Agenda item 3.1. and 3.3.
Paragraph 5 and 7 of the annotated agenda

PMM004: Comprehensive Lowered Emission Assessment and Reporting (CLEAR) Methodology for Cooking Energy Transitions

AMS-I.E.: Switch from non-renewable biomass for thermal applications by the user

Methodological Expert Panel – 15th meeting
Virtual, 22 and 23 July 2026

UNFCCC Secretariat
Mitigation Division

Procedural background

- MEP workplan for 2025 (issued at SBM015) contained further work on revision of CDM methodologies/tools, and a list of CDM methodologies and methodological tools prioritized for transitioning to the Article 6.4 mechanism, including the methodologies:
  - AMS-II.G.: Energy efficiency measures in thermal applications of non-renewable biomass;
  - AMS-I.E: Switch from non-renewable biomass for thermal applications by the user.

- Study conducted on permanence of emissions reductions from improved cookstove projects on behalf of MEP.

- Adoption by CDM EB125 of a revision to Tool 33 (use of f_{NRB} values from the MoFuSS approach).

- Adoption by SBM018 of the standard “Addressing non-permanence and reversals in mechanism methodologies” (cf. para. 6 and para. 11 to 17).

- One related bottom-up clean cooking methodology received: PMM004 (CLEAR methodology).

Procedural background

- MEP 011 considered the revision of “AMS-II.G.: Energy efficiency measures in thermal applications of non-renewable biomass” and “AMS-I.E.: Switch from non-renewable biomass for thermal applications by the user”, together with the proposed mechanism methodology (PMM) “PMM004: Comprehensive Lowered Emission Assessment and Reporting (CLEAR) Methodology for Cooking Energy Transitions” and agreed to continue work.

- MEP 012 further considered the revision of “AMS-II.G.: Energy efficiency measures in thermal applications of non-renewable biomass” and “AMS-I.E.: Switch from non-renewable biomass for thermal applications by the user” and agreed to continue to work on these methodologies.

Updates

- At MEP 011, the small group decided to work towards one single consolidated methodology to be further elaborated on the basis of the PMM004 methodology on a top-down basis.
- Work conducted:
  - Full restructuring of PMM004 to match A6.4 methodology structure;
  - Alignment with approved methodological tools (e.g. Tool: Emissions from electricity generation and consumption).

- At MEP 012, based on further consideration, the small group agreed also to elaborate a new draft methodology focusing exclusively on energy efficiency activities for clean cookstoves using wood fuels in rural areas (similar scope to AMS-II.G). In parallel, the small group continued to work on the consolidated methodology based on PMM004.

Updates

- Since MEP014, the small group has further drafted the new methodology including additionality, applicability, baseline selection, baseline and activity emissions methods, amongst others.

- During MEP 015, the small group seeks to:
  - Finalize 'PMM004: Comprehensive Lowered Emission Assessment and Reporting (CLEAR) Methodology for Cooking Energy Transitions' and 'AMS-I.E.: Switch from non-renewable biomass for thermal applications by the user' and launch it for stakeholder inputs.

Key Issues

Stakeholder inputs	Previous public consultations on PMM004 and A6.4-MEP013-A02 and treatment of relevant stakeholder inputs
Applicability	Eligible cooking-transition pathways and safeguards
Additionality	Simplified and comprehensive additionality pathways
Baseline setting	Pre-activity scenario, baseline quantification and BAU comparison
Activity emissions	Continuous and non-continuous measurement methods
Monitoring	Usage, KPTs, SUMs, continuous metering and data quality
Leakage	Embodied cookstove emissions and leakage assessment
Non-permanence	Biomass-reservoir reversal risk and buffer-pool treatment
Double counting	Household consent and carbon-market accounting safeguards
Next steps	Public input and subsequent methodological work

Public input received

- Public consultation on PMM004 was conducted from 16 June to 6 July 2025.
- Sixteen submissions were received and considered in revising the draft mechanism methodology.
- The draft was revised to align the PMM004 submission with Article 6.4 mechanism standards.
- The methodology provides a harmonized approach for quantifying emission reductions from clean cooking activities with greater quality, transparency and consistency.

Applicability

Scope and eligibility of cooking energy transition activities

Applicability

- Applies to Article 6.4 project activities and programmes of activities covering household cooking energy transitions.
- Covers eligible efficiency improvements and fuel- or technology-switching pathways from higher- to lower-emission cooking solutions.
- Eligible technologies include high-efficiency biomass cookstoves, electric cookstoves, gasifiers, [and LPG]
- Applicable in urban and non-urban household contexts, subject to pathway-specific eligibility, performance, monitoring and traceability requirements.

Key issues and proposed solutions - Applicability (1/2)

Fuelwood Pathway

- Pre-activity fuel primarily fuelwood
- Non-urban areas
- Rural electrification below 50 per cent
- Increased thermal efficiency
- Not otherwise eligible under the "Energy efficiency measures in household cooking" methodology

Artisanal-charcoal pathway

- Pre-activity fuel primarily artisanal charcoal
- Urban or non-urban areas
- Increased thermal efficiency
- Not otherwise eligible under the other methodology

Electric [and LPG] pathways

- Fuel and technology switch to a lower-emission cooking solution
- Electric cooking supplied by an eligible grid or renewable decentralized system
- [LPG pathway and associated requirements]
- Households using electricity as the primary baseline energy source are excluded

Common monitoring requirement

Monitoring approach is pathway-specific: non-continuous energy-consumption methods for biomass cookstoves and continuous energy tracking for electric [and LPG] technologies.

Key issues and proposed solutions - Applicability (2/2)

- Project cookstove technologies shall meet the cooking needs of the target population, demonstrated through robust research or an investigation of cooking practices and attitudes during activity design.
- Each project cookstove shall be permanently and uniquely identified and linked to one household; detached household identification cards are not sufficient as the sole identifier.
- Malfunctioning cookstoves shall be replaced or retrofitted with technologies of comparable or better quality and thermal efficiency, or the affected households shall be excluded from emission-reduction claims.
- Biomass-burning project cookstove models shall be tested using ISO 19867-1:2018 by an ISO 17025-accredited laboratory - or an equivalent national standard where such testing capacity is unavailable - and shall achieve at least 30 per cent thermal efficiency.
- From 1 January 2028, project cookstove usage for biomass cookstoves shall be determined using Stove Use Monitors, subject to resolution of the remaining drafting inconsistency in the cover note.

Activity boundary

Technology deployment area

Locations where project cookstoves are distributed and operated

+

Fuel and energy supply area

Locations where fuels or energy carriers are produced, generated, processed, supplied or collected

Included within the activity boundary

Point-of-use combustion: CO_2, CH_4 and N_2O | Upstream fuel-production emissions | Electricity generation and, where applicable, transmission and distribution

Above-ground woody biomass

Relevant GHG reservoir where biomass fuels are used

→ **Subject to reversal-risk treatment**

Baseline setting

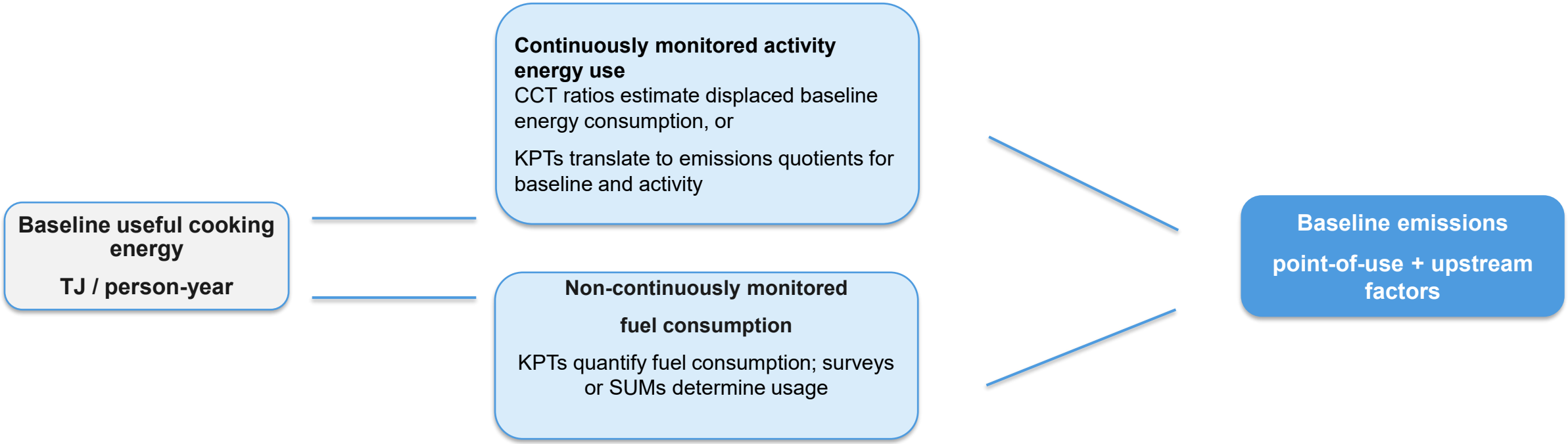
Pre-activity scenario, baseline emissions and conservative BAU comparison

Key issues and proposed solutions - Baseline scenario

- The pre-activity scenario is established through a representative survey of the target population.
- The survey identifies existing cooking technologies, fuels or energy carriers, relative use, and household characteristics.
- Survey results are cross-checked against recent and credible external data sources.
- Where discrepancies arise, conservative values are applied according to the methodology's data-source hierarchy.
- The same evidence may support monitoring design and help demonstrate that selected project technologies are appropriate for local cooking needs.

Key issues and proposed solutions - Baseline emissions

- Biomass-based baseline fuel consumption applies a historical emissions approach.
- Baseline consumption is scaled by household size and adjusted to reflect verified activity participation through project cookstove use.



Key issues and proposed solutions - Downward adjustment and BAU

First crediting year

- Standardized downward adjustment
- Lower bound of the baseline energy-consumption uncertainty interval
- Compared with a minimum downward-adjusted baseline derived from activity emissions
- Lower of the two values applied

Subsequent years

- MEP recommends annual downward adjustment of 1%

Conservative BAU safeguard

- Crediting baseline must remain below the conservative BAU baseline
- If not met ex ante: further adjustment
- If not met ex post: conservative BAU baseline applied

The framework combines a conservative first-year downward adjustment with ex-ante and ex-post BAU checks.

Key issues and proposed solutions - Activity emissions

Continuously monitored energy consumption

- All activity fuel or energy consumption measured directly
- Mass or volume converted to energy using NCV
- Relevant GHG emission factors then applied

Non-continuously monitored energy consumption

- Fuel consumption determined through representative KPTs
- KPTs reflect typical operating conditions
- All fuel types and cooking devices in activity households are measured

Scaling basis

Activity emissions are scaled using monitored project fuel/energy consumption, user households and days project cookstoves are present.

Hawthorne effect adjustment

Without SUMs, credited emission reductions are capped at 75 per cent of the KPT-based estimate; with SUMs, an activity-specific adjustment is derived from usage during and around the KPT.

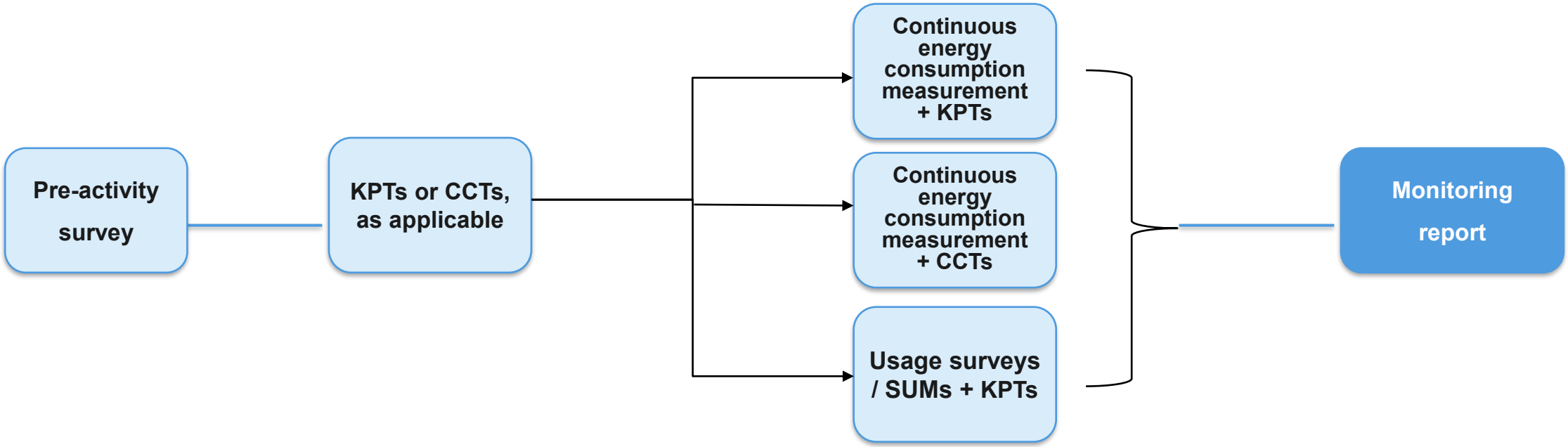
Key issues and proposed solutions - Leakage

- Leakage is assessed at methodology level, with Appendix 10 explaining the derivation of the estimated leakage value.
- Continued use of baseline cookstoves is captured directly in activity emissions rather than treated as leakage.
- Baseline equipment transfer and market leakage from reduced biomass demand are assessed as not material or already addressed in the accounting framework.
- Residual leakage from project cookstove materials, manufacture and transport is quantified per new project cookstove added in year y.
- Default values distinguish industrially manufactured/imported/refined-metal stoves from locally sourced earthen cookstoves.

Monitoring

Activity data, sampling, performance testing and monitoring schedules

Key issues and proposed solutions - Monitoring



- Section 14 specifies monitoring schedules for usage surveys, CCTs, KPTs and SUMs, including seasonality requirements.
- Section 16 covers parameters monitored during the crediting period, including distribution status, user household characteristics, cookstove days, cookstove usage and fuel/energy consumption.
- Section 15 fixes key parameters that are not monitored during the crediting period, including technical lifetime, thermal efficiency, fNRB, emission factors and NCVs.
- Survey and sampling provisions are aligned with the Sampling and surveys tool under development.

Key issues and proposed solutions - Appendices

A1	Activity information cover sheet	**A2**	Sample A6.4ERs waiver certificate	**A3**	Upstream emission factors	**A4**	Default EFs, efficiencies and NCVs	**A5**	Activity-specific surveys
A6	Kitchen performance tests	**A7**	Controlled cooking tests	**A8**	Stove use monitors	**A9**	Activity sampling provisions	**A10**	Demonstration of requirements at the methodology level

Appendices translate the methodology into implementation templates, measurement protocols, sampling rules and methodological evidence.

Key issues and proposed solutions - Uncertainty

1. Conservative default emission factors and standardized parameters
2. Representative monitoring and data collection requirements
3. Conservative baseline and activity energy-consumption calculations
4. Downward adjustment and comparison with conservative BAU baseline
5. Transparent parameter treatment across baseline, activity, leakage and ER calculations

Stakeholders are asked to consider whether the methodology should address uncertainty through conservative design choices, or by relying only on ex-post statistical analysis.

Non-permanence

Reservoir-specific reversal risk and buffer-pool treatment

Key issues and proposed solutions - Non-permanence

Subject to reversal risk

- Subset of emission reductions linked to biomass reservoirs
- Above-ground woody biomass in landscape
- CO_2 reductions from reduced biomass consumption

Not subject to reversal risk

- CH_4 and N_2O reductions from biomass combustion
- Emissions from non-biomass cooking transition pathways
- Biochar removals not quantified

Alternative approach

- Activity participants do not control reservoirs
- Reservoirs are geographically distinct from deployment sites
- Observed reservoir changes cannot be directly attributed to the activity

Practical treatment

Potential reversal risks are quantified through a 100-year risk assessment and addressed through Reversal Risk Buffer Pool contributions that are immediately cancelled.

Core calculation

$$ER_y = BE_{final,y} - AE_y - LE_y$$

Where ER_y is emission reductions, $BE_{final,y}$ is final downward-adjusted baseline emissions, AE_y is activity emissions and LE_y is leakage emissions.

Issuance transparency

$$A6.4ER_{participant,y} = ER_y - SOP_y - OMGE_y - RRBP_y$$

The methodology reproduces the registry-related deduction structure for information and transparency.

Deductions cover the Share of Proceeds, overall mitigation in global emissions and Reversal Risk Buffer Pool contribution.

Key issues and proposed solutions - Double counting and alignment

- Each monitoring report shall demonstrate that the claimed emission reductions are not also claimed in other environmental markets, accounting frameworks or carbon crediting programmes.
- The activity and its baseline shall not overlap with mandatory domestic mitigation schemes unless the emission reductions are excluded from crediting or not used for those obligations.
- Specific safeguards address overlaps with jurisdictional REDD+ programmes and other fuelwood- or charcoal-related carbon crediting activities.
- User households shall provide explicit consent that emission reductions are attributed solely to the Article 6.4 activity.
- The host Party DNA confirms consistency with NDC, LT-LEDS and long-term Paris Agreement goals as part of host Party approval.

Recommendations to the Supervisory Body

Not applicable at this stage; the draft methodology is aimed to be published for a call for public input

Subsequent work

- Consider stakeholder input and prepare an updated draft methodology for consideration by the Supervisory Body.
- Assess potential future expansion to bioethanol, biomass pellets, biogas and biodigester technologies.
- Undertake this expansion after completion of the relevant methodological tools on fossil-fuel combustion and biomass emissions.