United Nations Framework Convention on Climate Change

Revision to AMS-III.BK: Strategic feed supplementation in smallholder dairy sector to increase productivity

CDM EB 112

Glasgow, United Kingdom of Great Britain and Northern Ireland, 26 to 29 October 2021

UNFCCC Secretariat

Mitigation Division

Procedural background

- While considering the bottom-up submission "*SSC-NM106: Change in smallholder cattle emissions intensity*", MP identified an error in the calculation of project emissions related to the amount of supplement consumed by the project animals in AMS-III.BK.

- The proposed revision to correct an error was initiated in accordance with "*Procedure: Development, revision and monitoring methodologies and methodological tools*".

- A call for public inputs for the methodology was conducted between 05/10/2021 and 19/10/2021. No comments were received.

Purpose

- The purpose of the revision is to correct an error in the calculation of project emissions related to the amount of supplement consumed by the project animals.

- **Technology/measure**
  a) To reduce emissions per unit of milk through strategic supplementation to large ruminants (i.e., cows and/or buffaloes).
     - Supplementation improves digestion and promotes increased productivity
- **Applicability**
  a) Lactating animals in smallholders ≤100;
  b) Supplement based on nutritional requirements in the project region (e.g. to include macronutrients, minerals) and complies with local regulation;
  c) Gross energy (GE) content of supplement does not exceed 10% of the total GE content of the baseline basal ration.

Key issues and proposed solutions

- **Issues identified by MP**

$$PE_y = \sum_s \left(SEF_{PJ,s,y} \times \left(FCM_{PJ,s,y} \times N_{PJ,s,y} \right) \right) \times \frac{GWP_{CH4}}{1,000} + PE_{EG,y} + PE_{trans,y}$$

Equation (11)

- In the current version of the methodology, $N_{PJ,s,y}$: **Number of "equivalent" project animals** is calculated, based on the share (%USs,y) of supplement taken by the project animals.
- However, when equations (15) and (16) of the methodology are applied, the parameter (%USs,y) cancels out, therefore it does not influence the calculation of the project emissions.
- On the other hand, the number of project animals $N_{PJ,s,y}$ is a monitoring parameter.
- This error has been corrected in the proposed revision.

Impacts

- The revision of the methodology will correct the error identified and ensure accurate estimation of emission reductions from CDM project activities.

- No registered CDM projects/PoAs applying AMS-III.BK

Recommendations to the Board

- The MP recommends that the Board adopt the draft revised methodology.

Extra slides

- **Emission reductions**

a) Calculated: $(EF_b - EF_p)$ x Project milk production;

b) Emission factor is following IPCC approach:

$$EF = \left[\frac{GE \bullet \left(\dfrac{Y_m}{100} \right) \bullet 365}{55.65} \right]$$

V4_10_Ch10,

2006 IPCC

- For Gross Energy (GE), stratified multi-stage cluster sampling is required to collect data on type and quantity feedstuff.
  - Energy content and digestibility per type of feedstuff are determined in recognized laboratory.
- Methane conversion factor (Ym) taken from IPCC (7.5%).

(b) Step 2: determine the discount factor to account for portion of purchased supplement given to non-productive animals or wasted ($\%US_{s,y}$).

In this step, a discount factor is determined to account for supplement that has been purchased by participating farmers but not utilized by the productive female population (i.e. males, immature females, and non-large ruminant species).

$$\%US_{s,y} = \frac{\sum_r US_{r,s,y}}{\sum_r PS_{r,s,y}}$$

Equation (15)

Where:

$\%US_{s,y}$ = Discount factor to account for supplement fed to non-productive animals or lost to waste in production category s in year y (percentage)

$US_{r,s,y}$ = Amount of supplement fed to non-productive animals or lost to waste of project respondent herd r in production category s in year y (kilograms/year)

$PS_{r,s,y}$ = Amount of supplement purchased for project respondent herd r in production category s in year y (kilograms/year)

Agenda item 4.1.(c)

Paragraph 23 of the annotated agenda

(c) Step 3: calculate the equivalent number of productive females per project category ($N_{PJ,s,y}$).

In this step, the equivalent number of productive females on lactation in a given production category is calculated ($N_{PJ,s,y}$). The result from equation (16) below shall be further cross checked with $NP_{s,y}$, i.e. it shall be less than or equal to $NP_{s,y}$ for the same category s. Otherwise, the smaller number between the two shall be used as the $N_{PJ,s,y}$.

$$N_{PJ,s,y} = \frac{GS_{s,y} \times (1 - \%US_{s,y}) \times \sum_r SA_{r,s,y}}{\sum_r PS_{r,s,y} - \sum_r US_{r,s,y}}$$

Equation (16)

Where:

$N_{PJ,s,y}$ = Number of equivalent productive animals on lactation within production category s provided with supplementation in year y (number of animals)

$GS_{s,y}$ = Total amount of supplement purchased by participating farmers in production category s in year y (kilograms/year)

$\%US_{s,y}$ = Discount factor to account for supplement fed to non-productive animals or lost to waste in a given production category in year y (percentage)

$SA_{r,s,y}$ = Number of productive females of respondent herd r in production category s in the survey sample in year y (number of animals)

$PS_{r,s,y}$ = Amount of supplement purchased for project respondent herd r in production category s in year y(kilograms/year)

$US_{r,s,y}$ = Amount of supplement fed to non-productive animals or lost to waste in project respondent herd r in production category s in year y (kilograms/year)