

Agenda item 3.4.

Paragraph 17 of the annotated agenda, Annex 4 to MEP 014 meeting report

Energy efficiency measures in household cooking

Article 6.4 Supervisory Body – SBM Briefing on the outcomes of MEP 014

Bonn, Germany, 21 July 2026



- **2026 MEP workplan:** includes the revision of CDM methodology “AMS-II.G.: Energy efficiency measures in thermal applications of non-renewable biomass”
- **MEP012 finalized the draft methodology and agreed to launch a call for public input**
 - 24 April to 15 May 2026
 - 20 submissions received (285 comments)
- **MEP013** considered the public inputs, conducted further analysis and **recommended the draft methodology for approval by the Supervisory Body**
- In parallel, the MEP is advancing another clean cooking methodology with a different/broader scope (on the basis of CDM AMS-I.E and the PMM004 methodology submission)

- Stakeholder inputs
- Applicability
- Baseline setting
- Monitoring
- Uncertainty
- Non-permanence



- **Call for public input** open on the draft methodology after MEP012
 - 24 April to 15 May 2026
 - 20 submissions received (285 comments) + 1 confidential input;

Key comments (*consideration detailed in the cover note*)

- Methodology is too conservative
 - Strong concerns on compounding uncertainty + deductions: (i) Ambitious benchmark; (ii) Conservative BAU comparison; (iii) Ψ_y percent of households that qualify as users; (iv) Hawthorne adjustment; (v) 1%/yr downward adjustment; (vi) Buffer pool contribution; (vii) fNRB; (viii) OMGE and SOP deduction
 - Exempt from downward adjustment
 - Select a less conservative wood to charcoal conversion factor
 - Exempt from buffer pool contribution for non-permanence risk
 - More realistic fuel consumption per capita
 - Improve definitions and applicability conditions (e.g. poverty demonstration, efficiency testing)
 - Views on ambitious benchmark set at the methodology level vs. activity level
 - Correct equations
-



APPLICABILITY



To define the procedures, requirements, and guidelines for developing and monitoring Article 6.4 activities that involve the distribution and operation in **households** that qualify as **low-income or impoverished** in **rural areas** of **improved cookstoves** for **fuelwood or charcoal** where the fuels remain the same between the baseline and the activity scenarios.

Key applicability conditions (1/2)

- Households only (not institutions)
- Rural areas only
- Location demonstrated to experience low income or poverty
- Main fuel: >75% of fuelwood or artisanal charcoal (and no fuel switching)
- Only energy efficiency
- Project cookstoves:
 - meet the needs of the target population
 - identifiable/traced

Academic literature points to strong additionality of improved cookstoves in the context of rural areas experiencing poverty

Key applicability conditions (2/2)

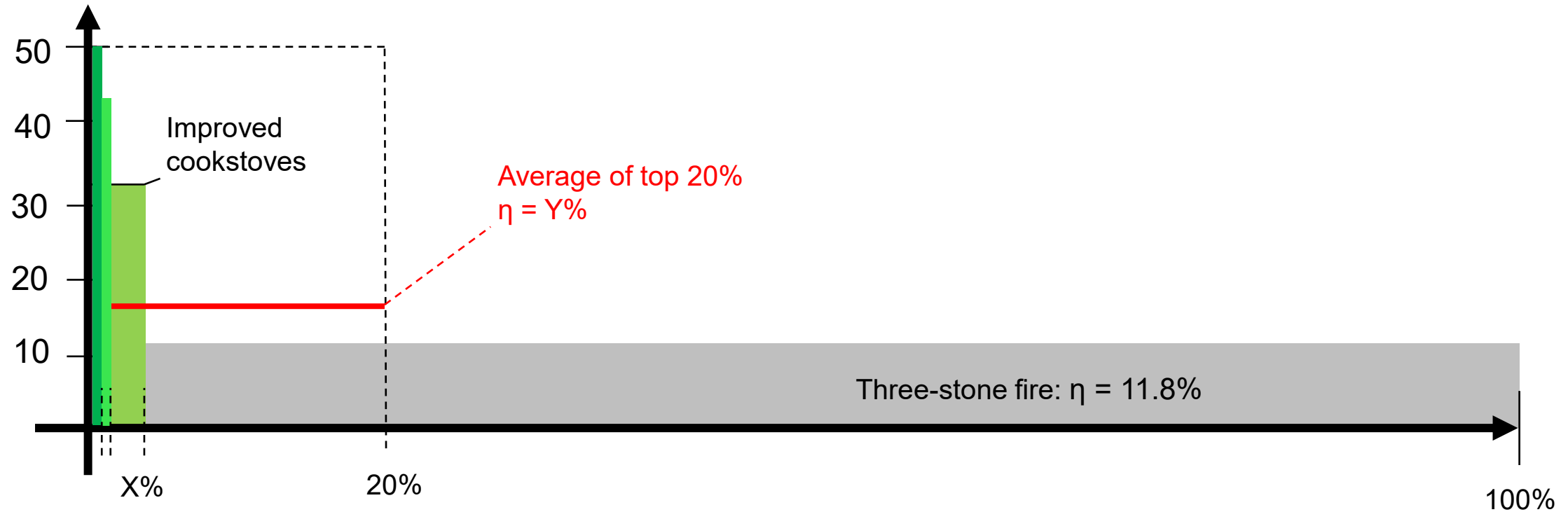
- Cookstove efficiency
 - Tested with ISO 19867-1:2018 (or subsequent) – or equivalent national standard if not available
 - Minimum efficiency: 20% (plancha/griddle); 25% (fuelwood); 30% (charcoal)
- Prior to the A6.4 activity: $\leq 4.5\%$ of households with an efficient stove
 - Stoves from other carbon crediting mechanisms not taken into account

BASELINE SETTING



Baseline setting: ambitious benchmark (approach as per RMP 36(ii))

BL cookstove
efficiency η (%)



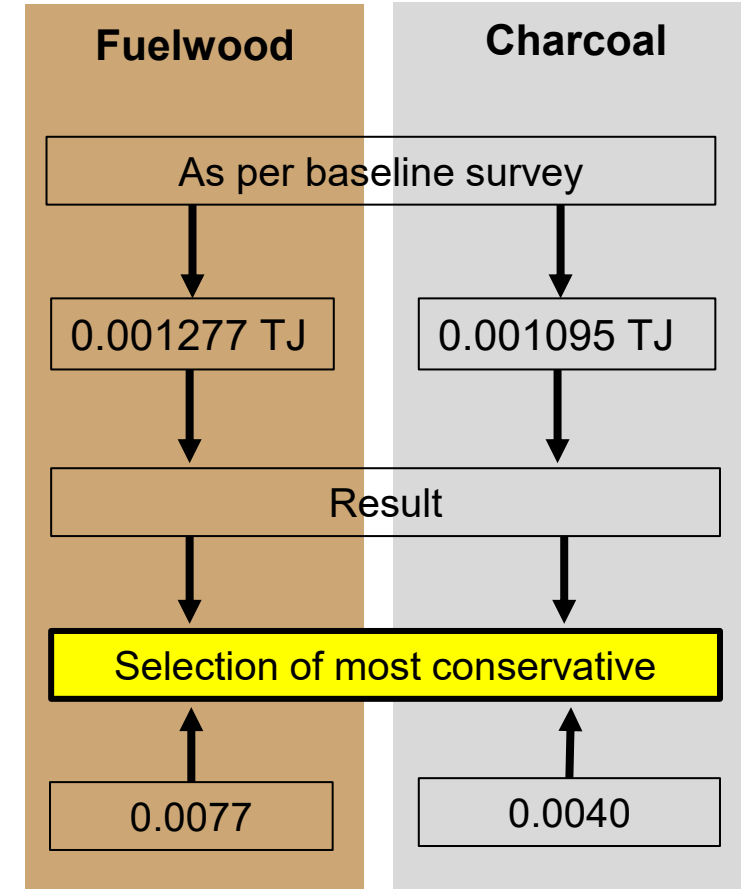
Baseline setting: (through the ambitious benchmark)

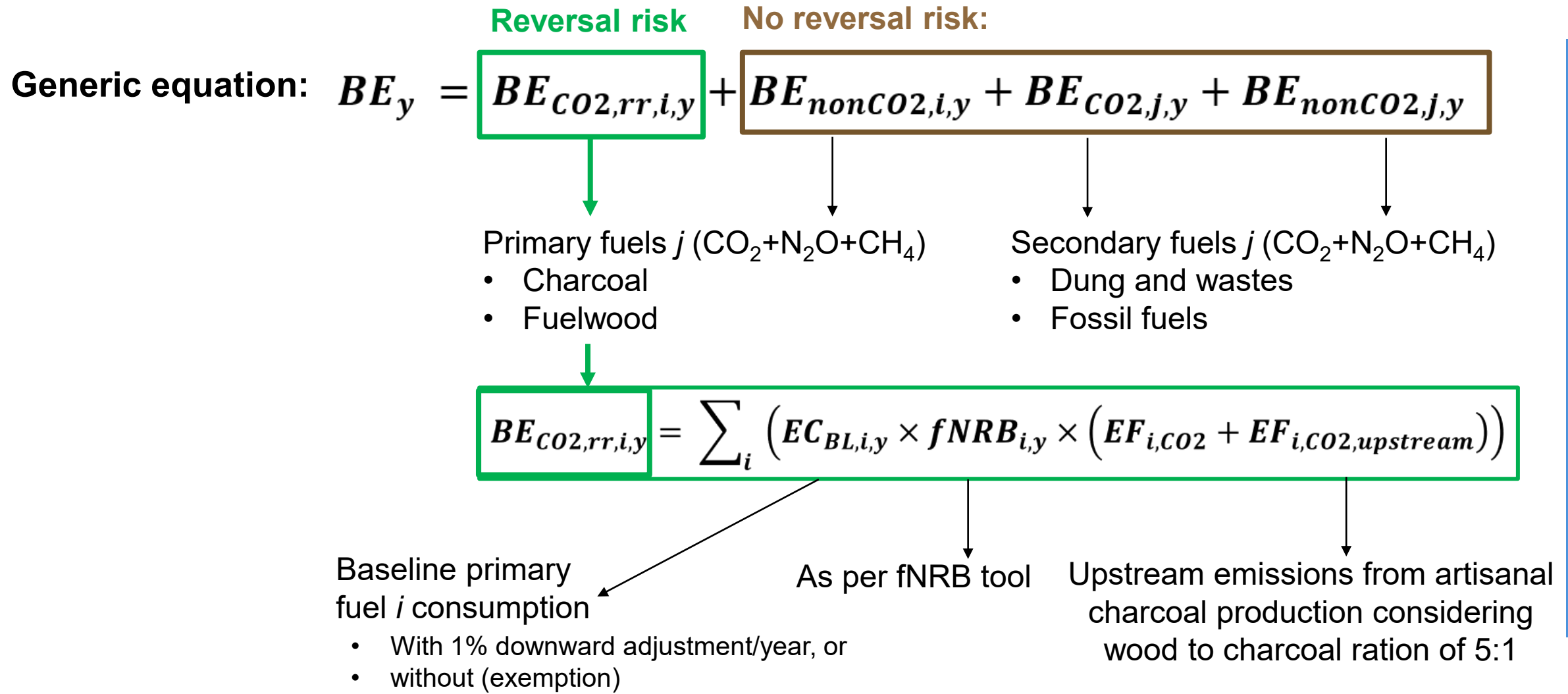
Average thermal efficiency (η)
of the top 20% in the baseline:

Useful energy provided per
person per year:

Energy consumption from fuel
use for cooking per person and
year (TJ / (person x year)):

Comparison with backstop
values: (TJ / (person x year))





Calculation of the energy consumption (generic formula)

Specific energy consumption (TJ / (person x year))

% of households that qualify as user households

Number of total possible project cookstove days (for all cookstoves and households)

$$EC_{i,y} = H_y \times SEC_{i,y} \times \frac{\Psi_y \times \sum_h Days_{y,h}}{CD_y}$$

Average household size

365 (or 366) days per year

The diagram illustrates the generic formula for calculating energy consumption (EC_{i,y}). The formula is presented as $EC_{i,y} = H_y \times SEC_{i,y} \times \frac{\Psi_y \times \sum_h Days_{y,h}}{CD_y}$. Annotations with arrows point to each component:

- Specific energy consumption (TJ / (person x year))** points to $SEC_{i,y}$, which is highlighted in a grey box.
- Average household size** points to H_y .
- % of households that qualify as user households** points to Ψ_y .
- Number of total possible project cookstove days (for all cookstoves and households)** points to the numerator $\Psi_y \times \sum_h Days_{y,h}$.
- 365 (or 366) days per year** points to the denominator CD_y .

Key issues and proposed solutions

	Specific energy consumption	
Baseline emission	Activity-specific ambitious benchmark compared to backstop	Lowest of either
Conservative BAU	Benchmark set in methodology & checked vs. activity conditions	
Activity emissions	Measured using KPT sampling campaigns	

Recommendation – Exempt from annual downward adjustment

The mechanism methodology provides significant benefits to communities with the lowest income.

Efficient cookstoves reduce fuel costs and the time spent for collecting firewood, benefiting low-income households that often devote a large share of their income and labour to cooking energy.

They also may reduce exposure to indoor air pollution, which disproportionately affects women, children, and vulnerable communities who spend significant time near traditional stoves.

These communities are often also particularly affected by the impacts of climate change and have contributed the least to global greenhouse gas emissions.

For these reasons, the MEP recommends that the Supervisory Body exempt this mechanism methodology from downward adjustment in subsequent years, in line with paragraphs 65 and 66 of the Baseline Standard, to facilitate the implementation of this project type.



MONITORING



Monitoring

Recommendation:

- Starting 01 January 2028, use of SUMs becomes mandatory for USAGE and HAWTHORNE EFFECT quantification;
- Before 2028: usage surveys allowed to determine % households that qualify as users, but cap at either 90% (with customer support actions) or otherwise 58% (without)

Monitoring Activity	Prior to validation	Prior to first verification	Annual	Every monitoring period
Pre-activity studies				
Pre-activity survey	X			
Activity studies				
Usage surveys			X	
Usage SUMs measurements			Continuous	
Activity KPTs (energy consumption measurement) & Activity KPT survey				X (must be performed no less frequently than every two years even if the monitoring period is longer)
SUMs Hawthorne effect measurements		X (during the first monitoring period of the crediting period)		
Ongoing monitoring tasks				
Maintenance of total sales and service records, and activity databases	Continuous	Maintenance of total sales and service records, and activity databases	Continuous	Maintenance of total sales and service records, and activity databases

Appendices

A1 Activity information cover sheet (summarizes all key project characteristics)	A2 A6.4ERs Waiver Certificate <i>(informed consent form signed by household which prevents double counting)</i>	A3 Activity-specific Survey Requirements <i>(Baseline survey, usage surveys, monitoring surveys)</i>	A4 Activity sampling provisions <i>(Guidelines on sampling, complements requirements in Sampling & Surveys Tool)</i>
A5 Kitchen Performance tests <i>(Guidelines and requirements on KPTs)</i>	A6 Stove use monitors (SUMs) <i>(Guidelines and requirements on use of SUMs)</i>	A7 Demonstration of Requirements at the methodology level <i>(explains the methodological assumptions)</i>	

UNCERTAINTY



What do our standards say?

- Baseline Std. Appendix 1, para. 13.
"Mechanism methodologies shall apply a conservative approach to ensure that the emission reductions or net removals from an Article 6.4 activity using the methodology are **very unlikely to be overestimated**, taking into account the overall uncertainty in quantifying the emission reductions or net removals. ..."
- In IPCC AR5 and AR6 calibrated-language usage (which the A6.4 ecosystem references throughout), "very unlikely" means below 10% probability. "Extremely unlikely" means below 5%. "Exceptionally unlikely" means below 1%. "Unlikely" means below 33% probability. (e.g. AR5 WG1 Technical Summary (TS), Box TS.1).

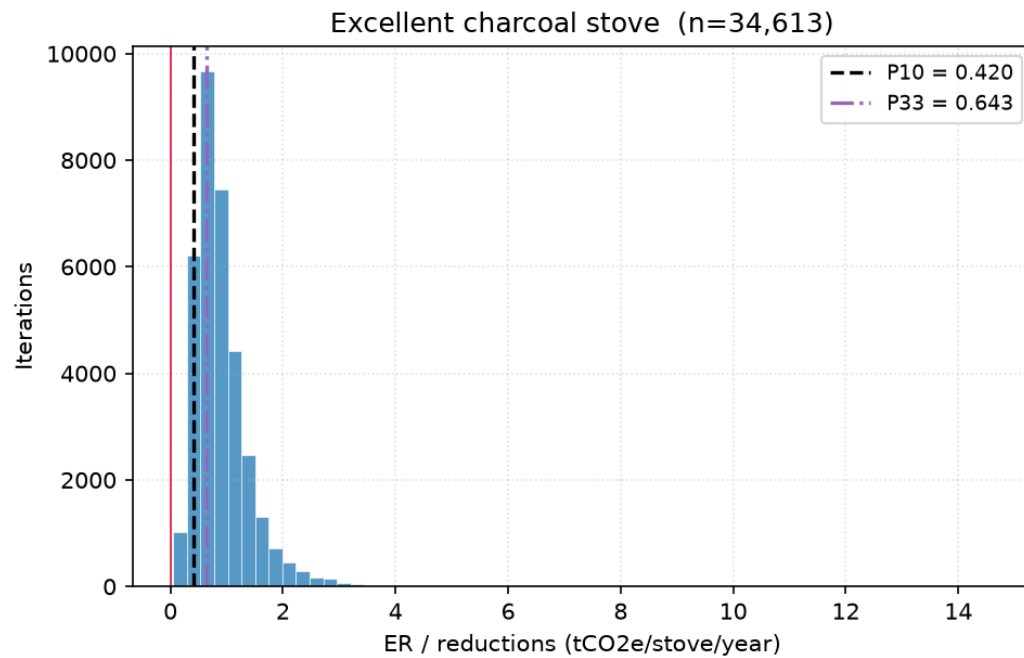
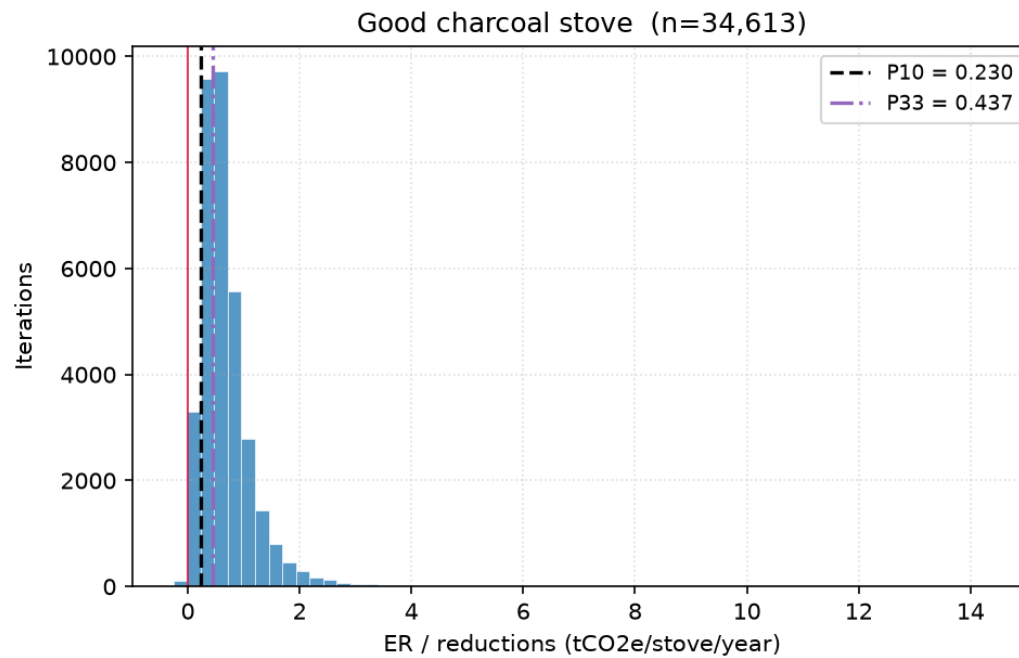
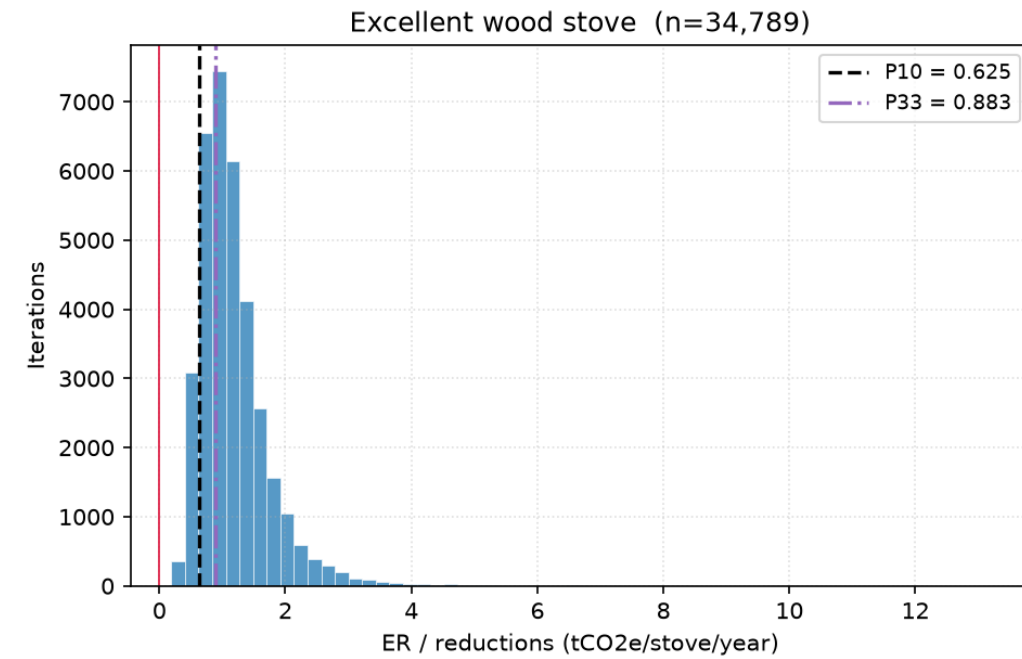
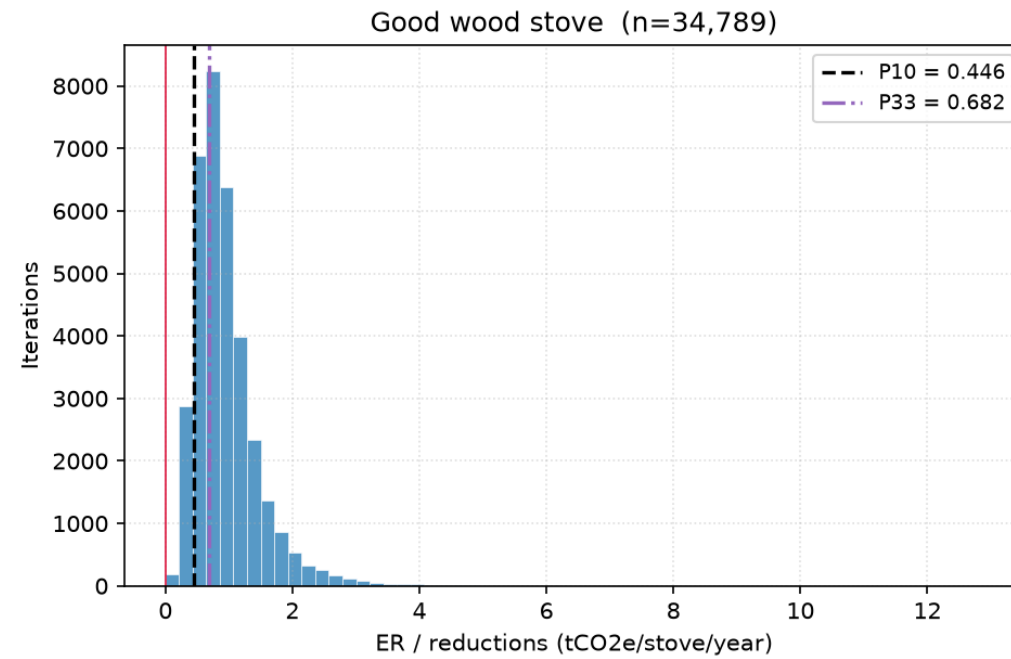


Parameter	Same draw in BE and PE?	Reason
E_{cook}	Yes	Same household useful cooking demand
H_s	Yes	Same household size
Usage	Yes	Same project-use adjustment applied to both equations
fNRB	Yes	Same country/project biomass context
Emission factors	Yes	Same physical emission factor must apply
η_{bench}	No (BE only)	Baseline stove efficiency only
η_{project}	No (PE only)	Project stove efficiency only — different physical stove
PCE_m and PCE_{KPT}	Different but related (screened)	Related measurements; impossibility screen rejects $PCE_m > PCE_{KPT}$

- P10 implements "very unlikely to be overestimated" exactly: there is a 90% probability the true *ER* is at least the credited value.
- Paragraph 13 is a one-sided test — it concerns overestimation, not underestimation. There is no symmetric concern about being too cautious. The natural one-sided lower bound at 90% confidence is P10.



ER (reductions) distribution per archetype - IPCC_Conservative_Distribution_DefaultLit



Monte Carlo Analysis outcome in tCO₂e per household per year

	Good wood stove (25%)	Excellent wood stove (35%)	Good charcoal stove (35%)	Excellent charcoal stove (45%)
MEP014 recommendation	0.35	0.58	0.14	0.49
Final: Approach A at P10	0.446	0.625	0.230	0.420
Final: Mean ER (Monte Carlo)	0.950	1.173	0.678	0.909
P10 as % of central	46.9%	53.3%	33.9%	46.2%

- MEP concluded that the emissions reductions calculated by the methodology are "very unlikely to be overestimated": i.e. there is a 90% probability the true *ER* is at least the credited value.
- Simplification: Uncertainty analysis undertaken at methodology level and individual activities do not have to estimate uncertainty, i.e. undertake uncertainty propagation calculations or Monte Carlo analysis.



NON-PERMANENCE



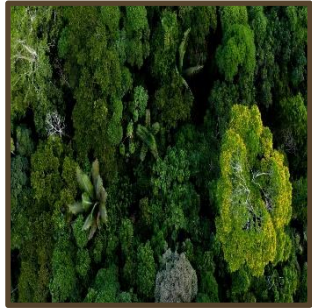
Non-permanence

- Impact of cookstove activities is on the stock of “landscape trees” (reservoir at reversal risk)
- Application of the “Methodological tool: Reversal risk assessment”
 - Contribution to the buffer pool
- However: Use of exemptions permitted by the “Reversal Standard”
 - No monitoring of the carbon reservoirs; No post-crediting period monitoring; No reversals-related notifications or actions

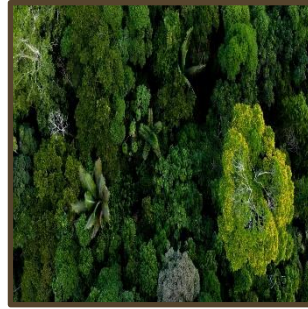
Year 10

Cooking – 100% renewable firewood

Pre-project



Project



No net avoided
emissions since all
firewood burned has
been compensated
by regrowth of
biomass

Non-permanence?

N/A

Baseline



Carbon credits?

N/A

All harvesting
replaced by
regrowth

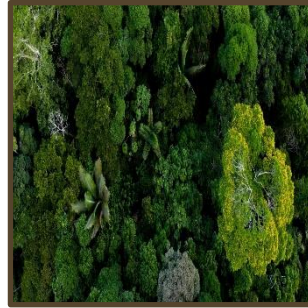


Cooking – non-renewable biomass

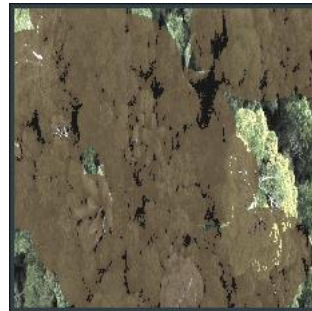
Pre-project



Project



Baseline



25 tCO₂ ↑

Non-permanence?

25 tCO₂ of avoided emissions were credited, which were then emitted to the atmosphere for reasons unrelated to the carbon project & outside the control of the carbon project

Consideration of reversal risk

$$A6.4ER_{activity,y} = ER_y - A6.4ER_{SOP,y} - A6.4ER_{OMGE,y} - A6.4ER_{buffer,y}$$

A6.4ERs to be forwarded to the reversal risk buffer pool account

$$A6.4ER_{buffer,y} = \sum_i \left(\underbrace{(EC_{BL,i,adj,y} - EC_{proj,i,y})}_{\text{Calculated emission reductions}} \times (fNRB_{i,y} \times (EF_{i,CO_2} + EF_{i,CO_2,upstream})) \right) \times F_{buffer,i,t}$$

fraction of the A6.4ERs contributed to the reversal risk buffer pool account for (%)

Stakeholder inputs (as part of annotated agenda to SBM021)



- 13 submissions were received, comprising 100 comments.

No.	Submitter	Affiliated organization
1	AFOLU	AFOLU
2	Karan Kumar and Deboshmita Dey	Value Network Ventures Pte. Ltd.
3	Elisa Derby	Clean Cooking and Climate Consortium (4C)
4	David Kitt	DelAgua
5	Donee Alexander	Bridge Carbon
6	Dr. Khalequzzaman	Bangladesh Bondhu Foundation
7	Laurent Perrinjaquet	BURN Manufacturing
8	Laurent Perrinjaquet	Project Developer Forum
9	Alban de Villeneuve	TotalEnergies
10	Federica Dossi	Carbon Market Watch
11	Andrea Bonzanni	IETA
12	Mohamed Thiero	Bouaké Ville Durable Project, Cote d'Ivoire
13	Oumou Doumbouya	DNA, Guinea

Inputs to the SBM022 annotated agenda AMS-II.G

- The call for public input was open from 6 to 13 July 2026.
- Inputs focused mainly on the cover note and baseline scenario, followed by normative references, non-permanence provisions, applicability, activity boundary and Appendix 7.
- These areas point to further clarification needs on baseline setting, conservativeness, applicability, non-permanence and implementation requirements.

Section	Number of inputs
Cover note	29
7. Baseline scenario	29
3. Normative and informative references	10
10. Non-permanence provisions	12
4. Applicability	6
5. Activity boundary	5
Appendix 7 – Demonstration of requirements	5
8. Activity scenario	3
9. Leakage	1
14. Monitoring requirements	1
15. Data and parameters not monitored	1
Total	102



- **Non-permanence provisions / buffer pool (Section 10)** —Several implementers (BURN, PD Forum, Bridge Carbon, Bangladesh Bondhu Foundation, TotalEnergies) argued the 100-year reversal-risk assessment and buffer-pool contribution are conceptually inapplicable to fuelwood/cookstove activities, since no forest carbon stock is being credited. Carbon Market Watch, by contrast, welcomed the introduction of non-permanence risk provisions as appropriate conservatism.
- **SUMs (Stove Usage Monitors) mandate** — support in principle but concern about a hard 2028 cutoff/blanket census requirement being impractical; IETA proposed pushing the mandatory date to 2031.
- **Wood-to-charcoal conversion factor** — general support for revising 4:1 → 5:1, though 4C argued evidence supports 6:1.

Summary of the inputs to the SBM022 annotated agenda

- **Downward adjustment / ambition-over-time exemption** — split views: implementers wanted an exemption for low-income/LDC contexts; Carbon Market Watch opposed any exemption, arguing it would undermine increasing ambition
- **Hawthorne effect adjustment** — concerns the default 25% discount factor for survey-based monitoring is too conservative
- **4.5% penetration-rate eligibility cap (para 13(j))** — An input called this an arbitrary hard cutoff that should be removed or made a rebuttable test instead.
- **Editorial:** Technical corrections addressed equation units and indices, variable definitions, cross-references, non-CO₂ emissions and fuel-transport emissions.
- **Validity:** Clarification was requested on validity beyond 2030, transition arrangements, dependence on pending supporting tools
- **Call for inputs period** — multiple inputs commented that the 7-day comment window (including a weekend) was too short.



CLOSING



- Provide an exemption from downward adjustment in subsequent years as per para. 65 and 66. of the “Baseline Standard”;
- To adopt this draft mechanism methodology contingent on the approval of the following methodological standards tools:
 - Methodological tool: Sampling and surveys;
 - Methodological tool: Reversal risk assessment;
 - Relevant revisions to approved standards and methodological tools required for PoAs.

APPENDIX: FURTHER DETAILS

