Scaling Clean Cooking in East African Schools: the key role of planet-friendly school meals policies and actions.

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The Research Consortium for School Health and Nutrition

Led by member states:

School Meals Coalition

Small Secretariat based in London:

LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

Research Consortium for SHN

Research Consortium for School Health and Nutrition

- Impact & Evidence
- Analytics & Metrics
- Good Examples
- Nutrition
- Diet & Food Systems
- Early Career Researcher & Young Scientist Network
- Artificial Intelligence

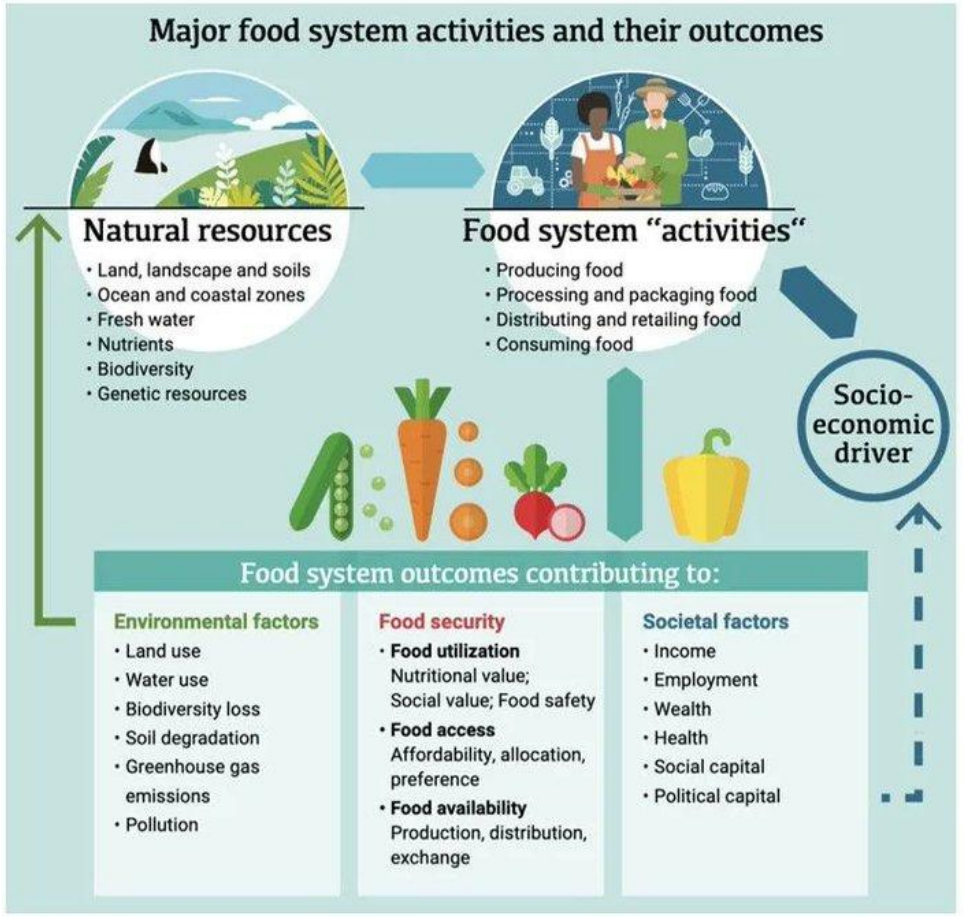
7 global academic Communities of Practice

White Paper on School Meals and Food Systems

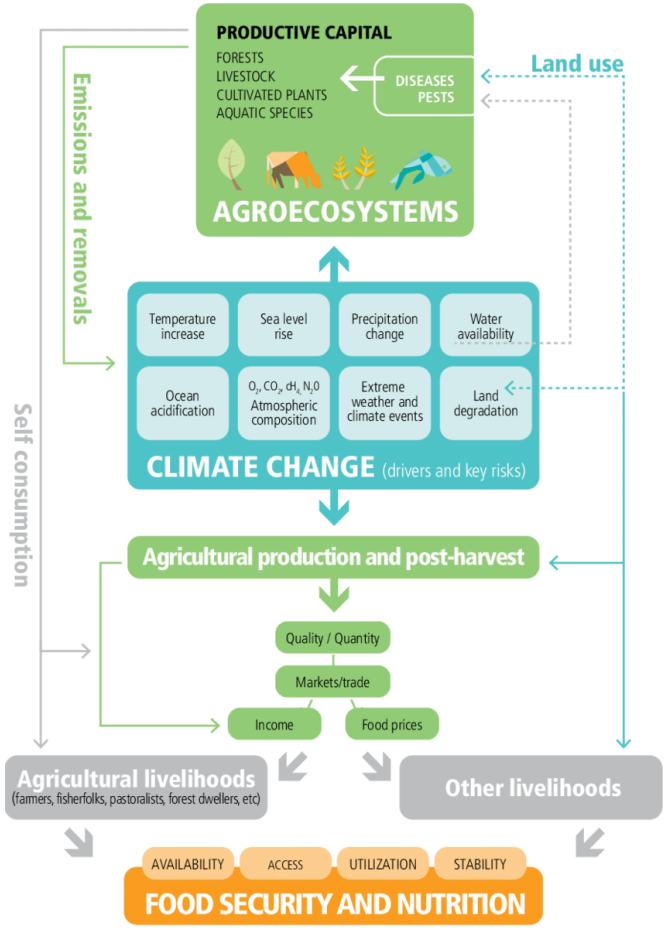
Produced in collaboration with **164 contributors** from **87 organizations** worldwide:

Read the full paper

The food system, climate change, and food security nexus



UN Environmental Programme, International Resource Panel, 2022



Armine Juergenliemk et al, 2020

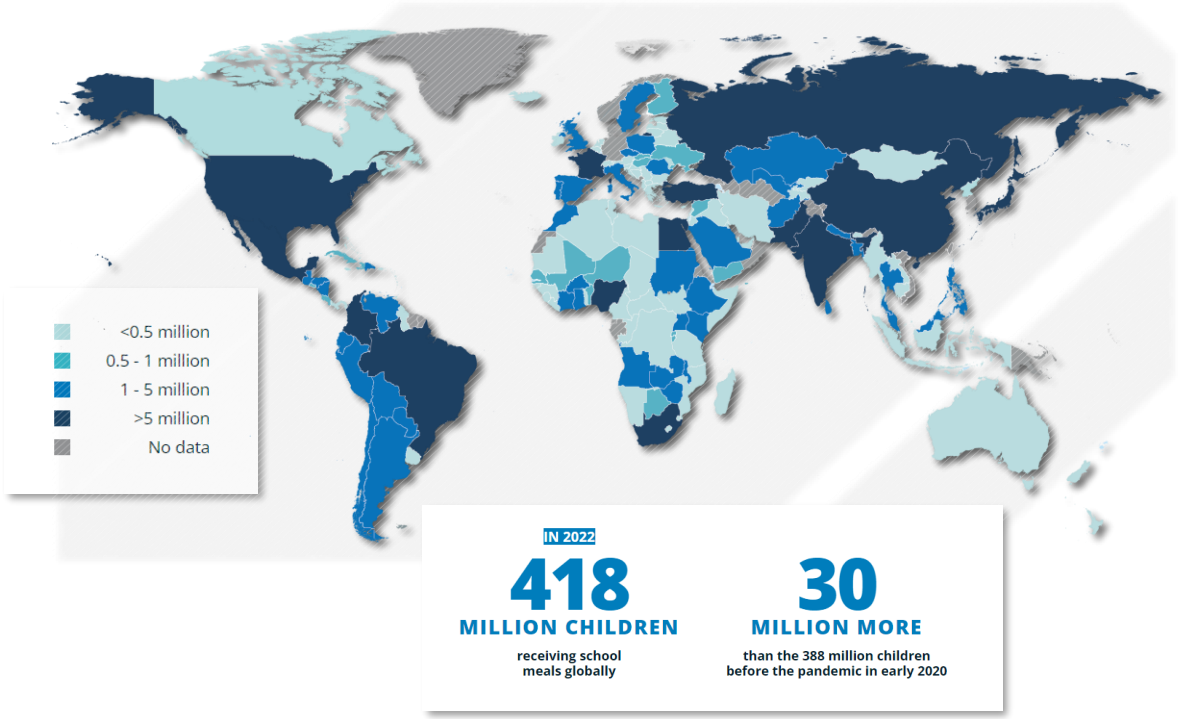
- **30%** of the world experience food insecurity
- **1/3** of all food is wasted
- **Food systems are a major cause of climate change** and environmental degradation
- **Climate change disrupt food production** and quality and increase food insecurity

School meals: A unique opportunity

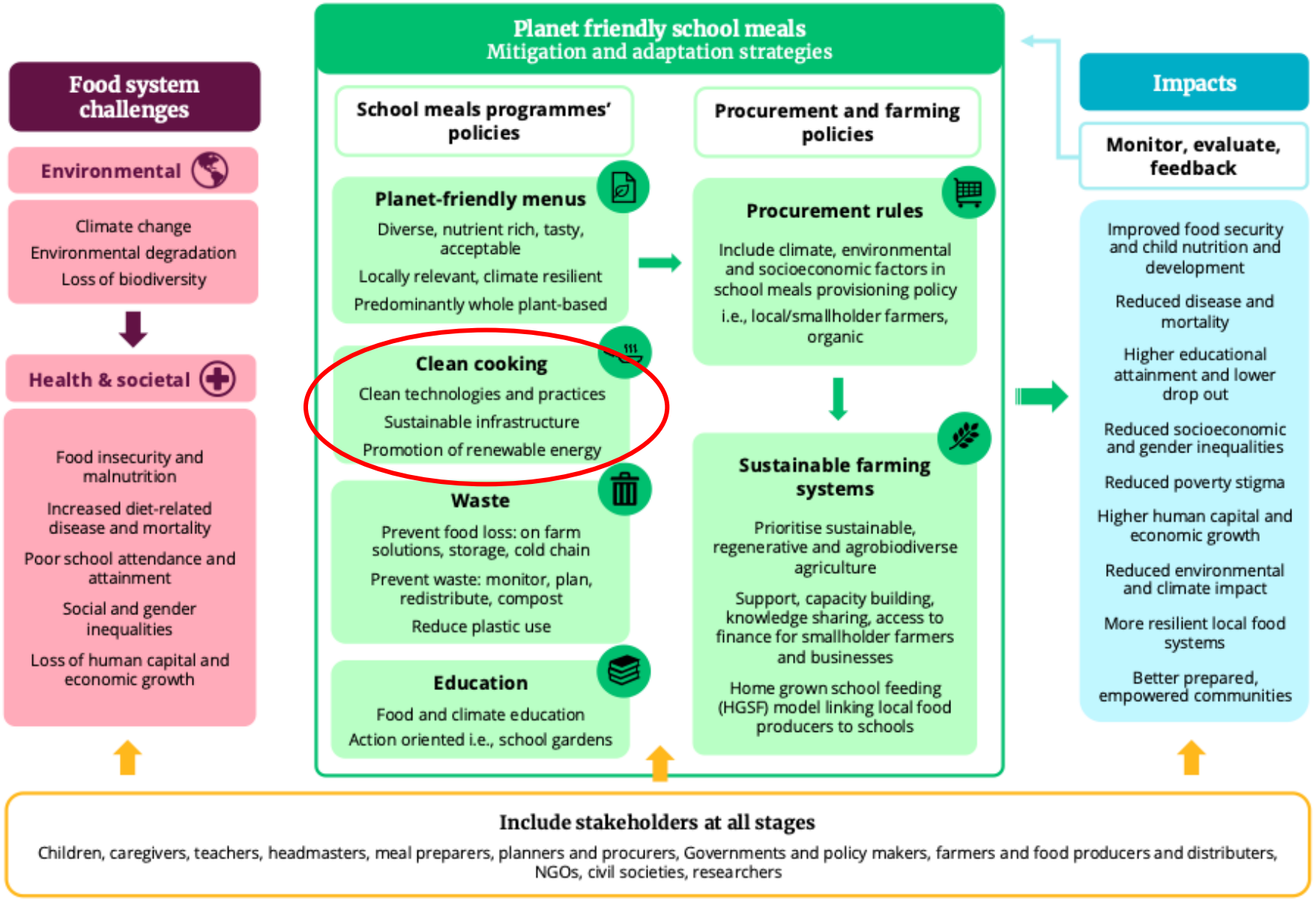
WHY SCHOOL MEALS?

- 418 million children receive a meal at school each day
- 98% of school meals programmes are financed and managed domestically
- Governments therefore hold the policy levers to create significant change at scale
- Two opportunities for governments to create systemic change:

1. Those directed at making **immediate changes** to school meal programs;
2. **Demand-driven** planet-friendly **procurement policies** that promote ecological and farming practices and develop sustainable regional food systems



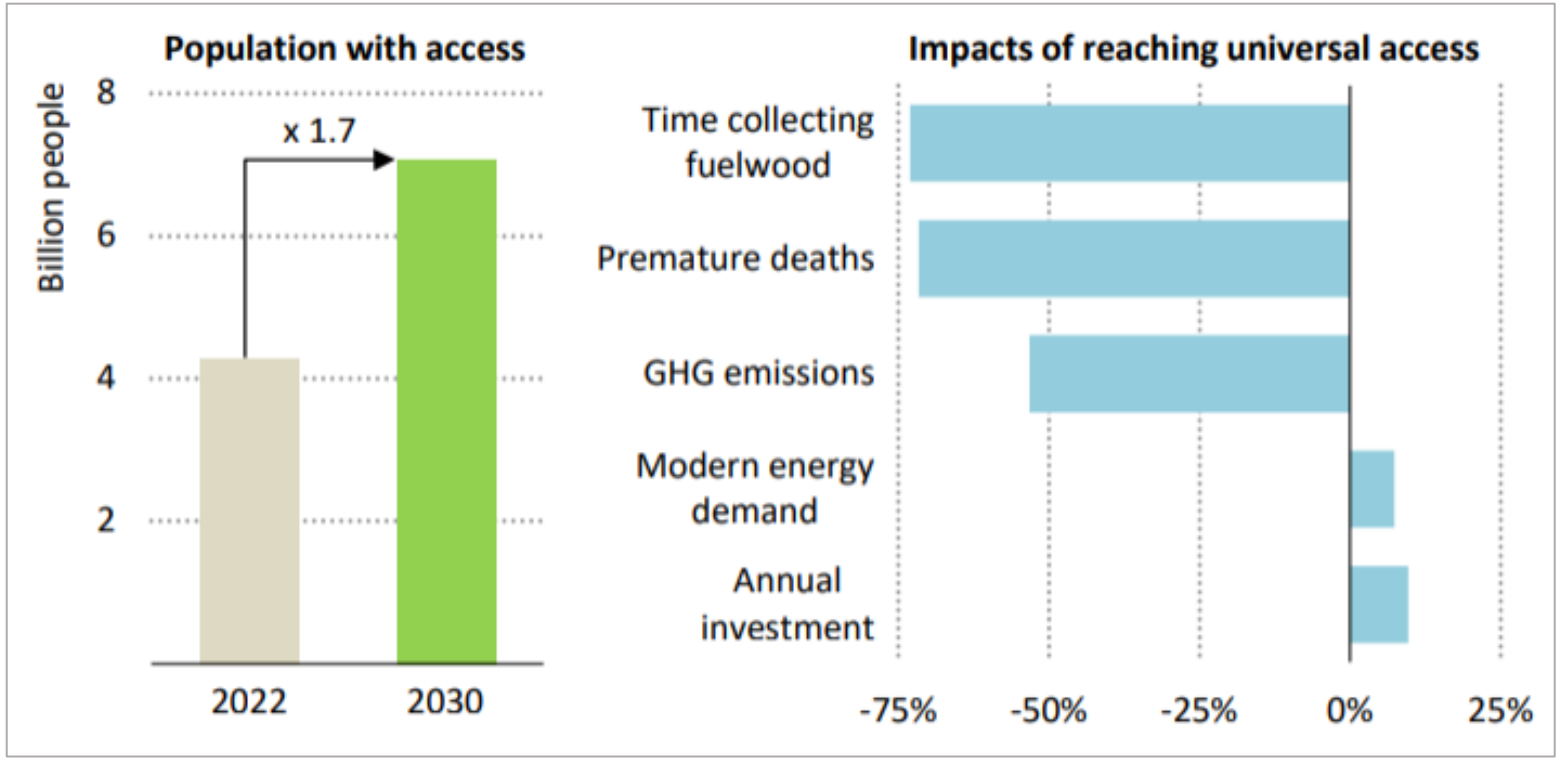
Planet-friendly school meals conceptual framework



Health and environmental effects of unstainable cooking practices

- **2.3 billion people**, mainly in Africa, **lack access** to clean, safe, reliable, and affordable cooking energy.
- Major contributor to **deforestation and GHG emissions**
- Clean cooking could save more than **3 million** deaths per year. with women and children most at risk

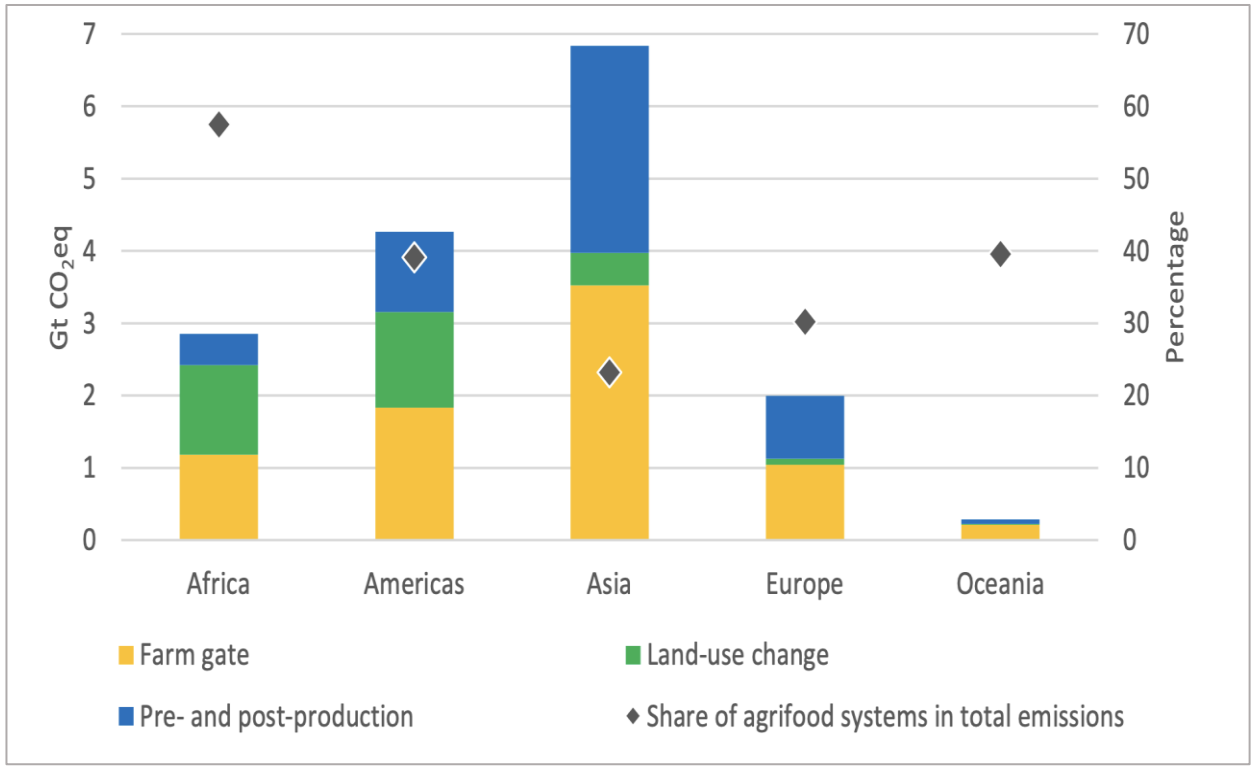
Impacts of achieving universal access to clean cooking in emerging market and developing economies, 2020–2022



International Energy Agency, 2023

Agrifood systems emissions and mitigation potential from reduced wood fuels harvest in Africa

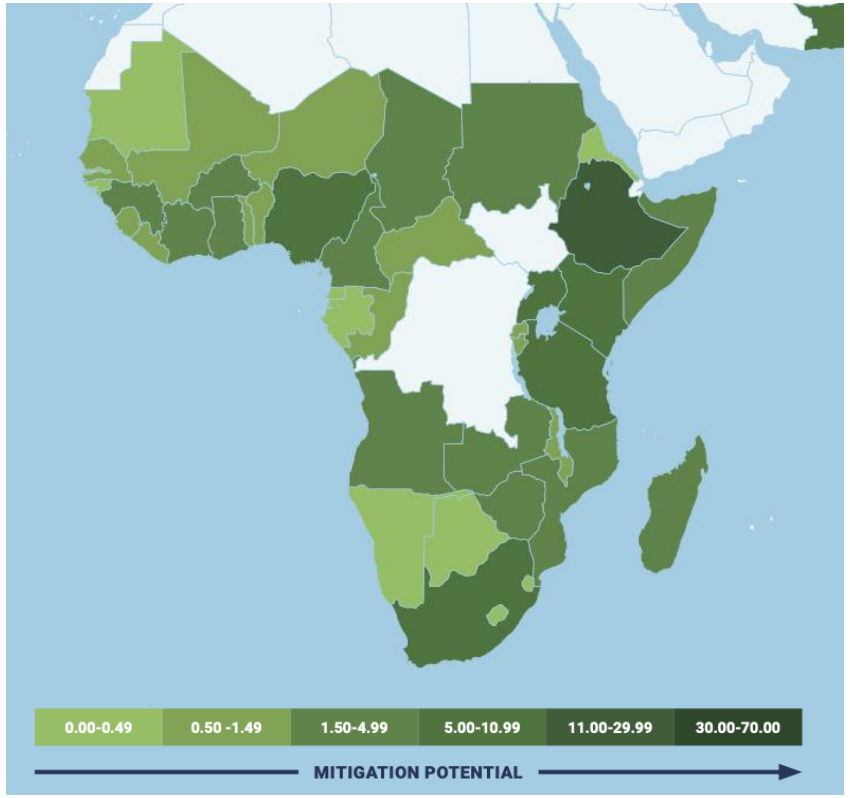
Agrifood systems emissions and share in total emissions by region, 2021



FAO, 2024

- Agrifood systems are the main cause of emissions in Africa. emissions are mainly driven by land use and conversion

Map of mitigation potential in Africa from reduced wood fuels

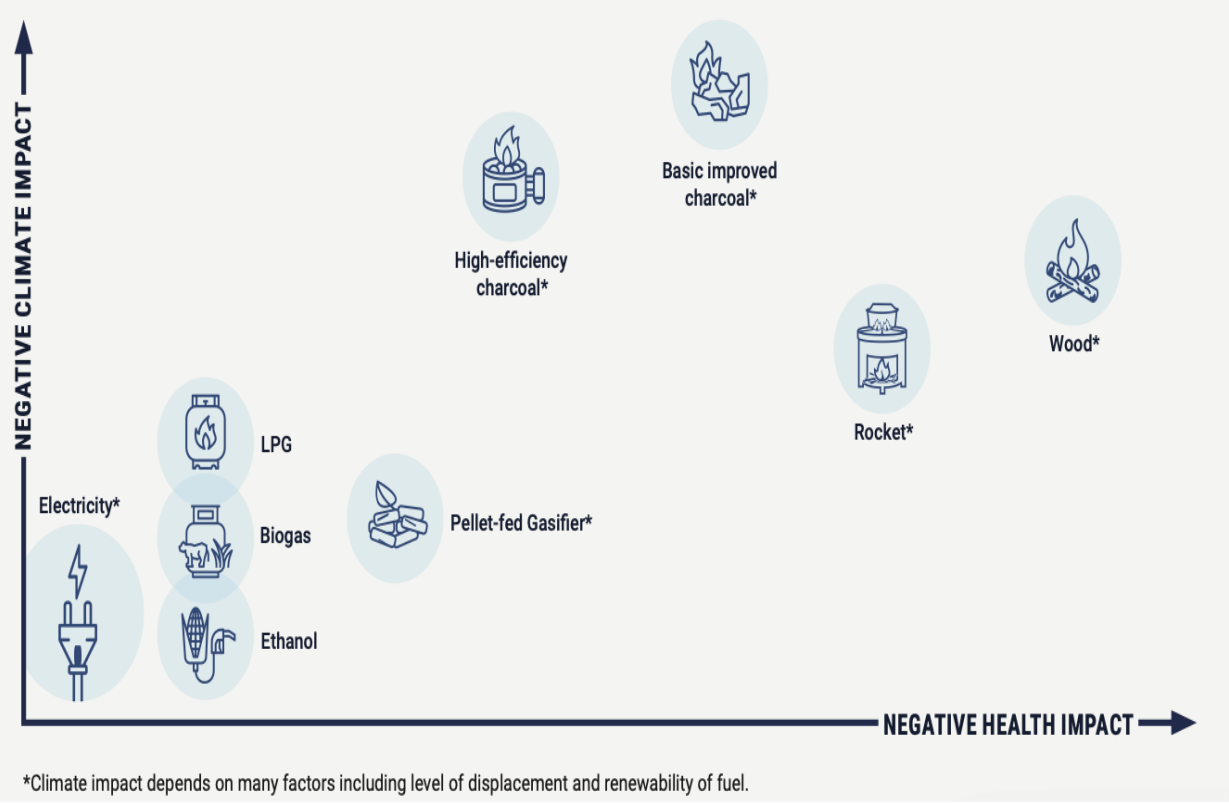


Clean Cooking Alliance, 2023

- In East Africa emissions form wood fuel account for >**50% of a country's total emissions**.

Clean cooking solutions for multiple outcomes

Clean cooking solutions for climate and health impact



Clean Cooking Alliance, 2022

Cooking stove performance against various metrics

Type of stove	Health	Gender	Environment	Upfront cost	Fuel cost	Disruption risk	Scalability	Efficiency and cooking time
Gathered biomass								
Charcoal and fuelwood								
Coal								
Kerosene								
Improved biomass cookstoves								
LPG								
Natural gas								
Electric cooking								
Biogas								
Ethanol								

High performance · Medium performance · Low performance · Not applicable

IEA, 2023

Lack of Clean cooking in Schools

- Open cooking, charcoal or wood stoves utilized in > **85% of schools in low-income countries**; access to electric stoves in schools is non-existent (GCNF, 2022)

- Schools in Sub-Saharan Africa consume **8 million tons of firewood per year**, emitting 12 tons of carbon dioxide equivalent (tCO2e). (ESMAP, 2023)

- Biomass in school cooking causes indoor air pollution, affecting the health of staff and children (McCord et al., 2017)

Clean cooking in schools: approaches

1. **More efficient cooking**: menu changes and behaviours (eg use lids)
2. **Energy supplies**: biomass transition to electricity (grid or PV + batteries), biogas, pellet gasifier, LPG
3. **Cooking equipment**: more efficient stoves and pots (to suit energy source) eg:

    Electricity: induction hob, integrated electric pot with insulation, rice cooker, electric pressure cooker

MECS Modern Energy Cooking Services

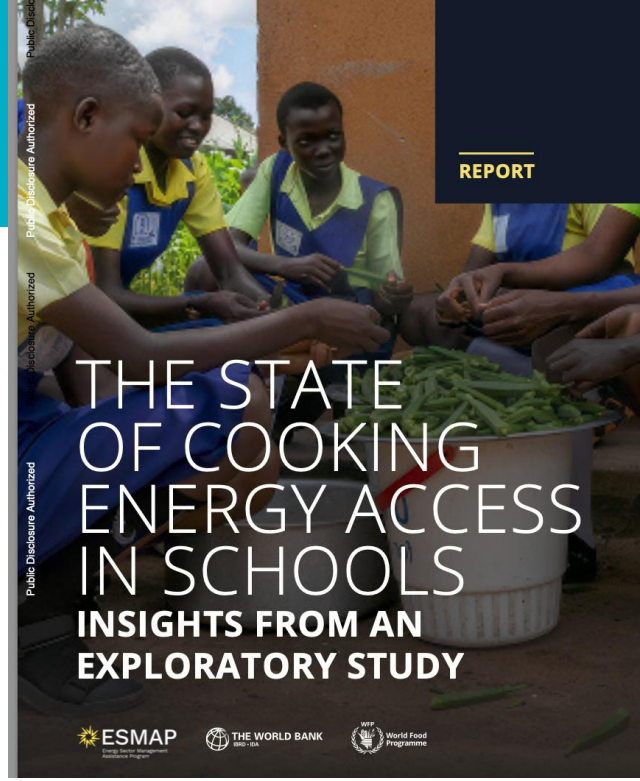
Loughborough University

ESMAP Energy Sector Management Assistance Program

UKaid from the British people

State of cooking energy access in schools

- **Energy Sector Management Assistance Program (ESMAP) – 2023 Report**:
  - primary and secondary sources used to create a database on clean cooking initiatives in schools in SSA
  - Mostly implemented by international organizations



- **Survey of clean cooking initiative results, Kenya, Rwanda, and Uganda:**
  - Most initiatives use **improved cookstoves (ICS)** fuelled by firewood or charcoal, and stacking is prevalent.
  - Except for gas and electricity, **alternative clean-cooking fuels are still in the innovation**, research, and development phases.
  - Many schools could not accurately estimate their cooking energy consumption or fuel expenditures, and **field performance data was lacking**.

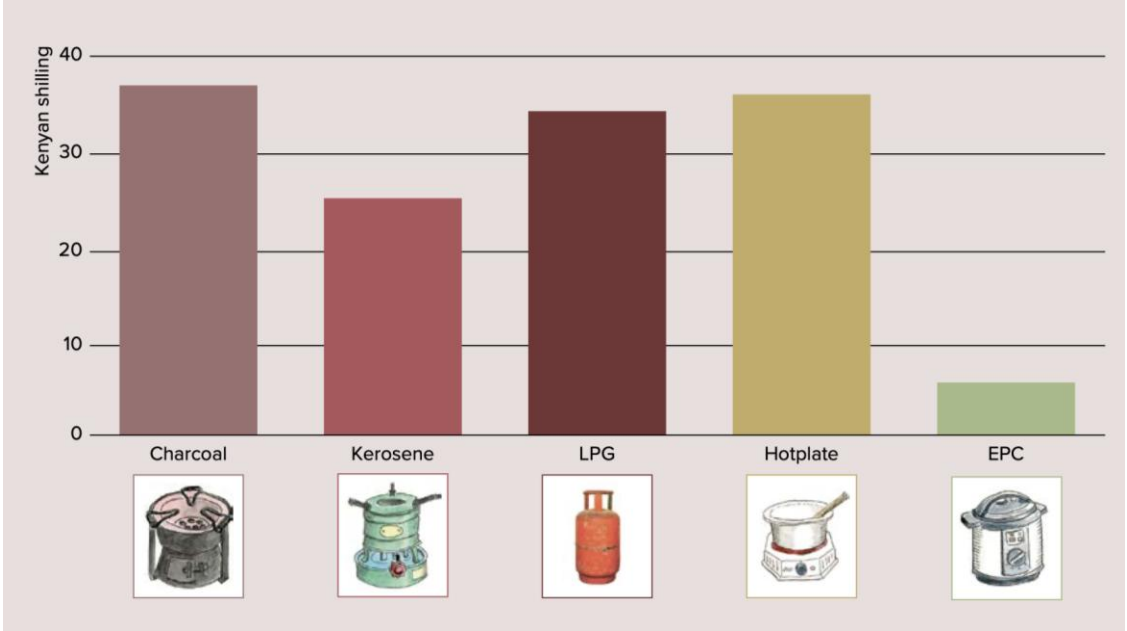
Research and data needs to scale up clean cooking in schools

- **Major data gaps** hinder estimation of the scale of the problem and development of appropriate interventions.

- **Lack of official statistics on the rate of clean cooking** access in schools

- Need for **accurate costing of fuel**s to estimate true cost of inefficient cooking, help governments and stakeholders estimate returns on investment
- **Reliable data,** can incentivize promotion and uptake of cleaner cooking solutions

Fuel cost of cooking 500g of yellow beans



Source: Modern Energy Cooking Services, MECS,

Case studies

School Cooking Model for impacts from Rwanda field study

- **Study of fuel-efficient school menus and cooking practices for cost savings in Rwanda's school feeding**
  - 14 schools in Rwanda, initially using firewood (1 also LPG, 1 briquettes)
  - Switch to a "fuel-efficient" menu, eg pre-soaking beans
  - behavioural changes, eg use of lids
- Methods:
  - Cooking diaries, measuring fuel use
  - Controlled Cooking Tests using 40 litre EPCs
  - Modelled partial switch to electric cooking
  - Developed a "School Cooking Model"
- Outputs:
  - Fuel use, costs, GHG emissions, time savings, unsustainable wood saved

WFP wfp.org World Food Programme

Loughborough University
STEER – Centre for Sustainable Transitions: Energy, Environment and Resilience

Republic of Rwanda
Ministry of Education

Electric pressure cookers in Lesotho

WFP-funded project introducing energy-efficient Electric pressure cookers (EPCs) in primary schools.

Results showed:

- Cost of cooking considerably less than LPG or firewood.
- EPCs safer and more reliable than other fuels.
- Fewer students without meals.
- Schools able to serve the same types of food.
- Savings in time and water use.
- Reduced waste.
- Improved air quality in school environment.

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Food4Education's Giga Kitchen, Kenya

- Meals for approximately **60,000 school children daily** in one giga kitchen in the outskirt of Nairobi
- **Steam cooking**: boiler generated heat, creating steam that powers the cooking process
- **Eco-briquettes to generate heat** – smoke free, made from compressed sawdust and organic waste; 2.5 tonnes produce 60,000L of steam
- Food4Education uses 16,000 tons of eco-briquettes a day, in 29 kitchens; equivalent to saving around 32,000 trees.
- **Water saving**: After the steam cools down and condenses, hot water is reused for cooking, washing, and cleaning,.
- Improvements in energy efficiency, environmental and health

Want to know more about Planet friendly school meals?

- Working **in partnership with pilot countries to implement the findings and recommendations** of the White Paper
- A '**toolbox of tools'** to help policymakers and technical staff develop locally- and nationally- appropriate interventions.
- A **Journal special issue,** and periodic webinars, focusing on planet friendly school meals issues.
- **Continued engagement** with policymakers and key decision makers.

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