Clean Cooking: A critical tool for energy security and development

WTO Fossil Fuel Subsidy Reform Initiative

15 February 2023
Agenda

1. An overview of CCA
2. The global clean cooking gap
3. Sector evolution and trends
4. Discussion
AN OVERVIEW OF CCA
The Clean Cooking Alliance works with a global network of partners to build an inclusive industry that makes clean cooking accessible to the 2.4 billion people who live each day without it.
CCA is a global organization with a focus on local transformations.

CCA is committed to advancing the agency of local stakeholders and their visions for change through a portfolio of global and country-level workstreams.
CCA fosters transformative change across the whole of a diverse and complex ecosystem
CCA generates significant impact for the sector

- **$75+M**: Deployed or raised to support enterprises
- **60+**: Enterprises received technical assistance
- **$18M**: Invested in research and evidence
- **100M+**: People engaged via advocacy & communications
- **2,000+**: Women entrepreneurs trained
- **100+**: Events, workshops, and convenings globally
2.4 billion people globally lack access to clean cooking

The proportion of population with primary reliance on clean cooking fuels and technologies is about 30% in Sub-Saharan Africa and about 63% in Developing Asia, as of 2020.

*Grey countries are those with absent data*
Clean cooking remains one of the most under-invested development challenges in the world

Clean cooking receives about 1% of the US$10 billion a year required to achieve universal access by 2030.

Annual funding allocated to clean cooking\(^1\)  $130 million

Shortfall  $9.87 billion

Annual funding required to achieve universal access by 2030\(^2\)  $10 billion

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\(^1\)Energyizing Finance: Understanding the Landscape 2021, SE4All; \(^2\)Based on the IEA World Energy Outlook Model, in which the annual investment required to achieve universal access to clean cooking accounting for Net Zero Emissions by 2050 (NZE) scenario is $8 billion. This amount does not include fuel costs to the user or technology replacement costs (in other words, only first time access is included).
Clean cooking sits at the nexus of several development challenges
There can be no just energy transition without addressing the clean cooking gap

The share of household energy used for cooking can be as high as 90% for low-income households compared to 10% in wealthy and developed countries.
Universal access to clean cooking can help achieve global climate goals

- **Clean cooking mitigates greenhouse gas emissions**
  
  1 gigaton of CO$_2$e is produced every year from burning woodfuels, around 2% of global emissions\(^1\)

- **Clean cooking reduces black carbon emissions**
  
  >50% of man-made black carbon emissions come from household fuel combustion\(^2\)

- **Clean cooking reduces forest degradation**
  
  34% of woodfuel harvesting is unsustainable\(^3\)

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Clean cooking access can deliver health, air quality and gender & livelihood benefits

**HEALTH**
Up to **3.2 million people die** prematurely every year from illnesses associated with exposure to smoke from open fires or inefficient stoves (WHO, 2022)

**AIR POLLUTION**
Household air pollution from solid biomass fuel use accounts for **16% of ambient air pollution** globally and upwards of 30% of ambient air pollution in India, Nepal and other parts of Asia (McDuffie EE et al., 2021)

**GENDER & LIVELIHOODS**
Women and children spend **4 to 20 hours per week** gathering fuel or spend significant household income purchasing it (WHO, 2016); **60% of deaths from household air pollution** are women and children (IHME, 2020)
Climate Forcing Emissions

Health Damaging Emissions

- Clean
  - Electricity*
  - LPG
  - Biogas
  - Ethanol

- High-efficiency charcoal*
  - Rocket*
- Basic improved charcoal*
- Wood*

*Climate impact depends on renewability
What if all LMIC countries with >1 million polluting fuel users transitioned to clean cooking?

Percentage of the population with primary reliance on polluting cooking technologies

- 77 countries
- ~2.5 billion polluting fuel users

WHO, 2018
A large-scale clean cooking transition would lead to significantly lower greenhouse gas emissions by 2040

Full transitions result in ~15% lower cumulative CO$_2$e by 2040

CO$_2$e increases 12% from 2018-2040 in BAU

*1 gigaton = 1 billion tons
A large-scale clean cooking transition would lead to significantly lower greenhouse gas emissions by 2040.

A full transition to clean cooking by 2040 results in cumulative emissions reductions of ~3 Gt CO$_2$e.

CO$_2$e sequestered by nearly 50 billion tree seedlings growing for 10 years!
SECTOR EVOLUTION AND TRENDS
More enterprises are getting to economies of scale

Number of companies reporting revenue from clean cooking sales of $1 million or higher

Source: Clean Cooking Industry Snapshot 2022, Clean Cooking Alliance
More capital raised by the industry

Capital raised by clean cooking enterprises

Source: Clean Cooking Industry Snapshot 2022, Clean Cooking Alliance
The market of solutions is diversifying

Share of revenues from clean cooking sales by technology category

Source: Clean Cooking Industry Snapshot 2022, Clean Cooking Alliance
Enterprises are investing more in innovation

Comparison of patent families of the top 10 fundraisers in clean cooking and off-grid solar, using a 3-year rolling average

Source: Clean Cooking Industry Snapshot 2022, Clean Cooking Alliance
Rewind to a decade ago
The sector’s paradigm

Design stoves that are cleaner than existing models and that perform their cooking job just as well, and then run campaigns to “educate” people into buying them.
But the paradigm was incomplete

How do you compete on price?

How do you overcome upfront costs?

How do you ensure quality and safety?

How do you make it seamless?

How do you reach your customers?
Fast forward to today
From products to solutions
Seamless customer experience
More scalable

Now

Looking ahead