# M0184 Consolidated REDD Methodology & AUDef Module

Verra's REDD+ team & consultants

20 April 2023

Photo: Bale Mountain REDD Project

# Webinar Objectives

Stakeholders understand:

- Methodology at a high level
- Key changes since public consultation
- Current stage and next steps

# Agenda

- Introduction
- Overview of activity data collection and allocation
  - Activity data collection
  - Risk mapping and allocation
  - Roles and responsibilities
- Deep dive into the *Module for Estimating Emissions Reductions from Avoiding Unplanned Deforestation*
- Next steps

# Methodology development team

- Methodology/overall support
  - Dr. Tim Pearson (GreenCollar)
  - Kevin Brown (Wildlife Conservation Society)
  - Dr. Sarah Walker (Wildlife Conservation Society)
  - Simon Koenig (Climate Focus)
  - Dr. Till Neeff (independent)
  - Dr. Igino Emmer (Silvestrum)
  - David Shoch (TerraCarbon
- Risk mapping and modeling and allocation procedures
  - Dr. Lucio Pedroni (Carbon Decisions International)
  - Juan Felipe Villegas (Carbon Decisions International)
  - Prof. Robert Gil Pontius (Clark University)
  - Prof. J. Ronald Eastman (Clark Labs)
  - Dr. Rebecca Dickson (Terra Carbon and Clark Labs)
- Verra staff
  - Salvador Sánchez Colón, Manager, REDD+ Technical Innovation
  - Basanta Gautam, Manager, REDD+ Technical Innovation
  - Marie Calmel, Senior Technical Manager, Natural Climate Solutions
  - Julie Baroody, Senior Director, Forest Carbon Innovation

# Context

Photo: FUNDAECO / REDD Conservation Coast Project

# Current method & motivation for new approach

## Reference regions

- The only approach readily available in the voluntary carbon market for establishing avoiding unplanned deforestation (AUDef) project baselines

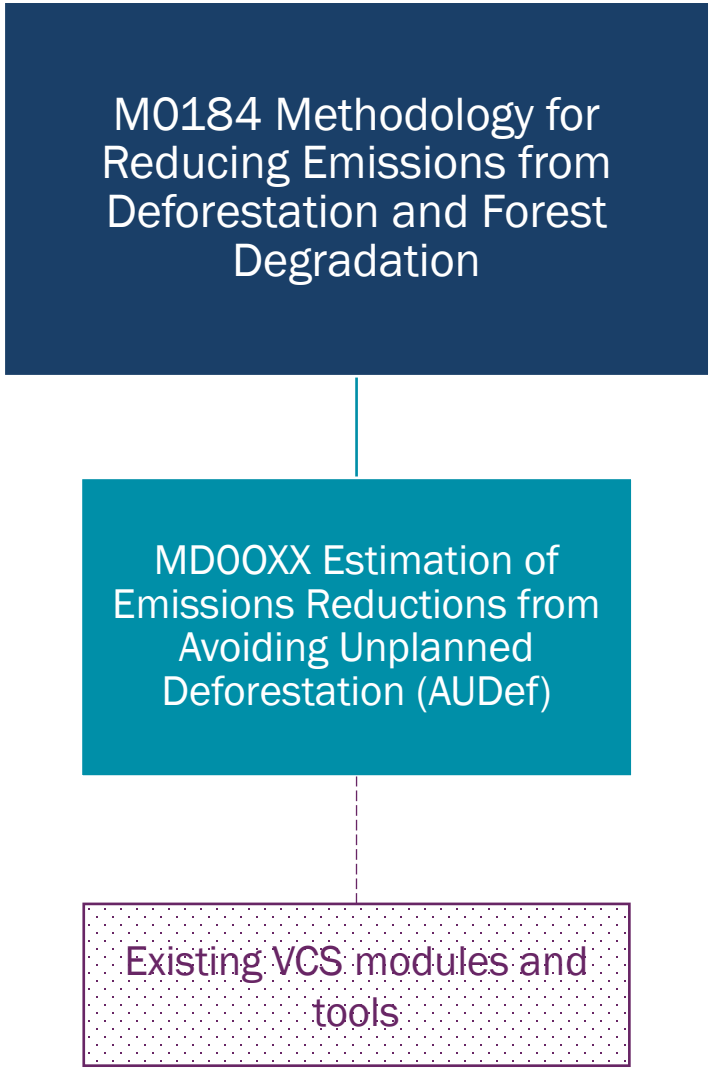
## Drivers for alternative methods

- Data/technology is at a point to enable new approaches that are workable and credible
- Alignment with government actions & accounting

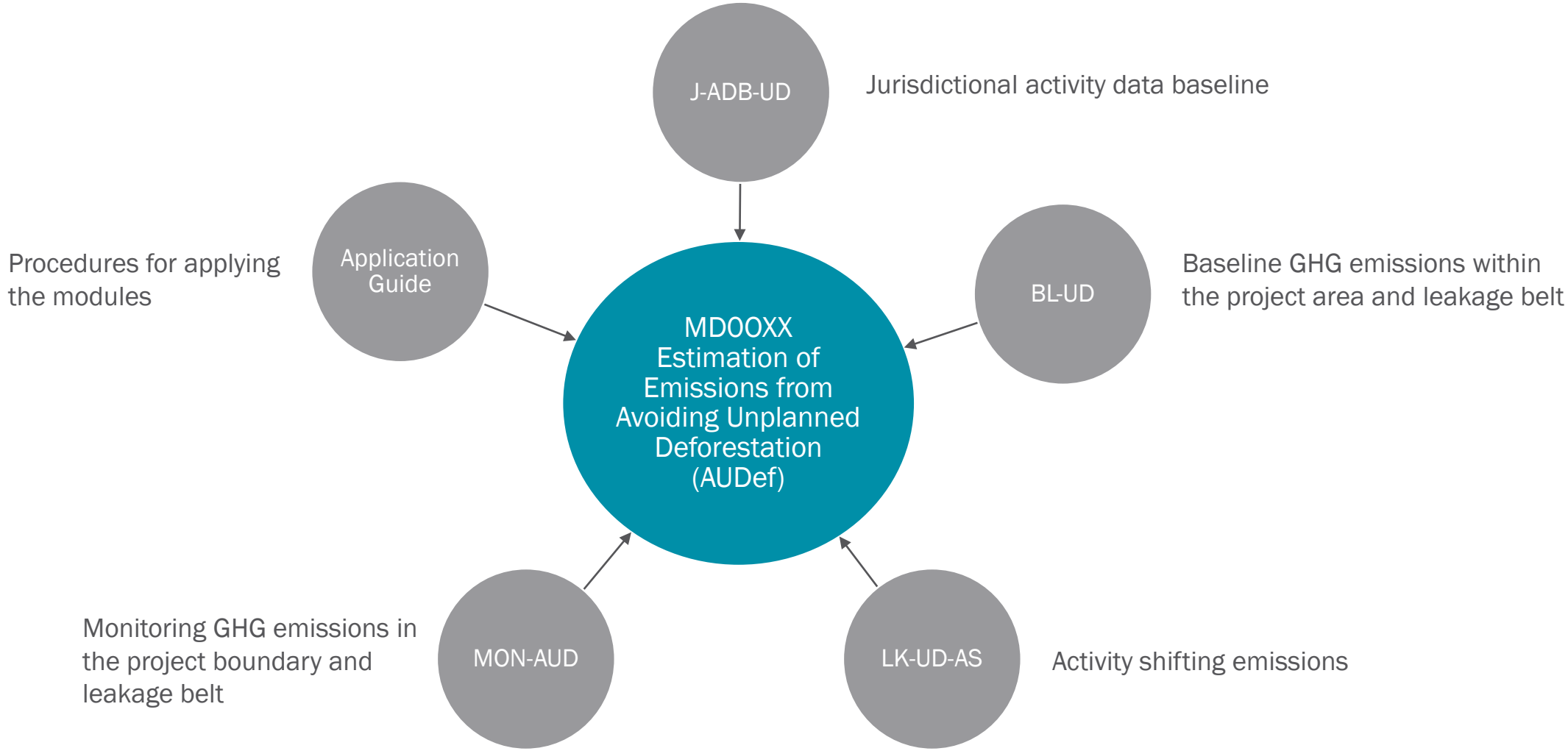
# How is REDD evolving?

- Shorter baseline periods for REDD projects
- Consolidating methodologies
- Risk-based jurisdictional allocation

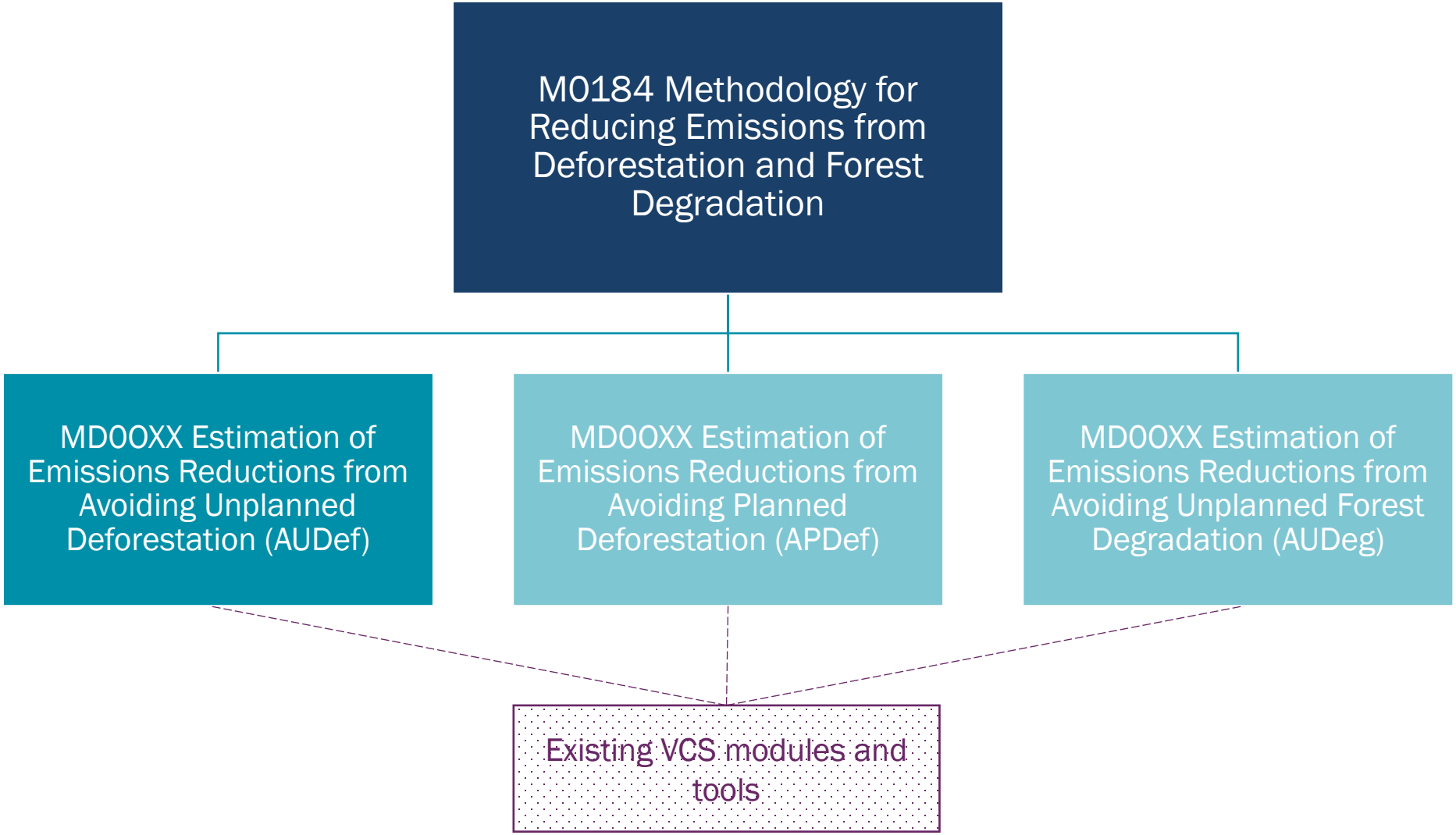
# Current methodology structure



# Public consultation modules combined



# Future methodology structure



# Additional changes from consultation version

- All Verra avoiding unplanned deforestation projects will now use this methodology
  - Firm timeline for adoption
- Roles and responsibilities for data generation clarified significantly
- General simplification

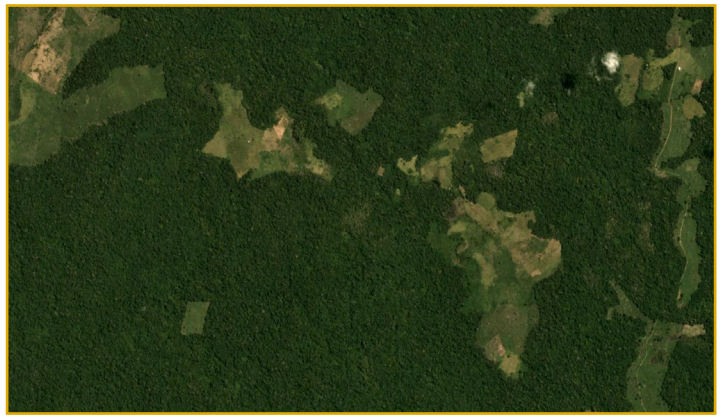
# Activity data collection and allocation

Photo: Nick Hall
Avoiding Planned Deforestation and Degradation in the Valdivian Coastal Reserve, Chile

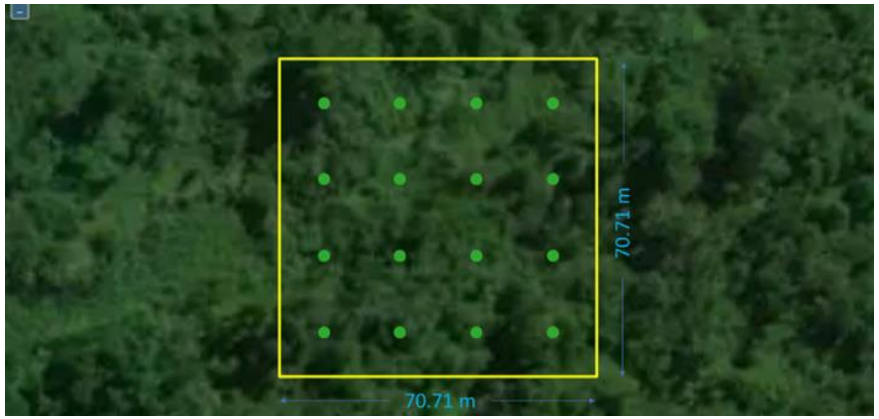
Activity data collection, risk mapping and allocation, roles and responsibilities

# Activity data and forest cover benchmark maps

Temporal satellite imageries



Sample plots




**Forest cover benchmark map** (forest-non-forest at 3-time points over the HRP)

**Land cover change transitions** (stable forest, stable non-forest, **deforestation**, and forest regrowth)

- Jurisdictional activity data is data on the magnitude of deforestation taking place during a given period of time
- Forest cover benchmark map (FCBM) is a map showing forest-non-forest in a jurisdiction

# Activity data and forest cover benchmark maps - requirements

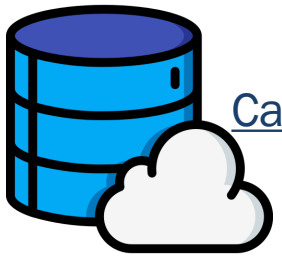
| Primary Data/product | Minimum Requirement |
|---|---|
| Satellite imagery | 10m & 30m spatial resolutions after and before 2015, respectively |
| Uncertainty of deforestation estimates | ≤ 10% at a 90% CI |
| Accuracy of change category (closed forest) | 90% & 70% for forest (end of HRP) and deforestation (during HRP) classes, respectively |
| Accuracy of change category (open forest, i.e., <50% CC) | 80% & 60% for forest and deforestation classes, respectively |

Request for Proposals for Development of Jurisdictional Activity Data and Forest Cover Benchmark Maps for VCS Avoiding Unplanned Deforestation Projects – Deadline: 30 April 2023

REDD Methodology page

# Crowdsourced supplemental data

| Data | Potential Use |
|---|---|
| Sample plots, spatial stratification, land cover maps, identified exclusions, etc., | Activity data (AD) generation |
| Remote sensing imagery, ancillary spatial data, projects FCBMs, etc., | Forest cover benchmark maps (FCBMs) |
| Maps of potentially arable land/ protection status/accessibility, carbon stock maps. | Maps of available land for activity shifting, EF for outside leakage belt |



Call for submission of supplemental materials from stakeholders – Deadline: 14 May 2023

Available data submission

# Allocation of jurisdictional activity data

- Jurisdictional activity data are allocated to projects in the jurisdiction proportionally to the local risk of deforestation
  - The *Unplanned Deforestation Risk Modeling and Mapping Procedure (UDef-RP)* is used for assessing/projecting deforestation risk in a spatially-explicit fashion
  - The *Unplanned Deforestation Allocation Procedure (UDef-AP)* is used for allocating portions of the jurisdictional activity data to projects within the jurisdiction
- Projects develop local-level estimates of relevant emission factors
- Allocated activity data × estimated emission factors = projects' baselines

# *Unplanned Deforestation Risk Modeling and Mapping Procedure (UDef-RP)*

- Formulated and pilot tested
- Benchmark model:
  - Deforestation risk = f(Distance to forest edge)
- Alternative, information-richer models:
  - Deforestation risk = $f(X_1, X_2, ..., X_p)$
- Identification of model "best able" to predict deforestation in the coming years:
  - Largest Area Under the Total Operating Characteristic Curve
  - Uppermost Total Operating Characteristic Curve

The Jurisdictional Deforestation Risk Model for the Validity Period

# *Unplanned Deforestation Allocation Procedure (UDef-AP)*

- Initial version:
  - Developed in the context of VCS Jurisdictional and Nested REDD Framework
  - Aimed at allocating portions of a jurisdictional FREL to nested projects
  - Spreadsheet tool
- (On-going) revision of the *UDef-AP*:
  - To be used for either:
    - VCS Jurisdictional and Nested REDD program or
    - Consolidated REDD Methodology
  - Able to allocate portions of either:
    - jurisdictional FREL (to projects nested in a JNR program)
    - jurisdictional activity data (to projects within the jurisdiction using the Consolidated Methodology)

# Key stakeholders

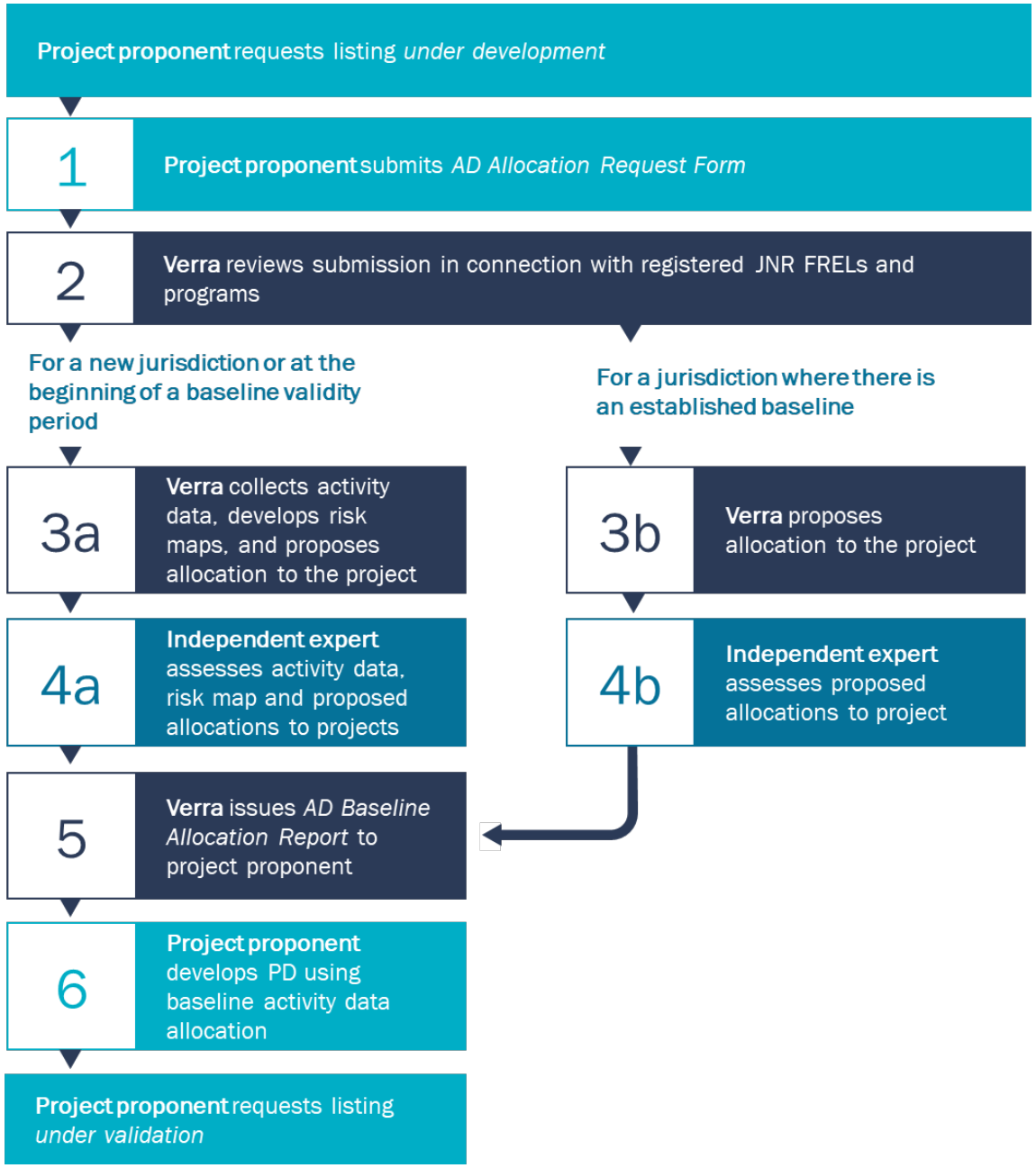
## Jurisdictional AD and risk map production

- Conducted by data service provider(s) on behalf of Verra
  - Data service providers may be project proponents
  - Assessed by independent expert reviewers
- Any stakeholder may submit jurisdiction-wide supplemental data
- Project proponents may submit project-specific forest cover benchmark map

## Project-level actions

- Project proponents create baseline using allocated AD and project-specific emission factors
- VVBs assess projects

# Process


Project proponent requests listing under development
1
Project proponent submits AD Allocation Request Form
2
Verra reviews submission in connection with registered JNR FRELs and programs
For a new jurisdiction or at the beginning of a baseline validity period
For a jurisdiction where there is an established baseline
3a
Verra collects activity data, develops risk maps, and proposes allocation to the project
3b
Verra proposes allocation to the project
4a
Independent expert assesses activity data, risk map and proposed allocations to projects
4b
Independent expert assesses proposed allocations to project
5
Verra issues AD Baseline Allocation Report to project proponent
6
Project proponent develops PD using baseline activity data allocation
Project proponent requests listing under validation

# Process

## Before validation

- PP requests pipeline listing (PL) under development and submits an *AD Allocation Request Form*
- PD development includes project-specific forest stratification map and eventual "post-processing" of AD allocated to leakage belt
- PP requests PL under validation
- Proceed as usual: public comment period → validation by a VVB → registration

## At verification

- PP prepares the monitoring report using allocated baseline data
- PP monitors deforestation in project area and leakage belt using the samples-based approach
- Project verified by a VVB

## At baseline reassessment

- The PP submits a new *AD Allocation Request Form* before drafting the monitoring report (MR)
- The baseline reassessment is validated by a VVB and the MR is verified by a VVB following the usual process

# *Module for Estimating Emissions Reductions from Avoiding Unplanned Deforestation (AUDef)*

Photo: FUNDAECO / REDD Conservation Coast Project

# The high-level view of the AUDef module

- Jurisdiction-level standardization of baseline activity data that is allocated to the projects via risk modeling
- Leakage divided between geographically-constrained agents (monitored in leakage belt) and non-geographically constrained agents
  - Leakage belt around project determined by Verra / DSP
  - Jurisdiction level standardization of factors associated with leakage by non-geographically constrained deforestation agents
- Project responsible for:
  - Development of emission factors
  - Activity data in project case (monitoring) of project area and leakage belt
- Activity data through remote sensing with resolution of at least 30 m up to 2015 and at least 10 m after 2015. Sampling approach required
- Uncertainty handled through discounting of both emission factors and activity data

# Module overview

| | | Activity Data | Emission Factors | Net Emissions |
|---|---|---|---|---|
| Baseline | | Verra (Appendix 1) | PP (5.3.1) | PP (5.3.1) |
| Project Emissions | | PP (5.3.2) | PP (5.3.1) | PP (5.3.2) |
| Leakage | LB | PP (5.3.2) | PP (5.3.1) | PP (5.3.3) |
| | OLB | Verra (Appendix 2) | Verra (Appendix 2) | PP (5.3.3) |

# Applicability

- Methodology level : exclusion of tidal wetlands (expected to be included in update to VM0033)
- Module level:
  - Exclusion of planned deforestation
  - Exclusion of leakage prevention activities which will cause emissions not accounted in the module (drainage of wetlands, flooded agriculture, confined feeding operations
  - Where a JNR FREL exists
  - Where baseline post-deforestation constitutes reforestation

# Overview of module steps

1. **Project efficacy**
   a. Define
      i. Leakage management area
      ii. Deforestation agents and causal chain
   b. Estimate
      i. Project efficiency at reducing deforestation
      ii. Internal permanence risks
      iii. Risks of leakage
2. **Define baseline**
   a. AD by risk class from Verra
   b. Allocate AD to strata
   c. Estimate discounted emission factors
   d. Determine annual baseline emissions
3. **Determine project emissions**
   a. Estimate ex-ante ERs
   b. Collect AD (inflate for uncertainty in PA)
   c. Determine net emissions
4. **Estimate leakage emissions**
   a. Leakage in leakage belt (geographically constrained)
   b. Leakage outside leakage belt (non-geographically constrained)
   c. Market effects leakage
5. **Sum to determine net emission reductions and subtract permanence deduction**

# Uncertainty

- Handled through discounting of both activity data and emission factors rather than estimation of total offset uncertainty as in some existing REDD methodologies (typically only applied to emission factors)
- For activity data baseline deforestation is conservatively discounted (lowered), while in the monitoring case deforestation is conservatively inflated (raised).
- Approach is the same as in the JNR and builds on a published approach (*Neeff 2020. What is the risk of overestimating emission reductions from forests – and what can be done about it? Climatic Change 166: 26*)

# Key elements of module

- **Boundaries**:
  - Jurisdiction, leakage belt and baseline validity period determined by Verra
- **Applicability**:
  - No planned deforestation, no tidal wetlands, no post-deforestation reforestation
- **Baseline**:
  - Standardized activity data, risk mapping and allocation across a jurisdiction conducted by Verra. Activity data discounted for uncertainty.
  - Emission factors developed by project proponent. Emission factors discounted for uncertainty
- **Monitoring**:
  - Project proponent collects activity data across PA and LB using sampled approach. AD inflated for uncertainty
- **Leakage**:
  - Leakage belt monitoring by project proponent
  - Deductions for leakage outside the leakage belt (important determination of immigrant proportion – $PROP_{IMM}$)

# Activity data

- Area of deforestation monitored for two purposes:
  - Over the historical reference period within the jurisdiction, informs baseline validity period AD
  - Over the monitoring period for project, informs monitored project emissions
- A “sample based approach” is utilized in both cases, where sample plots are interpreted against a high resolution imagery time series
- Conservative discounts (for jurisdiction AD baseline) and inflation (for project monitoring) factors are calculated based on uncertainty of deforestation sample
- In both cases, certain areas maybe be mapped as ‘identified exclusions’ and effectively removed from AD accounting (natural disasters, planned deforestation, bodies of water, commercial plantations, etc.)
- Sampling stratification is required for only the project case, but will likely be employed in the jurisdiction as well

# Jurisdictional vs. project AD estimation: major steps

| STEP | Jurisdiction | Avoided Unplanned Deforestation Project |
|---|---|---|
| Define Sampling frame | Jurisdiction | AUDef project area + leakage belt |
| Delineate Identified exclusions | Since start of historical period; >1000ha | Since start of monitoring period; >100ha |
| Generate Sampling Strategy | Any representative approach allowed | Stratified sampling required |
| Interpret sample plots | Four main LCC categories:<br>Stable Forest, Deforestation, Forest Regrowth, Stable Non-forest | Unplanned deforestation only |
| Estimate uncertainty | Uncertainty cannot exceed 20% of the estimate | No upper limit on uncertainty |
| Uncertainty discounting | Uncertainty over 10% results in discounting of AD | Uncertainty over 10% results in inflation of AD |
| Calculate AD | Single AD estimate for jurisdiction | AD reported separately for each project forest stratum and for project area & leakage belt |

# Jurisdictional vs. project AD estimation: Other distinctions

| | Jurisdiction | UDef Project |
|---|---|---|
| Use | Informs jurisdictional AD over baseline validity period | Calculate project monitoring period emissions |
| Who does | Data service provider | Project proponent |
| When, over what period | Prior to start of each baseline validity period, over historical reference period (previous ~10 years) | At each project monitoring event, over previous monitoring period |
| Exclusions from sampling frame | Intertidal zone; commercial plantations; natural disturbances; planned infrastructure; planned deforestation; permanent water | Everything from jurisdiction + natural disturbances; planned deforestation (>100ha) observed during monitoring period |
| Stratification | Not required, but advantageous to be based on observed land cover change (e.g. stratify with a land cover change map) | Required for: 1) project forest strata, 2) accounting area (PA vs LB), and 3) minimum of three strata defined by expected frequency of observing deforestation |

# Next steps

Photo: Mark Godfrey
Avoiding Planned Deforestation and Degradation in the Valdivian Coastal Reserve, Chile

# Methodology Publication & Project Transition

**Oct 2020 - Mar 2022**

- Finalization of JNR v4
- Options assessment & development of modules to standardize existing AUDD methodologies

**Apr - May 2022**

- Modules consultation

**Jul - Aug 2022**

- Review of comments
- Decision to move to consolidated methodology

**Sep 2022 - Mar 2023**

- Revision of modules per comments
- Revision of Risk Mapping & Allocation Tools

**April – Jun 2023**

- VVB assessment of methodology

**Q3 2023**

- Target for methodology publication
- Activity data from the first jurisdictions allocated to projects

**Q4 2024**

- Activity data available for all 40+ jurisdictions

**2025**

- All REDD projects use new meth or are nested within a JNR program

# First Phase Jurisdictions

| Country | Jurisdiction |
|---|---|
| Brazil | Acre State |
| | Amapá State |
| | Amazonas State |
| | Pará State |
| | Rondônia State |
| Cambodia | National |

| Country | Jurisdiction |
|---|---|
| Colombia | National |
| Democratic Republic of Congo | Mai Ndombe Province |
| Kenya | National |
| Tanzania | National |
| Zambia | National |
| Zimbabwe | National |

# Key resources

Subject to change before publication

## Drafts

Draft *Methodology for Reducing Emissions from Deforestation and Forest Degradation*

Draft *Module for Estimation of Emissions Reductions from Avoiding Unplanned Deforestation*

## Invitations to contribute

RFP for Development of Jurisdictional Activity Data and Forest Cover Benchmark Maps

**Deadline: 30 April 2023**

Call for submission of supplemental materials from stakeholders

**Deadline: 14 May 2023**

Note upcoming deadlines

Project transition timeline

# Questions?

Photo: FUNDAECO / REDD Conservation Coast Project

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