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

Clean Cooking and Climate Consortium (4C)

ESMAP Clean Cooking No. 5: Carbon Crediting from Clean Cooking Interventions

CLEAN COOKING ALLIANCE

EPA

BERKELEY AIR MONITORING GROUP

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

SEI Stockholm Environment Institute

United Nations Climate Change

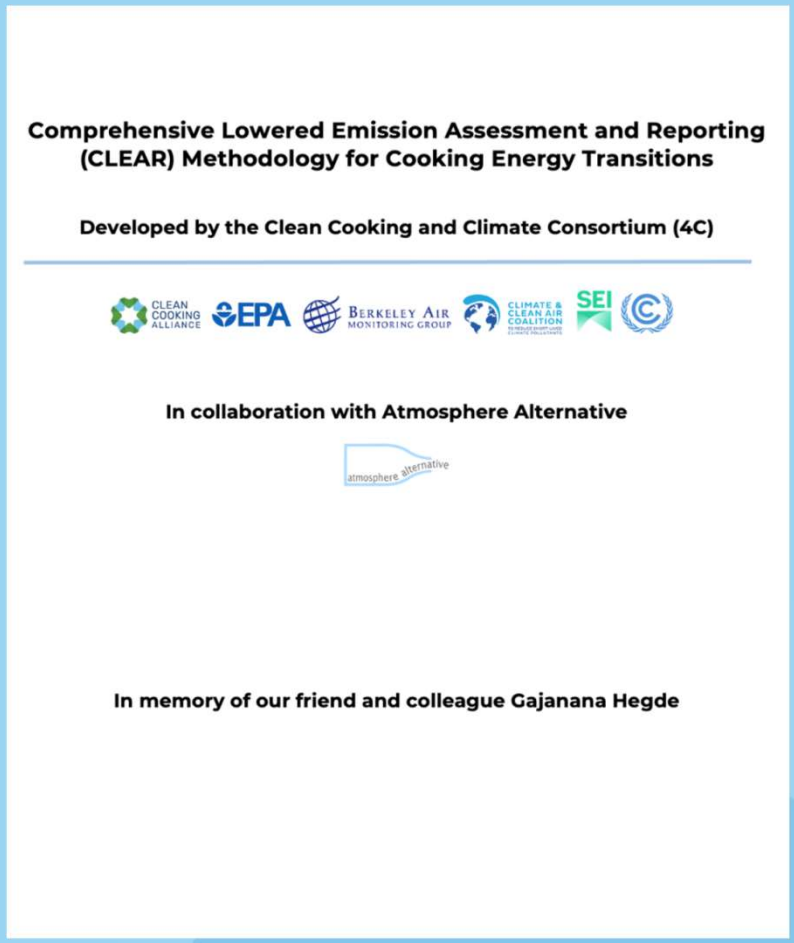
Comprehensive Lowered Emission Assessment and Reporting (CLEAR) Methodology for Cooking Energy Transitions

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

- Is intended to become the standard methodology used for cookstove projects under both the voluntary carbon market and Paris Agreement mechanisms

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

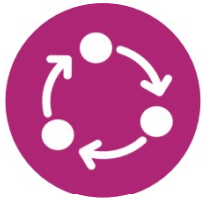
The methodology has been developed in close collaboration with more than 250 key stakeholders including UNFCCC, voluntary standards bodies, and project developers.



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



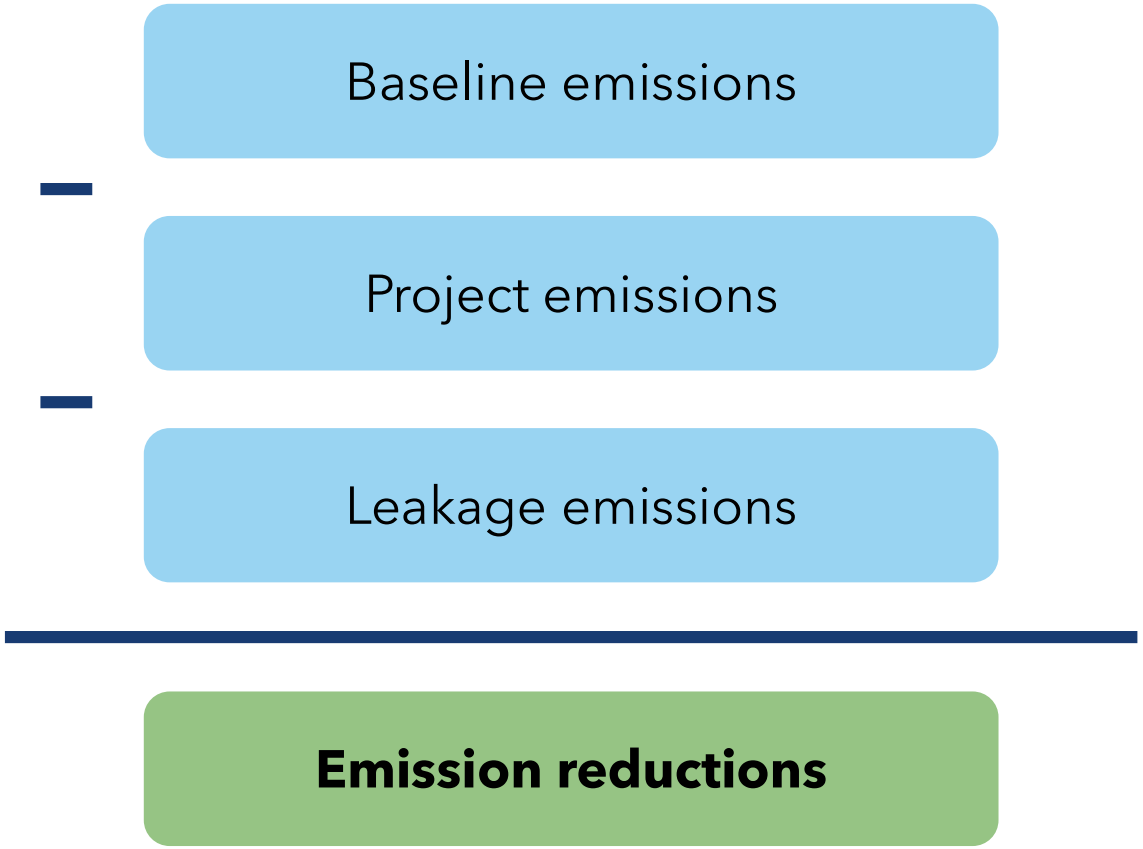
Developed in collaboration with 250+ stakeholders

Incorporates conservative default values, guardrails, and flagged upper bounds

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

Revised based on 1400+ public comments

Overview of GHG Emission Reductions (ERs) quantification



Under CLEAR, key inputs for ER calculations are determined differently for CTEC and non-CTEC projects

CTEC Projects

Project fuel/energy consumption **measured**:

- **Continuously and directly** (via metering or through fuel sales records);
- **on all project technologies;** and
- **in all project households.**

Non-CTEC Projects

Project fuel/energy consumption **measured**:

- **on only a subset of sites, and/or**
- **not continuously.**

CTEC = Continuously Tracked Energy Consumption. CTEC path built on MECD.

Key over-crediting risks for cookstove carbon projects

Use of questionable self-reported data

No assumed baseline stacking

Potential KPT Hawthorne effect

Overstated cookstove usage

High KPT baseline fuel consumption

Inflated fNRB (~90%)

Over-crediting risks and how CLEAR addresses them: Energy/fuel consumption

Challenge	CLEAR mitigation measure
Use of questionable self-reported data	Requires direct measurement in all cases
Potential KPT Hawthorne effect	SUMs or take a 25% deduction to ERs
High KPT baseline fuel consumption	KPT baseline fuel consumption caps and flags
No baseline stacking assumed	Metering or KPTs addresses stacking

Over-crediting risks and how CLEAR addresses them: Stove usage and fNRB

Challenge	CLEAR mitigation measure
Overstated cookstove usage	SUMs or cap PTDs based on customer support actions
Inflated fNRB (~90%)	MoFuSS-derived values required

CLEAR Next Steps

Review & Approval

- CLEAR is undergoing review by:
  - UNFCCC for use under Art 6.4
  - Gold Standard (GS) for use under the VCM
  - Global Carbon Council for use under the World Bank ASCENT Carbon program
  - Open Carbon Platform
- CLEAR is posted here for use under Article 6.2.
- Once published by UNFCCC or GS:
  - ICVCM will conduct a rapid review to determine CCP label eligibility.
  - CLEAR will be submitted to other voluntary carbon-crediting programs.

Parallel Activities

- Development and launch of webCLEAR and webMoFuSS
- Finalization of Appendices: CLEAR application for institutional and commercial cookstove projects
- Training materials and capacity-building activities on CLEAR application for carbon market stakeholders

Thank you!

For more information on CCA's carbon market work and the CLEAR methodology:

https://cleancooking.org/carbon-market-integrity/

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

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Supplemental slides

Stakeholder review of the CLEAR methodology

Review round	# of organizations/reviewers	# of comments
Early technical review *May 2024*	17 organizations	360
4C public comments *July –Aug 2024*	41 organizations	695
Gold Standard technical review 1 *Mar 2025*	4 reviewers	125
Gold Standard technical review 2 *May 2025*	4 reviewers	64
UNFCCC public comments *June 2025*	16 organizations	301
UNFCCC technical comments *July 2025*	1 organization	26
TOTAL	**76**	**1405**

The key inputs needed to estimate ERs can be divided into three categories:

Household cooking context and stove use patterns

How cooking is done under baseline conditions; whether the project stove is being used

We determine:

- HH size and baseline fuel(s) used
- # of HHs that use the project stove regularly (*if needed*)
- PTDs: # of days the project stoves are in places, used regularly (*if needed*)

Fuel savings

Amount of fuel consumed in baseline vs. project conditions

We measure:

- Baseline fuel consumption
- Project fuel consumption

Climate impact of fuel

How climate-intensive the cooking fuel consumed is

We apply:

- Emission factors
- fNRB (for biomass fuels)

And consider:

- Upstream emissions

Of the key inputs needed to estimate ERs, fuel/energy consumption and fNRB have the biggest impact

Household cooking context and stove use patterns

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We determine:

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- PTDs: # of days the project stoves are in places, used regularly (if needed)

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Amount of fuel consumed in baseline vs. project conditions

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- **Baseline fuel consumption**
- **Project fuel consumption**

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And consider:

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CLEAR emission reductions calculation: Inputs & sources/ methods: Household context and stove use patterns

Inputs needed to estimate ERs	How to determine it	
Inputs/adjustments	**Non-CTEC projects**	**CTEC projects**
Baseline fuel types, fuel mix proportions, and HH size	Baseline scenario survey	Baseline scenario survey
# of project stove user HHs and PTDs	Annual usage survey + visual inspection, or through SUMs	N/A; project fuel consumption directly measured in all project households
	✶ *PTDs are capped if not measured with SUMs*	

Slide 15

ED1 [@Jessica Vargas] could you please delete the “category” column in these 3 slides, so there are just 3 columns? We already say what the category is in the title

Elisa Derby, 2025-11-13T22:24:02.132

CLEAR emission reductions calculation: Inputs & sources/ methods: Fuel consumption

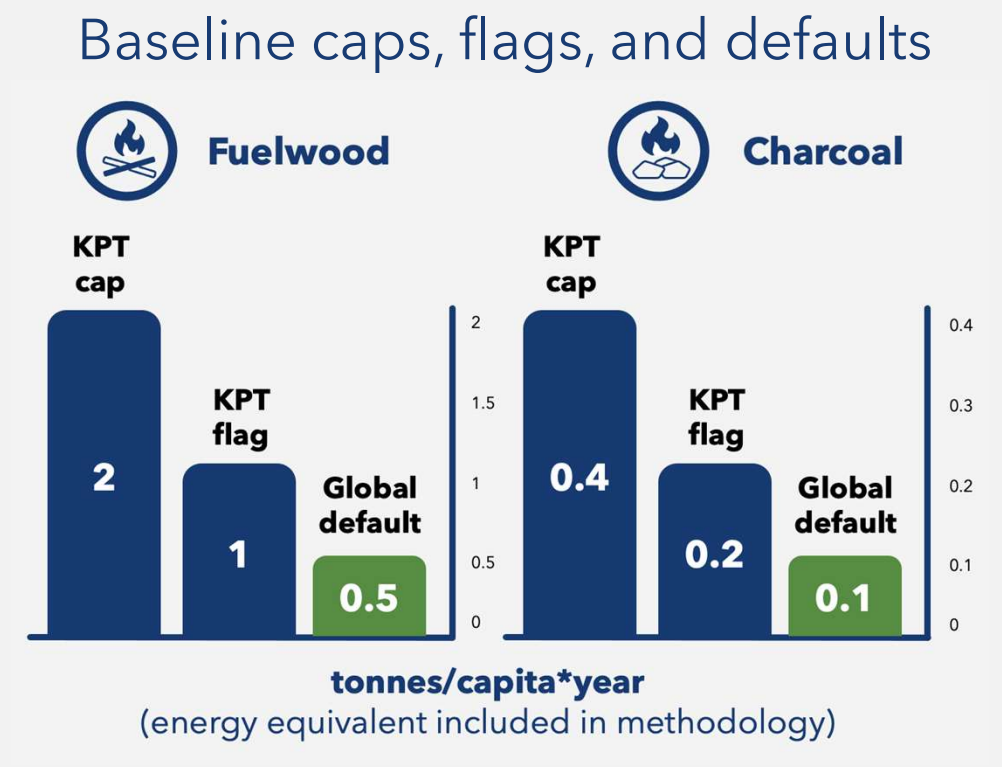
Inputs needed to estimate ERs	How to determine it			
Inputs/adjustments	**Non-CTEC projects**		**CTEC projects**	
Baseline fuel consumption	Global default or KPT		Baseline KPT	Back-calculated from project data, using CCT-derived fuel consumption ratios and usage surveys
Project fuel consumption	KPT		Project KPT (incl. metered data)	Metered project data alone
Hawthorne Effect (HE)	Measured with SUMs		Not required	
		*25% discount to ERs if not measured through SUMs.*		

CLEAR emission reductions calculation: Inputs & sources/ methods: Climate impact of fuel

Inputs needed to estimate ERs	How to determine it	
Inputs/adjustments	**Non-CTEC projects**	**CTEC projects**
Emission factors	Default values from IPCC	
Upstream emissions	Values from literature	
fNRB	MoFuSS-derived values	

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**



Stove use: Non-CTEC options

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

Cap applied to this % if not measured with SUMs

Who gets counted?

- **User**: Project participant with a functioning cookstove that is in use at least once per week
- **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