



VCS Methodology

VMR0007

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# RECOVERY AND RECYCLING OF MATERIALS FROM SOLID WASTES

Version 1.0

4 September 2023

Sectoral Scope 13

The original CDM methodology *AMS-III.AJ. Recovery and recycling of materials from solid wastes* was adopted on 25 March 2010. It has been further revised over time. Version 9.0 was adopted on 8 September 2022. This methodology revision must be used with the latest version of AMS-III.AJ. available on the CDM website.

Version 1.0 of this methodology revision was developed by Verra. It was approved on 4 September 2023.

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# 1 SOURCES

This methodology revision applies to CDM small-scale methodology *AMS-III.AJ. Recovery and recycling of materials from solid wastes*. Project proponents must use this methodology revision in conjunction with the latest version of AMS-III.AJ.

This methodology uses the following sources:

- The latest version of the CDM small-scale methodology *AMS-III.AJ. Recovery and recycling of materials from solid wastes*

# 2 SUMMARY DESCRIPTION OF THE METHODOLOGY

Additionality and Crediting Method	
Additionality	Project Method
Crediting Baseline	Project Method

The CDM methodology AMS-III.AJ. comprises activities for the recovery and recycling of materials in municipal solid waste (MSW) to process them into intermediate or finished products, displacing the production of virgin materials in dedicated facilities, thereby resulting in avoidance of energy use. For paper and cardboard recycling, the avoided methane emissions may be claimed if the baseline scenario is decay in a disposal site.

This methodology revision integrates a discount factor to account for uncertainty about the displacement of production of virgin materials caused by the project activity.

This methodology must be used with the latest version of AMS-III.AJ. The procedures and requirements of AMS-III.AJ. must be applied unless indicated otherwise.

# 3 DEFINITIONS

The definitions in AMS-III.AJ. and the latest version of the *VCS Program Definitions* apply for this methodology, unless this methodology or the *VCS Program Definitions* indicate otherwise.

## 4 APPLICABILITY CONDITIONS

All applicability conditions of the latest version of AMS-III.AJ. must be met.

## 5 PROJECT BOUNDARY

The project boundary must be determined following the procedure provided in the latest version of AMS-III.AJ.

## 6 BASELINE SCENARIO

The baseline scenario must be determined following the procedure provided in the latest version of AMS-III.AJ.

## 7 ADDITIONALITY

Additionality must be demonstrated following the procedure provided in the latest version of AMS-III.AJ.

## 8 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

### 8.1 Baseline Emissions

The baseline emissions must be determined following the procedures provided in the latest version of AMS-III.AJ. replacing the equations as indicated in the following.

The following equation replaces Equation 2 of AMS-III.AJ.:

$$BE_{plastic,y} = \sum_i [Q_{i,y} \times L_i \times (1 - DF) \times (w_{i,in-country,y} \times SE_{i,in-country,y} + w_{i,imported,y} \times SE_{i,imported,y})] \quad (2)$$

Where:

- $BE_{plastic,y}$  = Baseline emissions associated with the recycling of plastic in year  $y$  (tCO<sub>2</sub>e)
- $Q_{i,y}$  = Quantity of plastic type  $i$  recycled in year  $y$  (t/y)
- $L_i$  = Net to gross adjustment factor to cover degradation in material quality and material loss in the production process of the final product using the recycled material (use the value of the latest version of AMS-III.AJ.)
- $DF$  = Discount factor for upstream displacement (30%)
- $w_{i,in-country,y}$  = Percentage of plastics produced in the host Country out of total plastic consumed in year  $y$  (%)
- $SE_{i,in-country,y}$  = Specific emissions in the baseline for the production of virgin plastics type  $i$  in the host Country in year  $y$  (tCO<sub>2</sub>/t)
- $w_{i,imported,y}$  = Percentage of imported plastics out of total plastic consumed in year  $y$  (%)
- $SE_{i,imported,y}$  = Specific emissions in the baseline for virgin plastics type  $i$  imported in year  $y$  (tCO<sub>2</sub>/t)

The following equation replaces Equation 6 of AMS-III.AJ.:

$$BE_{glass,y} = Q_{glass,y} \times L_{glass} \times (1 - DF) \times B_i \times SEC_{Bl,glass} \times EF_{el,PJ,y} \quad (6)$$

Where:

- $BE_{glass,y}$  = Baseline emissions for the production of container glass from virgin inputs in year  $y$  (t CO<sub>2</sub>e)
- $Q_{glass,y}$  = Quantity of glass cullet recycled by the project activity in year  $y$  (t)
- $L_{glass}$  = Net to gross adjustment factor to cover degradation in material quality and material loss in the production process of the final product using the recycled material (use the value of the latest version of AMS-III.AJ.)
- $DF$  = Discount factor for upstream displacement (30%)
- $SEC_{Bl,glass}$  = Specific electricity consumption for the production of raw materials displaced by the glass recycling (MWh/t), take the value specified in paragraph 34 of AMS-III.AJ
- $EF_{el,PJ,y}$  = Emission factor of the electric grid supplying electricity to the recycling facility in year  $y$  (tCO<sub>2</sub>/MWh)

The following equation replaces Equation 7 of AMS-III.AJ.:

$$BE_{metal,y} = \sum_i Q_{i,y} \times (1 - DF) \times B_i \times SE_i \quad (7)$$

Where:

- $BE_{metal,y}$  = Baseline emissions for the production of metal from virgin inputs in year y (t CO<sub>2</sub>e)  
 $Q_{i,y}$  = Quantity of metal type i (steel or aluminium) recycled and sent to a processing or manufacturing facility in year y (t)  
 $DF$  = Discount factor for upstream displacement (use 30%)  
 $SE_i$  = Specific CO<sub>2</sub> emission factor for production of metal i (tCO<sub>2</sub>/t), take the value specified in table 4 in AMS-III.AJ.

Project proponents may propose a methodology revision with a different discount factor for upstream displacement in accordance with the latest version of the *VCS Methodology Requirements*.

## 8.2 Project Emissions

Project emissions must be determined following the procedures provided in the latest version of AMS-III.AJ.

## 8.3 Leakage Emissions

Leakage emissions must be determined following the procedures provided in the latest version of AMS-III.AJ.

## 8.4 Estimated GHG Emission Reductions

The estimated GHG emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y \quad (14)$$

Where:

- $ER_y$  = GHG emissions reductions in year y (tCO<sub>2</sub>e)  
 $BE_y$  = Baseline emissions in year y (tCO<sub>2</sub>e)  
 $PE_y$  = Project emissions in year y (tCO<sub>2</sub>e)  
 $LE_y$  = Leakage in year y (tCO<sub>2</sub>e)

## 9 MONITORING

### 9.1 Data and Parameters Available at Validation

Project Proponent must follow the procedure provided in the latest version of AMS-III.AJ.

### 9.2 Data and Parameters Monitored

Project Proponent must follow the procedure provided in the latest version of AMS-III.AJ.

### 9.3 Description of the Monitoring Plan

Project Proponent must follow the monitoring plan and procedure provided in the latest version of AMS-III.AJ.



# APPENDIX 1: DOCUMENT HISTORY

Version	Date	Comment
v1.0	04 Sep 2023	Initial version