



## Methodology Overview

VM0047: Afforestation, Reforestation, Revegetation (ARR)

VMD0054: Module for estimating leakage from ARR activities

Julianne Baroody, Verra

Christian Ehrat, Verra

Maxim Grigri, Verra

Spencer Plumb, Verra

David Shoch, TerraCarbon

Scott Settelmyer, TerraCarbon

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# Welcome



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

- Introductions
- Webinar Orientation/Housekeeping
- Methodology history
- Methodology development and review process
- Acknowledgements of contribution



# Presentation Overview

Methodology Overview

Applicability Conditions

Census-Based Approach

Area-Based Approach and Dynamic Performance Benchmark

VMD0054 Leakage Module

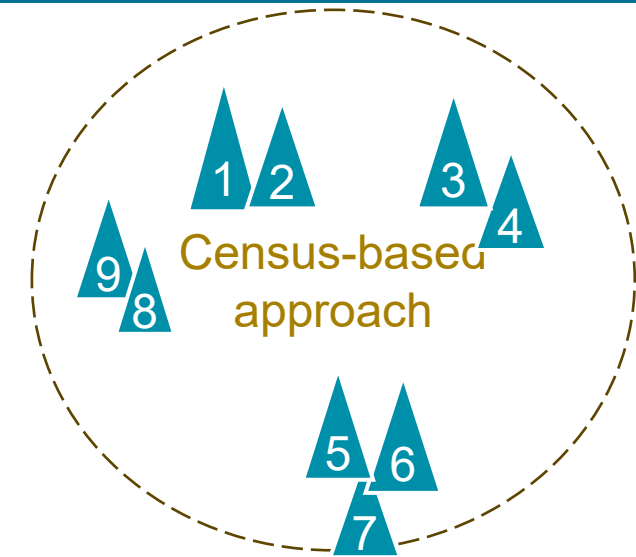
Question and Answer/ Next Phases



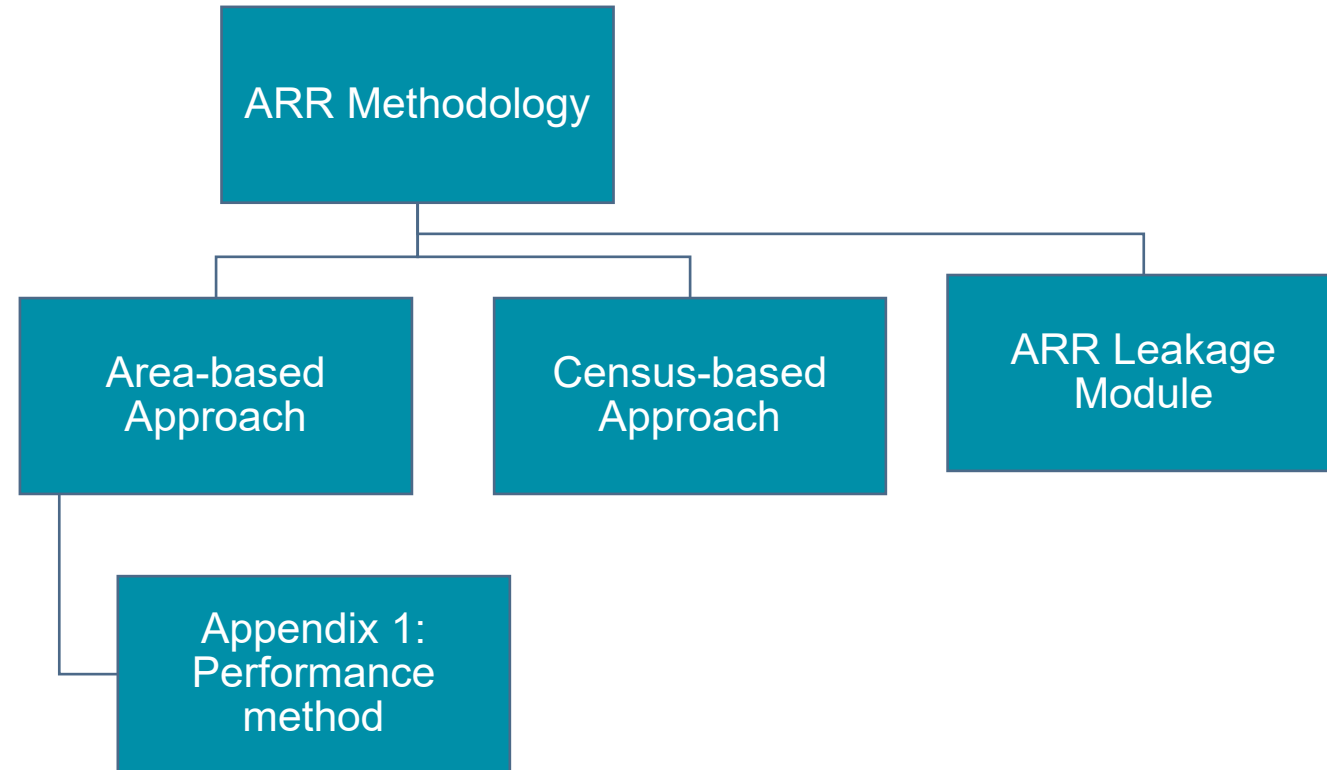
Photo by FUNDAECO / REDD Conservation Coast Project

# Methodology Overview

- The methodology covers afforestation, reforestation, and revegetation (ARR) and offers two quantification approaches: census-based and area-base
- **Census-based approach** sets a zero-baseline under strict criteria. Requires a complete census of all planting units at the time of planting. Uses direct measurement sampling to quantify carbon removals, and scales total carbon stocks by the total number of planting units.
- **Area-based approach** uses a dynamic performance benchmark for setting crediting baseline and additionality. Uses direct measurement sampling to quantify carbon removals, and scale total carbon stocks by the project area.



# Methodology Structure



# Applicability Conditions

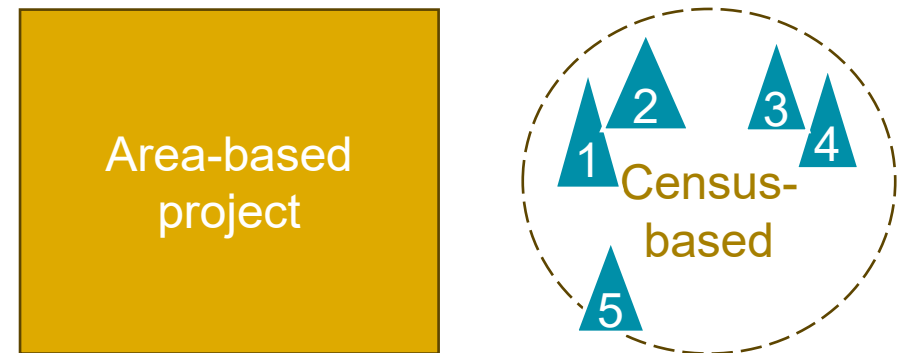
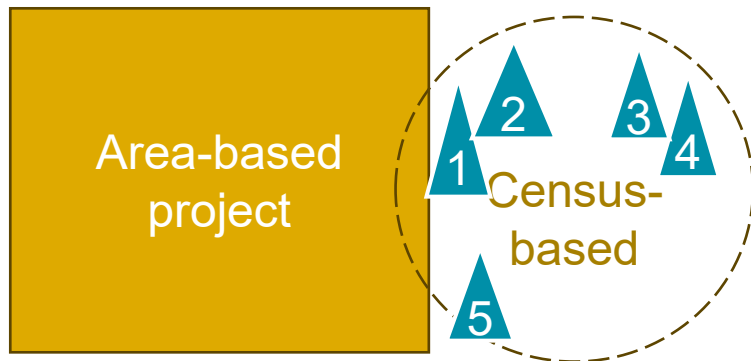


The methodology is applicable where:

Project activities increase vegetative cover; and

Area-based, census-based, or a combination of the two quantification approaches may be used where:

- both area- and census-based applicability conditions are met.
- approaches must be selected at the project start date and used for the entire project crediting period. Where the two approaches are used together, they must not overlap



# Applicability Conditions

This methodology is not applicable under any of the following conditions:



Project activities (e.g., site preparation) involve mechanical removal offsite or burning of significant stocks of pre-existing dead wood. Where project site preparation includes chipping, mastication or machine piling, all material must remain onsite within the project boundary.

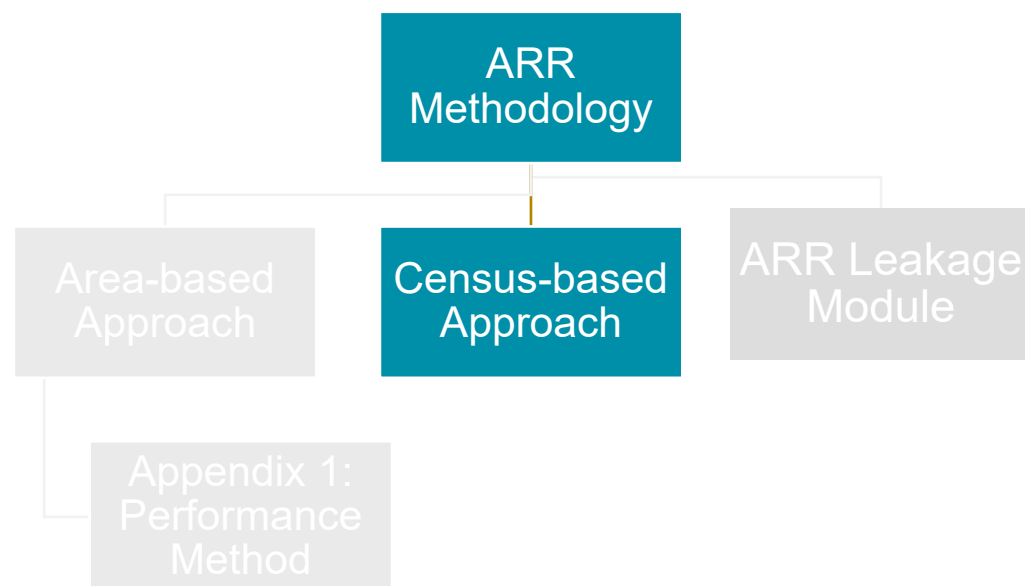


Project activities take place in tidal wetlands (e.g. mangroves, salt marshes).



Project activities that occur on organic soils or in wetlands and result in manipulation of the water table. Planting species that do not naturally occur in organic soils or wetlands is considered a manipulation of the water table. Where projects take place on organic soils and manipulate the water table, they must be developed using a multiple-project activity design combining this methodology and a Wetland Restoration and Conservation methodology.

# Methodology Structure and Quantification Approaches (3/4)



**Census-based accounting Project carbon stocks:** scales biomass per tree to the whole project level using a complete census of planted trees

Uses project methods (e.g. demonstration of investment barriers)

Project activity must be direct planting

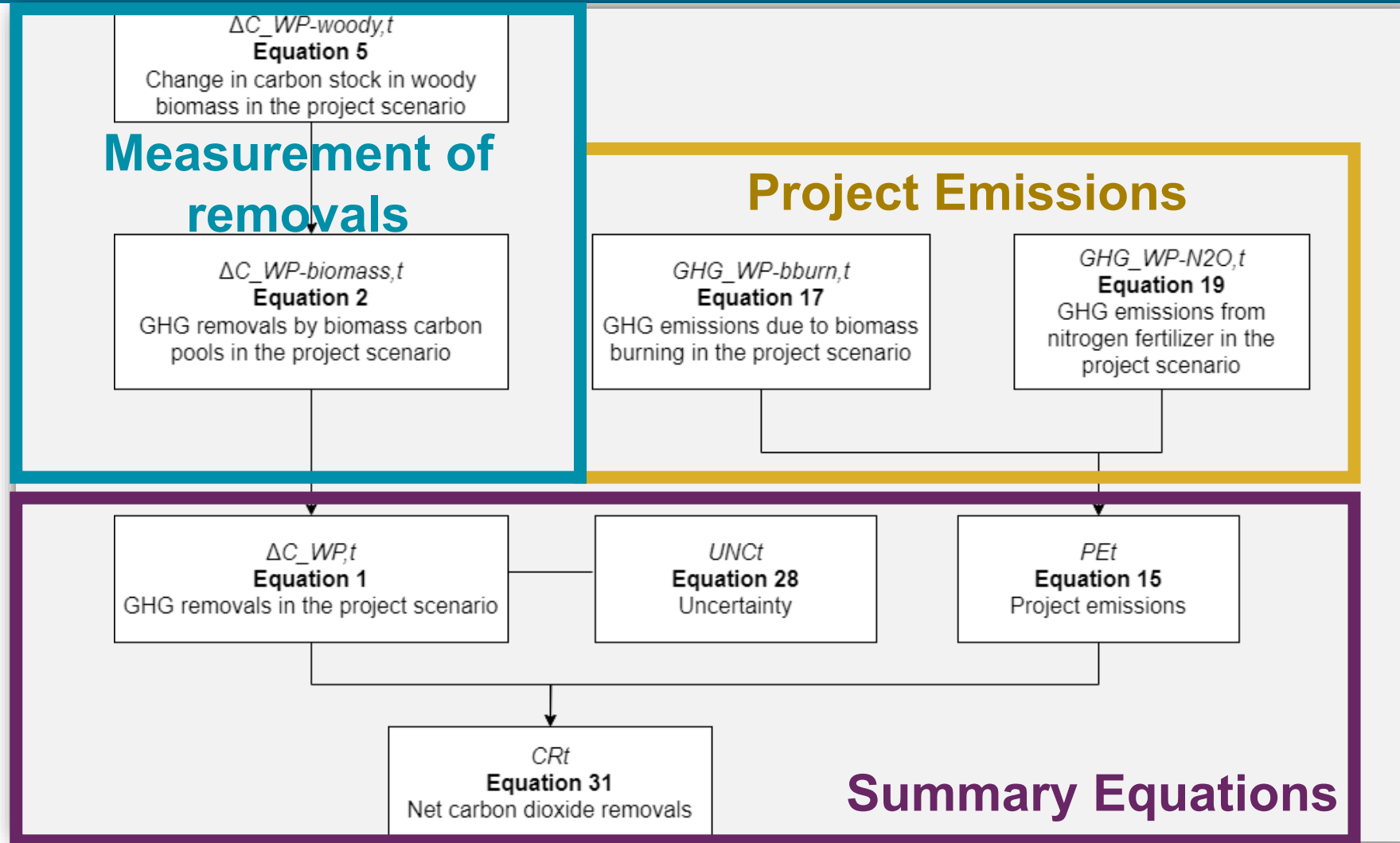
Project activity must not produce continuous tree and/or shrub cover on any contiguous area exceeding one hectare.

Individual planting units of woody biomass must be clearly defined and accounted for in a complete census.

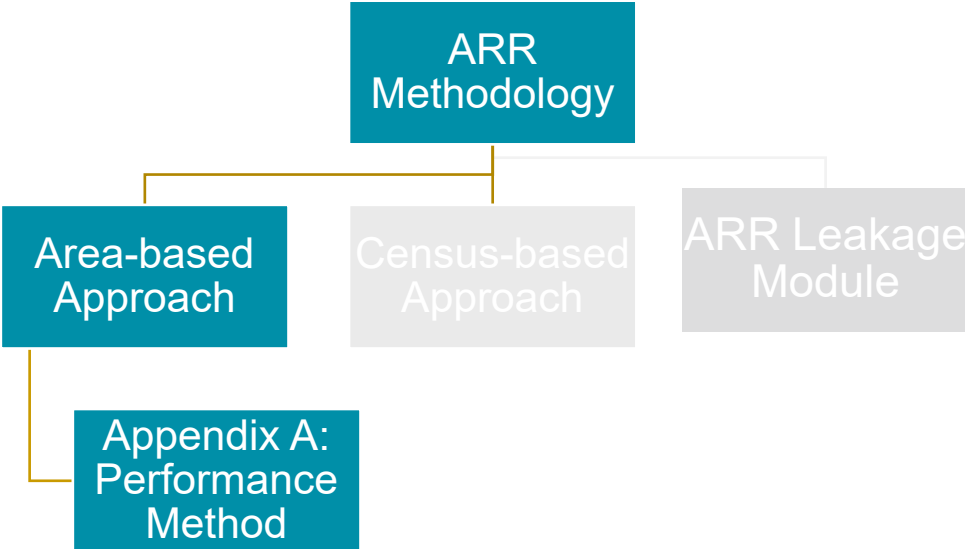
Must not create forest cover exceeding 1 hectare



# Census-based approach summary of equations



# Methodology Structure and Quantification Approaches



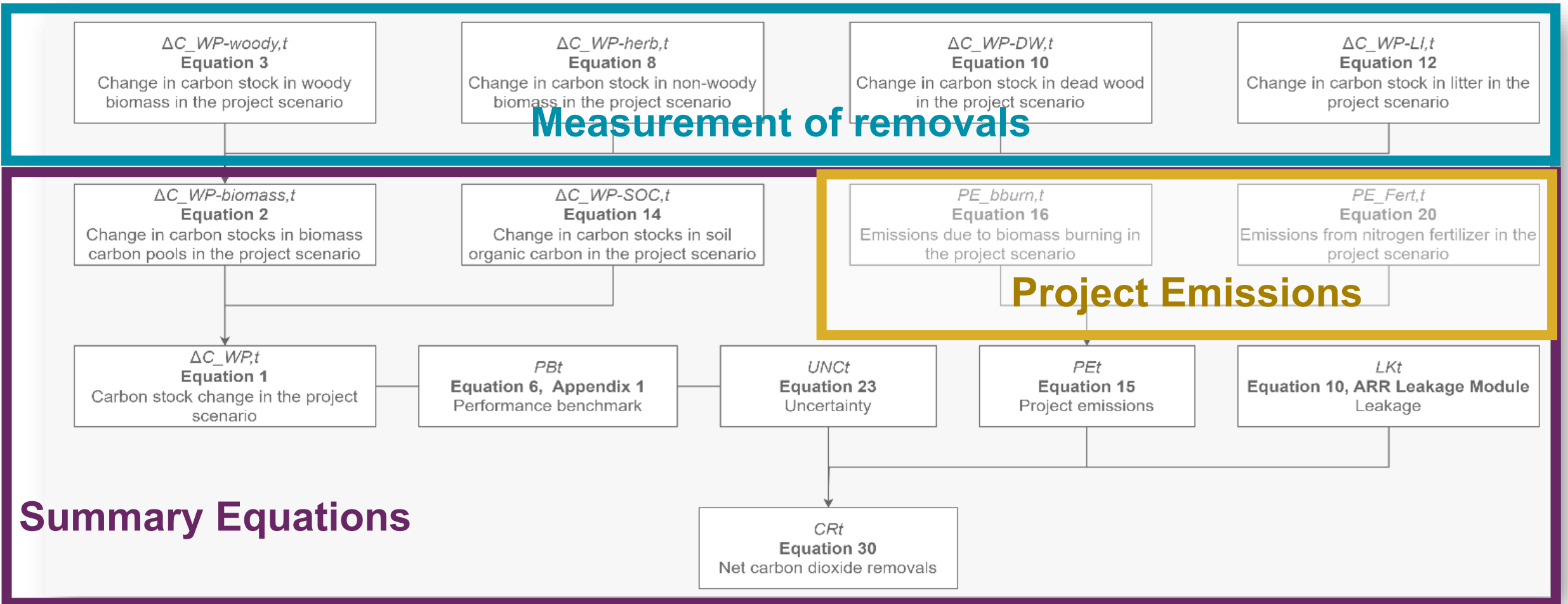
### Option A: Area-based accounting approach (Performance Method)

**Project carbon stocks:** Uses traditional plot-based sampling methods to scale biomass estimates to the whole project level

**Baseline and additionality:** Uses a dynamic performance benchmark that matches and monitors the project against to statistically comparable control plots within defined reference region.

**Carbon Pools and GHG Sources:** woody above and belowground biomass, non-woody biomass, dead wood, litter, soil organic carbon, non-CO<sub>2</sub> emissions from biomass burning and N<sub>2</sub>O emissions from nitrogen fertilizer.

# Area-based approach summary of equations









Performance benchmark applied in Equation 30:  $CR_t = \Delta C_{WP,t} \times (1 - PB_t) \dots$

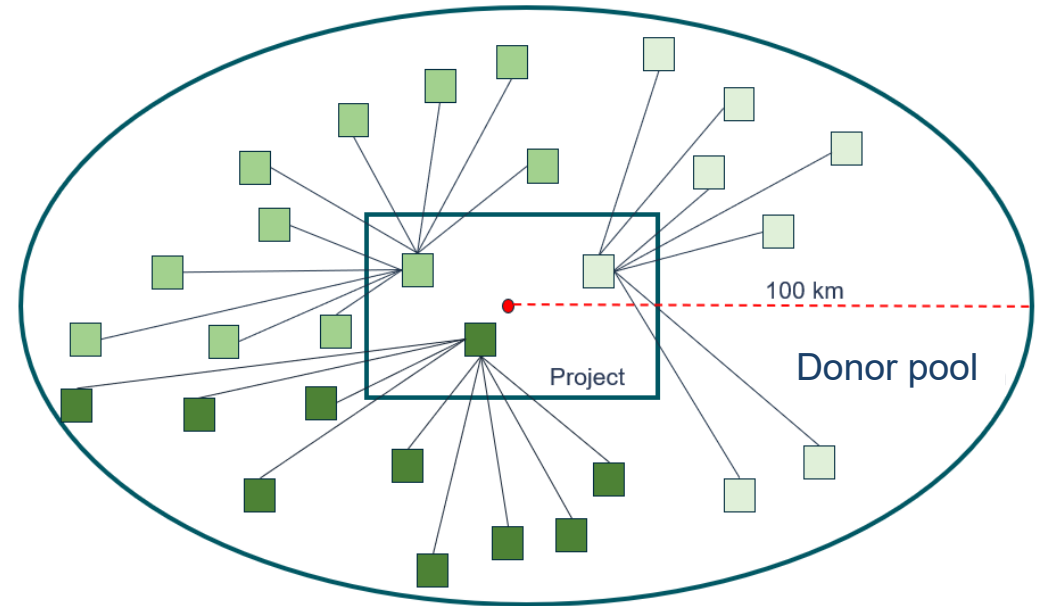
# Control Selection Criteria

<b>Exact matching criteria – delineation of donor pool of candidate control plots</b>	<b>Jurisdictional boundary</b>	Base domain = jurisdiction (national or subnational) registered under JNR or delineated by the national/subnational government for reporting REDD+.
	<b>Ecoregion</b>	Exclude any areas not within the same ecoregion (biome level) as the project.
	<b>Policy environment</b>	Exclude areas with any operating government-funded programs providing incentives for tree planting differing from those in the project area.
	<b>Outside any registered AFOLU project</b>	Optionally, exclude any registered AFOLU projects.
	<b>Land tenure</b>	Exclude any areas with different land tenure classification than the project area. At a minimum, land tenure classification must distinguish between public and private lands. More precise classifications (e.g., indigenous reserves, concessions, private industrial lands) may be used where available.
	<b>Geographic proximity</b>	Exclude areas beyond a 100 km radius of the centroid of the project plot.
<b>Nearest neighbor matching</b>	<b>Historic trend in vegetation</b>	Stocking indices from three or more time points during the historic period spanning 8-10 years immediately prior to project start.

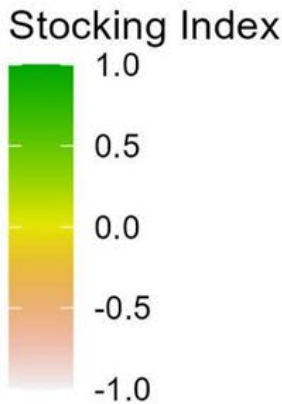
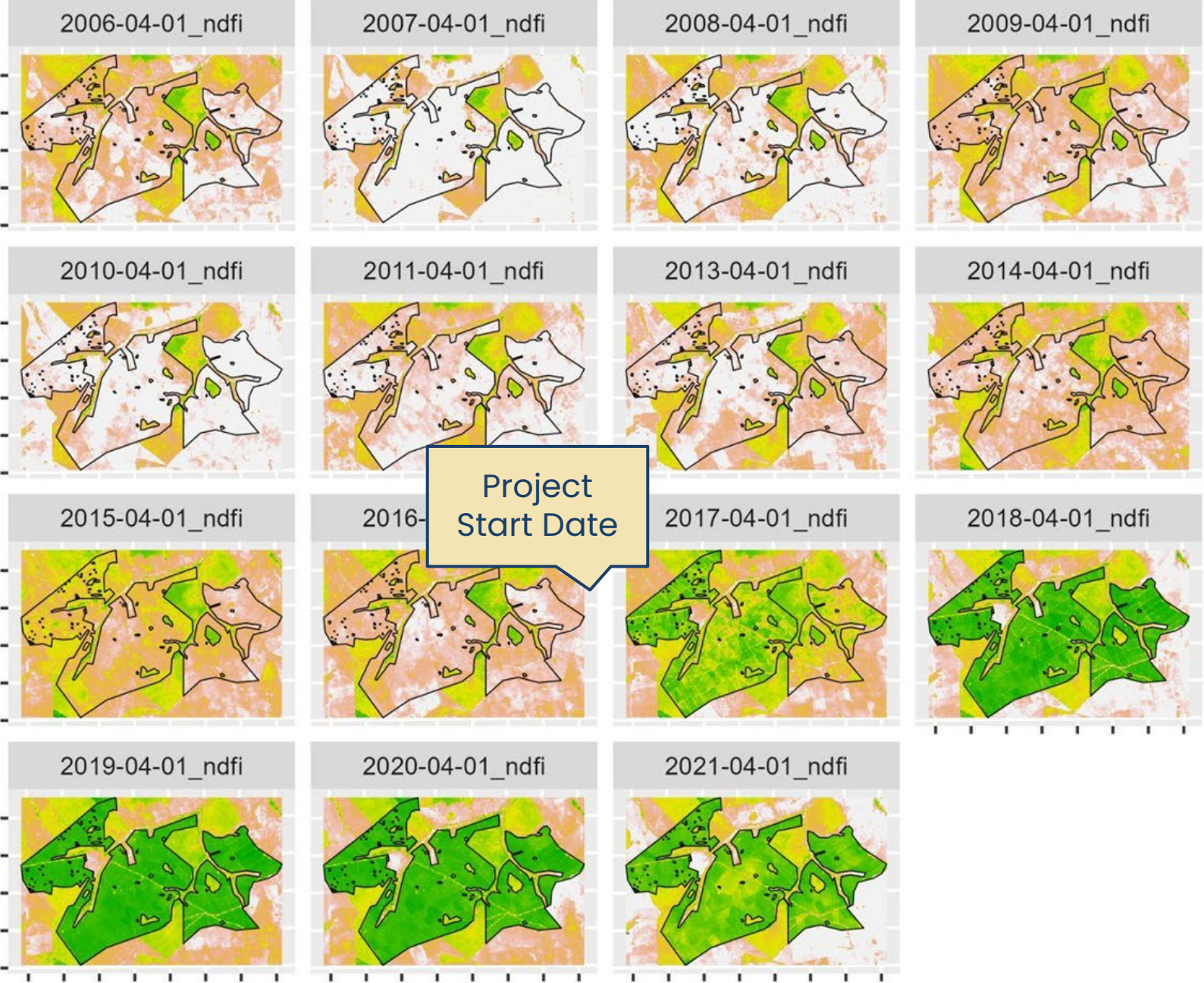
# Establishing a Dynamic Performance Benchmark

- Appendix 1 establishes a dynamic performance benchmark based on comparative changes observed in a Stocking Index (SI) in the project area and in matched controls. Controls are selected to match historic trends in SI in the project area.
- Stocking index (SI) is an unspecified remote sensing metric with demonstrated correlation with terrestrial above ground carbon stocks.

Indicative Stocking Index	Historical Trend in Vegetation Signal
	Intensive agriculture 
	Fallow agriculture cycle 
	Natural regeneration 







Project  
Start Date



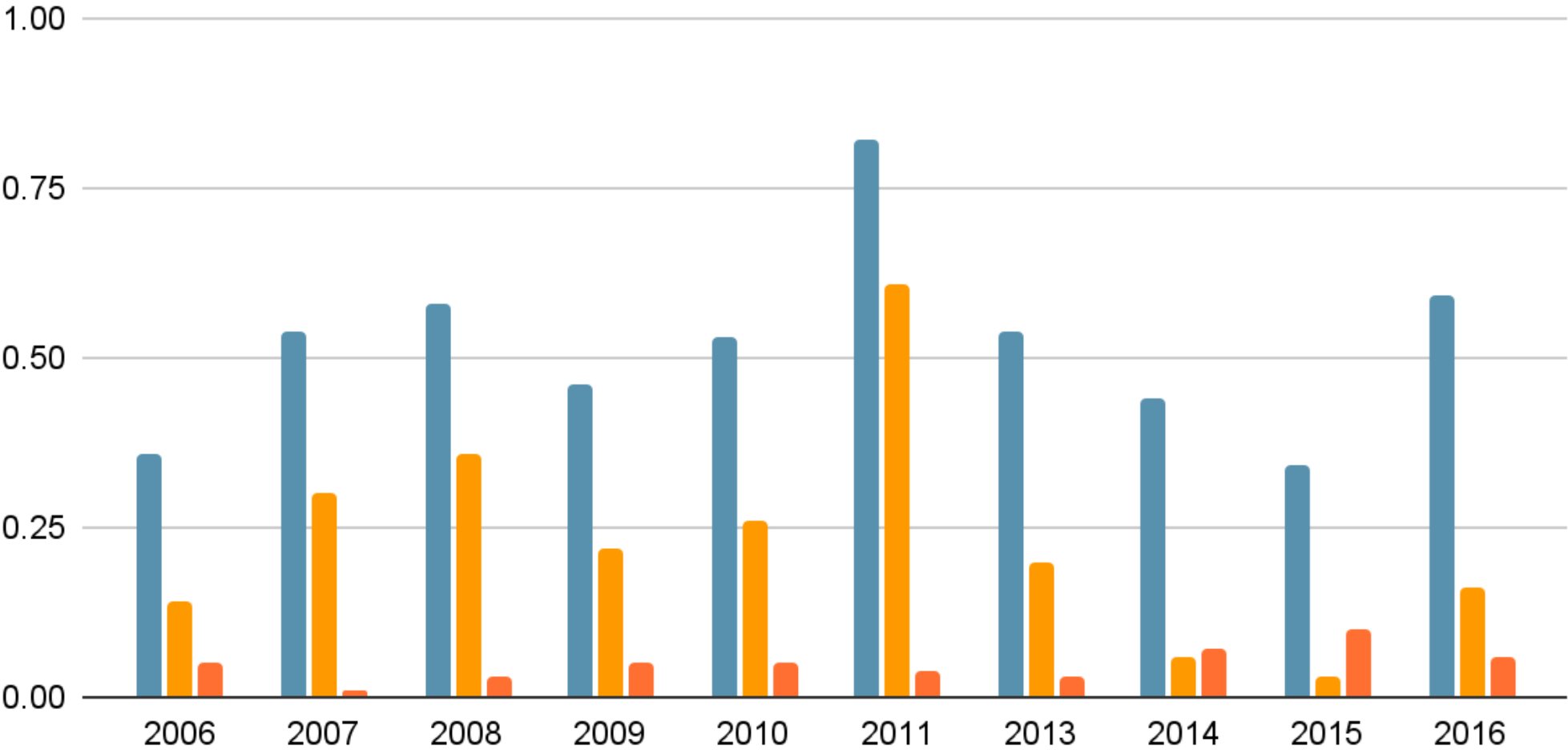
Example  
outcome  
of control  
plot  
selections



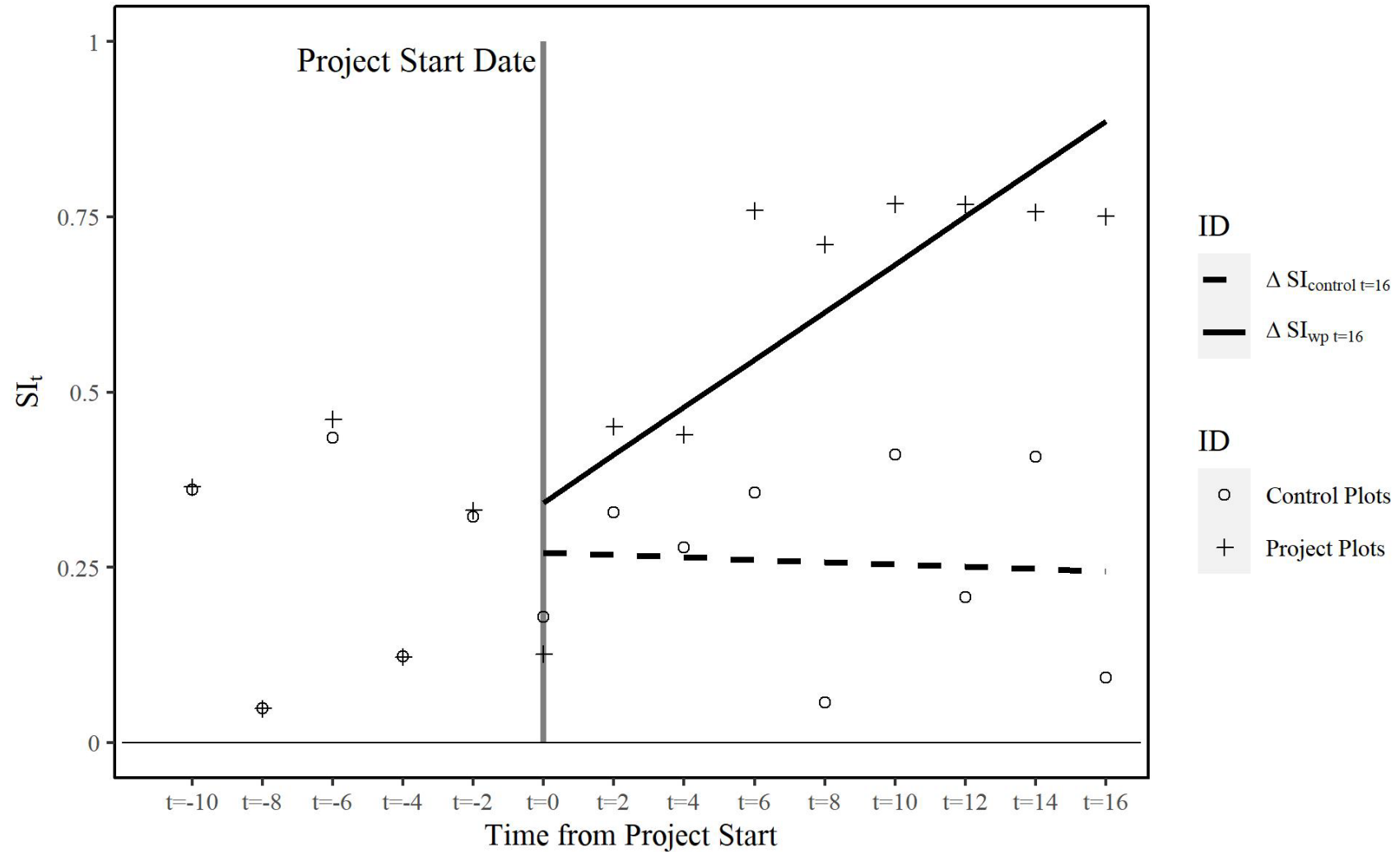


# Standardized Difference of Means at Each Time Step

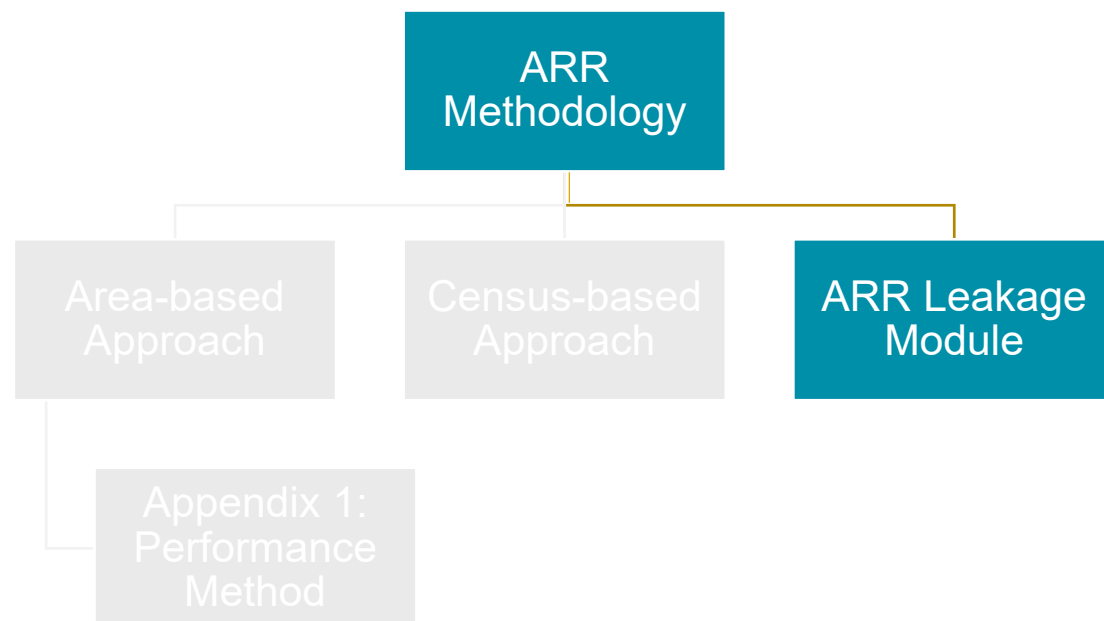
100km Radius Donor Pool Matched



# Example of Stocking Index Comparison



# Methodology Structure and Quantification Approaches (4/4)



## ARR Leakage Module

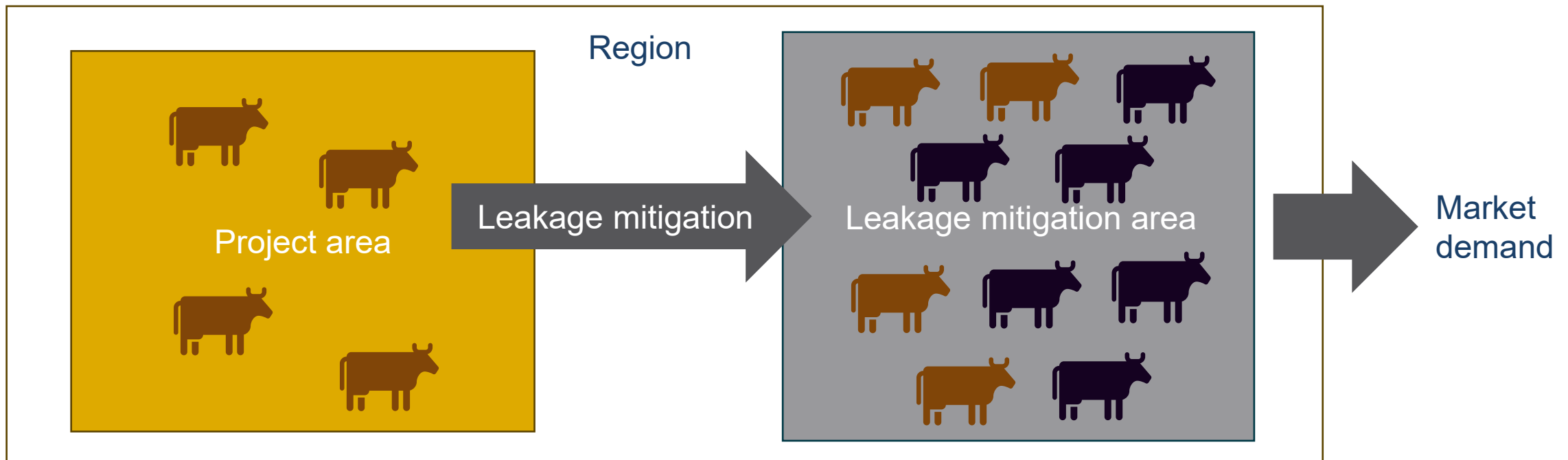
- Both accounting approaches use the same leakage module; “VMD0054 Module for Estimating Leakage from ARR Activities”
- The standardized approach accounts for leakage related to the displacement of pre-project agricultural and fuelwood collection activities whether it is caused activity-shifting or by other market effects.



# Overview of leakage module

The module accounts for activity-shifting leakage by the baseline agent and market leakage by other actors.

Leakage is calculated based on the change in agricultural or fuelwood output within the project area and the effects of actions taken to boost production outside the project area “leakage mitigation areas”.



# Leakage module steps

1. Determine Foregone Production in Project Area (units of production)
  - Estimate foregone production using historical data, growth rates to estimate baseline production and compare to actual production.
2. Account for leakage mitigation activities in Leakage Mitigation Area (units of production)
  - Leakage mitigation area must be in same region, geographically delineated and subject to written agreement with landowner; may not overlap with other leakage mitigation areas
  - Estimate baseline production in leakage mitigation area in same manner as project area and compare to actual production
  - Calculate amount of foregone production subject to leakage
3. Determine amount of new land brought into production (hectares)
  - Estimate the area of new land required to replace foregone production based on regional yields and default values for supply that is replaced and new land needed
4. Estimate carbon stock change in new lands brought into production (tons C/hectare)
5. Determine leakage emissions (tons CO<sub>2</sub>e)
  - Product of new land brought into production (ha), C stock change (per ha), converted to CO<sub>2</sub>e

# Next Phases / Question and Answer

- ABACUS Label public consultation
- Expected revisions
  - Errata and clarification
  - Gathering input to assess areas for improvement
- Frequently Asked Questions document
- Validation and Verification Body Training

Thank You



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Spencer Plumb  
splumb@verra.org  
Verra  
[www.verra.org](http://www.verra.org)