3: Include discounting factors into the average annual rate of deforestation based on the uncertainty of the estimates of historical deforestation areas

Step 3: Allocate corresponding portions of the jurisdictional baseline AD for unplanned deforestation to PAs and LBs

- Step 3.1: Develop jurisdictional benchmark forest cover maps
- Step 3.2: Construct a jurisdictional deforestation risk model and map by applying the unplanned deforestation risk modeling and mapping procedure (UDef-RP)
- Step 3.3: Allocate portions of the jurisdictional baseline AD to risk classes within PAs and LBs using the unplanned deforestation activity data allocation procedure (UDef-AP)

Step 4: Leakage analysis

- Step 4.1: Delineate the leakage belt
- Step 4.2: Delineate the area available for activity shifting outside leakage belt
- Step 4.3 Estimate emission factor for activity-shifting areas outside the leakage belt

This RFP covers all the steps except 3.2, 3.3, and 4.1, which will be addressed at a later point.

Entities are welcome to submit their proposal(s) for one or more of the jurisdictions in Table 1 below.

Table 1: Phase 1 jurisdictions

Country	Jurisdiction	BVP Start	BVP End	HRP Start	HRP End
Brazil	Acre State	2021-01-01	2026-12-31	2011-01-01	2020-12-31
	Amapá State	2021-01-01	2026-12-31	2011-01-01	2020-12-31
	Amazonas State	2024-01-01	2029-12-31	2014-01-01	2023-12-31
	Pará State	2019-01-01	2024-12-31	2009-01-01	2018-12-31
	Rondônia State	2022-01-01	2027-12-31	2012-01-01	2021-12-31
Cambodia	National	2022-01-01	2027-12-31	2012-01-01	2021-12-31
Colombia	National	2020-01-01	2025-12-31	2010-01-01	2019-12-31
Democratic Republic of Congo	Mai Ndombe Province	2021-01-01	2026-12-31	2011-01-01	2020-12-31
Kenya	National	2022-01-01	2027-12-31	2012-01-01	2021-12-31
Tanzania	National	2021-01-01	2026-12-31	2011-01-01	2020-12-31
Zambia	National	2022-01-01	2027-12-31	2012-01-01	2021-12-31
Zimbabwe	National	2021-01-01	2026-12-31	2011-01-01	2020-12-31

Note: BVP = baseline validity period, HRP = historical reference period (the actual dates of the FCBM can be +/- one year of this date to allow for imagery availability)

While respondents can be a single entity or a consortium, we encourage collaboration with relevant stakeholders in the jurisdiction (especially jurisdictional governments/authorities) during proposal development and implementation. Respondents can be project proponents, governments, or other stakeholders.

3   SCOPE OF WORK

The following are the key tasks and expected deliverables; details on completing the tasks are provided in *AUDef* Appendices 1 and 2. The steps may be followed in an alternative order to how they are presented below. For efficiency, DSPs may perform tasks simultaneously (e.g., work on activity data and forest cover mapping).

TASK 1. Document review and standard operating procedures (SOPs)

The DSP shall review Verra's *M0184* and *AUDef* in detail to fully understand how the data products will be used. Based on this document review, the DSP shall draft standard operating procedures (SOPs) for area sampling and mapping.

- For developing SOPs, see the FCPF-FAO SOP templates as examples for area estimation (http://www.openmrv.org/home).
- Verra will supply the SOPs that were developed for pilots.

- Guidance on sample-based activity data development and remote sensing-based best practices can be found in *Integration of remote-sensing and ground-based observations for estimation of emissions and removals of greenhouse gases in forests: Methods and Guidance Document from the Global Forest Observation Initiative*.

Similarly, the DSP shall review and evaluate supplementary materials received from stakeholders. In consultation with Verra, the DSP must determine how (or if) full or parts of the submitted data will be used in the subsequent analysis. Please refer to *AUDef* Section A1.4.3 and Table 17 for guidance on deciding whether the data can be used.

TASK 2. Forest Cover Benchmark Map

A jurisdictional raster FCBM (FCBMj) covering the jurisdictional area, plus a buffer of at least 10 km outside the jurisdiction's boundary (excluding areas outside of the national borders and areas mapped as identified exclusions), will be needed for use in the *Unplanned Deforestation Risk Modeling and Mapping Procedure (UDef-RP)* and *Unplanned Deforestation Activity Data Allocation Procedure (UDef-AP)*. To develop the FCBM, the DSP shall undertake the steps described in *AUDef* Section A1.4.3. In addition, the following must be considered:
- The FCBM applies a binary classification (forest and non-forest at different points) over the historical reference period. The jurisdictional forest cover benchmark map comprises eight transition classes, each representing a unique series of forest/non-forest transitions over three periods.
- There should not be any systematic gaps (e.g., areas of no data) in the maps.
- For the accuracy assessment, using the data collected for jurisdictional-area sampling could be efficient.
- Appendix 1 provides an indicative outline for the Jurisdictional Activity Data and Forest Cover Benchmark Map Description Report.

To evaluate the accuracy of a project-scale FCBM, the DSP shall undertake the steps listed in *AUDef* Appendix 1 Section A1.4.3. The accuracy evaluation should be made in relation to the timepoint representing the end of the historical reference period.

TASK 3. Development of Deforestation Activity Data

To develop jurisdictional deforestation AD, the DSP shall undertake the steps described in *AUDef* Appendix 1 Section A1.4.1 & A1.4.2. In addition, the following shall be considered:
- Sampling designs may be systematic, random, stratified random sampling, or any other design supported by current best practices in sampling-based area estimation. The sampling frame should exclude "identified exclusions" areas as defined in Section A1.4.1 of *AUDef* Appendix 1.
- The DSPs shall utilize country expertise and local knowledge and are encouraged to leverage ancillary data sources (e.g., VHR images, LiDAR) wherever possible.
- The response design must be set up in publicly available data collection software, for example, the Collect Earth software package (https://openforis.org/tools/collect-earth/).
- The sampling design should anticipate the requirement that the final estimate of the "deforestation" class should have an uncertainty (half-width the 90% confidence interval of the estimate of the mean) of no more than ± 10%.
- For the primary imagery dataset, a resolution of 10m or finer must be utilized for all time periods from 2015 forward; before 2015, the minimum resolution is 30m.
- An indicative outline for the Description Report is provided in Appendix 1.

TASK 4. Delineate the areas available and estimate the emission factor for activity shifting areas outside of the leakage belt

The DSP shall delineate the area of forest and non-forest land within the jurisdictional boundaries that is available for leakage due to geographically mobile actors. The DSP shall undertake Step 1 described in *AUDef* Appendix 2 Section A2.1 to delineate such areas.

The DSP shall develop a spatially weighted emission factor for areas outside the leakage belt subject to conversion from activity shifting by migrants following Step 2 described in *AUDef* Appendix 2 Section A2.2. This emission factor is approximated using area-weighted carbon stocks of all lands in the jurisdiction

A carbon stratification map shall be sourced from peer-reviewed global forest carbon stock maps to conduct a spatial overlay to identify the area of each jurisdictional carbon stratum that falls within the available category. For simplicity, the emission factor will represent the area-weighted carbon stock of available forests in the aboveground and belowground pools.

4 DELIVERABLES

DELIVERABLE 1

A report documenting the following:
- Materials submitted by stakeholders
- Names of submitting organizations/persons
- Procedure used to evaluate such materials
- Explanations on how the submitted materials are going to be used during FCBM and AD development

DELIVERABLE 2

A full *Jurisdictional Activity Data and Forest Cover Benchmark Map Description Report* (draft template in Appendix 1) together with the following materials:
- Forest cover benchmark map, including supporting materials:
  - A vector file of the jurisdictional boundary and its buffer
  - Results of the accuracy assessments
  - The input data layers used for map generation or, if online tools were used, platform access
- Activity data, including supporting materials:
  - SOPs for forest-cover mapping, response design, sampling design, data collection, and data analysis
  - Excluded identified areas (e.g., planned deforestation, planned infrastructure, large-scale natural disturbances)
  - A description of the sampling design
  - Data collected (including stratification layers) and processed. Both the raw sample-unit level assessments and any processed results, or calculation sheet used to derive the results
  - Response design implementation, e.g., in Collect Earth or a similar platform

- Map of available land for activity shifting
- Emission factor for leakage from migrant agents

5 CRITERIA FOR EVALUATION

- Depth of understanding the assignment, as demonstrated by the quality of the workplan.
- Demonstration of prior work that has prepared the team for the required tasks. Experts are expected to have experience and expertise including, at a minimum, jurisdictional-level forest cover mapping, analysis of remote sensing data, sample-based area estimation, local knowledge, and understanding of the VCS Program.
- Involvement of local experts from the jurisdiction in the sampling design, sample plots interpretation and mapping elements of the proposal.
- Alignment of the proposed approach with any existing REDD+ national forest monitoring system and/or MRV and/or endorsement by jurisdictional/national REDD office.
- Mitigations described for any potential conflicts of interest arising from direct or indirect financial interests in the jurisdiction (i.e., stakes or relationships to any project(s)).
- The proposed timeline.

6 RESPONSES TO THE RFP

Proposals should not exceed ten pages per jurisdiction and should contain the following four elements.

1) **Data service provider's introduction and experience**, covering, at minimum, the following points:

    - Brief introduction, experience, and in-house capacity

    - If not yet underlined approved to provide AD for this purpose, demonstration that the respondent qualifies per the required capabilities outlined in the request for expression of interest for collection of jurisdictional deforestation date for allocation to VCS projects (this can be in addition to the page limit for this section of the proposal).

    - State whether it is a sole submission or association with other firms

    - Disclosure if the respondent (or a member of the responding consortium) is a project proponent and/or affiliated with any project proponents working in the jurisdiction or have ongoing collaborations with the government REDD offices.

    - Key experts' names, responsibilities, affiliations, and qualifications for the assignment (CVs can be annexed to the proposal).

    This section should not exceed **two pages**.

2) **Technical approach**, covering, at minimum, the following points:

    - Understanding of the objectives of the assignment

    - Technical approach for implementing the tasks

- Plans for using remote sensing and other ancillary data

- Ability of proposal to support government's plans for REDD+ NFMS/MRV for jurisdictional REDD+; leveraging of local expertise

- Access to any additional valuable data/info from the jurisdiction (if any)

This section should not exceed **five pages**.

3) **Work Plan**, covering, at minimum, the following points:

- Outline the plan for implementing the main tasks of the assignment within a given timeframe

- Financial proposal, including rationale for the main budget items

This section should not exceed **two pages**.

4) **Expectations of Verra**

This section should not exceed **one page**.

All proposals and documents shared with Verra will be kept confidential.

Proposals must be submitted to Basanta Gautam (bgautam@verra.org) by 30 April 2023. The successful service providers will likely be asked clarifying questions or invited for a deeper discussion. Verra plans to finalize the selection of the consultants by 8 May 2023, with the work to be completed as soon as possible thereafter, ideally between 31 July and 31 August 2023.

Legal Nature of RFP

This RFP is an invitation for proposals, and Verra is under no legal obligation to accept any proposal nor proceed with the RFP. Verra reserves the right to amend the requirements at any time.

APPENDIX 1: OUTLINE OF THE JURISDICTIONAL ACTIVITY DATA AND FOREST COVER BENCHMARK MAP DESCRIPTION REPORT

The following outline is indicative; the final data submission should be aligned with the requirements and parameter naming conventions of the version of the _Module for Estimating Emissions Reductions from Avoiding Unplanned Deforestation (AUDef)_ current at the time of the assignment.

The report should include key supporting data such as AD, FCBM and project areas.

Introduction

- Objectives and context
- Definitions applied for data collection
- Time periods
- Spatial boundaries

Forest cover mapping

- Introduction
- Details of the classification scheme and definitions
- Data sources used
- Step-by-step workflow for generating forest-cover change maps and forest-cover maps
- Accuracy assessment of the jurisdictional maps per Table 2 below (forest vs non-forest for end of HRP and deforestation vs not deforestation for start to end of HRP)

Table 2: Accuracy assessment of jurisdictional maps

Map classes (h)	Reference classes (j)				Total	User's accuracy %
	Forest	Non-forest	Deforestation	Not Deforestation		
Forest	n_{11}	n_{12}	n_{13}	n_{14}	$n_{1.}$	$n_{11} / n_{1.}$
Non-forest	n_{21}	n_{22}	n_{23}	n_{24}	$n_{2.}$	$n_{22} / n_{2.}$
Deforestation	n_{31}	n_{32}	n_{33}	n_{34}	$n_{3.}$	$n_{33} / n_{3.}$
Not Deforestation						
Total	$n_{.1}$	$n_{.2}$	$n_{.3}$	$n_{.4}$	n	
Producer's accuracy %	$n_{11} / n_{.1}$	$n_{22} / n_{.2}$	$n_{33} / n_{.3}$	$N_{44} / n_{.4}$		

Integration of project maps into the jurisdictional maps

The integration shall be done separately for maps submitted by projects and for the subset of the jurisdictional-scale map with which the project-scale map intersects.

- Overview of projects considered
- Spatial boundaries and leakage belts
- Accuracy assessment of project-scale maps per Table 3 below
- Rationale for whether or not integration was undertaken

Table 3: Accuracy assessment of project-scale maps

Map classes (h)	Reference classes (j)		Total	User's accuracy %
	Forest	Non-forest		
Forest	n_{11}	n_{12}	$n_{1.}$	$n_{11} / n_{1.}$
Non-forest	n_{21}	n_{22}	$n_{2.}$	$n_{22} / n_{2.}$
Total	$n_{.1}$	$n_{.2}$	n	
Producer's accuracy %	$n_{11} / n_{.1}$	$n_{22} / n_{.2}$		

Forest cover change measurement

Sampling Design
- Introduction
- Basic characteristics of the sampling design
- Identified excluded areas
- Sampling frame
- Definitions of strata (if applicable)
- Number of sample units allocated
- Approach to sample unit allocation

Response Design
- Introduction
- Details of the classification scheme and definitions
- Data sources used
- Sample unit's spatial support
- Interpretation key
- Decision tree
- Data collection form in chosen software
- Interpreters' confidence in plot classification

Data Collection
- Introduction
- Individuals involved
- Sample unit allocation to interpreters
- Results of cross-validation for a subset of sample units assessed by all interpreters (Table 4 below)

Table 4: Sample unit cross-validation

	All interpreters agreeing	One interpreter disagreeing	Two interpreters disagreeing	Etc.
Stable forest	Number of sample units / Percentage	Number of sample units / Percentage	Number of sample units / Percentage	Number of sample units / Percentage
Stable non-forest	Number of sample units / Percentage	Number of sample units / Percentage	Number of sample units / Percentage	Number of sample units / Percentage
Total deforestation	Number of sample units / Percentage	Number of sample units / Percentage	Number of sample units / Percentage	Number of sample units / Percentage
Unplanned deforestation - Total	Number of sample units / Percentage	Number of sample units / Percentage	Number of sample units / Percentage	Number of sample units / Percentage
Unplanned deforestation – Large scale	Number of sample units / Percentage	Number of sample units / Percentage	Number of sample units / Percentage	Number of sample units / Percentage
Forest regrowth	Number of sample units / Percentage	Number of sample units / Percentage	Number of sample units / Percentage	Number of sample units / Percentage
Total	Number of sample units / Percentage	Number of sample units / Percentage	Number of sample units / Percentage	Number of sample units / Percentage

Training

- Introduction
- Topics covered
- Attendees with the attendance record
- Exam, if applicable

Data Analysis

- Introduction
- Strata against reference classes - there might be only one stratum (Table 5 below)
- Non-response sample units (Table 6 below)
- Strata weights, if applicable (Table 7 below)
- Area proportions per class – there might be only one stratum (Table 8 below)
- Summary table of areas and associated uncertainties (Table 9 below)

Table 5: Reference classes

Stratum (h)	Reference classes (j)							Total
	Stable forest	Stable non-forest	Total deforestation	Annual total deforestation	Unplanned deforestation	Planned deforestation	Forest regrowth	
Stratum h1	n_{11}	n_{12}	$n_{13} + n_{14}$	Annual counts for deforestation	n_{13}	n_{14}	n_{15}	$n_{1.}$
Stratum h2	n_{21}	n_{22}	$n_{23} + n_{24}$		n_{23}	n_{24}	n_{25}	$n_{2.}$
Stratum h3	n_{31}	n_{32}	$n_{33} + n_{34}$		n_{33}	n_{34}	n_{35}	$n_{3.}$
Total	$n_{.1}$	$n_{.2}$	$n_{.3} + n_{.4}$		$n_{.3}$	$n_{.4}$	$n_{.5}$	n

Table 6: Non-response sample units

Classes (j)	Number of sample units used for analysis	Number of non-response sample units because of missing data	Number of non-response sample units because of low interpretation confidence
Stable forest	Count of sample units	Count of sample units	Count of sample units
Stable non-forest	Count of sample units	Count of sample units	Count of sample units
Deforestation	Count of sample units	Count of sample units	Count of sample units
Unplanned deforestation	Count of sample units	Count of sample units	Count of sample units
Planned deforestation	Count of sample units	Count of sample units	Count of sample units
Forest regrowth	Count of sample units	Count of sample units	Count of sample units

Table 7: Strata weights

Strata	Map area in hectares	Strata weight (w_h)
Stratum h1	$a_{1.}$	a_1/a
Stratum h2	$a_{2.}$	a_2/a
Stratum h3	$a_{3.}$	a_3/a
Total	a	1

Table 8: Area proportions per class

Stratum (h)	Reference classes (j)							Total ph.
	Stable forest	Stable non-forest	Total deforestation	Annual total deforestation	Unplanned deforestation	Planned deforestation	Forest regrowth	
Stratum h1	p11	p12	p13 + p14	Annual proportions for deforestation	p13	p14	p15	p1.
Stratum h2	p21	p22	p23 + p24		p23	p24	p25	p2.
Stratum h3	p31	p32	p33 + p34		p33	p34	p35	p3.
Total p.j	p.1	p.2	p.3 + p.4		p.3	p.4	p.5	1

Table 9: Summary of areas and uncertainties

Classes (j)	Proportion	Standard error	Area in hectares	Standard error in hectares	Percentage uncertainty at the 90% level
Stable forest	p.1	S(p.1)	A1	S(A1)	U%(A1)
Stable non-forest	p.2	S(p.2)	A2	S(A2)	U%(A2)
Total deforestation	p.3 + p.4	S(p.3+p.4)	A3+A4	S(A3+A4)	U%(A3+A4)
Annual total deforestation	Annual estimates and uncertainties for deforestation				
Unplanned deforestation	p.3	S(p.3)	A3	S(A3)	U%(A3)
Planned deforestation	p.4	S(p.4)	A4	S(A4)	U%(A4)
Forest regrowth	p.5	S(p.5)	A5	S(A5)	U%(A5)
Total	1		a		

The Description Report should include, at a minimum, the following annexes:
- SOP for mapping production
- SOP for response design
- SOP for sampling design
- SOP for data collection
- SOP for data analysis