

CDM-ARWG38-A03

Draft A/R Methodological tool

Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity

Version 03.0 – Draft

DRAFT



United Nations
Framework Convention on
Climate Change

COVER NOTE

1. Procedural background

1. The Afforestation and Reforestation Working Group (A/R WG) undertook the work of improvement of A/R methodological standards, including simplification and consolidation of standards, as part of its 2012 work programme. Since this work could not be concluded during the year, the A/R WG agreed to conclude the work of simplification and consolidation of standards at its 38th meeting.
2. The following A/R methodological tools had been agreed by the A/R WG to be revised, while incorporating the relevant decisions of the Executive Board (hereinafter referred to as the Board) of the clean development mechanism (CDM) and other substantive improvements:
 - (a) “Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity”;
 - (b) “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities”;
 - (c) “Procedure to determine when accounting of the soil organic carbon pool may be conservatively neglected in CDM A/R project activities”.
3. Draft revisions of the tools were prepared by the secretariat and were considered by the A/R WG at its 38th meeting. The A/R WG agreed to launch a call for public inputs on the draft revised tools as contained in annexes 2, 3 and 8 of the report of the 38th meeting of the A/R WG.
4. The A/R WG further agreed to finalize the draft revisions after taking into account public inputs received in response to the call and to recommend the finalized drafts to the Board for its approval.
5. As no public inputs were received in response to the call, the draft revisions of the tools as contained in annexes 2, 3, and 8 of the report of the 38th meeting of the A/R WG are recommended by the A/R WG for approval of the Board.

2. Purpose

6. These revisions of the A/R CDM methodological tools aim to incorporate the relevant decisions of the Board and also to incorporate other substantive improvements.

3. Key issues and proposed solutions

7. The following improvements are proposed in the draft revisions of the tools:
 - (a) “Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity”
 - (i) Incorporating related decisions of the Board;

- (ii) Delinking leakage emission from the project carbon stocks;
 - (iii) Estimating leakage from actual carbon stocks in the receiving lands;
 - (iv) Reformatting the tool using the current template, thus enhancing readability and consistency;
 - (b) “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities”
 - (i) Introducing conditions under which the conservative default-factor based methods for estimation of carbon stock in dead wood and litter can be used, in order to safeguard environmental integrity of the tool.
 - (c) “Procedure to determine when accounting of the soil organic carbon pool may be conservatively neglected in CDM A/R project activities”
 - (i) Incorporating relevant clarifications issued by the Board;
 - (ii) Removing the distinction between the requirements for demonstration of land eligibility for 'afforestation' vs. 'reforestation';
8. Changing the title from “Procedures to demonstrate the eligibility of lands for afforestation and reforestation CDM project activities” to tool for “Demonstration of eligibility of lands for A/R CDM project activities”, in line with the nature of the document.

4. Impacts

9. The revisions of the approved A/R CDM methodological tools will improve the objectivity, simplicity and accessibility of the tools while also enhancing their environmental integrity.
10. The revisions will allow withdrawal of a number of stand-alone documents containing decisions by the Board relating to substantive issues addressed in the tools.
11. The revision of the tools will not have any adverse impact on A/R CDM project activities that are already registered.

5. Subsequent work and timelines

12. If approved by the Board, the revised tools will become effective from the date of publication on the UNFCCC website following the approval of the Board, and the earlier versions of the tools will remain valid for a period of 240 days.

6. Recommendations to the Board

13. The A/R WG recommends that the draft revisions of the A/R CDM methodological tools be approved by the Board

TABLE OF CONTENTS	Page
1. INTRODUCTION	5
2. SCOPE, APPLICABILITY, AND ENTRY INTO FORCE	5
2.1. Scope	5
2.2. Applicability	5
2.3. Entry into force	5
3. NORMATIVE REFERENCES	5
4. DEFINITIONS	5
5. PARAMETER	6
6. ESTIMATION OF LEAKAGE EMISSION	6
7. DATA AND PARAMETERS USED IN THE TOOL	9
7.1. Data and parameters not monitored	9
7.2. Data and parameters monitored	9

DRAFT

1. Introduction

1. This tool provides a step-by-step method for estimating increase in GHG emissions resulting from displacement of pre-project agricultural activities from the project boundary of an afforestation or reforestation (A/R) project activity under the clean development mechanism (CDM). The tool estimates the increase in emissions on the basis of changes in carbon stocks in the affected carbon pools in the land receiving the displaced activities.

2. Scope, applicability, and entry into force

2.1. Scope

2. The tool applies to all types of A/R CDM project activities and programmes of activities.

2.2. Applicability

3. This tool is not applicable if the displacement of agricultural activities is expected to cause, directly or indirectly, any drainage of wetlands or peat lands.

2.3. Entry into force

4. The date of entry into force of the revision is the date of the publication of the EB 75 meeting report on 4 October 2013.

3. Normative references

5. The following documents are indispensable for the application of this tool:
 - (a) Glossary of CDM terms;
 - (b) The A/R methodological tool: “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities”;
 - (c) The A/R methodological “Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities”.

4. Definitions

6. The definitions contained in the Glossary of CDM terms shall apply.
7. For the purpose of this tool, the following specific definitions shall apply:
 - (a) **Agricultural activities** - refers to crop cultivation activities and grazing activities occurring on land;
 - (b) **Crop cultivation activities** - refers to human induced activities, occurring on land, that are aimed at vegetation control for producing food, forage, fiber, oilseed crops, etc., including harvesting of the produce;
 - (c) **Grazing activities** - refers to human induced activities, occurring on land, that are aimed at livestock production;

- (d) **Displacement of agricultural activities** - refers to shifting of the agricultural activities from areas of land within the project boundary to areas of land outside the project boundary;
- (e) **Leakage emission** - refers to the increase in GHG emissions resulting from displacement of pre-project activities.

5. Parameter

8. This tool provides procedures to determine the following parameter:

Table 1. Parameter determined by the tool

Parameter	SI Unit	Description
$LK_{AGRIC,t}$	t CO ₂ e	Leakage emission due to the displacement of agricultural activities in year t

6. Estimation of leakage emission

9. Leakage emission attributable to the displacement of agricultural activities due to implementation of an A/R CDM project activity is estimated as the decrease in carbon stocks in the affected carbon pools of the land receiving the displaced activity.

Note 1. Displacement of an agricultural activity by itself does not result in leakage emission. Leakage emission occurs when the displacement leads to an increase in GHG emissions relative to the GHG emissions attributable to the activity as it exists within the project boundary.

Note 2. Increase in GHG emission occurring outside the project boundary attributable to the secondary effects of the A/R CDM project activity (e.g. changes in demand, supply or price of goods) is considered insignificant for the purpose of this tool and hence accounted as zero.

10. Leakage emission attributable to the displacement of grazing activities under the following conditions is considered insignificant and hence accounted as zero:
- (a) Animals are displaced to existing grazing land and the total number of animals in the receiving grazing land (displaced and existing) does not exceed the carrying capacity of the grazing land;
- (b) Animals are displaced to existing non-grazing grassland and the total number of animals displaced does not exceed the carrying capacity of the receiving grassland;
- (c) Animals are displaced to cropland that has been abandoned within the last five years;
- (d) Animals are displaced to forested lands, and no clearance of trees, or decrease in crown cover of trees and shrubs, occurs due to the displaced animals;
- (e) Animals are displaced to zero-grazing system.

11. In all other cases, the lands within the project boundary from which the pre-project agricultural activities are to be displaced outside the project boundary are delineated and their area is estimated. Leakage emission resulting from displacement of the activities is estimated as follows:

$$LK_{AGRIC,t} = \frac{44}{12} \times (\Delta C_{BIOMASS,t} + \Delta SOC_{LUC,t}) \quad \text{Equation (1)}$$

$$\Delta C_{BIOMASS,t} = [1.1 \times b_{TREE} \times (1 + R_{TREE}) + b_{SHRUB} \times (1 + R_S)] \times CF \times A_{DISP,t} \quad \text{Equation (2)}$$

$$\Delta SOC_{LUC,t} = SOC_{REF} \times (f_{LUP} \times f_{MGP} \times f_{INP} - f_{LUD} \times f_{MGD} \times f_{IND}) \times A_{DISP,t} \quad \text{Equation (3)}$$

Where:

$LK_{AGRIC,t}$ = Leakage emission resulting from displacement of agricultural activities in year t ; t CO₂e

$\Delta C_{BIOMASS,t}$ = Decrease in carbon stock in the carbon pools of the land receiving the activity displaced in year t ; t d.m.

Note. The factor of 1.1 is used to account for the carbon stock in the dead wood and litter pools as a fixed percentage of the carbon stock in living trees.

CF = Carbon fraction of woody biomass; dimensionless.

A default value of 0.47 is used unless transparent and verifiable information can be provided to justify a different value.

$A_{DISP,t}$ = Area of land from which agricultural activity is being displaced in year t ; ha

b_{TREE} = Mean above-ground tree biomass in land receiving the displaced activity; t d.m. ha⁻¹

The value of this parameter is obtained by applying one of the applicable methods from the tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities” to the land receiving the displaced activity.

Where the land receiving the displaced activity is unidentified, value of b_{TREE} is set equal to the applicable value of mean above-ground biomass in forest in the region or country where the A/R CDM project activity is located, as obtained from Table 3A.1.4 of the *IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry* (IPCC GPG-LULUCF 2003) unless transparent and verifiable information can be provided to justify a different value.

R_{TREE}	=	<p>Root-shoot ratio for trees in the land receiving the displaced activity; dimensionless.</p> <p>A default value of 0.25 is used unless transparent and verifiable information can be provided to justify a different value.</p>
b_{SHRUB}	=	<p>Mean above-ground shrub biomass in land receiving the displaced activity; t d.m. ha⁻¹.</p> <p>The value of this parameter is obtained by applying one of the applicable methods from the tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities” to the land receiving the displaced activity.</p>
R_s	=	<p>Root-shoot ratio for shrubs in the land receiving the displaced activity; dimensionless.</p> <p>The default value of 0.40 is used unless transparent and verifiable information can be provided to justify a different value.</p>
$\Delta SOC_{LUC,t}$	=	<p>Change in soil organic carbon (SOC) stock due to land-use change in the land receiving the displaced activity in year t; tC ha⁻¹.</p> <p>The value of this parameter may be set to zero if:</p> <p>(a) The only displaced activity being received in the land is grazing activity; or</p> <p>(b) The value of the parameter as estimated from Equation (3) is less than zero (i.e. negative).</p>
SOC_{REF}	=	<p>SOC stock corresponding to the reference condition in native lands by climate region and soil type applicable to the land receiving the displaced activity; t C ha⁻¹.</p> <p>The value of this parameter is taken from Table 3 of the “Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities”.</p>
$f_{LUP}, f_{MGP}, f_{INP}$	=	<p>Relative SOC <i>stock change factors</i> for land-use, management practices, and inputs respectively, applicable to the receiving land before the displaced activity is received; dimensionless.</p> <p>The value of these parameters is taken from Tables 4, 5, and 6 of the “Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities”.</p>
$f_{LUD}, f_{MGD}, f_{IND}$	=	<p>Relative SOC <i>stock change factors</i> for land-use, management practices, and inputs respectively, applicable to the receiving land after the displaced activity has been received; dimensionless.</p> <p>The value of these parameters is taken from Tables 4, 5, and 6 of the “Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities”.</p>
t	=	<p>1, 2, 3, ...years elapsed since the start of the A/R CDM project activity</p>

12. Where pre-project activities are shifted to different types of receiving lands in a year, Equations (1), (2) and (3) shall be applied to each type of land separately and the estimated leakage emissions shall be added to obtain the value of the parameter $LK_{AGRIC,t}$

7. Data and parameters used in the tool

13. This section describes the requirements for the data and parameters used in this tool. The requirements contained in the data description tables should be treated as an integral part of the tool. The requirements contained in the tools which are referred to in this tool shall also apply.

7.1. Data and parameters not monitored

14. The values, sources, and requirements for data and parameters which are not subject to monitoring are provided in the text of the tool along with the equations in which these are used.

7.2. Data and parameters monitored

15. The requirements for data and parameters subject to monitoring are provided in the table below.

Data / Parameter table 1. Area of land

Data / Parameter:	$A_{DISP,t}$
Data unit:	Ha
Description:	Area of land from which agricultural activity is being displaced in year t
Source of data:	Field measurement
Measurement procedures (if any):	Standard operating procedures (SOPs) prescribed under national forest inventory are applied. In the absence of these, SOPs from published handbooks, or from the IPCC GPG LULUCF 2003, are applied
Monitoring frequency:	At every verification
QA/QC procedures:	Quality control/quality assurance (QA/QC) procedures prescribed under national forest inventory are applied. In the absence of these, QA/QC procedures from published handbooks, or from the IPCC GPG LULUCF 2003, are applied

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
Draft 03.0	4 October 2013	To be considered by the Board at EB 75. The call for public inputs (open from 21 August to 5 September 2013) did not receive any inputs. This version now includes a cover note.
Draft 02.0	21 August 2013	AR WG 38, Annex 3 A call for public input will be issued on this draft revised tool. This draft version includes input from the call for public inputs from 21 August 2013 to 5 September 2013. This revision: <ul style="list-style-type: none"> • Incorporates related decisions from the Board; • Delinks leakage emission from the project carbon stocks; • Estimates leakage from actual carbon stocks in the receiving lands; • Reformats the methodology using the current template and thus enhances readability and consistency; • Due to the overall modification of the document, no highlights of the changes are provided.
01	04 December 2009	EB 51, Annex 15 Initial adoption.

Decision Class: Regulatory

Document Type: Tool

Business Function: Methodology

Keywords: afforestation reforestation, grazing activities, pre-project GHG emissions
