EPA Indoor Air Quality

Clean Cooking and Climate Consortium (4C)

ETHOS

January 27, 2024

Clean Cooking and Climate Consortium – 4C

Who We Are

A partnership between:

- Clean Cooking Alliance (CCA)
- U.S. Environmental Protection Agency (EPA)
- United Nations Framework Convention on Climate Change (UNFCCC) Secretariat
- Climate and Clean Air Coalition (CCAC)
- Berkeley Air Monitoring Group
- E[illegible]

Clean Cooking and Climate Consortium – 4C

What We Do

4C reduces barriers to entry in the clean cooking carbon market through 5 ecosystem-building pillars:

1. Technical assistance and measurement, reporting, and verification (MRV) support to accelerate progress towards climate goals.
2. Development of a new clean cooking carbon methodology.
3. Affordable access to robust data on key carbon project parameters.
4. Capacity-building for key carbon market stakeholders.
5. Due diligence for buyers of cookstove carbon credits.

Clean Cooking and Climate Consortium – 4C

Why Focus on Cooking and Carbon?

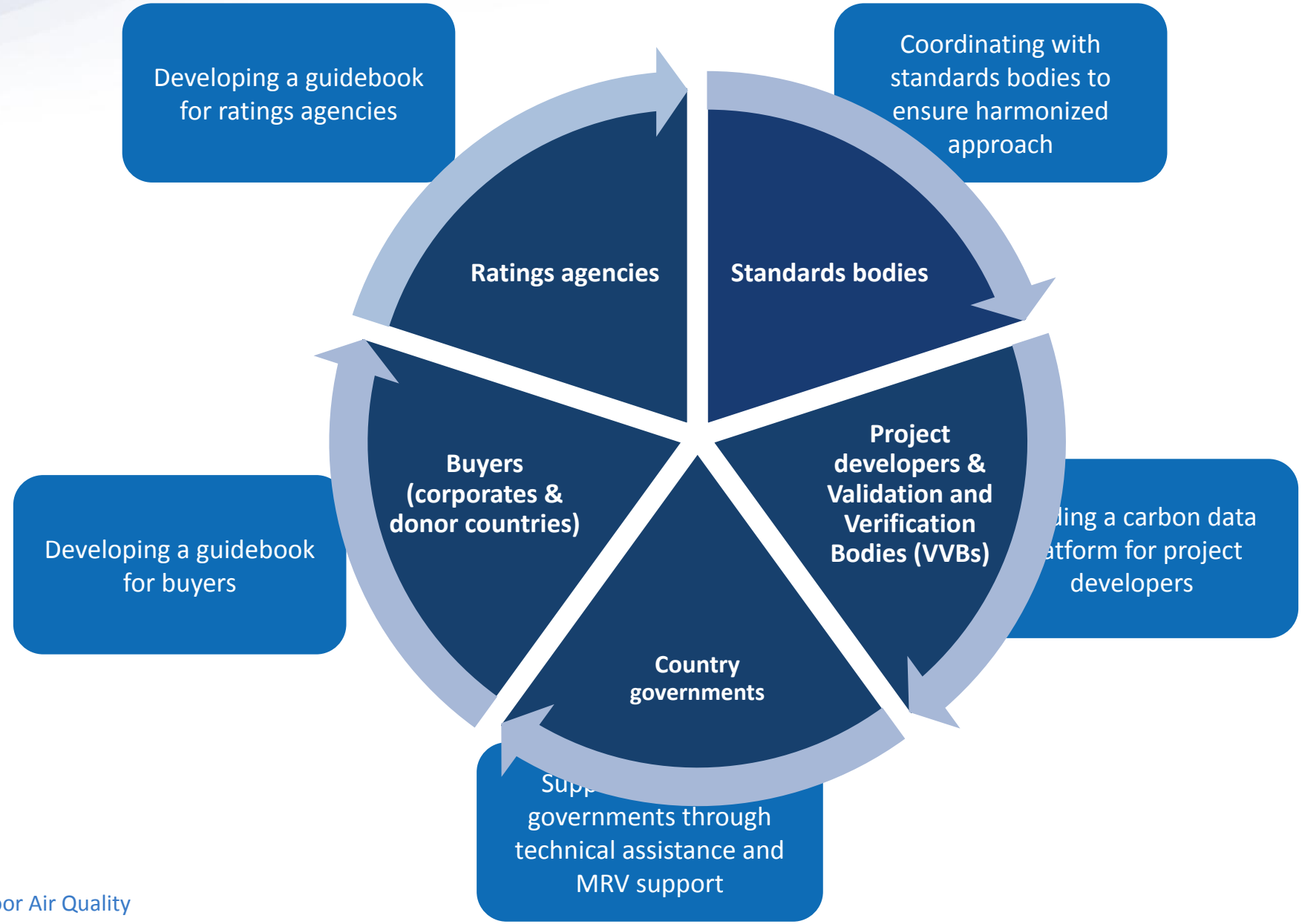
- The greatest barrier to rapidly expanding clean cooking access is **lack of finance**.
- US $10 billion per year is required to achieve universal access—**current clean cooking investment falls woefully short** at only US $200 million annually.
- **Carbon finance represents a potential gamechanger for the ecosystem**, with the potential to unlock tremendous funding flows to support ambitious clean cooking action.
- Currently, the existence of different methodologies results in **a lack of consistency** in the sector and **concerns about credibility.**

New Clean Cooking and Carbon Methodology

Bringing greater transparency, consistency, and integrity to the ecosystem.

- Being drafted in close partnership with more than **250 key stakeholders** including UNFCCC, voluntary standards bodies, and project developers.
    - It is intended to become the standard for cooking projects under **Article 6.2, Article 6.4, and the Voluntary Carbon Market (VCM)**.
- **Key features include:**
    - Designed to cover all cooking transition scenarios.
    - Incorporates the latest science on key parameters.
    - Ensures reliable data to meet project developer needs.
    - Will improve verification processes.

Engaging key stakeholders



Methodology Development

Timeline and Process

Inception

Oct 2022

Sector stakeholders express need for improvements to carbon methodologies for clean cooking projects.

Consultation

Nov 2022 – Jun 2023

4C begins consultation process to understand challenges in current methodologies and prepare for development of new methodology.

Development

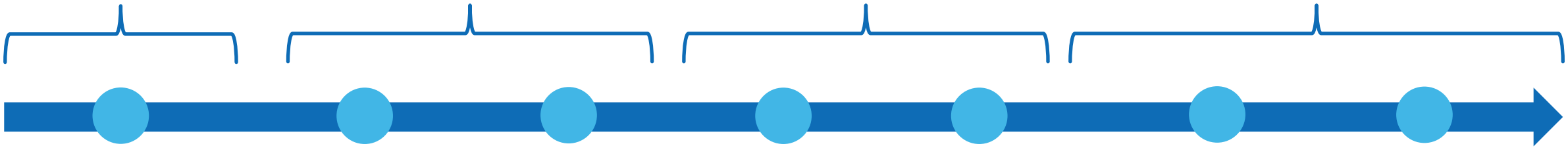
Jul 2023 – Sep 2023

4C convenes relevant experts to elaborate on first draft of methodology modules.

Finalization

Oct 2023 –

4C solicits ongoing feedback to refine and complete methodology.



Oct 2022

MRV meeting at CCF in Accra to determine path forward for clean cooking methodologies

Nov 2022 - May 2023

Series of virtual stakeholder consultations

Jun 2023

Hybrid meeting for project developers in Nairobi

Jul 2023

Methodology development workshop in Washington, DC

Virtual session for remote stakeholders

Sep 2023

Update on methodology development at ACW in Nairobi

Oct - Dec 2023

Continued stakeholder consultation

Continued methodology development

2024

Release draft methodology

Formal commenting period

Finalize methodology

Cookstove carbon methodology development

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Kirkland, WA

4C is in the process of developing a new cookstove carbon methodology for use by interested parties (e.g., under Art. 6.2, VCM and 6.4, subject to approvals).

Being developed in line with the latest science and in response to needs expressed by sector stakeholders, including:

- Reliable data to meet project developer needs
- Improved verification processes
- Incentivize best practices

4C's methodology grew out of needs expressed by the sector and incorporates multiple rounds of stakeholder feedback

Inception	Consultation	Development	Finalization
Oct 2022	Nov 2022 – Jun 2023	Jul 2023 – Sep 2023	Oct 2023 –

Takeaways:

- Clean cooking carbon methodologies must be improved to overcome current challenges and better serve the sector.

Takeaways:

- We must find a way to use common baselines and the latest data supported by the best science while also not crushing the market.
- There should be a concerted movement/agreement among all actors in the space to start using the new default parameters at the same time.

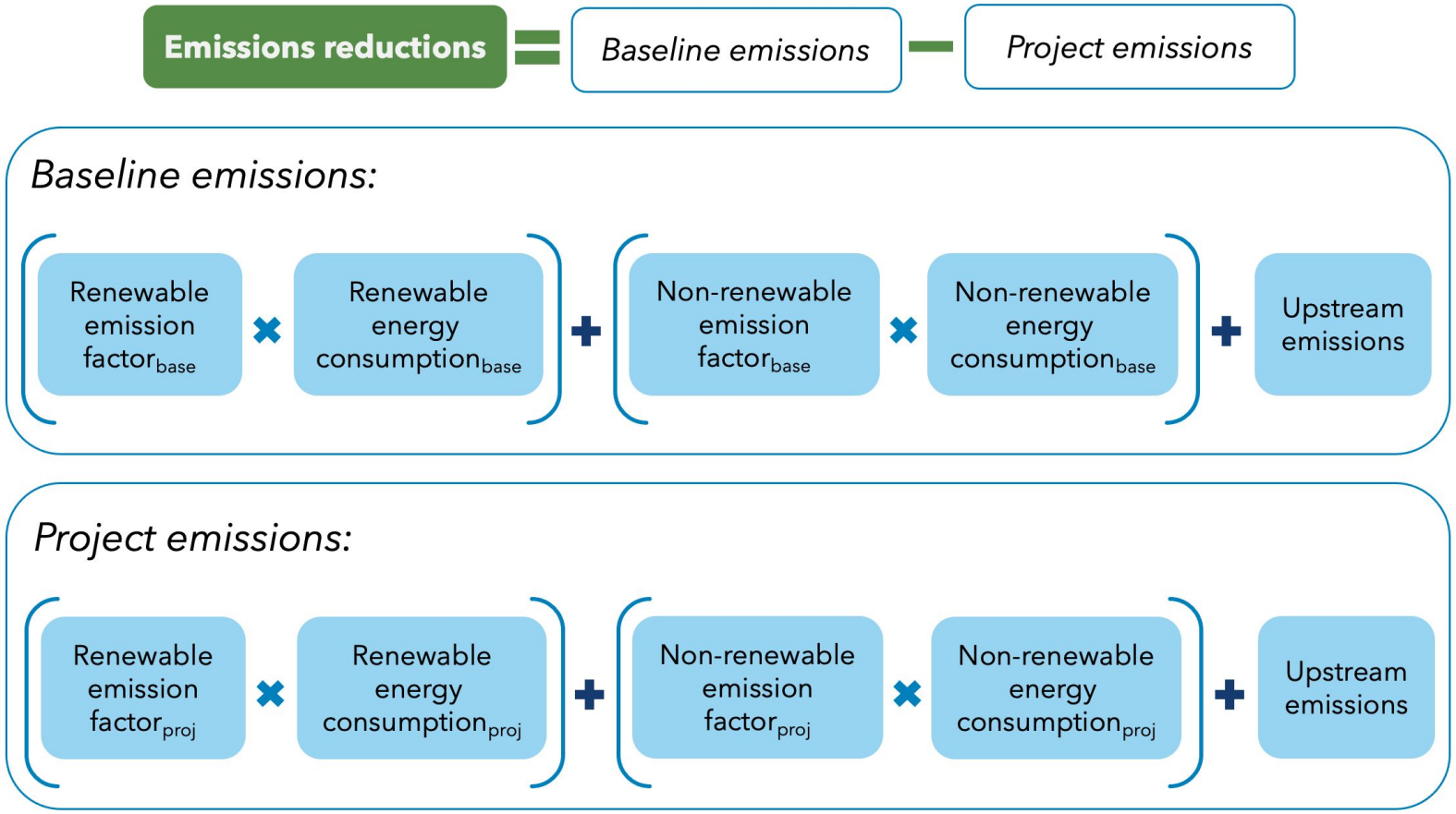
Takeaways:

- A comprehensive methodology, with standards bodies aligned on default values and best practices, will benefit the entire sector.
- Incentivize best practices, most accurate data, and clean fuels and cleaner cooking technologies.
- Parameters based on the latest science will support buyer confidence.

Next steps:

- Continue stakeholder consultation for draft methodology at COP28 in Dubai in Nov-Dec 2023.
- Complete any final revisions to draft methodology.
- Formal commenting period.
- Finalize methodology.

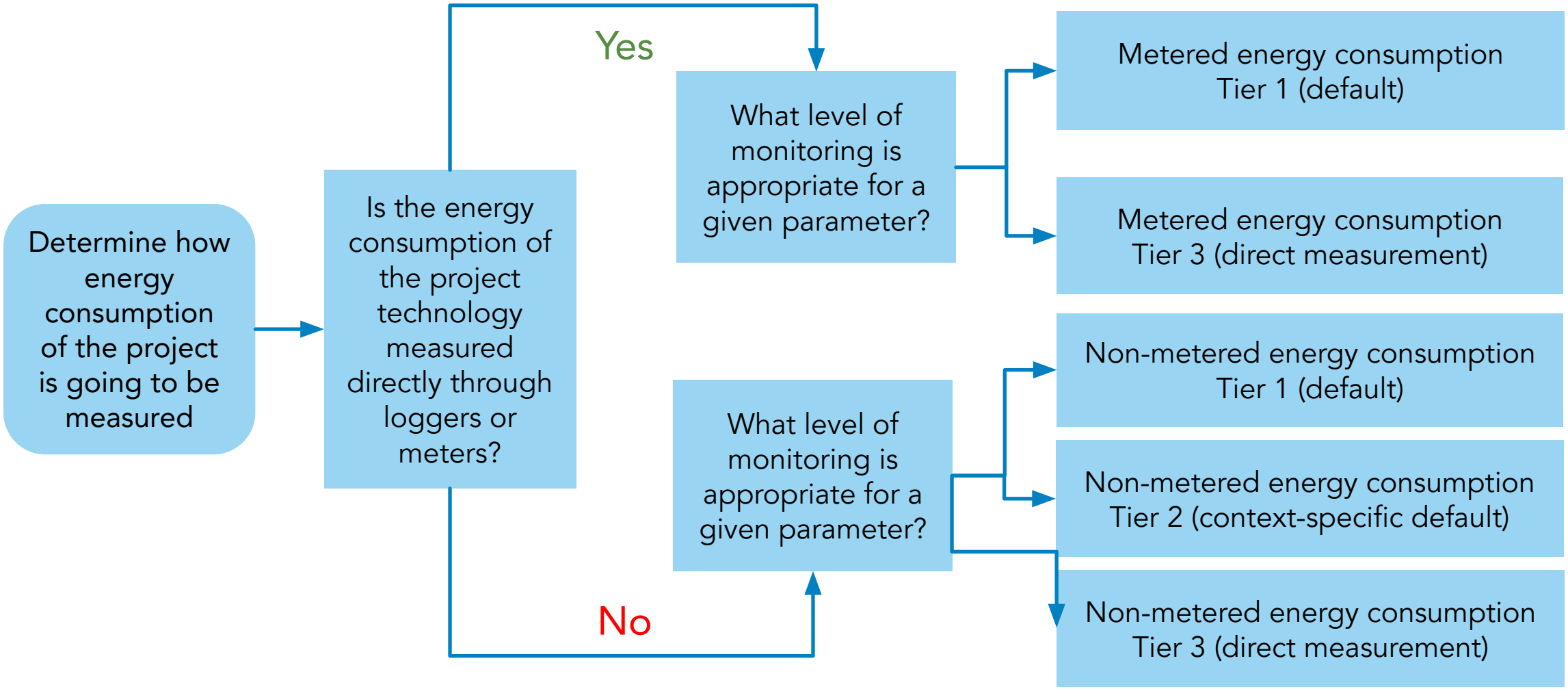
Overview of emissions reduction calculation approach



Summed over all stoves in home (as relevant)

- Add up emissions from cooking sources in home before and after intervention
- Holistic approach that builds on many approaches from different methodologies
- Better accounting for impact of stacking
- Leakage, usage not shown here

Simplified module decision tree overview



CLEAN COOKING ALLIANCE

Overview of tier mod

- Tiers represent different levels of monitoring rigor
- Aims to incentivize robust monitoring by allowing for more accurate, project-specific parameter estimates.
- Provide pathway for simpler monitoring with more conservative assumptions
- Each parameter can be monitored at distinct tier levels

Non-metered energy consumption	Tier and associated example approaches
Baseline	**T1 (default):** • Global default value, or • Conservative assumption from vetted literature, or • Published standardized baselines
	T2 (context-specific default): • More granular default value (e.g., regional, country-level)
	T3 (direct measurement): Direct measurements where possible
Project	T1 (default): Low-effort/basic data collection with ceiling or discounts to ensure conservativeness.
	T2 (context-specific default): **N/A**
	T3 (direct measurement): • Representative study with direct measurements where possible • Modelling with vetted sources of input data

Overview of non-metered energy consumption module

Non-metered	Tier and associated option
Baseline energy consumption	T1 (default): Conservative global default: 0.4 t/cap/year in wood equivalent energy= 0.0062 TJ/cap/year. Apportion based on baseline survey of stove use estimates and assumption that 0.00093 TJ/cap/year is required for useful energy (0.15*0.0062 TJ/cap/year).
	T2 (context-specific default): More granular default (e.g., regional, country-level). Conservative assumption from literature (e.g., through standardized baselines). DNAs may specify requirements informed by guidance on what is/isn't acceptable.
	T3 (direct measurement): Representative study with direct measurements of fuel consumption in homes (e.g., KPT or sensor-based alternative).
Project energy consumption	T1 (default): Determine amount of equivalent energy required for project technology to provide same level of service as baseline technologies using ISO thermal efficiency ratios. Use CDM thermal efficiency defaults for baseline when appropriate.
	T2 (context-specific default): N/A
	T3 (direct measurement): Representative study with direct measurements of fuel consumption in homes (e.g., KPT or sensor-based alternative).

Under consideration:

- Appropriate ceiling for Tier 1
- Sources that are acceptable alternatives to defaults (e.g., ISO Clean Cooking Catalog data, older IWA data)
- Process for determining acceptable sources
- Guidance for which stoves need to be monitored

Cookstove Carbon Calculator

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Nordica MacCarty

Berkeley Air Monitoring Group

Motivation

New Methodology from 4C

New web-based tool

Gold Standard for the Global Goals

TPDDTEC, V4

ER calculation tool

Standard	**GS4GG**
Methodology	**REDUCED EMISSIONS FROM COOKING AND HEATING:Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC), Version 4.0**
Version of the ER tool	**1.2**
Date	**12/6/2022**
Note	**Only change the cells with YELLOW highlight**

Please also check the "read me "worksheet" before start filling the information.

This tool is applicable for the project with **single project scenario**. In case the PD has more than 1 type of project scenario (e.g., project stove which are 5% different in absolute term, the PP could (1) create different files for different project scenarios OR (2) Copy the tab "ER schedule per month) but edit the input parameters accordingly. The summary table in tab "Cover" should also be updated.

Project Information		
Project name	Super Saver ICS distribution in Wonderland	Insert project name
GS ID	GS12345	Insert GS ID.
Crediting period	5 years, renewal twice	
Project Start date	10/18/2018	Insert Project start date (DD/MM/YYYY).
Crediting period 1- Start date	10/18/2019	Insert CP start date (DD/MM/YYYY).
Crediting period 1- End date	17/10/2026	Insert CP end date (DD/MM/YYYY).
Crediting period 2- Start date		Insert CP start date (DD/MM/YYYY).
Crediting period 2- End date		Insert CP end date (DD/MM/YYYY).
Crediting period 3- Start date		Insert CP start date (DD/MM/YYYY).
Crediting period 3- End date		Insert CP end date (DD/MM/YYYY).
Baseline Cookstove type	TSF	Insert the type of baseline cookstove for example three stone, mud stove etc.
Project Technology	Super Saver	Insert the type of project cookstove (brand name/design etc.) for example Ecostove/ rocket type
Project Technology Useful Lifetime	5	Select the useful lifetime of the project cookstove as per the manufactures specifications.
Calculation method	Method 1	Select the methodology calculation method. Please note that Method 3 will have 2 case of project fuel which are Fossil fuel - FF (such as LPG) and non-fossil fuel - NFF (such as ethanol, biomass)

Emission reduction per year

Monitoring period	From	To	Emission reduction before leakage (VERs)	Leakage	Emission reduction AFTER leakage (VERs)	Note
Year 1	10/18/2019	10/17/2020	12,377		12,377	Issued
Year 2	10/18/2020	10/17/2021	19,725		19,725	Issued
Year 3	**10/18/2021**	**10/17/2022**	**26,145**		**26,145**	**Requesting issuance**
Year 4	**10/18/2022**	**10/17/2023**	**31,584**		**31,584**	**Requesting issuance**
Year 5	*10/18/2023*	*10/17/2024*	*33,697*		*33,697*	*Forecast*
Year 6	*10/18/2024*	*10/17/2025*	*33,669*		*33,669*	*Forecast*
Year 7	*10/18/2025*	*10/17/2026*	*33,751*		*33,751*	*Forecast*
Year 8	*10/18/2026*	*10/17/2027*	*33,833*		*33,833*	*Forecast*
Year 9	*10/18/2027*	*10/17/2028*	*33,697*		*33,697*	*Forecast*
Year 10	*10/18/2028*	*10/17/2029*	*33,669*		*33,669*	*Forecast*
Year 11	*10/18/2029*	*10/17/2030*	*33,751*		*33,751*	*Forecast*
Year 12	*10/18/2030*	*10/17/2031*	*33,833*		*33,833*	*Forecast*

Cover | Read me | Parameters | Method 1 | Method 2 | Method 3_NFF | Method 3_FF | ER schedule per mont

Goals

User friendly

Easier Decision Making

Quick and Accurate Calculations

Update-ability

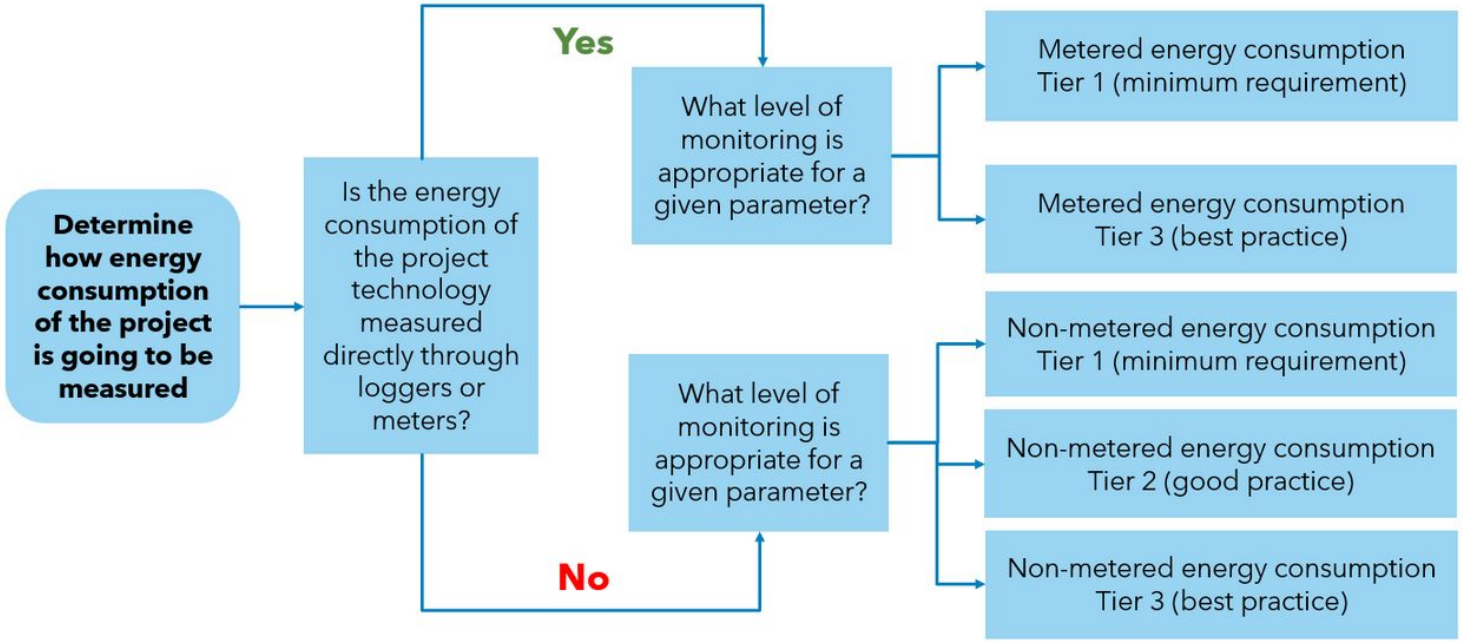
Accessible

Calculator

01

How The Calculator Works

Our calculator uses the latest data to help you understand the impact of your cookstove



"Cookstove carbon methodology development Clean Cooking and Climate Consortium (4C)." Clean Cooking Alliance, 2023

Calculator

01 How The Calculator Works

Our calculator uses the latest data to help you understand the impact of your cookstove

02 Calculating Emissions Reductions

Our tool helps you understand the positive environmental impact of switching to clean cookstoves

Emissions reductions = *Baseline emissions* − *Project emissions*

Baseline emissions:

(Renewable emission $factor_{base}$ × Renewable energy $consumption_{base}$) + (Non-renewable emission $factor_{base}$ × Non-renewable energy $consumption_{base}$) + Upstream emissions

Project emissions:

(Renewable emission $factor_{proj}$ × Renewable energy $consumption_{proj}$) + (Non-renewable emission $factor_{proj}$ × Non-renewable energy $consumption_{proj}$) + Upstream emissions

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Calculator

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02 Calculating Emissions Reductions

Our tool helps you understand the positive environmental impact of switching to clean cookstoves

03 Environmental Impact of Cookstoves

Our tool calculates carbon, particulate matter 2.5, black carbon and organic carbon savings

Next Steps

Cookstove Carbon Calculator

Baseline

Three-stone Fire

Project

Rocket