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

Clean Cooking and Climate Consortium (4C)

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EPA

BERKELEY AIR MONITORING GROUP

CLIMATE & CLEAN AIR COALITION TO REDUCE SHORT-LIVED CLIMATE POLLUTANTS

SEI Stockholm Environment Institute

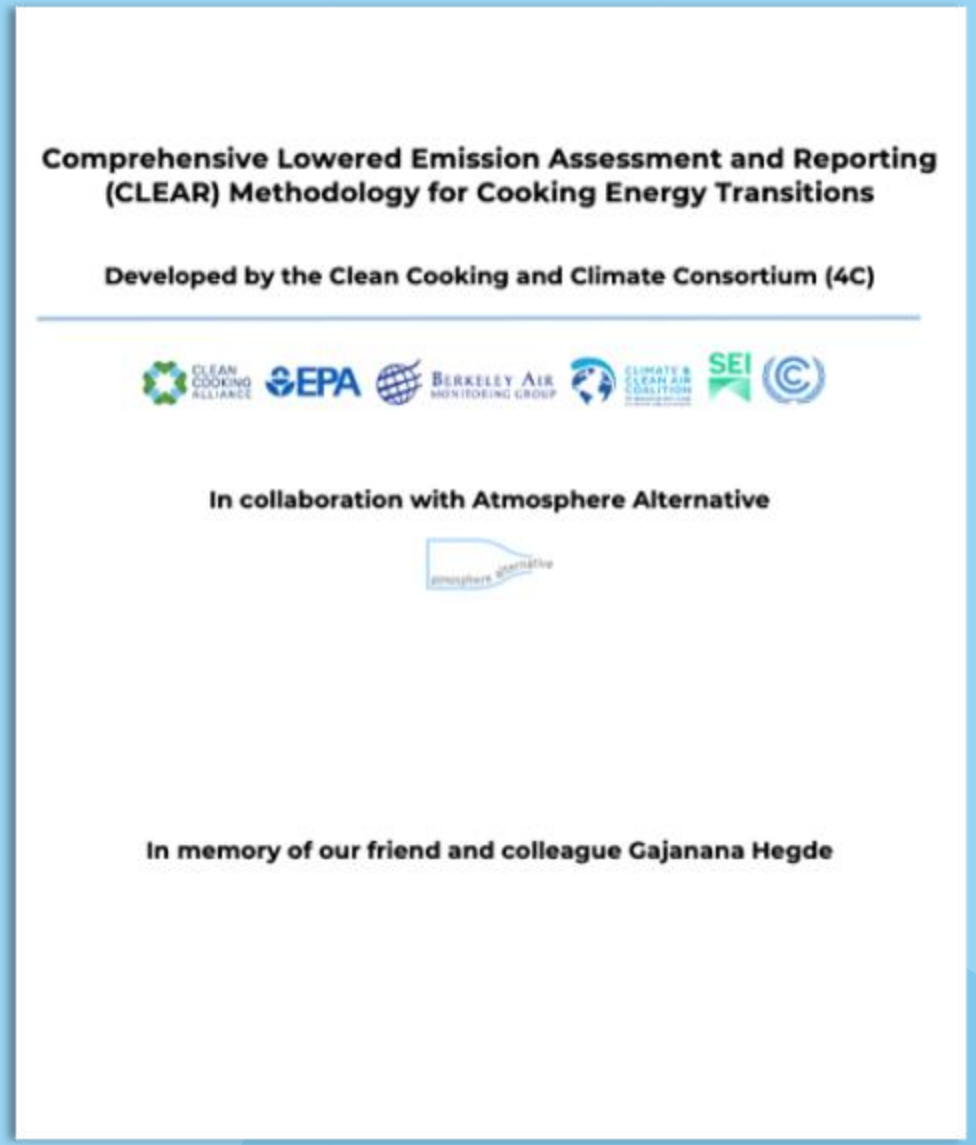
United Nations Climate Change

CLEAR Methodology for Cooking Energy Transitions

Developed in response to demand from key stakeholders, this new methodology:

- Is intended to become the standard for cookstove projects under Art. 6.2 & 6.4 of the Paris Agreement, and throughout the Voluntary Carbon Market

- Will generate the most realistic emission reductions estimates to date, reduce integrity risks, and increase consistency in the sector



Key parameters in clean cooking GHG emission reductions associated with over-crediting risks:

- Adoption, Usage, Stacking, Fuel consumption
- Fraction of non-renewable biomass (fNRB)
- Emission factors
- Charcoal conversion

Summary overview of how the CLEAR methodology addresses key over-crediting risks

Adoption, Usage, Stacking, Fuel consumption	Requires direct in-home measurements of fuel consumption, no survey-only options
	Caps and flags on baseline fuel consumption and usage rates
	Hawthorne effect adjustment
fNRB	MoFuSS model-derived, TOOL30 disallowed
Emission Factors	Aligned with latest scientific data
Charcoal conversion factor	6:1 value, supported by lit review, field studies

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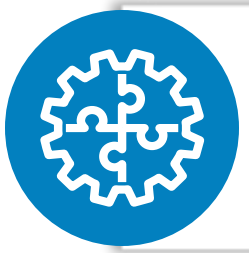
What's special about the CLEAR methodology?



First public goods methodology, covers all common cooking transition scenarios

Incorporates the latest science, increasing the requirements for substantiating input parameters

Incentivizes best practices, mandates direct in-home fuel consumption measurement

Incorporates conservative default values, guardrails, and flagged upper bounds

Developed in collaboration with 250+ stakeholders

Revised based on 700+ public comments received during formal consultation

Methodology Contents and Approaches

Quantification of GHG Emission Reductions

Methodology parameters are calculated differently for Continuously Tracked Energy Consumption (CTEC) and non-CTEC projects and therefore are presented separately in the CLEAR methodology.

CTEC Project

Continuously measures fuel or energy consumption directly on all project technologies, in all project households.

Using built-in or external data loggers (also known as metering), including for electric cookstoves, LPG, ethanol, and biogas, or through fuel sales records.

Non-CTEC Project

Does NOT track all project cookstoves through energy consumption data loggers or fuel sales records.

Quantification of GHG Emission Reductions

Non-CTEC:

Emissions reductions for the project during year *y* = (Baseline emissions during year *y* − Project emissions during year *y*) × Adjustment to account for the Hawthorne Effect × (1 − % deduction to account for leakage during year *y*)

CTEC:

Emissions reductions for the project during year *y* = (Baseline emissions during year *y* − Project emissions during year *y*) × (1 − % deduction to account for leakage during year *y*)

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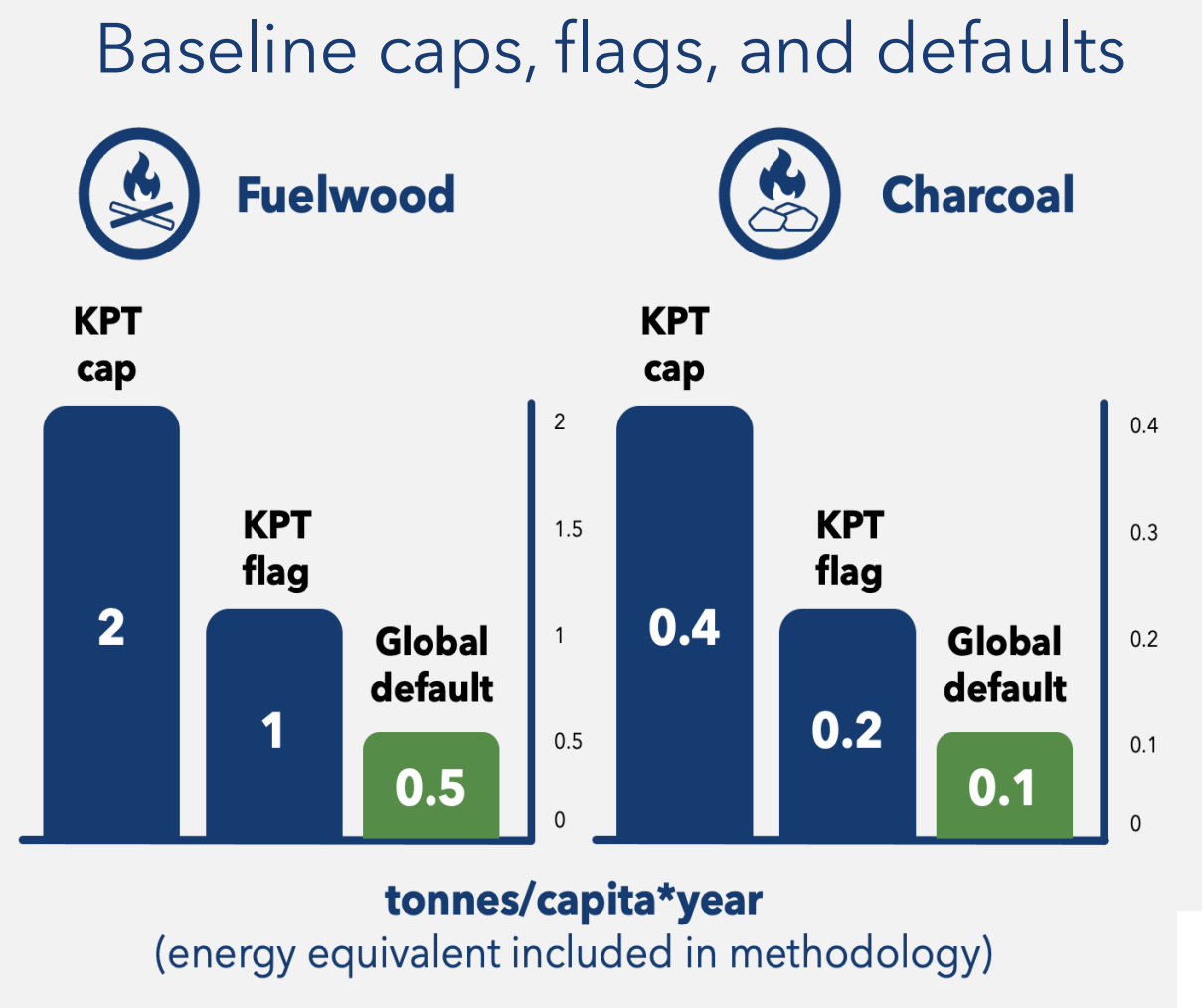
Use, Adoption, Stacking and Fuel Consumption

Non-CTEC Projects

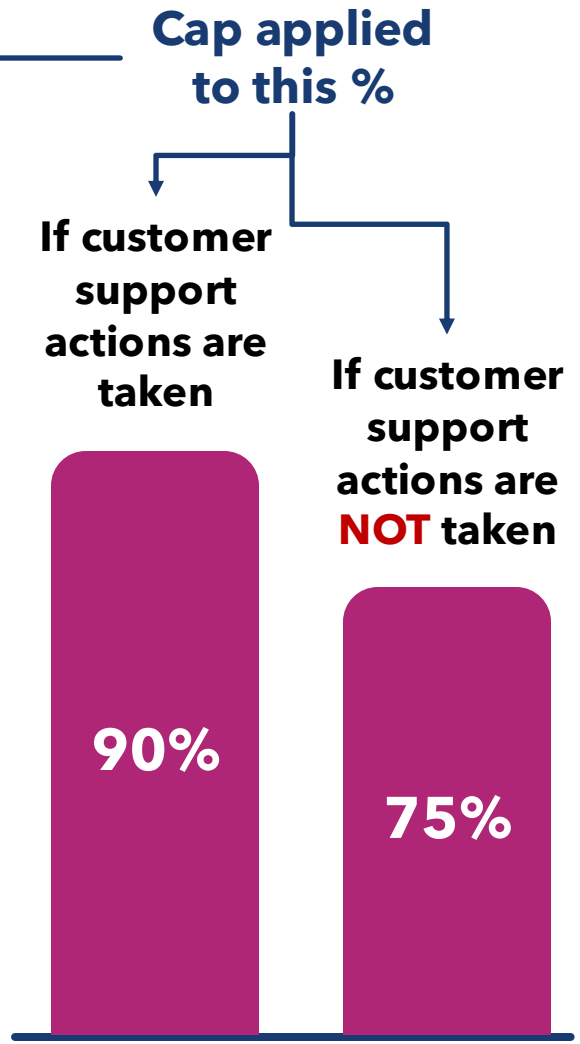
Fuel consumption: Non-CTEC options

Option 1	Option 2
Baseline fuel consumption	*Baseline fuel consumption*
Baseline KPT	**Global default**
Project fuel consumption	*Project fuel consumption*
Project KPT	**Project KPT**



Usage: Non-CTEC options

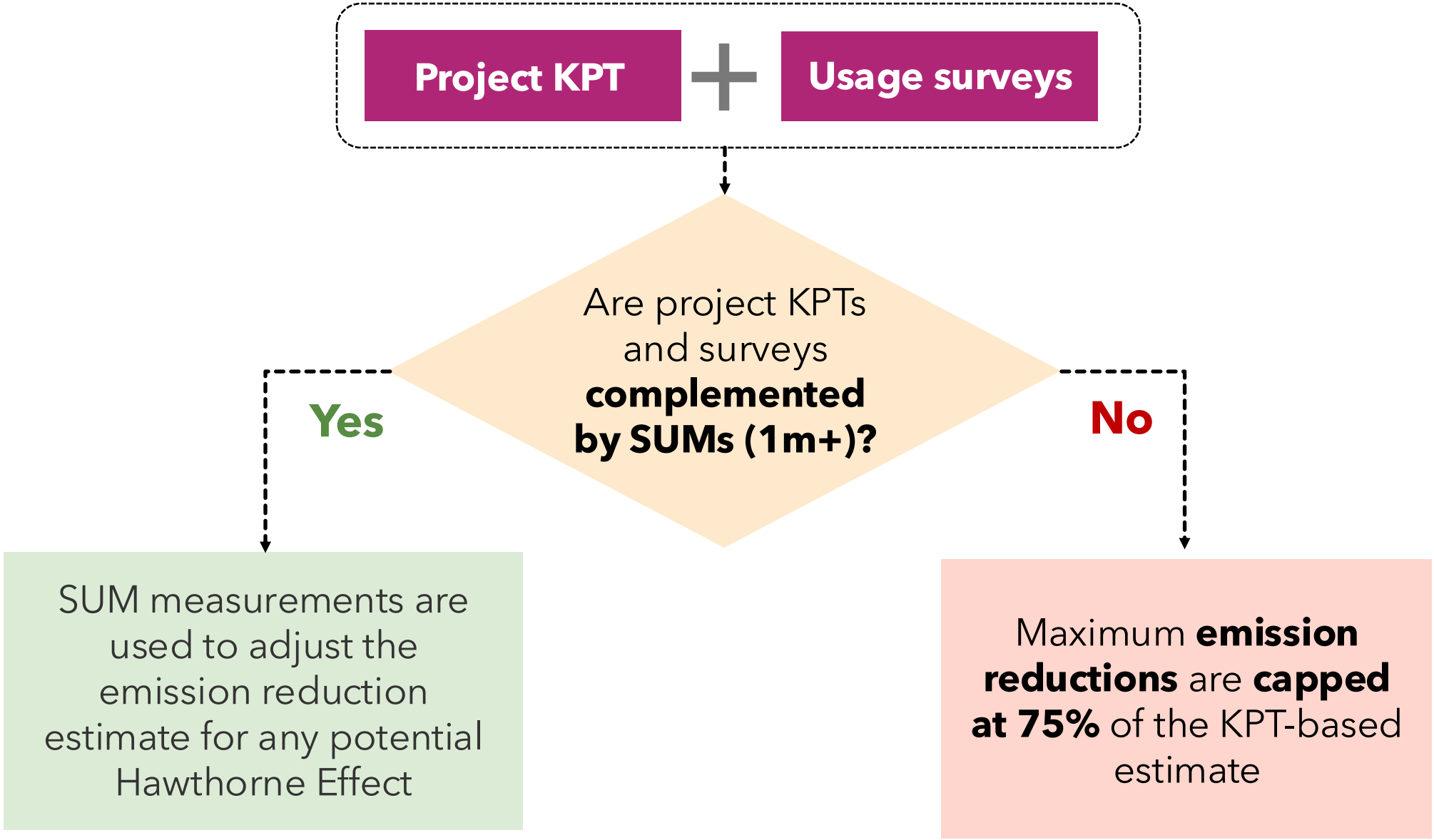
% of project homes with stoves present, where project cookstove is used at least once per week **determined via annual usage surveys and visual observation**



Usage and related terms

- **User**: Project participant with a functioning cookstove that is in use at least once per week
- **Usage**: Frequency/quantity of cooking
- **Project Technology Days (PTDs)**: # of days for which project technologies are available and in regular use (once or more per week)

Accounting for the Hawthorne Effect: Non-CTEC projects



Use, adoption, stacking and fuel quantification

CTEC Projects

Fuel consumption: CTEC options

Option 1 (Project technology displacement)	**Option 2** (Total household fuel consumption)
Baseline fuel consumption **Back-calculation using fuel consumption ratios, determined via CCTs**	*Baseline fuel consumption* **Baseline KPT**
Project fuel consumption **Continuously tracked (through data loggers or fuel sales records)**	*Project fuel consumption* **Continuously tracked (through data loggers or fuel sales records)** + **Project KPT**

Approaches for both CTEC and non-CTEC Projects

fNRB

Source of data options:

National or sub-national default values from MoFuSS

Customized project area using online MoFuSS

Project-specific MoFuSS calculations

- **Marginal fNRB option is still TBD**
- **TOOL30 is NOT allowed**

Emission Factors & Charcoal Conversion

Emissions	Approach/sources of data
Point of use (including from baseline, project, and both renewable and non-renewable sources)	• Default values from the latest version of the IPCC Guidelines for National GHG Inventories • For fuels that do not have an IPCC default value, project proponents shall use literature-based values or project level tests using ISO 19867. • Considers a charcoal conversion factor of 6:1
Upstream (include production, processing, transportation, and distribution of cooking fuels).	• Calculated by multiplying energy consumption by an upstream emission factor(s). • The source of these upstream emission factors is Floess et al. 2023. • For pellet fuels, project proponents may estimate their own upstream emissions factors or justify values through published literature. • Grid emission factors should be sourced from the estimates provided by the IFI-TWG on GHG Accounting, or from the marginal grid emission factors provided by the relevant national authority. • Off-grid emission factors should be sourced from: https://www.seforall.org/system/files/2021-08/SEforALL_Carbon-emissions-methodology-note.pdf • Upstream emissions for fuelwood are considered as zero.

Charcoal Conversion – 6:1

Transparency: Project Information Cover Sheet

To be completed at the project design stage (validation) and updated at time of each verification (highlighting changes from originals). Asks project proponents to provide key details of the project such as:

- Baseline and project fuel types
- Number of households (HH) and average HH size
- Approaches used for fuel consumption, fNRB, EFs
- Project cookstove(s) ISO thermal efficiencies
- Expected CO2e emissions reductions
- Number of HHs sampled (if applicable)
- ISO Tier(s) for PM2.5 and CO emissions (optional)
- Details on customer support actions provided
- Justification for values over flagged threshold
- Number of cookstoves of each type
- Details on how seasonality is addressed
- Details on additionality

Next Steps

Timeline: Recent Developments and Next Steps

Finalization

Jul – Nov 2024

4C solicits ongoing feedback to refine methodology

This involved:

- Formal public commenting period
- Revise methodology based on feedback

Submission & Approval

Nov 2024 – TBD

CLEAR is currently under review for approval and publication, starting with Gold Standard and Verra

ICVCM review pending publication

Planned submission to UNFCCC in the coming months!

Thank you!

For more information on the CLEAR methodology and recent updates:

https://cleancooking.org/4C/methodology

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