

# **Voluntary Carbon Standard**

**Tool for AFOLU Methodological Issues**

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## I. SCOPE and APPLICABILITY

### Scope

1. This tool provides step-wise guidance for dealing with methodological issues associated with AFOLU projects;
2. This tool shall be used in addition to any guidance provided by the most current versions of the Voluntary Carbon Standard and VCS Program Guidelines;
3. New AFOLU methodologies being proposed shall adhere to the rules defined in this tool; and
4. In validating the application of this tool to a proposed project, VCS Verifiers shall assess the credibility of all data, rationales, assumptions, justifications and documentation provided by the project participant to demonstrate that the tool has been used appropriately.

### Applicability Conditions

1. The project as proposed falls within one or more of the eligible AFOLU project categories as defined below; and,
2. Implementation of the project activities, with or without being registered as an AFOLU project, shall not lead to violation of any applicable law even if the law is not enforced.

### Eligible AFOLU Activities

#### Afforestation, Reforestation, and Revegetation (ARR)

Eligible activities in the ARR project category consist of establishing, increasing or restoring vegetative cover through the planting, sowing or human-assisted natural regeneration of woody vegetation to increase carbon stocks in woody biomass and, in certain cases, soils.

Forest management practices such as enrichment planting and liberation thinning shall be considered Improved Forest Management (IFM) project activities. Revegetation activities that primarily target woody biomass production shall be considered ARR project activities.

#### Agricultural Land Management (ALM)

Land use and management activities that have been demonstrated to reduce net GHG emissions on cropland and grassland (see IPCC 2006 GL for AFOLU<sup>1</sup>) by increasing carbon stocks (in soils and woody biomass) and/or decreasing CO<sub>2</sub>, N<sub>2</sub>O and/or CH<sub>4</sub> emissions from soils are eligible under the VCS as ALM projects.

Three broad categories of activities are eligible:

1. Improved cropland management, including the adoption of practices that demonstrably reduce net GHG emissions from a defined land area by increasing soil carbon stocks, reducing soil N<sub>2</sub>O emissions, and/or reducing CH<sub>4</sub> emissions<sup>2</sup>.

<sup>1</sup> [www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.htm](http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.htm)

<sup>2</sup> Guidance relating to manure management falls outside of AFOLU scope.

2. Improved grassland management, including the adoption of practices that increase soil carbon stocks and/or reduce N<sub>2</sub>O and CH<sub>4</sub> emissions.
3. Cropland and grassland land-use conversions<sup>3</sup>.

Land conversions of cropland or grassland to forest vegetation are considered ARR activities.

### **Improved Forest Management (IFM)**

Activities related to improved forest management are those implemented on forest lands managed for wood products such as sawtimber, pulpwood, and fuelwood and are included in the IPCC category “forests remaining as forests” (see IPCC AFOLU 2006 Guidelines). Only areas that have been designated, sanctioned or approved for such activities (e.g., as logging concessions or plantations) by the national or local regulatory bodies are eligible for crediting under the VCS Improved Forest Management (IFM) category.

Improved forest management practices, in both upland forests and wetland forests (e.g. peat-swamps, mangroves, etc.), that qualify as eligible activities under the VCS, include:

1. Conversion from conventional logging to reduced impact logging (RIL);
2. Conversion of logged forests to protected forests (LtPF) including:
  - a. protecting currently logged or degraded forests from further logging; and,
  - b. protecting unlogged forests that would be logged in the absence of carbon finance;
3. Extending the rotation age of evenly aged managed forests (ERA); and,
4. Conversion of low-productive forests to high-productive forests (LtHP).

### **Reduced Emissions from Deforestation and Degradation (REDD)**

Reduction in the conversion of native or natural forests to non-forest land, that would be deforested in the absence of the REDD project activity, are eligible under the VCS. VCS REDD activities can be broadly categorized as:

1. Avoiding planned deforestation (APD): reduces GHG emissions by stopping deforestation on forest lands that are legally authorized and documented to be converted to non-forest land.
2. Avoiding unplanned frontier deforestation and degradation (AUFDD): reduces GHG emissions by stopping deforestation/degradation of degraded to mature forests at the frontier that has been expanding historically, or will expand in the future, as a result of improved forest access.
3. Avoiding unplanned mosaic deforestation and degradation (AUMDD): reduces GHG emissions by stopping deforestation/degradation of degraded to mature forests occurring under the mosaic configuration.

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<sup>3</sup> Projects converting grasslands shall demonstrate that they do not harm local ecosystems.

## II. PROCEDURE

The project proponents shall take the following steps:

- Step 0: follow the general methodological guidance
- Step 1: determine the land eligibility
- Step 2: determine the project boundary
- Step 3: determine the carbon pools
- Step 4: establish a project baseline
- Step 5: assess and manage leakage
- Step 6: estimate and monitor net project greenhouse gas benefits

### Step 0: general methodological guidance

1. The (ex-ante) determination and quantification of the baseline and project scenario, including the leakage assessment shall follow either relevant IPCC 2006 Guidelines (GL) for AFOLU<sup>4</sup>, or approved CDM or VCS methodologies. An ex-ante calculation of the net carbon benefits of the project is only required to determine whether decreases in carbon pools or increases in GHG emissions are insignificant and need not be measured and monitored.
2. For AFOLU projects, all significant GHG sources and leakage shall be measured, estimated and monitored in both the baseline and project case. Certain GHG sources may be considered “insignificant” and do not have to be accounted for if **together** such omitted decreases in carbon pools and increases in GHG emissions amount to less than 5% of the total CO<sub>2</sub>-eq benefits generated by the project<sup>5</sup>.
3. Pools can be omitted if their exclusion leads to conservative estimates of the number of carbon credits generated.

### Step 1: determine the land eligibility

4. Determine the eligibility of the land contained within the project boundary on the basis of the VCS “Guidance for Agriculture, Forestry and Other Land Use Projects”.
5. Carbon projects encompassing several land-use activities must satisfy the VCS land eligibility requirements for each activity type for which crediting is being sought.
6. Documented evidence shall be provided in the VCS PD that no ARR or ALM project areas were cleared of native ecosystems within the ten years prior to the proposed VCS project start.
7. In the case of REDD projects, the boundary of the REDD activity shall be clearly delineated and defined and include only land qualifying as “forest”<sup>6</sup> for a minimum of 10 years prior to the project start date.

### Step 2: determine the project boundary

8. The project proponent shall determine the project boundary, which is defined by:
  - a. The geographic boundary within which the project will be implemented;
  - b. The project crediting period;
  - c. The sources and sinks, and associated types of greenhouse gases (i.e., CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>), the project will affect; and
  - d. The carbon pools that the project will consider.

<sup>4</sup> [www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.htm](http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.htm)

<sup>5</sup> The following CDM EB tool can be used to test the significance of emissions sources:  
[http://cdm.unfccc.int/EB/031/eb31\\_repan16.pdf](http://cdm.unfccc.int/EB/031/eb31_repan16.pdf)

<sup>6</sup> Using internationally accepted definitions of what constitutes a forest, e.g., based on UNFCCC host-country thresholds or FAO definitions.

### Step 3: determine the carbon pools

9. The carbon pools that shall be accounted for are listed in Table 1 below.

**Table 1:** Carbon pools to be considered for different AFOLU project activities

|             |   | Living Biomass      |                        |              | Dead Organic Matter |           |                   |                            |
|-------------|---|---------------------|------------------------|--------------|---------------------|-----------|-------------------|----------------------------|
|             |   | Above ground trees* | Above ground non-tree* | Below-ground | Litter              | Dead wood | Soil <sup>7</sup> | Wood products <sup>8</sup> |
| <b>ARR</b>  |   | Y                   | O/S                    | Y            | O/S                 | O/S       | O/S               | O                          |
| <b>ALM</b>  |   | Y                   | N                      | O            | N                   | N         | Y                 | O                          |
| <b>IFM</b>  | Conventional logging to RIL: a. with no effect on total timber extracted                                      | Y                   | N                      | O            | N                   | Y         | N/O               | N                          |
| <b>IFM</b>  | b. with >25% reduction in timber extracted  | Y                   | N                      | O            | N                   | Y         | N/O               | Y                          |
| <b>IFM</b>  | Convert logged to protected forests   | Y                   | N                      | O            | N                   | Y         | N/O               | Y                          |
| <b>IFM</b>  | Extend rotation age   | Y                   | N                      | O            | N                   | O         | N                 | O                          |
| <b>IFM</b>  | Conversion of low productive forests to productive forests  | Y                   | N                      | O            | O                   | O         | N                 | O                          |
| <b>REDD</b> | Planned or unplanned conversion of forest to non-forest, with final land cover of annual crop                 | Y                   | O                      | O            | O                   | O         | O                 | Y                          |
| <b>REDD</b> | Planned or unplanned conversion of forest to non-forest, with final land cover of pasture grasses             | Y                   | O                      | O            | O                   | O         | N                 | Y                          |
| <b>REDD</b> | Planned or unplanned conversion of forest to non-forest, with final land cover of perennial crop <sup>9</sup> | Y                   | Y                      | O            | O                   | O         | N                 | Y                          |

\* For ARR and ALM projects, instead of “Above ground trees” and “Above ground non-tree”, these two pool categories should read “Above ground woody” and “Above ground non-woody” respectively.

**Y:** pool shall be included in the monitoring plan for the baseline and project.

**S:** pool to be included if its reduction due to the project is significant<sup>10</sup>.

**N:** pool need not be measured because it is not subject to significant changes or potential changes are transient in nature.

**O:** pool is optional, although its carbon stock may increase as a result of the project, depending on the practices involved.

<sup>7</sup> See the A/R CDM tool for the conservative exclusion of soil organic carbon [http://cdm.unfccc.int/EB/033/eb33\\_repan15.pdf](http://cdm.unfccc.int/EB/033/eb33_repan15.pdf)

<sup>8</sup> If timber is removed before clearing and used for wood products, then the amount going into long-lived wood products shall be accounted for.

<sup>9</sup> Common perennial crops include oil palm, bananas, fruit trees, spice trees, and the like.

<sup>10</sup> The sum of decreases in carbon pools and increases in GHG emissions that may be neglected (i.e., considered “insignificant”) shall be less than 5% of the total CO<sub>2</sub>-eq benefits generated by the project. The following CDM EB tool can be used to test the significance of emissions sources - [http://cdm.unfccc.int/EB/031/eb31\\_repan16.pdf](http://cdm.unfccc.int/EB/031/eb31_repan16.pdf).

10. Emissions of N<sub>2</sub>O shall also be accounted for, unless insignificant, if any nitrogen fertilizer and/or manure is applied, or N-fixing species planted, during the crediting period.
11. Reductions of N<sub>2</sub>O and/or CH<sub>4</sub> emissions are eligible for crediting if in the baseline scenario the project land would have been subject to cattle grazing and/or nitrogen fertilization, and/or if fire would have been used to clear the land or constitutes a cause of forest degradation.

#### **Step 4: establish a project baseline**

12. All AFOLU projects are subject to the same baseline rules as defined by the VCS. In addition, the following guidance for specific project types is provided.
13. ALM project activities shall consider current and previous management activities. If activity-based methods are used for soil C stocks, stock estimates shall be determined relative to the computed maximum C stocks that occurred in the designated land area within the previous 10 years<sup>11</sup>. Minimum baseline estimates for N<sub>2</sub>O and CH<sub>4</sub> emissions shall be based on verifiable management records (e.g., fertilizer purchase records, manure production estimates, livestock data) averaged over the 5 years prior to project establishment.
14. In the case of IFM project activities, project developers using a project-based approach (rather than a performance/benchmark standard)<sup>12</sup> for establishing a baseline shall provide the following information to prove that they meet minimum acceptable standards:
  - a. A documented history of the operator (e.g., operator shall have 5 to 10 years of management records to show normal historical practices). Common records would include data on timber cruise volumes, inventory levels, harvest levels, etc. on the property<sup>13</sup>;
  - b. The legal requirements for forest management and land use in the area, unless verifiable evidence can be provided demonstrating that common practice in the area does not adhere to such requirements; and
  - c. Proof that their environmental practices equal or exceed those commonly considered a minimum standard among similar landowners in the area.

The baseline for the IFM project is then the management practices projected through the life of the project, satisfying at a minimum the three requirements mentioned above.

15. For REDD projects the baseline has two main components: a land-use and land-cover (LU/LC) change component and the associated carbon stock change component. Developing the LU/LC change component of the baseline is handled differently for the three eligible REDD activity types.

- **Avoiding planned deforestation (APD):** Project documentation must clearly demonstrate that the land would have been converted to non-forest use if not for the REDD project (i.e., clear demonstration of the project's additionality). The project developer must provide verifiable evidence to demonstrate that, based on government and landowner-planned

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11 For example, if C stocks on the project area were 100 tonnes C/ha in 2002, then declined to 90 tonnes/ha by 2007 after intensive tillage, the minimum baseline C stock for a project established in 2008 would be 100 tonnes/ha.

12 See Additionality section of VCS 2007.1 for description of how a Performance Test versus Project Test may be applied under the VCS.

13 For new management entities with no history of logging practices in the project region, the baseline should reflect just the common practices and legal requirements. However, if the common practice is unsustainable and unsustainable practices contravene the mission of the implementing entity then a sustainable baseline is the minimum that can be adopted. For projects focused on stopping logging or reducing the impact of logging, where the implementing entity takes over ownership of a property specifically to reduce forest management emissions, then the project baseline may be based on the projected management plans of the previous property owners (i.e., the baseline shall represent what would have most likely occurred in the absence of the carbon project.)

land use changes, the project area was intended to be cleared. The annual rate of forest conversion shall be based on the common practice in the area—i.e., how much forest is typically cleared each year by similar baseline activities.

If it is common practice in the area for timber to be removed before clearing, then the amount of carbon that ended up in long-lived wood products must be estimated and deducted from the baseline emissions estimates (subject to the de minimis rule of 5%). See the IFM section for further guidance on how to estimate the amount of carbon transferred to long-lived wood products.

- **Avoiding unplanned frontier deforestation and degradation (AUFDD):** The project developer must demonstrate that the project area is located geographically where deforestation/degradation will likely happen during the crediting period. Where the expansion of the deforestation frontier into the project area is linked to the development of infrastructure that does not yet exist, evidence must be provided to the verifiers that such infrastructure would have been developed in the absence of the REDD project.
- **Avoiding unplanned mosaic deforestation and degradation (AUMDD):** A baseline projection of deforestation and degradation under this activity must be developed for the region in which the project area is located, making sure it takes into account such factors as historical deforestation/degradation rates and that the proposed regional baseline area is similar to the project area in terms of: drivers of deforestation/degradation, landscape configuration, and socio-economic and cultural conditions.

16. For all REDD projects types, project proponents shall, for the duration of the project, reassess the project baseline at least once every 10 years and have this reassessment validated at the same time as the next VCS verification. The baseline methodology must outline the measurements, calculations and assumptions used to estimate the annual amount and likely general location of the expected deforestation/degradation under baseline conditions.
17. The baseline net GHG emissions and removals must be estimated for each year of the proposed crediting period.

#### **Step 5: assess and manage leakage**

18. Leakage is defined as any increase in greenhouse gas emissions that occurs outside a project's boundary (but within the same country<sup>14</sup>), but is measurable and attributable to the project activities. Its effects on all carbon pools shall be assessed and significant effects taken into account when calculating net emission reductions. Accounting for positive leakage is not allowed.
19. For **small-scale ALM** land set-aside projects (< 10,000 ha), leakage due to displaced activities can be assumed to be zero.
20. IFM project developers must demonstrate that there is no leakage within their operations – i.e., on other lands they manage/operate outside the bounds of the VCS carbon project.
21. Leakage shall be assessed and managed for the three eligible REDD activity types as follows:
  - a. In the case of avoiding planned deforestation (APD) leakage shall be controlled and measured directly by monitoring the activities of the project landowner who was originally planning on deforesting the project area (i.e., the baseline deforestation agents). Any leakage identified shall be quantified and subtracted from the net carbon benefits claimed by the project.
  - b. In the case of avoiding unplanned frontier or mosaic deforestation and degradation (AUFDD or AUMDD) developers need to design and implement activities to minimize leakage, and monitor and account for leakage using approved methodologies.

<sup>14</sup> Following the CDM and VCS policy of not accounting for international leakage.

22. If leakage prevention measures for any eligible REDD activity include tree planting, agricultural intensification, fertilization, fodder production and/or other measures to enhance cropland and grazing land areas, then any significant increase in GHG emissions associated with these activities shall be estimated and subtracted from the project's net emissions reductions.
23. Leakage caused by market effects is not considered except for the case where timber production is significantly affected.
24. Table 2 below defines adjustments that shall be made to IFM project credits to account for potential market leakage resulting from a reduction of timber production.
25. For REDD projects, any carbon credits generated from stopping illegal<sup>15</sup> logging activities (to the extent they supply regional/global timber markets) shall also be subject to these market leakage discounts (following the Table 2 guidance for activities that "Substantially reduce harvest level permanently").

**Table 2:** Adjustments to account for potential leakage resulting from reduced timber production

| Project Action  | Leakage Risk     | Leakage Credit Adjustment (discount)   |
|---|------------------|--|
| Reduced impact logging with no effect or minimal effect on total timber harvest volumes   | None             | 0%   |
| Extend rotations moderately (5-10 years) leading to a shift in harvests across time periods but minimal change in total timber harvest over time                                    | Low              | 10%  |
| Substantially reduce harvest levels permanently (e.g., RIL activity that reduces timber harvest by 25% or more across the project area; or, a forest protection/no logging project) | Moderate to High | Depends on where timber harvest is likely to be shifted... <ul style="list-style-type: none"> <li>• Similar carbon dense forests within country: 40%</li> <li>• Less carbon dense forests within country: 20%</li> <li>• More carbon dense forests within country: 70%</li> <li>• Out of country: 0% (according to stated VCS and CDM policy of not accounting for international leakage)</li> </ul> |

26. Instead of applying the default market leakage discounts (from Table 2), project proponents may opt to estimate the project's market leakage effects across the entire country and/or use analysis(es) from other similar projects to justify a different market leakage value.
27. The outcome of the IFM and REDD market leakage assessment conducted at first VCU issuance (whether using default discounts or project specific analysis(es)) shall be subject to the VCS double approval process. IFM and REDD market leakage assessments conducted at validation stage and at verification other than the first VCU issuance are not required to undergo the double approval process.

### Step 6: estimate and monitor net project greenhouse gas benefits

28. In the case of ARR or IFM rotation forestry projects, the maximum number of carbon credits to be assigned to the project shall not exceed the project's net carbon stock benefits (i.e., project minus baseline carbon stocks, including long-lived wood products) averaged across

<sup>15</sup> Activities that reduce legally harvested timber production are covered under the IFM section of the VCS and are not eligible REDD activities

the harvesting/rotation cycles during the project crediting period<sup>16</sup>, adjusted for project emissions of CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub>, and leakage.

29. The timing of verifications of ARR project activities shall be chosen such that a systematic coincidence of verification and peaks in carbon stocks is avoided.
30. ALM projects that target soil C stock increases shall account for, where significant, concomitant increases in N<sub>2</sub>O and CH<sub>4</sub> and fossil-derived CO<sub>2</sub>; similarly, projects targeting N<sub>2</sub>O emission reduction need to account for, where significant, reductions in soil C stocks. Measurements shall be based on randomized sampling, using established, reliable methods, with sufficient sampling density to determine statistically significant changes at a 95% confidence level. Soil C stock change factors shall be based on measurements of soil C stocks to the full depth of affected soil layers, accounting for differences in bulk density as well as organic C concentrations.
31. The IPCC 2006 Guidelines shall be used for estimating: CO<sub>2</sub> and non-CO<sub>2</sub> emissions; forest regrowth (carbon accumulation) if degradation is reduced; and reductions in forest carbon stocks caused by removals of biomass exceeding regrowth. These Guidelines shall also be followed in terms of quality assurance/control and uncertainty analysis.

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<sup>16</sup> This average is calculated from actual carbon measurements and/or estimates/projections based on the project's harvest plan/schedule.

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**Cover:** Tree nursery at Laguna De Cube, Ecuador carbon project.

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