

Powering Productivity in African Grids

Welcome & Keynote: The Energy Transition

Professor Ed Brown, Director MECS Programme

Organizing Team

- Modern Energy Cooking Services (MECS),
- Climate Compatible Growth (CCG),
- Strathmore University – School of Computing and Engineering Sciences (SCES)
- Yale University
- Innovate UK Energy Catalyst Programme
- RAP/RETA – Our Regulator Colleagues

The Next Two Days: Objectives

- Moving the energy agenda in the Global South from **access** alone (connections) to questions of utility **viability**, service **quality** and social/economic **impact**.
- Exploring how **financial sustainability for utilities** depends on solving the twin challenges of **low demand** (which electric cooking can help address) and **poor reliability**.
- Building on three days of Discussion in Windsor during the RAP/RETA Energy Regulator Exchange

Today's Programme

09:30 – 10:00 | Session 1: Understanding the Kenyan Grid: Losses and Reliability

Speakers: Ms. Anne Wacera Wambugu & Eng. Hicks Waswa –
Strathmore University & Kenya Power and Lighting Company, KPLC

10:00 – 10:30 | Session 2: Feeder-Level Analysis and Emerging Loads

Speakers: Mr. Kenneth Mugo & Mr. Harrison Mwaura –
Strathmore University

10:30 – 11:00 | Coffee Break

Today's Programme

11:00 – 11:30 | Session 3: The Economic Value of Improved Reliability

Speaker: Dr. Eric Hsu – UC Berkeley/ Yale University

11:30 – 12:00 | Session 4: Tariff Design – General Principles

Speaker: Dr. Eng Fenwicks Musonye – Energy and Petroleum Regulatory Authority, EPRA, Kenya

12:00 – 13:00 | Session 5: Panel Discussion: Resolving the Losses–Tariff Cycle

Panellists: Mr. Lee Okombe, EPRA; Eng. Raphael Ndolo, KPLC; Mr. Murefu Barasa, Loughborough University and Prof. Mitchell VanVuren, Vanderbilt University — the case for reliability investment and latent demand

13:00 – 14:00 | Lunch

Today's Programme

14:00 – 14:30 | Session 6: Tariff Design: Lessons from Uganda

Speaker: Dr. Patrick Tutembe – Electricity Regulatory Authority, ERA, Uganda

14:30 – 15:00 | Session 7: Simulating Tariff Reductions: Evidence from Kenya

Speaker: Mr. Murefu Barasa – Loughborough University

15.00 – 15.30 Tea and Coffee

15:30 – 16:45 | Session 8: First Regulators Round Table

Facilitator: Prof. Ed Brown and Mr. James Miano

16:45 – 17:00 | Day 1 Wrap-up



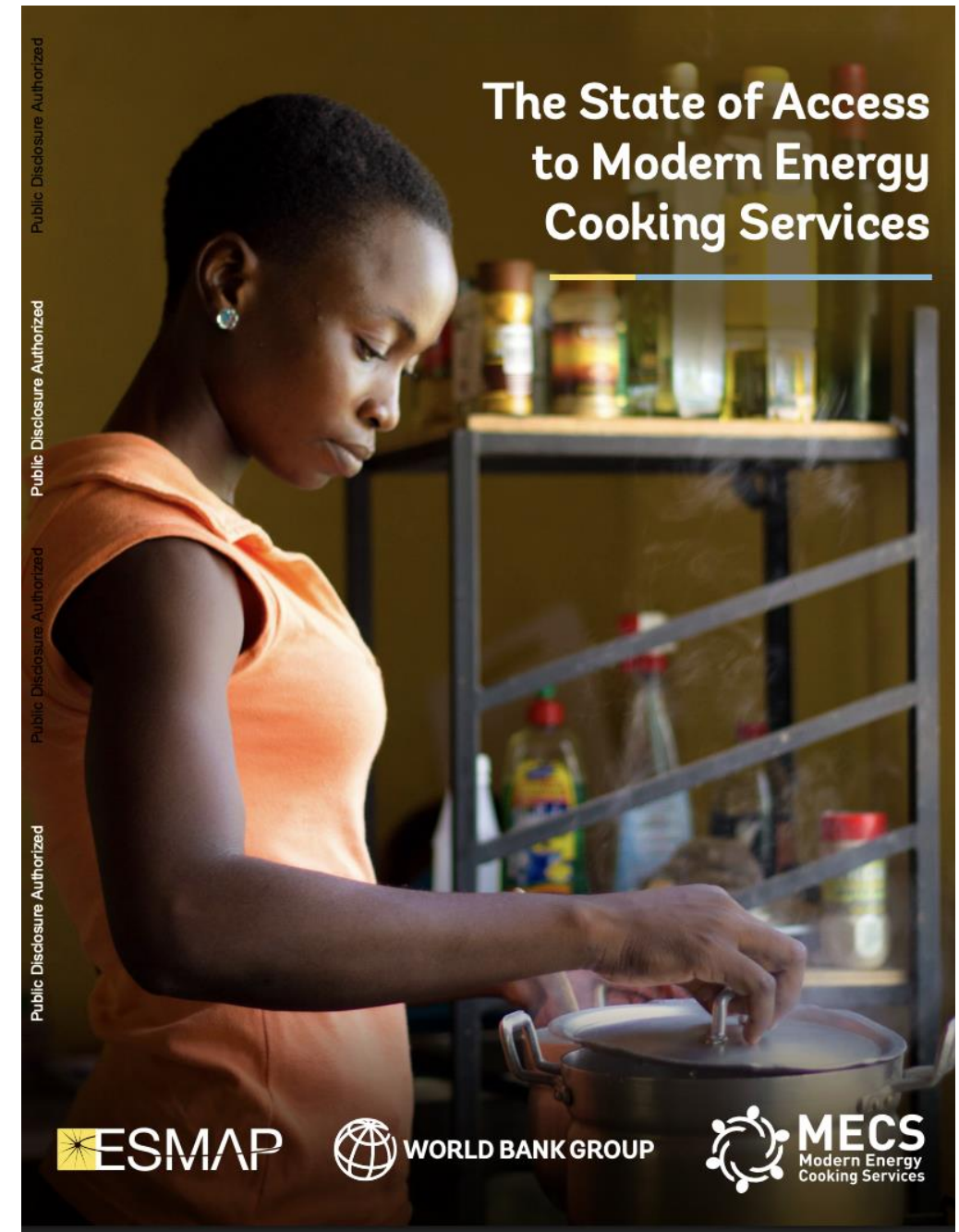
A few words on eCooking: The MECS Journey

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The **Modern Energy Cooking Services MECS** programme aims to **break out of the “business-as-usual”** cycle of developments on cooking by investigating how to rapidly accelerate a transition from biomass to genuinely ‘clean’ cooking (i.e. Tier 4/5).

- **Began work in 2018**
- **Evidence, research and insights** into the drivers and pathways for economies to transition to modern energy cooking services.
- Supporting Governments, international institutions and the private sector.
- Energy System Modelling
- Technology Development
- Cooking cultures and Behaviour change
- Carbon and outcome finance methodologies



The State of Access to Modern Energy Cooking Services

Public Disclosure Authorized

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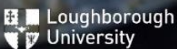


WORLD BANK GROUP



Sustainable Scaling: Meeting the Clean Cooking Challenge in Africa

POLICY BRIEF
August, 2024



Collaborative effort between the African Energy Commission (AFREC) and the Modern Energy Cooking Services Programme (MECS) initiated at the margins of COP 28.

The intent of the Report is to (1) **help establish a baseline and track progress** (2) **support the development of evidenced based and targeted clean cooking programme.**

Tackling **Key myths**

“We don’t need more research and reports, we just need money.”

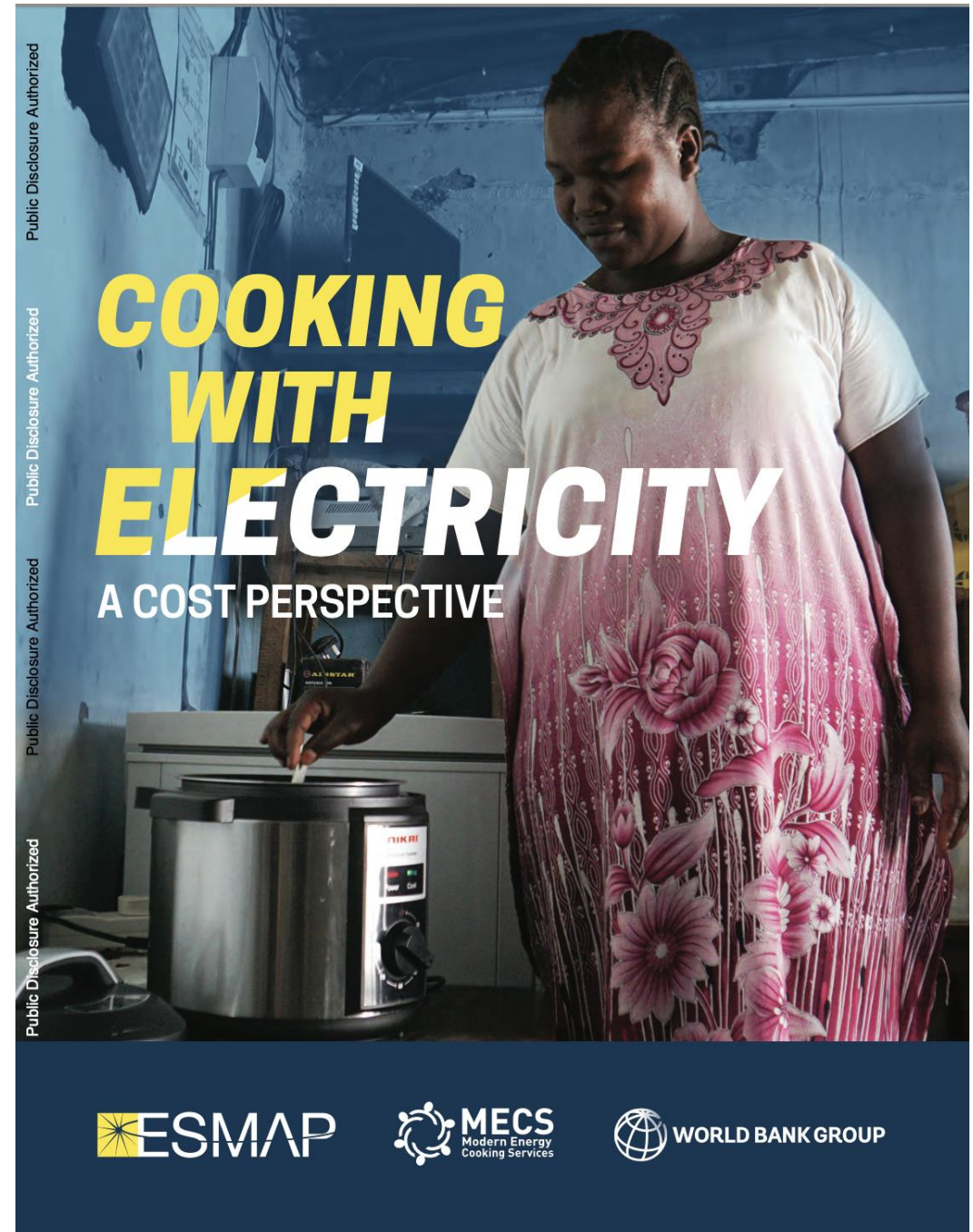
“The answers and known and are simple, we just need to act”

One of key arguments of the Report is that Pathways to Clean Cooking are **Highly contextual and nationally-specific**. For better targeting and strategy design, we need to match funding for delivery with funding for enhancing data-driven strategy development in every African country.



Strong focus on the Feasibility/Affordability of Electric Cooking

- New more efficient appliances
- Economic modelling of affordability
- Ground-truthing – consumer focus.
- Innovative finance
- Carbon Methodology Innovations
- Country Programmes demonstrating sustained uptake and job creation



Growing Global Momentum

Margaret made the switch to e-cooking!

"I am now saving \$10 a month. In one year, that's an entire extra month's salary."

Margaret Waithera is a food producer living in Kikuyu, Kenya

ecoq[®]
by burn

burnstoves.com/electric



Formation of Global Electric Cooking Coalition at COP in 2023 – 36 members and growing rapidly.

Increasing amounts of dedicated finance for electric cooking. African Development Bank announced over \$15 million in funding for eCooking initiatives in East Africa last year.

A number of large **carbon deals** being announced – taking advantage of the high integrity of eCooking credits (eg Ghana Article 6, WB Bond).

Local manufacture in India started, for export to Africa, plus first movers within African continent too.

National eCooking strategies being developed in a number of countries with strong political leadership

Low Hanging Fruit: Grid-Connected eCooking

- Growing number of Utilities convinced of **the role of eCooking in Demand creation** amongst existing customers.
- M300 gives a great **additional opportunity** to embed eCooking as a key component in growing consumer demand as part of last mile connectivity.
- **Multi-Faceted National Strategies** (eg Uganda, Tanzania, Kenya, Sierra Leone) beginning to be put in place to take advantage of these opportunities.



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Electric cooking is here to stay, and it works

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Grid-Connected eCooking: Policy Components



- On-Bill financing (Tanzania)
- Dedicated eCooking tariffs (Uganda) or innovative use of time of day tariffs
- Institutional eCooking (eg as part of national school feeding initiatives)
- Bulk Purchasing facilities (utility, ESCOs etc.)
- Co-ordinated Carbon Strategy
- National Appliance Standards
- Repair and maintenance system development
- National awareness raising
- Future demand sensitive energy system modelling

- Introduced 9th October 2025, the programme targets newly connected electricity customers, offering them an eCooking appliance such as an EPC or an induction hob on credit.
- Instead of paying the full cost upfront, customers repay gradually through their electricity bills, with 25% of every prepaid electricity purchase automatically allocated toward appliance repayment. *So, if a customer makes an electricity purchase worth TZS 10,000, the money is automatically split between buying units (TZS 7,500) and making a repayment to their loan (TZS 2,500).*
- Phase 1 targets households on the normal domestic tariff. During this phase TANESCO will be assessing performance and customer response and feedback, before scaling up. As the programme scales, TANESCO plans to expand to other tariffs, e.g. the lifeline tariff, largely for those in rural areas.
- We sometimes hear concern that eCooking might contribute to rural households using more than the lifeline tariff limit (75 units per month). But cooking with eCooking appliances is incredibly efficient. If a family transferred around half of their cooking to eCooking (makande, beans, rice- the food most well suited to an electric pressure cooker, for example), they are likely to use only around 1 unit a day.



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Leave No One Behind – The DRE Context



Our **COSMO** programme supported the development of business models for **minigrids incorporating eCooking loads**. Collaboration with AFD in Madagascar

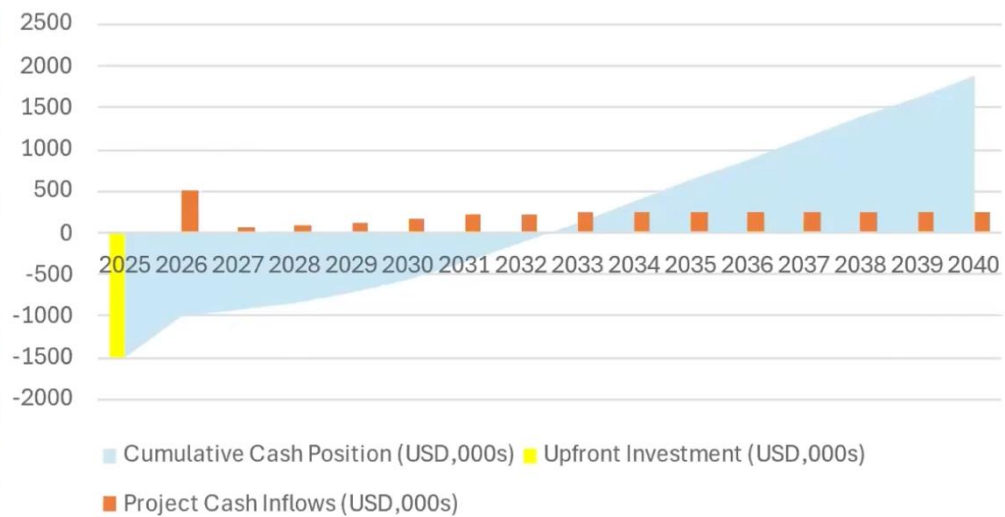
We undertook early work on **solar PV generators for eCooking (CREST)**, now being followed through by private sector.

Our **STARSS Programme** focuses on market-ready stand alone and roof-top innovations

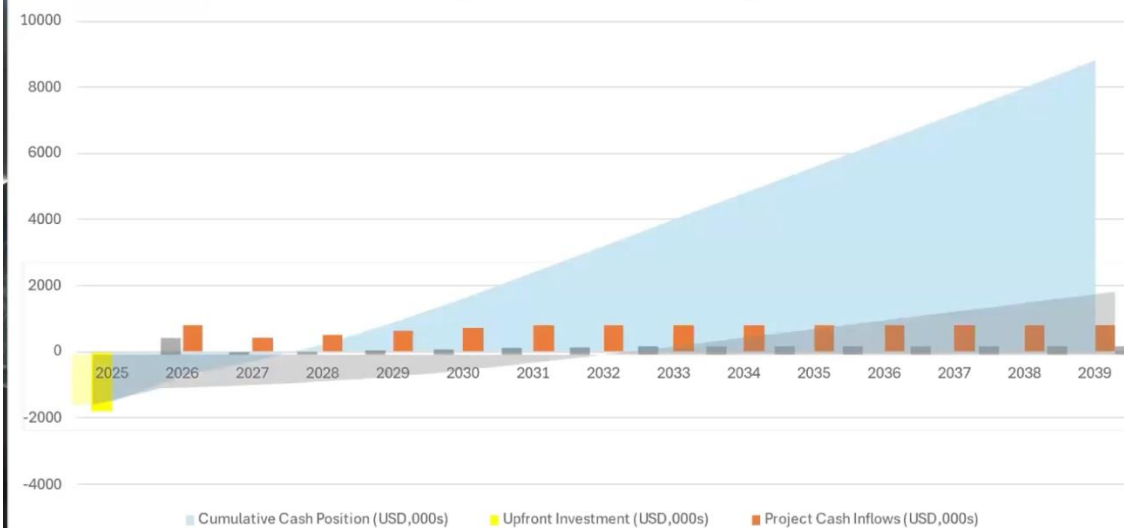
Solar shops run by women groups in Malawi, with **synergies between direct solar pumping and solar eCooking** (using DC EPC), alongside an upgrade option to Lithium Titanate batteries (which have greater lifespan than Lithium Iron Phosphate). Partner - Kachione.



Minigrid without eCooking



Minigrid with 50% HHs eCooking



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The key take away is that we should not be financing energy access initiatives without taking into account the opportunities for electric cooking to be a key component of consumption.

Modelling these opportunities has been a key component of our work with a growing number of partners



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Dr. Eng. Julius Butime, Dean, SCES, Strathmore University

