

Clean cooking and climate action

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The climate, environmental, and health benefits of clean cooking

How to utilize carbon finance mechanisms for clean cooking



Voluntary market considerations



The climate, environmental, and health benefits of clean cooking

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Burning woodfuels alone produces ~1 Gt CO_2e / year (1.9–2.3% of global emissions)

Polluting fuels harm health and the climate

The burning of solid fuels and kerosene produces high levels of:

- Black carbon (BC)
- Carbon dioxide (CO₂)
- Carbon monoxide (CO)
- Methane (CH₄)
- Nitric oxide (NO) & nitrogen dioxide (NO₂)
- Organic carbon (OC)
- Polycyclic aromatic hydrocarbons (PAHs)
- Sulfur dioxide



Household air pollution is a leading health risk factor that contributes to millions of deaths each year

Household air pollution ranks 9th in the number of attributable ^H global deaths:

 Annually up to 4 million deaths are attributable to HAP from the use of solid fuels and kerosene (WHO, 2016) (IHME, 2019)



Total 2019 deaths from all causes by risk factor

>50% of global black carbon emissions come from burning solid fuels for household energy needs

BC is a powerful climate forcer and dangerous air pollutant:



Short-lived climate pollutants and greenhouse gases produced by burning solid fuels

Name and description of GHG or SLCP

Is it an SLCP? Climate warming pollutants with a relatively short lifetime in the atmosphere compared with CO_2 . Is it a GHG? Gases found in the atmosphere that absorb outgoing thermal radiation, and therefore heat the earth.

How long does the GHG or SLCP stay in the atmosphere? Is the climate effect of the GHG or SLCP global regional, or local?

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BC: also known as soot, is an aerosol and part of $PM_{2.5}$ pollution. Per unit of mass, BC has a warming impact on climate that is up to 1,500 times stronger than CO_2 .

CH₄: a powerful greenhouse gas that traps heat 28 times more effectively than CO_2 over a 100-year timescale.

Tropospheric O₃: a greenhouse gas and air pollutant; the main ingredient of smog and produced from sunlight interacting with other pollutants.

CO₂: the primary GHG emitted through human activities, responsible for 55-60% of warming.



Forest degradation vs. deforestation



Degradation:

long-term reduction of the overall potential supply of benefits from the forest, which includes carbon, wood, biodiversity and other goods and services.

Deforestation: direct human-induced conversion of forested land to non-forested land.

In short, forest degradation can be considered the **quality decline in forests** or wood resources; whereas, deforestation can be thought of as the reduction in the **quantity of forested land**.

The benefits of transitioning to clean cooking

Scaling clean cooking access is crucial to:

- Address climate change by reducing GHGs and SLCPs
- Reduce forest degradation by avoiding unsustainable woodfuel harvesting

For example, successful deployment and utilization of 100 million improved stoves could reduce the annual emissions from woodfuels alone (~1Gt CO2e) by 11–17%





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Climate commitment overview

UNFCCC (United Nations Framework Convention on Climate Change) and the international climate agreements

- UNFCCC: to support the global response to the climate change threat
- **Kyoto Protocol:** agreed in 1997, **developed countries** must reduce their emissions of GHGs (Greenhouse Gases) 5% below 1990 levels
- Paris Agreement: agreed in 2015, all countries must reduce their emissions of GHG based on individual climate pledges (or NDCs – Nationally Determined Contributions)

Climate market overview

Carbon markets before and after the Paris Agreement

- Market Mechanisms under the Kyoto Protocol: Emissions Trading, Joint Implementation (JI) and Clean Development Mechanism (CDM)
- Market mechanisms from the **Paris Agreement:** Cooperative Approaches (Art 6.2), mitigation mechanism (Art 6.4) and non-market approaches (Art 6.8)
- COP26: adoption of decisions to operationalize the carbon markets
 - Art 6.2: guidance for bilateral or multilateral approaches (crediting mechanism, linking to emisison trading systems);
 - Art 6.4: rules, modalities and procedures for a multilateral crediting mechamism (A6.4M, successor of the CDM);
 - Art 6.8: workplan

Clean cooking in the CDM and in the A6.4M

- CDM: reduce the consumption of biomass classified as non-renewable, charcoal or fossil fuels, and reduction of the indoor air pollution;
- Programme of Activities (PoA) Framework: reduce the transaction costs of a clean technology distribution
 - continuously add and monitor similar Component Project Activities (CPAs) under the same common framework;
 - adopted standards and guidelines for sampling and surveys;
 - 78 registered clean cookstoves PoAs (51 in Africa, 7 in Latin America and the Caribbean, 23 million "carbon credits" issued)
 - Project "Distribution of ONIL cookstoves Guatemala": distribution of 32,000 cookstoves ("plancha" type), 3 CPAs, 190,000
 "carbon credits" issued.
- A6.4M: transition of the CDM projects to the new mechanism and "carbon credits" issued from project registered after 01/01/2013 can be used by the country's first NDC
 - CDM activities can transition to the A6.4M upon approval by host country (request by 2023, approval by 2025), if they comply with A6.4M rules

Emission reduction methodologies for clean cooking

Methodologies under the CDM

- Developed through a transparent public consultation process;
- Recommended by a panel of experts in different GHG mitigation technologies;
- To date: more than 200 methodologies approved under the CDM;
- Some include the application of internationall recognized standards;
- A6.4M: new methodologies and tools will be developed
 - Experience gained and lessons learned under the CDM;
 - Inclusion of ISO standards;
 - Rules of A6.4M emphasize the promotion of sustainable development;
 - Difficult to pinpoint how the indoor air pollution and emission testing will be addressed.

Carbon Pricing

There are different ways to put a price in carbon

- Carbon Tax (CTax): a fee is charged for each ton of CO₂ emitted, the price is defined by the government;
- Emission Trading Schemes (ETS): cap-and-trade of permissions/allowances to emit CO₂;
- International Carbon Markets: selling countries authorize the use of the internationally transactioned mitigation outcome (ITMOs) to buying countries.

Outlook for the future

- Robust baselines for Art 6.2 (best available technologies, benchmarks of average of top performing technologies or historic emissions adjusted);
- High demand for offsets is expected (especially for energy access projects with high sustainable development benefits);
- Initiatives to rate the methodologies for their reliability and accuracy (considering the parameters to estimate GHG emissions, stove performance and MRV);
- Price offered depends on the quality attributes of the "carbon credit" as determined by above parameters.

Voluntary market considerations

Owen Hewlett, Chief Technical Officer, The Gold Standard Foundation <u>owen.hewlett@goldstandard.org</u>

Gold Standard®

Carbon Finance for Clean Cooking – January 2022 Owen Hewlett – Chief Technical Officer



Our Vision

Climate security and sustainable development for all

Our Mission⁷

To catalyse more ambitious climate action to achieve the Global Goals through robust standards and verified impacts

Making good better.



PROCESS

Design

- Define your project and technology
- Choose the right standard and methodology
- •Check you meet eligibility
- Conduct stakeholder engagement
- •Create a design doc and a monitoring plan

Implementation

- Appoint an auditor and undergo validation and design review
- Implement your project (timing can vary)
- Start following your monitoring plan

Performance

- Periodically produce monitoring reports
- Appoint an auditor and undergo verification and performance review
- Resolve queries, submit for issuance of credits
- Receive credits in account

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CERTIFICATION PROCESS



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COSTS TO CONSIDER



Cost of the stove itself – varies by tech, location as well as initial purchase, installation and maintenance



Cost of advice – certification is complex, many first time developers work in partnership with a consultant, though this isn't always necessary



Cost of monitoring – to certify you'll need to follow a methodology to help collect data and quantify results. This is an ongoing cost.

| × | |
|---|---|
| × | _ |
| × | - |
| × | |

Cost of audit – to certify you'll need an independent audit, by an accredited body



Cost of selling credits – you may need legal advice for purchase contracts and you m ay wish to work with a retailer to help sell your credits, though the market is very good for PDs now

Gold Standard



Cost of issuing credits – GS charges a fee for credit issuance (<u>here</u>)

Project pricing – GS Market Place



https://marketplace.goldstandard.org/collections/projects

- Costs set by GS developer for direct retail
- Typically to individuals and small businesses, though increasingly by larger companies
- Cookstove prices set range (currently) 15-35 dollars

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Market trends

- Major growth of interest, supply and demand means prices are competitive and sale of high-quality credits is relatively straightforward
- Some costs of doing business are going up for example, auditors are very busy
- Complexity is decreasing, but you may still wish to work with an experienced expert
- Markets are diversifying host country authorization and accounting adjustments mean you could sell, for e.g. to the airline industry scheme (<u>CORSIA</u>)
- Market legitimacy is increasing with the Paris Rulebook agreed in Glasgow and the recognition of 'beyond value chain' responsibilities for companies...
- ...But markets still rightly attract concern due to misuse, poor quality credits and lack
 of consistency

Gold Standard

CONNECT WITH US!

- Email us at <u>help@goldstandard.org</u> to take the first steps
- You can read our core standard <u>here</u> and our activity requirements for clean cooking <u>here</u>
- If you're a really small project you may be able to use our microscale scheme
- •
- We offer a range of methodologies
 - Voluntary market clean cooking (all technologies)
 - <u>Metered & Measured Energy Cooking Solutions</u>
 - Health, gender, short lived climate pollutants for specialist buyers
- You can find some examples via our <u>marketplace</u> and via our <u>registry</u> (use 'energy efficiency – domestic' from drop down)
- If you need to connect with experienced providers we can support (without making specific recommendations where those actors are also account-holders)

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CCA-led consortium and MRV for climate activities

Michael Johnson, Senior Scientist, Berkeley Air Monitoring Group mjohnson@berkeleyair.com CCA and its partners applaud the 67 COUNTRIES* that have included household energy or clean cooking related goals in their NDCs.



These countries include:

| Afghanistan | 18. | Cote d'Ivoire |
|--|-------------|---------------|
| 2. Angola | 19. | Djibouti |
| 3. Azerbaijan | 20. | Dominican R |
| 4. Bangladesh | 21. | Ecuador |
| 5. Barbados | 22. | Eritrea |
| 6. Belize | 23. | Eswatini |
| 7. Benin | 24. | Ethiopia |
| 8. Bhutan | 25. | Gambia |
| 9, Burkina Faso | 26 . | Ghana |
| 10. Burundi | 27. | Guatemala |
| 11. Cameroon | 28. | Guinea |
| Central African Republic | 29. | Guinea-Bissa |
| 13. Chad | 30. | Haiti |
| 14. Chile | 31. | Honduras |
| 15. Colombia | 32. | India |
| 16. Comoros | 33. | Kenya |
| Congo, Democratic Republic | 34. | Kyrgyzstan |

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|----|--------------------|
| 9. | Djibouti |
| 0. | Dominican Republic |
| 1. | Ecuador |
| 2. | Eritrea |
| 3. | Eswatini |
| 4. | Ethiopia |
| 5. | Gambia |
| 6. | Ghana |
| 7. | Guatemala |
| 8. | Guinea |
| 9. | Guinea-Bissau |
| 0. | Haiti |
| 1. | Honduras |
| 2. | India |
| 3. | Kenya |
| 4. | Kyrgyzstan |

| 35. | Laos |
|-------------|------------------|
| 36. | Lesotho |
| 37. | Liberia |
| 38. | Macedonia |
| 39. | Madagascar |
| 40 . | Malawi |
| 41. | Mali |
| 42. | Marshall Islands |
| 43. | Mauritania |
| 44. | Mongolia |
| 45. | Morocco |
| 46 . | Mozambique |
| 47. | Myanmar |
| 48. | Nepal |
| 49 . | Niger |
| 50 . | Nigeria |
| 51. | Norway |

| 52. | Pakista |
|-----|---------|
| 53. | Peru |

- 54. Rwanda
- Senegal 56. Sierra Leone
- 57. Somalia
 - 58. South Sudan
 - 59. Sudan
 - 60. Tanzania
 - 61. Timor-Leste
- 62. Togo 63. Uganda
- 64. Uruguay
- 65. Vanuatu
- 66. United States of America
- 67. Zimbabwe

*as of 25 October 2021

NDC guidance

To support clean cooking and NDCs....

CCA, the Climate and Clean Air Coalition (CCAC), Berkeley Air Monitoring Group, US EPA, and UNFCCC will release two written reports—an implementation roadmap and monitoring, reporting, and verification (MRV) guidelines—and hold webinars and tutorials over the next six months.

The consortium will also offer customized technical assistance to countries actively implementing clean cooking plans.

Outline

- 1. What is measurement, reporting and verification (MRV)?
- 2. Best-practice MRV systems and approaches
- 3. Simplified MRV for early-stage programs
- 4. Role of ISO standards in mitigation activities
- 5. Resources and support



What is measurement, reporting and verification (MRV)?

Measurement, reporting and verification (MRV)

- MRV is a system which allows us to quantify progress towards climate goals
- Provides guidance for countries to meet measurement and reporting.
- Gives national implementers valuable feedback on how the effectiveness of mitigation activities.



Best-practice MRV systems and approaches...



- Are transparent, conservative, and scientifically sound.
- Employ unique approaches for household energy sector, as the emissions result from many distributed point sources in homes.
- Address the substantial variation in fuel and stove use patterns in homes across regions, user characteristics, and time.

While these complexities require unique considerations, efficient and smart approaches for the measurements and assumptions needed to calculate CO2e reductions are available.

Simplified MRV for early-stage programs

Background

- Fully quantifying CO2e reductions associated with household energy programs is not currently required, although it is anticipated that it will be necessary as programs mature.
- Countries may use other approaches to show progress in a sector while developing capacity to make quantitative CO2e estimates.



Rationale for Key Performance Indicators

- Key Performance Indicators (KPIs) are simple measures that demonstrate the progress achieved.
- KPIs may be informed by data that are already collected in existing national surveys or inventories, or these existing data collection tools may be updated to include KPI metrics. WHO offers standard questions.
- Monitoring KPI progress in the short-term allows countries to build the infrastructure to formally estimate CO2e reductions in the longer term.

Remember the ISO standards?

How can they help?

- ISO standards allow for the identification of best available technologies, which are specific to each context.
- Understanding the performance of common baseline and project scenario cooking technologies allows countries to increase their ambition over time.
- ISO Standards offer standardized methodologies for cookstove laboratory and field testing.



Resources and support



CCA and its partners will offer NDC implementation support and MRV guidance

- Provide national governments with support and technical assistance in adapting, adopting, and implementing ISO standards and voluntary performance targets
- Facilitate and support countries in their development of practical implementation plans incorporating clean cooking targets and activities to meet climate, energy, environmental and health goals
- Develop Monitoring, Reporting and Verification guidance for clean cooking goals, including methodologies and how to implement them



Discussion and Q&A