



COOKING WITH FIRE IN SUB-SAHARAN AFRICA AND LATIN AMERICA

SUSTAINABLE DEVELOPMENT GOAL
[#7: Ensure access to affordable, reliable, sustainable, and modern energy for all](#)

POSSIBLE ESSENTIAL QUESTIONS

- How are culture and cooking connected and how do they impact the health of a community?
- In what ways can cooking over an open flame or efficient stoves impact a region's economy and its people?
- What are some strategies people and communities are using to bring healthier cooking techniques to the developing world? What have the results been?
- Who should be involved in decreasing the use of open fires and inefficient stoves?
- What are some of the challenges of adopting a new way of cooking in different countries around the world?

BACKGROUND

Every eight seconds someone dies from the effects of cooking over an open fire or simple stove that uses kerosene, biomass, or coal - this is one of the world's largest unseen crises. This is because currently three billion people around the world don't have access to efficient and clean cooking solutions - polluting the air - and causing household air pollution. Household air pollution kills more people than AIDS, tuberculosis, and malaria combined and is the leading cause of death in children under the age of five. In addition to impacting people's health, cooking over open fires and simple stoves negatively impacts the environment, local economies and is a gender issue disproportionately impacting women. Ensuring universal access to affordable, reliable, and clean cooking systems is a key target of Sustainable Development Goal #7 and needs dedicated attention.

The typical cooking fire produces about 400 cigarettes' worth of smoke an hour and in poorly ventilated homes smoke can be 100 times higher than what's acceptable, releasing dangerous chemicals such as small particulate matter, soot, carcinogens, carbon monoxide, and hydrocarbons. Prolonged exposure to this type of indoor air leads to four million premature deaths each year.

Women are disproportionately impacted by household air pollution. Women spend the most time near the domestic hearth cooking and therefore, have the most prolonged exposure to the danger of smoke inhalation. Women are also responsible for collecting wood and fuel for the fires, often walking miles away from their home, which increases their risk of musculoskeletal damage and makes them vulnerable to human predators. The time it takes women to collect wood and fuel is also consuming their valuable time that could otherwise be spent generating income.

The environmental impact from inefficient and pollution cooking practices is substantial. Smoke is a source of black carbon which is a major contributor to global climate change. The collecting of wood for cooking fires is a major driver in deforestation and environmental degradation. Additionally, collecting wood for cooking also contributes to timber smuggling by hiding rare wood amongst the wood from common species.

This issue of clean, efficient cooking techniques is a much-overlooked global issue. Efficient and safe stoves have been developed saving up to 60% of fuel and reducing exposure to dangerous smoke however, the adoption of new stoves is challenging. This case study will take a closer look at how the tradition of cooking over an open fire in Sub-Saharan Africa and Central America impacts the environment, the health of women and children, and the local economy. It will also look at current solutions and highlight the need to work with a human centered design approach in designing solutions to this often-overlooked issue.



RESOURCES

Personal Stories

- [Women in Kenya share how cleaner cooking solutions can transform lives \(UN Foundation\)](#)
- [The Importance of Safe Cooking \(Stove Team\)](#)
- [Clean Cookstove Project in Kenya \(GreenTV\)](#)
- [A Day In The Life Of Mosotho Women: Stories of Strength and Responsibility \(ACE\)](#)
- [A women's burden \(New Internationalist\)](#)

Articles

- [Three Billion People Cook Over Open Fires — With Deadly Consequences \(National Geographic\)](#)
- [Illegal Logging in Malawi: Can Clean Cooking Stoves Save Its Forests? \(The Guardian\)](#)
- [Smoke and Mirrors Revealing Malawi's untold health and environmental crisis \(New Internationalist\)](#)
- [Open-Fire Stoves Kill Millions. How Do We Fix it? \(Smithsonian Magazine\)](#)
- [Tackling climate change through cleaner cookstoves \(Anthropocene Magazine\)](#)
- [Household Air Pollution and Health \(WHO\)](#)
- [Indoor Air Pollution from Cooking \(CA Air Resources Board\)](#)
- [Cookstoves in Tanzania - User Insights and Opportunities \(IDEO\)](#)
- [Increasing air pollution levels pose greater risk to children than adults \(Newsela\)](#)
- [What Causes Air Pollution? \(NASA Climate Kids\)](#)
- [Bangladesh introduces improved stove to save fuel \(Reuters\)](#)
- [100 Million Poor Families to Get Clean-Burning Stoves From Mrs. Clinton \(Good News Network\)](#)

Data & Maps

- [Smoke and Mirrors: Death by Country \(New Internationalist\)](#)
- [Tracking SDG 7 \(The Energy Progress Report\)](#)
- [Access to electricity \(The World Bank\)](#)
- [Access to Energy \(Our World in Data\)](#)
- [Infographic: Household Air Pollution \(WHO\)](#)

- [Household air pollution and health \(WHO\)](#)
- [The cookstove challenge: Frightening facts infographic \(ISO\)](#)
- [SDG7: Data and Projections \(IEA\)](#)
- [Infographic: Why Clean Cookstoves? \(Trees, Water & People\)](#)
- [Infographic: Global Burden of Air Pollution \(IHME\)](#)

Videos

- [Smoke and Mirrors: Smoke \(Pulitzer Center\)](#)
- [Clean Cooking \(WAME\)](#)
- [Clean Cookstoves and Fuels: A Global Perspective \(Clean Cooking Alliance\)](#)
- [Designing cleaner stoves for the developing world \(PBS\)](#)
- [How clean cookstoves improve lives \(Ashden\)](#)
- [Saving lives through clean cookstoves \(TEDxMontreal\)](#)
- [Impact Carbon, boosting sustainable energy businesses \(Ashden\)](#)
- [In India, Battling Global Warming One Stove at a Time \(Untold Stories\)](#)
- [Black Carbon \(NBC Learn\)](#)

Audio/Podcasts

- [Hotbox: The Oven From Turnspit Dogs to Microwaves \(42m 50s - 50m 45s\) \(Gastropod\)](#)
- [Dangerous Cooking – Extinguishing the health risks of open flame stoves \(Sandoz\)](#)
- [The Hidden Air Pollution in Our Homes \(The New Yorker\)](#)

Photographs

- [Photo Blog: Improved Cookstoves for Social Impact in Uganda \(Impact Carbon\)](#)
- [Guatemala Cookstoves \(National Geographic\)](#)
- [When Cooking Kills \(Pulitzer Center\)](#)

Helpful Links

- [Berkeley Air Monitoring Group](#)
- [Clean Cooking Alliance](#)
- [Burn Design Lab](#)
- [Clean Cooking is...](#)
- [Stove Team](#)
- [Sustainable Energy for All](#)
- [African Clean Energy](#)
- [United Nations Sustainable Development Goal 7](#)

