CLEAN COOKING ALLIANCE

Climate Action and Clean Cooking Co-benefits Workshop Report

Introduction

On September 9-11th, 2019, the UNFCCC secretariat, Climate and Clean Air Coalition, and the Clean Cooking Alliance hosted a workshop on climate action and clean cooking co-benefits, focusing on balancing practical implementation and science-based methodologies for project monitoring, reporting, and verification. The objective of the workshop was to increase the effectiveness of clean cooking programs as sustainable climate action that realize quantifiable co-benefits on the environment and air pollution. This report highlights the discussions held and outcomes of that workshop.

Background

Clean cooking is vital to combatting global climate change. Cooking, heating, and lighting emits up to 58% of global black carbon man-made emissions, a significant contributor to climate change (IIASA GAINS 2017). Many of today's more modern stoves are highly efficient and through a combination of lower fuel use and cleaner combustion, can reduce black carbon emissions by 50-90% (Garland et al. 2017). The Intergovernmental Panel on Climate Change (2018) acknowledges that reducing black carbon, methane, and other short-lived climate pollutants would not only have substantial co-benefits on health and air pollution but could, in the short-term, contribute significantly to limiting global warming, and thus, if implemented together with immediate and drastic cuts in CO_2 emissions, provide an immediate mitigation measure toward the long-term goal of limiting warming to 1.5ºC above pre-industrial levels, estimated to be critical for avoiding the most dangerous impacts of climate change.

Recognizing clean cooking as an important climate action, many countries included household energy programs in their National Determined Contributions (NDCs) under the Paris Agreement. The Paris Agreement, adopted by 195 countries, serves as the main vehicle to increase countries climate ambition while promoting sustainable development. Cooperative approaches for climate action embedded under Article 6 of the Paris Agreement include market-mechanisms (i.e. direct cooperation among countries under Article 6.2 and new sustainable development mechanism (SDM) under Article 6.4). Parties are currently discussing rules for the new mechanisms with a view to finalize them by COP25. The SDM will likely build on the lessons learned under the clean development mechanism (CDM), that was set up under the Kyoto-Protocol as a financial mechanism for incentivizing climate action. The CDM successfully channeled a

substantial amount of investment to clean cooking projects; in 2019, there were 69 programs of activity (PoAs) and 303 component project activities registered for clean cooking projects. However, the CDM was not without challenges. In particular, project developers cite the high cost and lengthy process of certification. Stakeholders have also called for more robust monitoring and verification tools and a frank discussion on how to balance science-based methodologies with practical and efficient implementation. Through 2019-2020, UNFCCC Parties are expected to set the rules for the Article 6 mechanisms and start their implementation, deciding on what will happen to existing CDM credits, projects, and methodologies.

There is a strategic opportunity to reset the conversation around climate finance and clean cooking. With this transition, many countries and project developers are seeking guidance on the best practices and methodologies for deploying clean cooking projects and programs as a source of market-based climate action. Investing in clean cooking projects offers countries measurable solutions not only to mitigate climate change, but also to realize substantial co-benefits on health and air pollution. 2019 is a critical year to enrich the conversation around evidence-based methodologies and tools for monitoring and verifying clean cooking generated carbon credits taking into account lessons learned.

Further, the evidence-base for clean cooking impacts has advanced greatly in the past five years. A significant amount of research has been recently published that should be used to inform the development of monitoring and verification, standards, climate financing, and technology and fuels selection. For example, in 2019 a research study was launched to deepen the understanding of the relationship between emissions and exposure. New in-field measurements of black carbon emissions for liquid, gas, and high-performing biomass stoves have also been recently reported. And since 2015, new methodologies relevant to household energy projects have been published for assessing woodfuel renewability, black carbon reductions, health impacts (as averted disability-adjusted life years [aDALYs]).

Clean cooking must be part of the climate solution and as such climate financing is poised to play an increasing role in the clean cooking sector. Credibly demonstrating the co-benefits of clean cooking on climate, air pollution, and health, and providing stakeholders with the evidence-based best practices and tools for program design, implementation, and monitoring and verification will motivate stakeholders to act now.

Workshop Purpose

The purpose of this workshop was to bring together key stakeholders (project developers, clean cooking technical experts, researchers, and climate finance partners) to:

1) disseminate the latest evidence on the relationship between cookstove emissions and health and climate impacts;

2) identify the regulatory, technological, and financial barriers to the effective implementation of clean cooking projects deployed through climate finance (or with other Results-based Finance—RBF—mechanisms); and

3) identify solutions to address the identified barriers based on the lessons learned from project developers and the most up-to-date science on emissions, technology, measurement, and policy.

Participant overview

The 32 attending workshop participants were comprised of carbon project developers (10), researchers (11), certification bodies (3) and other clean cooking technical experts (8).

Organization	**Role**
Clean Cooking Alliance	Workshop convener
Climate and Clean Air Coalition	Workshop convener
UNFCCC Secretariat	Workshop convener, Certification body
The Gold Standard Foundation	Certification body
Carbon Sink Climate Focus C-Quest Capital South Pole Carbon The Africa Stove Company Uganda Carbon Bureau VNV Advisory Services LLP Ecoeye BIX Capital	Project developers

Autonomous University of Northern Mexico/University of British Columba Berkeley Air Monitoring Group Duke University Mountain Air Engineering National Institutes of Health Nexleaf North Carolina State University Stockholm Environment Institute University of California, Berkeley	Researchers/MRV experts
U.S. Environmental Protection Agency	Development organization technical expert
World Bank (ESMAP and Ci-Dev)	Development organization technical expert

Agenda overview

The overall objectives of the first two days were two-fold: first, to disseminate the latest evidence on the relationship between cookstove emissions and health and climate impacts, with the intent that everyone in the room was starting from the same base of knowledge; and second, to identify the regulatory, technological, and financial barriers to the effective implementation of clean cooking projects deployed through climate finance (or other RBF mechanisms). Throughout days two and three, the focus moved to identifying solutions to these barriers based on scientific evidence and the lessons learned from project developers.

Monday

The first morning focused on current applications of carbon and other RFB-related research. This included a UNFCCC-led update on the CDM, an overview of what to expect under the Paris Agreement, a presentation on fNRB[1] baseline values, and a facilitated discussion on key challenges and opportunities under the Paris Agreement, including priorities for refining methodologies. A second morning session led by The Gold Standard Foundation (GS) comprised an update on The Gold Standard Foundation and review of GS methodologies, including gender, black carbon and aDALYs. This was followed by a facilitated discussion on challenges and opportunities in working with Gold Standard as compared to UNFCCC, including related to the

[1] fNRB is fraction of non-renewable biomass, or fraction of fuelwood/charcoal consumption that is derived from non-renewable sources

sustainable development goals, as well as key process/methodology gaps and possible solutions.

The afternoon began with a panel discussion with project developers (C-Quest Capital, South Pole; Uganda Carbon Bureau, BIX, and Climate Focus) on the challenges of developing clean cooking projects with carbon finance or RBF, how they have addressed them, and opportunities moving forward, with a common desire to simplify processes.

Through these sessions the group was able to reach a common understanding on the current state of clean cooking project activities in the carbon market, the methodologies for monitoring, reporting and verification (MRV), and options for practically implementing MRV.

The rest of the afternoon focused on research updates, with a goal to disseminate the latest evidence on the relationship between clean cooking solutions emissions and health and climate impacts, and also introduce new methodologies that are under development to fill existing gaps. Presentations covered a testing overview, black carbon in-field emissions, a new drudgery methodology, a planned review of health, gender and livelihoods RBF methodologies, details on Korean carbon market initiatives, and a facilitated discussion.

Tuesday

Day two began with CCAC presenting an overview of the importance of black carbon for the clean cooking sector and how increased consideration of these emissions represents a unique opportunity to better bring together health and climate change dimensions in the transition toward a sustainable household energy sector. The morning continued with a focus on the ISO lab and field standards, including presentations detailing how each standard works, as well as breakout sessions with project developers to discuss challenges and recommendations for ISO implementation, and with researchers to identify research gaps and how to better translate research into project implementation and policy.

The afternoon began with an overview of available tools for MRV and their practical implementation, including HAPIT, Gold Standard Impact tools, MoFuSS, and monitoring technologies and best practices. From there the group reviewed the key challenges and opportunities articulated over the first two days and broke out into small groups of mixed stakeholders to discuss remaining challenges and how to address them. Each of the stakeholder groups (project developers, certification bodies and researchers) then met in small groups to identify what from each of the other groups would help them be more effective.

Wednesday

The third day focused on reaching consensus on the challenges and barriers identified, the solutions proposed, and next steps to address them, including an offers-and-requests session wherein each individual workshop participant made a personal and/or organizational commitment to the group to help meet one or more of the needs identified.

Overview of barriers identified by the group

Over the course of the workshop, the group identified the following regulatory, technological, and financial barriers to effective implementation of clean cooking projects:

- A need to harmonize and simplify methodologies.
- A need to bring down the cost and complexity of certification.
- A need for consistency and stability in MRV requirements over time, to create certainty with buyers.
- A need to establish conservative default factors across the parameters necessary for project monitoring that are credible and context-specific.
- Costs and resources needed for MRV for project developers, including accurately measuring stacking.
- The cost of purchasing ISO standards.
- The lack of a market for black carbon reductions.
- Projects accessing carbon credits yet disseminating mediocre biomass stoves.
- A need for evidence-based methodologies for new technologies, such as electric cooking and ethanol.
- Uncertainty around the future of the CDM, and how the Paris Agreement will be implemented.

Opportunities identified to fill gaps in knowledge and support

As a result of the segregated stakeholder group brainstorming, each group developed a wish list of support they would like from the other groups.

Certification bodies

Certification bodies had a relatively small list of requests for researchers and project developers.

From researchers they requested more information on reference data, especially baseline technologies/fuels to reduce cost of monitoring and project design, which would help both them and project developers. They also requested collaboration with other agencies who are collecting data, to integrate surveys. Finally, they wanted more information around new technologies for MRV, and in particular wanted to evidence to support arguments that new technologies could justify smaller sample size requirements; they wanted to know how to work with these new MRV technologies.

On a related note, they requested that project developers champion these new technologies and test them out in order to give feedback to researchers and help the certification bodies make informed decisions around new requirements.

Project developers

Indicative of the myriad challenges they face, project developers identified many ways researchers and certification bodies could help them both reduce costs and ensure more successful implementation.

From researchers they requested more opportunities to work with researchers and access their research and data. This was particularly true for calculating fNRB, fuel use, baseline data, survey design, and statistical analysis—wherever possible they would like to have default values. They expressed interest in case studies at the country level putting together the critical data necessary for project development. They also wanted help from researchers in making decisions about which stove should be included in a project, how to make the decision, what the evidence for performance is, and how appropriate a stove is for a given context. Project developers requested research on behavior change and adoption/stove use at the country and sub-national level, and would like a database on researchers in the sector categorized by subject-expertise, and updated with ongoing studies and what data researchers have access to, so they know who to contact for specific help.

From certification bodies they wanted what boiled down to simplified processes and certainty. These categories included specific requests such as a mechanism for Gold Standard/UNFCCC to flag when changes are made to methodologies and certification/MRV requirement, and what it means for the project developers. They also wished for a reduce need for engagement by multiple DOEs in their projects, and a simplified DOE reviewer process. In addition to having lightweight verification methodology, they noted that having templates and tools for emissions reductions calculations and for monitoring would help them improve their efficiency and effectiveness, as would having centralized place for project developers to access all the relevant tools and trainings for developing projects. They noted that the CDM regional collaboration centers have been tremendously useful, and it would be helpful to have something similar for the Gold Standard. Project developers also want certification bodies to understand that monitoring SDG impacts is not always quantitative and needs to account for qualitative indicators. They requested that certification and methodology groups collaborate to streamline processes and reduce duplication. And finally, they would like to have access to ISO standards.

Researchers

Generally, and perhaps unsurprisingly, researchers wanted more information.

Requests from the researchers for project developers included providing granular information on project development and MRV costs to identify pain points and recommend cost-effective monitoring. They also requested more transparent data, whatever is shareable, including but not limited to the purposes of publishing. Researchers would like to know project developer technical capacities, needs, specs, to recommend the best monitoring options, and would like the opportunity to review MRV

plans and provide input. Finally, researchers requested that project developers please monitor stacking and disuse of traditional stoves.

From certification bodies researchers wanted more information on Cookstove IQ tool, guidance on how they can do to better facilitate a black carbon market, and the development of LPG and electric methodologies. They also requested a simple high-level cheat sheet on how the entire carbon market works.

Recommendations

Coming out of the workshop, the group had four main categories of recommendations:

- Continued exchange;
- Integration of black carbon into the carbon market;
- Knowledge management/shared resource; and
- Support to NDCs.

Continued Exchange

The desire for continued exchange spanned several levels. The group universally recognized that the opportunity to have researchers, project developers and certification bodies all in the same room allowed all participants to reach new understandings about the roles of the other stakeholders in clean cooking climate activities, as well as opportunities for themselves. The participants expressed an interest in continued dialogue with the group present at the workshop, including to continue an ongoing conversation about how to use the carbon market to promote higher quality stoves. The participant group also saw value in recreating the experience with other stakeholders of the same types elsewhere, specifically to undertake Climate Action and Clean Cooking Co-benefits workshop like this one regionally in East Africa, West Africa, and Asia—with local project developers, researchers and certification body representatives.

Integration of black carbon into the carbon market

The group unanimously expressed a desire for the integration of black carbon into the carbon market, and in some cases wasn't aware that it is not currently possible to generate carbon credits for black carbon reductions in either the voluntary or compliance markets. The group discussed the need for a review of the nascent Gold Standard black carbon methodology, and opportunities to strengthening it (underway already, as detailed under Next Steps below), as well as publishing and further disseminating the revised methodology though the CCAC network. The group proposed undertaking additional field studies, and more broadly disseminating results of black carbon reduction activities to date. The group proposed advocating for the inclusion of black carbon within NDCs at the country level.

Knowledge management/shared resources

The workshop participants identified a number of opportunities for the development or sharing of existing resources. A baseline consumption database has already been started but needs to be expanded. The group recommended the development of a

standardized emissions reduction calculation template, and database of more contextualized fNRB default values. Knowledge management documents identified to support Project Developers include summaries of relevant recent research findings; case studies highlighting cost effectiveness and reliability of monitoring devices; guidance on sample sizes under different high/low-tech monitoring scenarios; and guidance for using the new ISO lab standard and comparison of ISO lab vs. WBT. The group also recommended the development on an expert assistance network.

Support to NDCs

While all of the details of how the Paris Agreement will be implemented are not yet known, the group identified support to countries developing their NDCs as an important opportunity for contribution. This envisioned support takes the form of regional workshops to build capacity for incorporating household energy goals into NDCs; developing a harmonized approach for household energy credits; support to convert high-level NDC goals into an investment plan; engaging with policymakers; understanding the requirements and capacities needed for monitoring; and expanding regional collaboration centers.

Next steps

Of the recommendations made, one already underway is the review of the black carbon methodology, which is being undertaken along with a review of the gender and health methodologies by Berkeley Air Monitoring Group, funded by the World Bank. In addition, UNFCCC funded and has started the baseline fuel consumption database referenced above. With appropriate funding CCAC, UNFCCC and the Alliance could spearhead regional CACCCB workshops and/or a follow-on workshop focused specifically on monetizing black carbon. The participants also suggested additional meetings for this same workshop group to develop guidance and opportunities for engaging with NDCs, and guidance materials to share with them. These recommendations have been presented to the CCAC Household Energy Initiative partners group which has decided to integrate some of them into the priorities for action of the initiative over the next two years.

Workshops participants made specific commitments on the last day of the workshop that are also part of the group's next steps. Researchers committed to be a resource and available to support project developers; and to continue to develop tools that are accessible and user friendly. Project developers committed to collaborate with researchers; and to transparent data sharing. Gold Standard and UNFCCC vowed to bring more stability and lower costs; and to balance credibility, with simplification. The World Bank committed to work with participants to integrate the concept of data-driven approaches to better benefit households in Ci-DEV. BIX promised to work with practitioners in the field to develop investable opportunities based on certifiable outputs that can be monetized, not only carbon, but other co-benefits; and to more explicitly bring that to current and future investors. CCAC committed to continue the discussion on black carbon and how to increase emissions reductions and their monitoring and monetization in the household sector, including in the context of the new mechanism

under Article 6 of the Paris agreement and as part of countries' NDCs. These commitments are included in detail in the Annex.

Additional specific next steps planned by participants were reported in workshop evaluations, highlighted below.

Participant evaluations

The Alliance asked participants to fill out evaluation surveys at the end of the workshop. Of those reporting, the consensus was that workshop objectives were met, with a need to continue conversations over time. A common thread to what participants found most useful was the face-to-face connection and discussion with the other workshop participants, both within and across stakeholder groups. One researcher appreciated being able to glean "useful perspectives that are difficult to get in a non-interactive way (e.g. reading websites, docs)." Several respondents noted the presence and active engagement of certification bodies as especially valuable.

Both researchers and project developers reported gathering information and tools that they will use in their work, including integrating RBF metrics and approaches into research planning, and incorporating new MRV techniques into carbon projects.

One project developer shared their initial displeasure at the low default fNRB baseline value that SEI presented, and their resulting interest in and appreciation for how the value was calculated, and the fact that it is geographically more accurate and up-to-date than prior sources.

Two researchers reported plans for follow-up collaboration with specific project developers at the workshop to support their work in various ways. One plans to engage with Gold Standard and UNFCCC to help suggest improvements in their methodologies to incentivize measurements over default estimates; and also plans to improve monitoring methods and equipment to lower costs and increase accuracy to address the needs of monitoring in the carbon markets. One specific plan is to pilot monitoring programs for biogas projects that demonstrate the benefits of monitoring biogas usage and address the technical challenges of cost-effective monitoring.

One participant noted their disappointment that there was not a larger diverse group of financiers representing various RBF approaches. This is a regret shared by workshop organizers, who plan to address this by engaging Cardano (a planned participant who had to cancel) and others in follow-up conversations.

One participant closed their evaluation by saying "The atmosphere of the workshop was very inspiring, and I'll sure keep on following the development of the sector more actively thanks to this experience."

Annexures:

- Participant list
- Final participant agenda
- Detailed facilitators agenda with the adjustments made during the workshop (available upon request)
- Presentation slides (link)
- Participant commitment list (including org but not individual names)
- Workshop photos (available upon request)

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

CLEAN COOKING ALLIANCE

Climate Action and Clean Cooking Co-benefits Workshop

Company/Institution	Name
Autonomous University of Mexico	Ulises Olivares
Autonomous University of Mexico/University of British Columba	Adrian Ghilardi
Berkeley Air Monitoring Group	Michael Johnson
BIX Capital	Jeroen Blum
Carbon Sink	Ulla Mauno
Clean Cooking Alliance	Katie Pogue
Clean Cooking Alliance	Neeraja Penumetcha
Clean Cooking Alliance	Peter George
Clean Cooking Alliance	Seema Patel
Clean Cooking Alliance, consultant	Elisa Derby
Climate and Clean Air Coalition	Sophie Bonnard
Climate Focus	Hilda Galt
C-Quest Capital	Ken Newcombe
Duke University	Subhrendu Pattanayak
Ecoeye	Kyunghwa Jeon
Ecoeye	Ho Hyun Bae
Mountain Air Engineering	Ryan Thompson
National Institute of Health	Josh Rosenthal
National Institute of Health	Ashlinn Quinn
Nexleaf	Nithya Ramanathan
North Carolina State University	Andy Grieshop
South Pole Carbon	Tanushree Bagh
Stockholm Environment Institute	Rob Bailis
The Gold Standard	Vikash Taylan
Uganda Carbon Bureau	Sarah Kihuguru
UNFCCC secretariat	Gajanana Hegde
UNFCCC secretariat	Kenjiro Suzuki
University of California, Berkeley	Ajay Pillarisetti
US Environmental Protection Agency	John Mitchell
VNV Advisory Services LLP	Manjari Mahesh Chandra
World Bank, Ci-Dev	Matt King
World Bank, ESMAP	Zijun Li

Climate Action and Clean Cooking Co-benefits Workshop

Climate Action and Clean Cooking Co-benefits—*a workshop on balancing practical implementation and science-based methodologies for project monitoring, reporting, and verification.*

Location: 1750 Pennsylvania Ave NW, 12th floor conference rooms, Washington, D.C., USA

Date: September 9th-11th, 2019

Hosts: UNFCCC secretariat, the Climate and Clean Air Coalition, and the Clean Cooking Alliance

Funding: The Climate and Clean Air Coalition

The objective of this workshop is to increase the effectiveness of clean cooking programs as sustainable climate action that realize quantifiable co-benefits for the environment and air pollution.

Background: Clean cooking is vital to combatting global climate change. Cooking over polluting, open fires or inefficient stoves emits one-quarter of global black carbon emissions, a significant contributor to climate change. Many of today's more modern stoves are highly efficient and through a combination of lower fuel use and cleaner combustion, can reduce black carbon emissions by 50-90% (Garland et al. 2017). The Intergovernmental Panel on Climate Change (2018) acknowledges that reducing black carbon, methane, and other short-lived climate pollutants would not only have substantial co-benefits on health and air pollution but could, in the short-term, contribute significantly to limiting global warming, and thus, if implemented together with immediate and drastic cuts in CO_2 emissions, provide an immediate mitigation measure toward the long-term goal of limiting warming to 2°C above pre-industrial levels, estimated to be critical for avoiding the most dangerous impacts of climate change.

Recognizing clean cooking as an important climate action, many countries included household energy programs in their National Determined Contributions (NDCs) under the Paris Agreement. The Paris Agreement, adopted by 195 countries, serves as the main vehicle to increase countries climate ambition while promoting sustainable development. Cooperative approaches for climate action embedded under Article 6 of the Paris Agreement include market-mechanisms (i.e. direct cooperation among countries under Article 6.2 and new sustainable development mechanism (SDM) under Article 6.4). Parties are currently discussing rules for the new mechanisms with a view to finalize them by COP25. The SDM will likely build on the lessons learned under the clean development mechanism (CDM), that was set up under the Kyoto-Protocol as a financial mechanism for incentivizing climate action. The CDM successfully channeled a substantial amount of investment to clean cooking projects; in 2019, there were 69 programmes of activity (PoAs) and 303 component project activities registered for clean cooking projects. However, the CDM was not without challenges. In particular, project developers cite the high cost and lengthy process of certification. Stakeholders have also called for more robust monitoring and verification tools and a frank discussion on how to balance science-based methodologies with practical and efficient implementation. Through 2019-2020, UNFCCC Parties are expected to set the rules for the Article 6 mechanisms and start their implementation, deciding on what will happen to existing CDM credits, projects, and methodologies.

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Further, the evidence-base for clean cooking impacts has advanced greatly in the past five years. A significant amount of research has been recently published that should be used to inform the development of monitoring and verification, standards, climate financing, and technology and fuels selection. For example, in 2019 a research study was launched to deepen the understanding of the relationship between emissions and exposure. New in-field measurements of black carbon emissions for liquid, gas, and high-performing biomass stoves have also been recently reported. And since 2015, new methodologies relevant to household energy projects have been published for assessing woodfuel renewability, black carbon reductions, health impacts (as averted disability-adjusted life years [aDALYs]).

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Workshop Purpose: The purpose of this workshop is to bring together key stakeholders (project developers, clean cooking technical experts, researchers, and climate finance partners) to:

1) disseminate the latest evidence on the relationship between cookstove emissions and health and climate impacts;
2) identify the regulatory, technological, and financial barriers to the effective implementation of clean cooking projects deployed through climate finance (or with other Results-based Finance—RBF—mechanisms); and
3) identify solutions to address the identified barriers based on the lessons learned from project developers and the most up-to-date science on emissions, technology, measurement, and policy.

Specifically, participants will discuss:

- The most up-to-date science on lab and field testing and the implications for standards, financing, technology, and fuels selection, with an emphasis on which cookstove pollutants are the most effective predictors of health and climate impacts.
- Pragmatic, cost-effective, and reliable methods for determining performance of project cookstoves for climate and health-related parameters (e.g., by building on the ISO standards, WHO guidelines, and recent science).
- Feedback from project developers on the challenges and successes with carbon/climate finance.
- Streamlined methods, default values, best practice examples for determining the fraction of biomass used for cooking at households that can be considered as non- renewable.
- Streamlined methods, default values, best practice examples for determining amount of biomass used for cooking in households under the business-as-usual scenario (baseline).
- Pragmatic, cost-effective, and reliable methods for determining the retention rates of project cookstoves (e.g. use of technology such as stove use monitors, data loggers, Internet of Things, block chain), accounting for stove stacking typically encountered in many situations.

The workshop will also provide an opportunity to establish new partnerships, discuss lab and field testing strategies, and identify further areas of investigation.

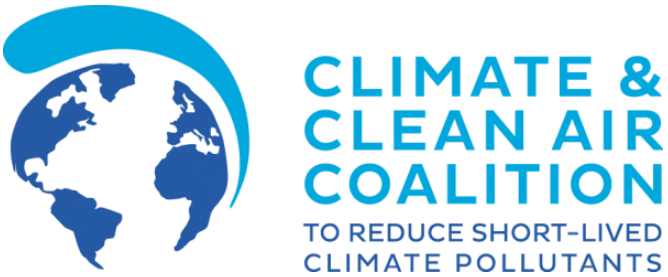
Outcomes:

1. **Harmonized methods and best practice examples in quantifying emission reductions from clean cooking projects based on published standards and up to date science**

2. **Examples of best practices that balance practical implementation and science-based methodologies for monitoring the long-term use of clean cooking technologies based on published standards and up to date science**

3. **Workshop report, including recommendations on key elements to be taken into account when developing the new rules for accounting for carbon credits under the market mechanisms including those that will be set up under Paris agreement**

This workshop is made possible due to the generous support of the Climate and Clean Air Coalition



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Climate Action and Clean Cooking Co-benefits Workshop Agenda

Day 1: 9:00-5:00

Day 1 objectives: 1) to identify the regulatory, technological, and financial barriers to effective implementation of clean cooking projects deployed with climate finance (or with other RBF mechanisms); and 2) to disseminate the latest evidence on the relationship between cookstove emissions and health and climate impacts.

8:30-9:00 Breakfast

9:00-9:05 Welcome (Dymphna van der Lans, Clean Cooking Alliance)

9:05-9:15 Climate and Clean Air Coalition introduction (Sophie Bonnard, Climate and Clean Air Coalition)

9:15-9:25 Setting the stage for the workshop (Katie Pogue, Clean Cooking Alliance)

9:25-9:45 Getting to know each other (Seema Patel, Clean Cooking Alliance)

9:45-12:00 Part I Current applications of research and the lessons learned: carbon credit (and other RBF) methodologies, feedback, and lessons learned

Session objective: to reach a common understanding on the current state of clean cooking project activities in the carbon market, the methodologies for monitoring, reporting and verification (MRV), and how to practically implement MRV.

- 9:45-10:30 Update from the CDM and review of the current state of CDM methodologies (Gajanana Hegde and Kenjiro Suzuki, UNFCCC)
    - 9:45-10:00 Overview of what to expect under the Paris Agreement; update on the volume of clean cooking projects, and current questions and actions by the methodology panel, including the process for updating and/or developing new methods
    - 10:00-10:10 fNRB baseline values (Rob Bailis, Stockholm Environment Institute)
    - 10:10-10:30 Facilitated group discussion and feedback on practical implementation

- 10:30-11:15 Update from the Gold Standard and review of the Gold Standard methodologies (Vikash Taylan, The Gold Standard)
    - 10:30-10:50 Overview of what to expect under the Paris Agreement; overview of process for updating and/or developing methods; overview of current methodologies: gender, black carbon, and aDALYs
    - 10:50-11:15 Facilitated group discussion and feedback on practical implementation

12:00-1:00 Break for lunch

1:00-2:00 Panel discussion with project developers on the challenges and opportunities (Ken Newcombe, C-Quest Capital; Tanushree Bagh, South Pole; Sarah Kihuguru, Uganda Carbon Bureau; and moderated by Seema Patel, Clean Cooking Alliance)

2:00-3:30 Part II Research update: what we've learned so far and what gaps remain

Session objective: to disseminate the latest evidence on the relationship between clean cooking solutions emissions and health and climate impacts.

- 2:00-2:15 What do people want, what might work, and how to test—India (Subhrendu Pattanayak, Duke University)
- 2:15-2:30 Black carbon in-field emissions—Rwanda (Andy Grieshop, North Carolina State University)
- 2:30-2:45 Black carbon in-field emissions—Nepal (Ryan Thompson, Mountain Air Engineering)
- 2:45-3:00 Emissions-to-exposure and in-home emissions performance, multiple geographies (Michael Johnson, Berkeley Air Monitoring Group)
- 3:00-3:30 Facilitated group discussion

3:30-3:45 Coffee break

3:45-4:45 Part II Research update: what gaps are being filled

- 3:45-4:00 Drudgery methodology (Ken Newcombe, C-Quest Capital)
- 4:00-4:10 Planned study on reviewing available methodologies on health, gender, and livelihoods for RBF (Zijun Li, The World Bank)
- 4:10-4:20 Korean ETS (Kyunghwa Jeon, Ecoeye)
- 4:20-4:45 Discussion on MRV for clean fuel projects (biogas, electricity, LPG, etc.) and how this differs from biomass fuels

4:45 Close

5:00-7:00 Reception at the Alliance offices (dinner included)

Day 2: 9:00-4:30

Day 2 Objectives: 1) to identify the regulatory, technological, and financial barriers to effective implementation of clean cooking projects with climate finance (or with other RBF mechanisms); and 2) to disseminate the latest evidence on the relationship between cookstove emissions and health and climate impacts.

8:30-9:00 Breakfast

9:00-9:10 Setting the stage and goals for the day (Katie Pogue, Clean Cooking Alliance)

9:10-9:20 The role of black carbon (Sophie Bonnard, Climate and Clean Air Coalition)

9:20- 12:00 Part III Current applications of research: resources, tools, and monitoring and verification best practices

Session objective: to create a common understanding of the ISO lab and field standard, and how it could be applied to further certification processes.

- 9:20-9:30 Introduction to testing (Neeraja Penumetcha, Clean Cooking Alliance)
- 9:30-9:50 WBT to ISO lab standard (Michael Johnson, Berkeley Air Monitoring Group)
- 9:50-10:10 ISO field standard (Ryan Thompson, Mountain Air Engineering)

10:10-11:10 Breakout groups

- *Breakout I:* Troubleshooting application of ISO process with project developers
- *Breakout II:* Identifying research gaps with researchers and best practices for translating research into project implementation and policy

11:10-11:30 Report out from breakout I and discussion

11:30-12:00 Report out from breakout II and discussion

12:00-1:00 Break for lunch

1:00-3:15 Part III Current applications of research: resources, tools, and monitoring and verification best practices continued

Session objective: to reach an understanding of the available tools for MRV and their practical implementation.

- 1:00-1:30 HAPIT (Ajay Pillarisetti, University of California, Berkeley)
- 1:30-2:00 Gold Standard Impact tools (Vikash Taylan, The Gold Standard)
- 2:00-2:30 MoFuSS (Adrian Ghilardi, Autonomous University of Mexico)
- 2:30-3:00 Monitoring technologies and best practices (Michael Johnson, Berkeley Air Monitoring Group; and Ajay Pillarisetti, University of California, Berkeley)

3:00-3:15 Coffee break

3:15-4:30 Part IV: Where we go from here: discussion and defining next steps

- 3:15-3:20 Summary of the key challenges and opportunities articulated over the first two days
- 3:20-3:50 Small group discussions on the remaining challenges and begin to identify opportunities to address them

- 3:50-4:00 Report out
- 4:00-4:20 Small group discussions on what project developers, certification bodies, and researchers could be doing to better support each other
- 4:20-4:30 Report out

4:30 Close and setting the stage for tomorrow (Katie Pogue, Clean Cooking Alliance)

Day 3: 9:00-12:00

Day 3 Objective: to identify solutions to address the identified barriers based on the lessons learned from project developers and the most up-to-date science on emissions, technology, measurement, and policies

** The format of final day to be determined by the first two days. The workshop will end with an optional lunch at 12:00.*

8:30-9:00 Breakfast

9:00 Setting the stage and goals for the day (Katie Pogue, Clean Cooking Alliance)

Part IV: Where we go from here: discussion and defining next steps continued

Themes to be discussed:

- Cost and complexity of MRV, where and how can we reduce?
- The Paris Agreement, what does it mean for clean cooking projects, carbon financing, and RBF?
- What can we all do together to achieve climate change mitigation and the associated co-benefits through clean cooking? Where are the opportunities for collaboration and partnerships?

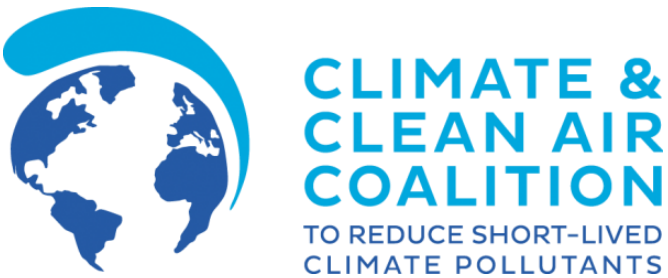
9:10-10:30 Facilitated group discussion on building consensus and next steps

10:30-10:45 Coffee break

10:45-11:30 Facilitated group discussion on building consensus and next steps

11:30 Close (followed by lunch)

This workshop is made possible due to the generous support of the Climate and Clean Air Coalition



Climate Action and Clean Cooking Co-benefits Workshop

Participant Commitments

Organization	Commitments
Clean Cooking Alliance	• Share all the resources we've discussed (including workshop slide decks and contact information) • Commit the Alliance to be a platform to connect people, disseminate research, facilitate new ideas • Continue updating the Clean Cooking Catalog • Remind everyone of their commitments!
Climate and Clean Air Coalition	• Track down many of you to keep the discussion going on black carbon (BC) and how to increase emissions reductions and their monitoring and monetization in the sector, incl. in the context of Article 6 of the Paris agreement and as part of countries NDCs • Disseminate the workshop outcomes widely through the CCAC channels
UNFCCC Secretariat	• Do even more to bring more stability and lower costs helping PDs, and balancing credibility which researchers want. • Bring attention to Paris committee on capacity building about cookstoves and the platform we talked about • Improve methodologies, simplify and make them more accurate • Simplify procedures
The Gold Standard Foundation	• Bring all the tools presented out from the closet • Work with colleagues to refine methodologies and make them more user friendly • Help project developers (PDs) bring more finance
Carbon Sink	• Start following this sector more actively and more broadly than just as a PD • Work to get approval to join the working group for the Gold Standard Foundation SDG tool
Climate Focus	• Serve as a resource on carbon markets • Provide information about NDCs and carbon accounting under Article 6 and how that will/won't work • Stay in touch with lots of you individually
C-Quest Capital	• Get more stoves out there
Uganda Carbon Bureau	• Reach out to everyone and provide whatever information that I can give
VNV Advisory Services LLP	• Get approval to share MRV costs • Push more on developing electric stove meth
Ecoeye	• Share information cited during the workshop • Share clean cooking opportunities with Korean investors to bring in more money • Apply new methodologies and technologies to our cookstove project to be more sustainable/efficient

BIX Capital	• Continue to work with practitioners in the field to develop investable opportunities based on certifiable outputs and can be eventually monetized, nor just carbon but other co-benefits. • Commit to more explicitly bringing that to current and future investors to bring it into investment guidelines, currently limited to carbon-based pre-financing
Autonomous University of Northern Mexico/University of British Columba	• Continue working on a web-based MoFuSS tool
Berkeley Air Monitoring Group	• Use the requests generated during this workshop as a reference while undergoing WB review meth process • Pay close attention to the needs of PDs, researchers, an others using the methodologies • Reach out with questions so that the review is strong and useful
Mountain Air Engineering	• Continue to develop/improve/streamline methods/equipment for monitoring so that it's cost-effective • Help suggest how monitoring can be cost-effectively integrated into MRV planning
National Institutes of Health	• Add anyone interested to the NIH ISN listserv beyond our members (about 100 members), where we share publications and questions/perspectives/exchanges. • If you are interested in health, we are a first point of contact to be resources
North Carolina State University	• Commit to being a technical resource for practitioners and other researchers • Engage more in ISO processes however I can be helpful
Stockholm Environment Institute	• Continue to work to make fNRB estimates accessible and available and the tool accessible/available, with the caveat the answer might not be what you want, but accurate and defendable. • Make myself available as a resource – like on what surveys are out there, consumption data, staying on top of new data, being able to point people or advising on how to design a survey to get there.
University of California, Berkeley	• Keep pushing on lower monitoring costs • Get the Chupacabra finished soon • Make myself available for questions on exposure, usage
U.S. Environmental Protection Agency	• Support regional testing knowledge centers to conduct ISO protocols through workshops • Support countries adding household energy to NDCs • Fund capacity building for the sector • Support some of you to speak about your work and raise awareness • Engage the USG thru USAID missions in country to include household energy in NDCs

World Bank (ESMAP and Ci-Dev)	• Work together to find and develop projects better – data driven, to better benefit households • Continue to work with all of you and be genuine in trying to introduce these approaches for future C-div work • Have many ongoing collaborations, continue the dialogue