PV CLIMATE TOOL

PT004

Identification of Degraded and Degrading Land in PV Climate Projects

Version 1.0
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Developed by: The Landscapes and Livelihoods Group (TLLG) www.landscapesandlivelihoods.com, and Plan Vivo Foundation Technical Advisory Committee www.planvivo.org with financial support from the Darwin Initiative (Project DAR29020).

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1 Summary

This tool provides procedures for the identification of degraded and degrading lands in projects certified under the Plan Vivo Carbon Standard (PV Climate). It can be referenced in PV Climate Methodologies, for example to provide justification for a conservative assumption of no change in woody biomass and/or soil organic carbon when estimating baseline emissions.

PV Climate Methodology Requirements state that:

> "*1.2.4 Sources of uncertainty in estimated Carbon Benefits that cannot be readily quantified must be controlled through the use of best practice approaches (e.g. to reduce measurement error), appropriate default values, proxies that are strongly correlated with the values they are used to predict, and robust assumptions.*"

The aim of this tool is to provide guidance on how projects can apply best practice approaches to generate robust assumptions relating land degradation status and trajectory in project areas.

2 Sources

Development of this tool was informed by the following CDM Tool:

> **AR-TOOL13** Tool for the identification of degraded or degrading lands for consideration in implementing CDM A/R project activities, Version 1.0

3 Definitions

This tool follows the definitions in the PV Climate Glossary and **PM001** and those listed below.

Degradation = A negative trend in land condition, caused by direct or indirect human-induced processes, that results in a long-term reduction or loss of woody biomass and/or soil organic carbon.

Degraded land = Land that has suffered from degradation.

Degrading land = Land that is undergoing degradation.

4 Applicability Conditions

This tool is applicable to PV Climate project interventions that result in net-removal of GHGs from the atmosphere. This includes any of the following intervention types:

- Agroforestry and farm forestry;
- Changes to cultivation practices;
- Changes to livestock management;
- Afforestation and reforestation; and
- Forest restoration.

All areas that this tool is applied to must have a baseline scenario that is either a continuation of pre-project land use, or that includes a change in land use that is expected to result in land degradation.

5 Procedures

The procedures for demonstrating that land is degraded or degrading follow a stepwise process:

- Step 1 Identifying relevant indicators of degradation
- Step 2 Demonstrating that land is degraded, and
- Step 3 Demonstrating that land is degrading, or is likely to be degrading.

The requirements for all steps must be fulfilled to assume that land is degraded and degrading.

5.1 Step 1: Identify relevant indicators of degradation

Evidence that land is degraded or degrading must be based on locally relevant and verifiable indicators of degradation . The indicators selected must also be relevant to the project activities, and the carbon pools that contribute to the expected carbon benefits. Indicators may include direct measurements or proxies. Some examples of indicators are included in the following list:

- Forest or land degradation status
- Tree biomass or tree cover
- Non-woody vegetation cover
- Soil organic carbon and/or nutrient availability
- Soil compaction and erosion
- Tree growth or plant productivity
- Other relevant features.

The indicators selected for describing degradation status and trends must be clearly stated, and justification must be provided for their relevance to the project activities, and accounted carbon pools and emission sources. If proxies are used for any indicators, evidence must be provided that the proxy values are strongly correlated to the relevant indicator. For example, if tree cover is used as a proxy for tree biomass, evidence of the correlation between tree cover and tree biomass must be provided for the project area.

Selected indicators and the justification for why there are appropriate must be included in the Project Design Document (PDD).

5.2 Step 2: Demonstrating that land is degraded

Land within a defined project area or stratum can be considered degraded if it meets at least one of the following criteria:

a. The area has been classified as “degraded” within the 5-years before the start of the project intervention under a verifiable local, regional, national or international land classification system or peer-reviewed study. This classification must be based on indicators that meet the requirements in Section 5.1.
b. There is robust evidence from within the 5-years before the start of the project intervention, that the land is degraded in comparison to other areas with similar environmental conditions.[1] This evidence must be based on indicators that meet the requirements in Section 5.1, that comes from in-situ measurements, or remote sensing imagery. Where sampling approaches or modelling are used to determine indicator values, robust evidence of degradation status would require average indicator values from the project area to be outside the 90% confidence interval for sampling and/or model uncertainty in comparable ‘undegraded’ sites.
c. One or more of the conditions in Box 1 are met, and demonstrated through conducting either a visual assessment of the state and condition of the indicators or a verifiable participatory rural appraisal.

[1] Note that AR-TOOL13 considers land degraded if it has been classified as degraded within the last 10 years. A 5 year period was chosen for this tool as this provides a better indication of recent site conditions.

Box 1: Conditions under which land can be considered degraded and/or degrading (from AR-TOOL13 V1.0)
(i) The severity and extent of soil compaction and soil erosion, as determined by the presence of: reductions in topsoil depth (as shown by root exposure, presence of pedestals; exposed sub-soil horizons or armour layers); gully, sheet or rill erosion, landslides, or other forms of mass-movement erosion;
(ii) Decline in organic matter content and/or recession of vegetation cover as shown by reduction in plant cover or productivity due to overgrazing or other land management practices, thinning of topsoil organic layer, scarcity of topsoil litter and debris (GPS and photo evidence should be provided);
(iii) Presence of plant species locally known to be related to the condition of degradation of the land or field/lab tests showing nutrient depletion (e.g. reduced growth, leaf loss, desiccation, leaf chlorosis), salinity or alkalinity, toxic compounds and heavy metals;
(iv) A reduction in plant cover or productivity due to overgrazing or other land management practices.

Evidence that each project area or stratum meets at least one of these criteria must be provided in the PDD or Annual Reports submitted to Plan Vivo.

Where indicator values for either criteria are derived from remote sensing data, the following requirement must be met:

- Maps of indicator values, or proxies that are strongly correlated with indicator values, must have a spatial resolution of 30m or higher and an accuracy greater than 70%.[2]

Where remote sensing data is used as evidence for criterion 5.2b, a description of the data sets used and mapping approaches, with sufficient detail that they are fully reproducible by a suitably qualified technician, must be provided as an Annex to the PDD or Annual Report.

5.3 Step 3: Demonstrating that land is degrading

Land within a defined project area or stratum can be considered degrading if it meets at least one of the following criteria:

a. There is evidence from a verifiable local, regional, national or international land classification system or peer-reviewed study, that there has been a trend of degradation in the project area, and/or no regeneration within a 3-to-10 year reference period that ends within 2 years of the start of the project intervention. This classification must be based on indicators that meet the requirements in Section 5.1.
b. There is robust evidence of a degradation trend and/or no evidence of substantive regeneration in the area within a 3-to-10 year reference period that ends within 2 years of the start of the project intervention, from in-situ measurements, or remote sensing imagery. This evidence must be based on indicators that meet the requirements in Section 5.1.
    - Robust evidence of a degradation trend and/or no regeneration would require demonstration that indicator values do not show a reduction in degradation over the reference period that is greater than the sampling and/or model uncertainty associated with that change assessed at a 90% confidence level.

[2] A minimum of 30m resolution is adopted to allow for the use of Landsat data that is used for many national land cover mapping projects. A minimum accuracy of 70% was adopted to allow for the use of existing land cover datasets (such as national land cover maps) that may not meet a higher accuracy threshold.

c. One or more of the conditions in Box 1 are met, and demonstrated through conducting either a visual assessment of the state and condition of the indicators or a verifiable participatory rural appraisal.

Evidence that each project area or stratum meets at least one of these criteria must be provided in the Project Design Document (PDD) or Annual Reports submitted to Plan Vivo.

Where indicator values for either criteria are derived from remote sensing data, the following requirements must be met:

- Maps of indicator values, or proxies that are strongly correlated with indicator values, must be produced for the start and end of the reference period using the same data sources and mapping approaches.
- Maps from the start and end of the reference period must be produced from imagery captured from the same season or as composites that reflect the same aspects of seasonality.
- Maps used must have a spatial resolution of 30m or higher and an accuracy greater than 70%.

Where remote sensing data is used as evidence for criterion 5.3b, a description of the data sets used and mapping approaches, with sufficient detail that they could be repeated by a suitably qualified technician, must be provided as an Annex to the PDD or Annual Report.

6 Parameters

This tool does not include any parameters. Requirements for data are described in Section 5.

7 References

AR-TOOL13 Tool for the identification of degraded or degrading lands for consideration in implementing CDM A/R project activities, Version 1.0. Available from: https://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-13-v1.pdf/history_view

PM001 Agriculture and Forestry Carbon Benefit Assessment Methodology, Version 1.0. PV Climate Methodology. Available from: https://www.planvivo.org/methodologies

PV Climate Glossary, Version 1.2. Available from: https://www.planvivo.org/pv-climate-documentation

PV Climate Methodology Requirements, Version 1.2. Available from: https://www.planvivo.org/pv-climate-documentation