

# HOUSEHOLD ENERGY INITIATIVE

## PROGRESS REPORT 2016-2017

### LEAD PARTNERS

Colombia, Finland, Global Alliance for Clean Cookstoves/United Nations Foundation (GACC), International Cryosphere Climate Initiative (ICCI), Nigeria, Poland, TERRE Policy Centre, UN Development Programme (UNDP), UN Environment

### IMPLEMENTERS

International Cryosphere Climate Initiative (ICCI), Global Alliance for Clean Cookstoves (GACC), Stockholm Environment Institute (SEI), UN Development Programme (UNDP), UN Environment

**TOTAL BUDGET FROM THE COALITION:** \$4,759,107

**TOTAL COALITION'S FUNDS SPENT:** \$ 812,011

### NOTE

This document presents results from the Climate & Clean Air Coalition's Household Energy Initiative reported between July 2016 and June 2017. These results were recorded using the Demonstrating Impacts indicators, which have been approved by partners as the "common currency" to monitor and communicate impacts across the Coalition's initiatives and workstreams<sup>1</sup>.

Presented achievements are the result of collaborations between multiple stakeholders, including national governments and cities, international organisations, NGOs, research institutions and the private sector. Some are a direct result of activities funded or co-funded by the Coalition, while others are indirect achievements in which the Coalition's actions played a catalysing role.

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<sup>1</sup> The latest version of the Demonstrating Impacts Framework is accessible to partners [here](#) where the online tool to report new results is also accessible and open throughout the year.

## DEMONSTRATING IMPACTS SUMMARY

### OUTPUTS

#### 6 KNOWLEDGE RESOURCES AND TOOLS

The initiative helped the development of the [Fuel Analysis, Comparison & Integration Tool](#) which allows users to compare the environmental, including climate, impacts of different fuel options in different countries. A [Protocol for Measuring Emissions of Black Carbon and Organic Carbon from Residential Wood Burning](#) was the first recognized testing protocol for black carbon emissions from wood stoves published. Three reports to sensitize policy makers on the impact that inefficient and fuel lighting have on the economy and the health of end-users and on the environment in Nigeria were also released.

#### 9 POLITICAL OUTREACH EVENTS

The initiative supported a series of consultations with environmental agencies from Canada, Chile, Estonia, Finland, Mongolia, Norway, Poland, Sweden and the United States of America.

#### 530 PERSON-DAYS OF TRAINING

The initiative supported 530 person-days of training to 136 participants from 19 countries including a global summit on black carbon and other emissions from residential coal heating and combined cooking and heating stoves and two trainings on monitoring of household air pollution in Ghana and Kenya.

#### \$191,500 OF CO- FUNDING

The initiative mobilised \$191,500 of co-funding to its activities.

### OUTCOMES

#### 14,157 VISITORS TO THE CLEAN COOKING CATALOG AND 1,297 DOWNLOADS OF THE FACIT TOOL

The [Clean Cooking Catalog](#), an online database of cookstoves, fuels, and testing data for over 350 stoves, received 14,157 visits last year and the [FACIT tool](#) was downloaded 1,297 times from the Global Alliance for Clean Cookstoves website.

#### 39 INSTITUTIONS STRENGTHENED

The initiative continued to support standard institutions from [29 countries](#) in the ISO process to develop standards for clean cookstoves and cooking solutions. Following previous initial investment work has continued with a testing centre in Senegal which is now implementing new black carbon testing capabilities. In addition, the initiative engaged in Ghana where EPA is now equipped with household exposure monitoring equipment and a number of public institutions in Ghana and Kenya are now knowledgeable on household air pollution and exposure monitoring.

## 5 POLICIES AND PLANS

The initiative supported the development of cookstove standards implementation strategies for Nigeria, Guatemala, and Kenya. For two additional countries, Ghana and Uganda, the pilot standards implementation work has started. This work takes cookstoves standards and turns them into tangible working plans for national standards bodies to implement and enforce.

## 53 MILLION CHANGES TECHNOLOGIES AND PRACTICES SINCE 2010

Based on a [survey from the Global Alliance for Clean Cookstoves](#), an estimated 20.6 million stoves and fuels were distributed in 2015, of which 13 million (63%) were clean and/or efficient. Cumulatively, an estimated 82 million stoves and fuels, including 53 million clean and/or efficient, have been distributed since 2010. Some of this distribution is a direct result of CCAC support. 2016 data will be available by the end of 2017.

## IMPACTS

### 26.2 MILLION METRICS TONS OF CO<sub>2</sub>E AVOIDED

The Global alliance for Clean Cookstoves estimates that the changes in technology above represent a cumulative impact of 26.2 million metrics tons of CO<sub>2</sub>e averted by these distributed clean stoves and fuels.

## NARRATIVE REPORT

### SUMMARY

### COOKSTOVES

#### Supported standards Implementation and Labelling in Guatemala, Kenya, China and Ghana and Uganda:

- ▶ **Kenya** - After the scoping mission in November 2016 (in-country stakeholder meetings gather information, plans, and challenges), CLASP consultants worked with Kenyan stakeholders to develop the standards and labelling strategy. The Alliance and CLASP organized a stakeholder meeting on June 6 in Nairobi to gather and incorporate the remaining feedback. The CLASP team is finalizing the strategy based on this input now.
- ▶ **Nigeria** - The CLASP team had a series of stakeholder meetings from March 6 – 9 in Nigeria as part of a scoping mission to gather information about the status of the market, organizations, goals, and challenges. This feedback has been incorporated into a draft strategy, which the Alliance shared with stakeholders in Nigeria in May. Feedback gathered during these in-person meetings are being incorporated into the final strategy by the CLASP team.
- ▶ **Guatemala** - Following the scoping mission in November 2016, the CLASP team developed a draft for the Guatemala standards and labelling strategy. A stakeholder workshop to gather input and validate the strategy is being planned for Summer 2017 in Guatemala.

- ▶ **Uganda** – After completing the scope of the standards and labelling pilot for Uganda with the Uganda National Bureau of Standards, Ministry of Energy, and CLASP, UNBS organized a kick-off meeting on April 19 to share the broad goals and timeline of the certification programme and gather feedback. Uganda’s technical committee met throughout April and May to update the national standards based on the most recent international standards updates. UNBS developed additional details for their planned certification program in April and May, identified pilot SMEs to be certified. These additional details were shared at a stakeholder workshop on June 7th. UNBS’s goal is to have a public announcement of their certification programme for cookstoves enterprises in December 2017 or January 2018.
- ▶ **Ghana** – CLASP and Alliance supported the Energy Commission (EC) for a January 24 meeting to discuss and agree on the levels to be set for the stars on the EC’s cookstoves label. Stakeholders discussed the current performance level for the range of products on the market, how to cover a range of stove and fuel types, and potential for environment and health impacts. This work also included a study to understand consumer reactions to labels for cookstoves. In February, Kantar, EC, CLASP and Alliance met to agree on the study design, develop questions, and assess focus group demographics. This team also discussed the preliminary results and the final report was delivered in May with the summary of consumer understanding, how it influences behaviour, and recommendations for a communications campaign.

### **Conducted Field studies to provide black carbon and organic emissions performance metrics of liquid/gas fuels during uncontrolled usage in households and conducted Black Carbon and Organic Carbon Emissions Field Studies: Forced-draft Gasifiers with Pellets.**

After the Alliance released two RFPs through UNOPS last year, two research studies will begin this year to characterize black and organic carbon emissions of cookstoves in normal household use. The first study will compare LPG and biogas fuelled stoves in Nepal with traditional wood stoves and will be conducted by Mountain Air Engineering in partnership with the University of Illinois at Urbana-Champaign and the Center for Rural Transformation - Nepal. MAE has submitted a detailed study plan has been submitted to HEI and UNOPs and approved

The second study will focus on the highest performing forced-draft gasifier on the market in Rwanda with biomass pellets as the fuel, with traditional stoves as the comparison. This work will be conducted by North Carolina State University. Contracting for this work has just finished, and once the study is completed, a workshop will be held. These data will fill much needed gaps in the field. As there is a paucity of in-field emission data, it is difficult to assess the real climate benefit of adopting cleaner and more efficient cookstoves and fuels. These studies are a first step in that direction.

### **Generated Information Regarding Adoption of Advanced Biomass Cookstoves and Evaluating Delivery Models in Kenya**

A report and activity map of pellet stove and fuel use in Kenya were developed based on a series of scoping exercises, meetings with key decision makers including representatives from Kenya’s Ministries of Energy and Environment, and discussions with every organization that is currently developing advanced biomass stoves and fuels in Kenya.

SEI purchased and delivered to Kenya stove use monitors (SUMS) to measure actual cooktoves use. Preliminary assessments of existing models of advanced biomass stoves were carried out to determine placement of SUMS and develop a protocol for their use.

SEI initiated discussions with key players active in developing Kenya's advanced biomass stove and fuel markets. For example, we will contribute to an updated version of the Kenya Briquette and Pellet strategy and participate in discussions regarding the development of standards for stoves and fuels.

### **Developed and adapted local policy tools to evaluate the contribution of household to ambient air pollution and corresponding health impacts**

In order to establish the linkage between cookstove performance and public health and climate co-benefits, the Alliance will soon release one to two RFPs through UNOPS on behalf of the HEI for research studies to define the relationship between cookstove emissions and personal exposure of household members to pollutants. These studies will complement ongoing WHO research work, as well as improve the models currently used to estimate health risks associated with cookstove emissions. These studies will inform the network of experts that is being established by the HEI.

### **Developed a Market assessment to identify potential outcome payers, international workshop to convene experts on emissions and exposure**

The Market Assessment has been completed by Gold Standard and a draft report has been submitted to the Alliance and is under review. This report highlights who the potential outcome payers are for clean cooking projects and the types of impacts they are interested in funding. The next steps will be for the Alliance and the Gold Standard Foundation to promote the results of the market assessment in order to help direct funding to clean cooking projects.

### **Conducted Field Testing: Linking Cooking Performance with Public Health and Climate Co-Benefits**

The HEI developed ToRs with Berkeley Air Monitoring Group, Ajay Pillarisetti (a post-doc with UC Berkeley), and Urban Emissions on this work. This work will begin with an in-country training session for Ghana EPA and the launch of the data collection period starting on July 17th, 2017. The 3-week intensive data collection period will be conducted by Ghana EPA, in close collaboration with HEI. Over the 3-week period, Ghana EPA will collect HAP data on 60 households in the Greater Accra Area. This data will be used to evaluate the contribution of HAP on ambient air pollution and the health impacts of HAP. This data will be used by UHI and their study being conducted in Accra, Ghana. These data will be the first city-level data in West Africa of this type and will serve as model for other countries in the coalition. Members of the Ghana Health Services, Ghana Ministry of Energy, Ghana Atomic Energy Commission, the University of Ghana, and the Kenya Ministry of Health will also be training the air pollution and health impacts of HAP.

The Alliance has contracted with UC Berkeley to incorporate the HAPIT (Household Air Pollution Intervention Tool) inputs into the LEAP-IBC (Long-range Energy Alternatives Planning System – Integrated Benefits Calculator), and the HEI is working with SEI (Stockholm Environment Institute) to assess next steps, which could include an in-person meeting with the modellers to assess the best way forward. By incorporating HAPIT inputs into the LEAP-IBC, it will allow the SNAP Initiative to have a much more robust tool that incorporates a major contributor to ambient air pollution and SLCPs.

UrbanEmissions has been contracted to develop the emissions inventory and a training is set up for July 2017 with Ghana EPA and other relevant stakeholders such as Ghana Health Services, Ghana Ministry of Energy, and other relevant researchers. The initial legwork for developing the model has already been completed.

The training will cover personal exposure monitoring using portable HAP equipment, which the Alliance has procured for Ghana EPA through USEPA funds. The training will last 4 days followed by 3 weeks of data collection. This training will build the technical capacity of the Ghana EPA, which is a priority for the Initiative.

## **HEATSTOVES**

### **Developed and conducted black carbon emissions testing and protocols**

The testing protocol has been officially published, and provided to all interested CCAC members, and is available online. “Greyscale” development has been completed, with a report in progress. This will make the BC Protocol more congruent with EU testing procedures and cookstoves testing, with much less expensive procedures (in developing countries especially), as testers simply measure the results by comparison with a visual grey-coloured standard (hence the term “greyscale”). The procedure was used in new testing by the EU-standard Ostrava Lab (Czech Republic) as well as Chile. Cooperation is also underway with a new U.S.EPA BC testing project that was one of the deliverables from the May 2017 Arctic Council Ministerial. The greyscale recommendations will be issued as part of a self-standing report as well as in the Final Testing Report and Recommendations to be issued in fall 2017.

### **Developed and conducted “Burn Right” information campaign**

A campaign is being conducted in Chile during its 2017 burning season and plans for a 2017-18 burning season campaign in Sweden are moving forward, with extensive co-funding from the Swedish EPA. Plans are underway for a more global northern hemisphere campaign in conjunction with WHO and UNECE, as well as perhaps the Arctic Council, emphasizing the impact on ice sheets and glaciers as well as the health and economic benefits of “burning right.” Consultations are planned with France and Germany for more concentrated campaigns that follow the Swedish model, given the size of emissions and influence of both countries on European standards, including work with the LRTAP Convention.

### **Identified measures to support and engage governments on policy options to reduce black carbon from domestic heating**

Report on future policy measures and needs has been drafted and is out for expert comment. In addition to consultations with CCAC Partners, including Chile, U.S., Canada, Poland, Norway, Finland and others; policy work took place in other multilateral forums including UNECE/CLRTAP and the Arctic Council. Sweden and Chile have agreed to serve as model “champions” engaged in all five domestic heating project components

### **Organised a combined heating and cooking and coal stoves summit with white papers**

Warsaw Stoves Summit, focused on combined heating+cooking stoves and coal heating stoves and excellently hosted by the Polish Ministry of Environment, took place May 29-30, 2017. Summit web page created and will serve as a networking tool for Summit participants and others. Many key issues and next steps were identified. White Papers, finalized in concert with May 2017 Summit available at [www.warsawstovessummit.org](http://www.warsawstovessummit.org).

### **Conducted outreach to private sector stove manufacturers for targeted advocacy**

Outreach with both major wood stove producers identified in producer mapping exercise, and innovative design manufacturers initiated and ongoing. There is consideration to hold seminars with groups of more progressive producers, identified through outreach meetings, in fall/winter 2017, to get more joint input for the final report.

### **LIGHTING**

Three reports with the objective to sensitize policy makers on the impact that inefficient and fuel lighting have on the economy and the health of end-users and on the environment, have been developed:

- ▶ Assessment of Nigeria energy balance and perform region-international study about off-grid lighting implementation
- ▶ Research and data collection of Nigeria black carbon emission – Short Lived Climate Pollutants and fuel consumption regarding savings potential
- ▶ Macroeconomic case for reforms to accelerate kerosene transition including list of policy priority issues regarding off-grid lighting and uncertainty regulation

The assessments, the risk and the macroeconomic analysis represent the baseline to prepare the policy makers for the discussion on national Minimum Energy Performance Standards (MEPS) for energy-efficient lighting. After the publication, a workshop with policy makers and national stakeholders will be organized to launch the discussion on the MEPS development.

## **HIGHLIGHTS**

### **COOKSTOVES**

By using cookstove standards to set ambitious and achievable goals, the sector can strengthen national policies and drive innovation that will lead to improved technologies and fuels that reduce emissions of SLCPs and co-emitted air pollutants and benefit human health. In order for standards to influence policy, drive innovation, and raise consumer awareness about product performance, the Alliance is working with national governments to implement standards. Under this project, the Alliance is working with policymakers and other stakeholders to develop standards implementation strategies that are appropriate for the country and market context, and building long-term government commitments to standards, labelling, and enforcement. The Alliance work has included piloting key aspects of standards and labelling (S&L) strategies to enable the refinement and further development of a rigorous S&L program to reduce emissions and enable trade, innovation, and growth in the cookstoves and fuels market.

The most appropriate and effective standards and labelling strategy are designed to match the market landscape, policies, consumers, and stakeholder needs and experiences. To be successful and impactful, the standards strategy



should be comprehensive and cover standards development, policy and regulation, enforcement, consumer awareness, and monitoring and evaluation.

The Alliance and CLASP, an organization with extensive experience supporting the development of standards and labelling for products around the world, are working to support the ongoing efforts of stakeholders in **Guatemala, Nigeria, and Kenya** to apply S&L best practices and develop S&L implementation strategies that reflect the state of national markets, goals and capacity of local institutions, and lead to lower emitting technologies.

The Alliance, building off previously developed S&L implementation strategies, is focusing on helping Ghanaian and Ugandan government officials implement key aspects of the strategy to ensure maximum reductions in emissions while securing buy-in from regulatory bodies. In **Ghana**, the Energy Commission (EC) was the lead implementing organization, and this project supported EC to extend their existing appliance labelling program to cover cookstoves, set tiers for the “Black Stars” on the label, consumer study to inform a future communications campaign, and developing a monitoring, verification, and enforcement manual.

In **Uganda**, Uganda National Bureau of Standards was the lead implementing organization, and this project is supporting UNBS to develop national standards based on the most up-to-date international standards, develop the details of a certification program for SMEs, and conduct a pilot with a few SMEs to become certified. Standards and labelling must be regularly iterated as better technologies are developed and standards increase. Therefore, S&L programs must be designed thoughtfully and with flexibility.

These steps conducted with CCAC support are early examples of applying best practices from other S&L programs to support innovation and improvement in the cookstove and fuels market.

## **HEATSTOVES**

The project has completed beta-testing at six national laboratories in Norway, Sweden, Denmark, Finland, Chile and an EU-designated lab (Ostrava, Czech Republic) but still has sufficient funds to complete beta-testing of the Protocol at 1-2 more labs. Greyscale testing was developed in Denmark, and tested in a second round at Ostrava. Greyscale will be included in any additional laboratory contracts. To ensure geographic and economic diversity, we are seeking laboratory partners in North America, and among developing countries.

## **CHALLENGES**

### **COOKSTOVES**

While the stakeholders are supportive of the strategy recommendations that have been developed, it is difficult to discuss strategies concretely when resources for next steps aren't identified. Across the countries, there is a lot of enthusiasm for taking the next steps with S&L implementation. The strategy development has included focusing on available resources, and the goal is to use these S&L strategies to support resource mobilization.

With most of the Alliance and CLASP team based outside of the focus countries, it has been difficult to have detailed and open discussions to gather stakeholder feedback. To address this challenge, we have gathered initial input



through in-person meetings, targeted follow-up through sharing documents as providing written feedback has been easier than teleconference meetings. This has allowed the in-person validation meetings to be more effective.

Although UNBS is leveraging an existing Micro, Small, and Medium Enterprise program, their timeline to establish a mandatory certification programme is ambitious. UNBS has realized the number of steps and issues to consider as the activity has progressed, but is still planning for their original timeline. This is an internal deadline, so if UNBS is delayed, there are no major consequences. And having this internal deadline does keep UNBS to be motivated to move things forward.

The stakeholder feedback for the labelling and certification programmes has generally been supportive, as stakeholders see this as an opportunity to access additional markets and consumers in both West and East Africa. Consumers are also concerned about the costs associated with testing. By increasing the number of organizations requiring testing services, it is possible to achieve more economies of scale with testing. In the Ghana context, the Energy Commission has commissioned the testing, so the costs for enterprises are lower.

## **HEATSTOVES**

The Policy report is delayed due to additional need for data and input from major emitting Partner countries (Germany, France, Russia). Draft report now out for comment and finalization anticipated by September 30, 2017. Report also being shared as part of analysis of needed next steps for at least 9 Partner countries.

Much of the information collected from private sector stoves manufacturers is business-confidential, making compilation much more difficult and sensitive, especially as regards shifting ownership. Outreach to key producers initiated early in 2017, but therefore delayed pending clearer picture of “who owns who” and largest companies.

## **LIGHTING**

The data collected so far are not recent as we hoped so our experts in the country are now trying get new information by engaging new local agencies and national stakeholders

## **LESSONS LEARNED**

### **COOKSTOVES**

The consumer study on labelling for cookstoves is the first time we have this type of information, which is critical to appropriately translate science (emissions data on cookstoves) to policy (standards and labelling program) to the public (consumers using labels to guide purchase of lower-emissions technologies). There is still more to understand about consumer reactions to labelling in Ghana and elsewhere, but the initial information has showed us that it is important to limit the information presented to consumers. For example, the distinctions between different types of pollutants emitted is challenging for consumers. The level of education determines whether consumers look at text or graphics, so a combination is helpful. Consumers are also pulling a lot of correct and incorrect understandings

from the graphics, which means that an effective communications campaign to accompany the roll out of the labelling program will be important.

In both Uganda and Ghana, the current level of testing data is limited for BC, which has made it difficult to set specific minimums or targets for BC emissions. By focusing the labelling and certification programmes on efficiency and other types of emissions, it creates the policy foundation for addressing BC in the future, though the need to present simple information to consumers must also be considered.

## OPPORTUNITIES

A number of opportunities emerged during the reporting period:

- ▶ The number of countries with cookstoves in their NDCs
- ▶ Pay-as-you-go vs traditional microfinance solutions – according to the World Bank/IFC, pay-as-you-go off-grid solar companies raised USD 223 million in 2016 alone. By providing energy services on a pay-as-you-go (PAYG) basis, enterprises are leveraging technology-focused business models to overcome the affordability barrier previously faced by consumers unable to afford the upfront cost of household energy products. [See more](#)