eCooking Support and Scale Project

Repair and Maintenance Training of eCooking Appliances in Uganda

Centre for Research in Energy and Energy Conservation

February, 2026

Acknowledgements

- CREEC extends its sincere appreciation to the Ministry of Energy and Mineral Development for its strategic guidance and continued support throughout the implementation of the Repair and Maintenance (R&M) technician training programme. The Ministry's commitment to advancing Uganda's clean cooking transition created a strong enabling environment for the successful implementation of the project.
- Recognition is also given to the financial and technical support provided by UK Aid through Modern Energy Cooking Services (MECS). The resources, technical expertise, and collaborative engagement facilitated through MECS were instrumental in enabling the nationwide rollout of the programme and in strengthening Uganda's electric cooking repair in Uganda.

This material has been funded by Ukaid from the UK government and is implemented by the Foreign, Commonwealth and Development Office; however, the views expressed do not necessarily reflect the UK government's official policies

Contents

Introduction

- Uganda's clean cooking transition aims to reduce biomass dependence and emissions
- eCooking adoption growing due to improved electricity access and appliance availability
- Key bottleneck identified: weak after-sales service and repair capacity
- Appliance failures risk undermining user confidence and sustained eCooking use

Objectives of the Project

General Objective

- To develop and roll out a nationally relevant training project that builds repair and maintenance capacity for efficient electric cooking (eCooking) appliances in Uganda

Specific Objectives

- Build national capacity for repair and maintenance of electric cooking appliances
- Design a modular, competency-based curriculum and training materials for R&M of eCooking appliances
- Roll out training to a minimum of 600 technicians nationwide

Scope of Work

Training Needs Asessment

Identify existing skills gaps, market challenges, and practical training requirements to inform relevant and effective curriculum design.

Curriculum Design

Design a structured curriculum to train technicians in troubleshooting, repair, and maintenance of electric cooking appliances

Stakeholder Engagement

To ensure the training curriculum aligned with national priorities, market realities, and appliance supplier requirements

Training Rollout

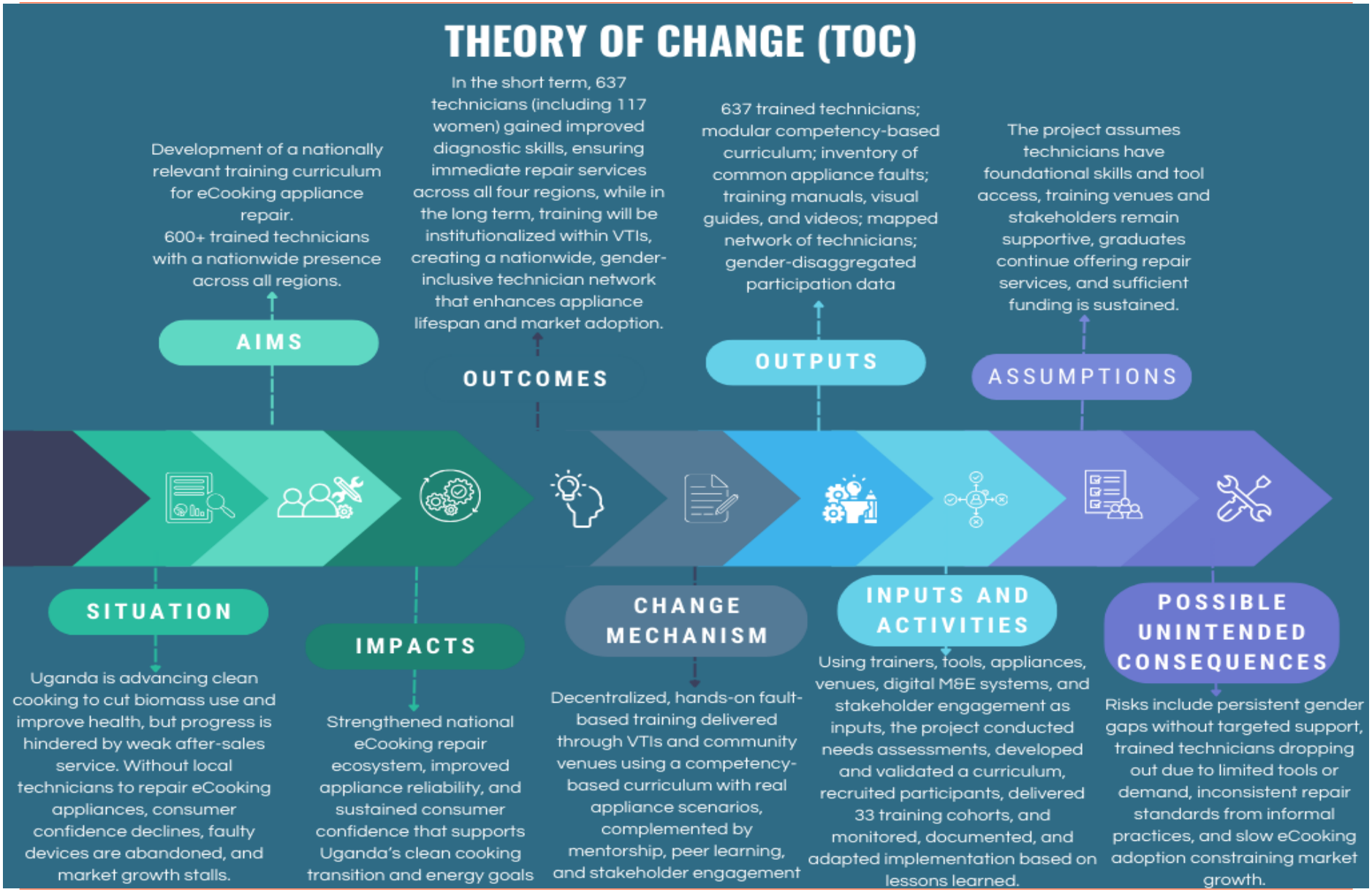
Deliver decentralised training to a minimum of 600 technicians across specified regions of Uganda

Monitoring, evaluation, and learning

Track training delivery, participation, and learning outcomes to assess programme effectiveness.

Create an inventory of common eCooking appliance faults

Identify and document the most common faults affecting electric cooking appliances to inform curriculum development


THEORY OF CHANGE (TOC)
Development of a nationally relevant training curriculum for eCooking appliance repair.
600+ trained technicians with a nationwide presence across all regions.
AIMS
In the short term, 637 technicians (including 117 women) gained improved diagnostic skills, ensuring immediate repair services across all four regions, while in the long term, training will be institutionalized within VTIs, creating a nationwide, gender-inclusive technician network that enhances appliance lifespan and market adoption.
OUTCOMES
637 trained technicians; modular competency-based curriculum; inventory of common appliance faults; training manuals, visual guides, and videos; mapped network of technicians; gender-disaggregated participation data
OUTPUTS
The project assumes technicians have foundational skills and tool access, training venues and stakeholders remain supportive, graduates continue offering repair services, and sufficient funding is sustained.
ASSUMPTIONS
SITUATION
Uganda is advancing clean cooking to cut biomass use and improve health, but progress is hindered by weak after-sales service. Without local technicians to repair eCooking appliances, consumer confidence declines, faulty devices are abandoned, and market growth stalls.
IMPACTS
Strengthened national eCooking repair ecosystem, improved appliance reliability, and sustained consumer confidence that supports Uganda's clean cooking transition and energy goals
CHANGE MECHANISM
Decentralized, hands-on fault-based training delivered through VTIs and community venues using a competency-based curriculum with real appliance scenarios, complemented by mentorship, peer learning, and stakeholder engagement
INPUTS AND ACTIVITIES
Using trainers, tools, appliances, venues, digital M&E systems, and stakeholder engagement as inputs, the project conducted needs assessments, developed and validated a curriculum, recruited participants, delivered 33 training cohorts, and monitored, documented, and adapted implementation based on lessons learned.
POSSIBLE UNINTENDED CONSEQUENCES
Risks include persistent gender gaps without targeted support, trained technicians dropping out due to limited tools or demand, inconsistent repair standards from informal practices, and slow eCooking adoption constraining market growth.

Electric Pressure Cookers

01

Electric Pressure Cookers were prioritised due to their widespread adoption in Uganda and technical complexity. Their integration of electrical, electronic, and mechanical systems provided strong learning opportunities in diagnostics, safety procedures, component testing, and preventive maintenance for high-demand appliances

Focus Appliances

Induction Cookers

02

Induction cookers were included because of their growing popularity and unique electromagnetic heating technology. Their power electronics systems exposed trainees to inverter circuits, IGBT modules, and cooling mechanisms, strengthening advanced troubleshooting skills in high-frequency electrical and electronic components

Air Fryers

03

Air fryers were selected due to their increasing market presence and relatively simple design. They offered accessible, practical experience in diagnosing heating elements, airflow systems, thermostats, and control faults, reinforcing foundational repair skills applicable across multiple electric appliances.

Approach

Curriculum Design

- Needs Assessment
- Industry standards and certificate alignment
- Development of training materials
- Stakeholder engagement- Webinar

Training Rollout

- Training hosted in community halls, training institutes, and partner schools within target localities
- Training time split: 30% theory, 70% hands-on practical work
- Each cohort trained for 3 days.
- Materials include manuals, videos, diagrams, fault lists, presentations

Sustainability of the Course

- Partnerships with VTIs support institutional embedding
- Reusable and adaptable public-good training materials
- Potential integration into national TVET systems
- Local technician networks strengthen market resilience

Training Components

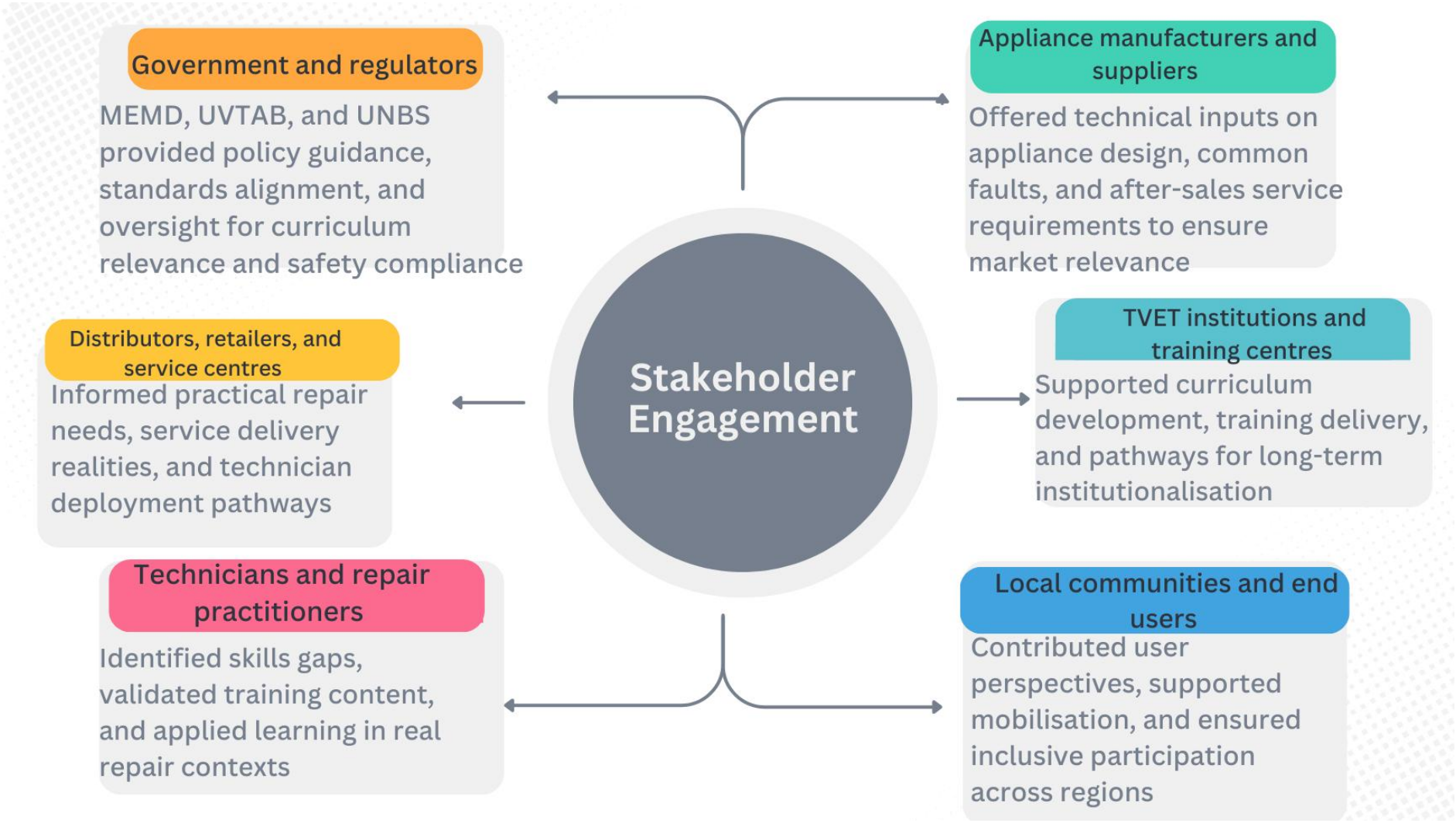
- Classroom instruction: appliance principles, energy basics, safety
- Hands-on practical sessions with real appliances
- Fault-based diagnostics and minor repairs
- Customer service and basic entrepreneurship skills

Training Delivery

- 33 training cohorts delivered nationwide
- Coverage across all regions of Uganda
- Trainings hosted at VTIs and community facilities
- Inclusion of formal and informal repair technicians

Monitoring & Evaluation

- Track trainee feedback, pass rates, satisfaction, and skills improvement.
- Findings used to refine content, delivery, and logistics for future rollouts


Government and regulators
MEMD, UVTAB, and UNBS provided policy guidance, standards alignment, and oversight for curriculum relevance and safety compliance
Appliance manufacturers and suppliers
Offered technical inputs on appliance design, common faults, and after-sales service requirements to ensure market relevance
Stakeholder Engagement
Distributors, retailers, and service centres
Informed practical repair needs, service delivery realities, and technician deployment pathways
TVET institutions and training centres
Supported curriculum development, training delivery, and pathways for long-term institutionalisation
Technicians and repair practitioners
Identified skills gaps, validated training content, and applied learning in real repair contexts
Local communities and end users
Contributed user perspectives, supported mobilisation, and ensured inclusive participation across regions

Training Needs Assessment

- A needs assessment survey was carried out among technicians and users of electric cooking appliances
- Data was collected on technician repair skills, experience, training needs, tools, and challenges
- Both quantitative data (demographics, experience, employment, tool ownership) and qualitative insights (training needs, challenges, preferences) were collected
- Most technicians relied on practical experience rather than formal technical qualifications
- There was a strong interest in further training on electric cooking appliance repair
- The sector was male-dominated, showing a need for gender inclusion strategies
- Major repair challenges included spare parts shortages, limited training access, and knowledge gaps
- Technicians strongly preferred hands-on practical training methods
- EPC usage among users was high, but awareness of repair service locations was low
- Expanding training access, including to women and informal technicians, would strengthen the workforce

Stakeholder Webinar

- Stakeholder webinar focused on developing a curriculum for the repair and maintenance of e-cooking appliances
- The strategy aims to promote clean cooking and reduce dependence on biomass
- The webinar brought together MEMD, MECS, manufacturers, suppliers, distributors, and actors in the clean cooking space
- Discussions highlighted the importance of after-sales service and repair infrastructure
- Key issues discussed included training content, spare parts availability, and manufacturer collaboration
- The webinar successfully collected stakeholder input on the training curriculum
- Stakeholder feedback helped refine the training program before rollout

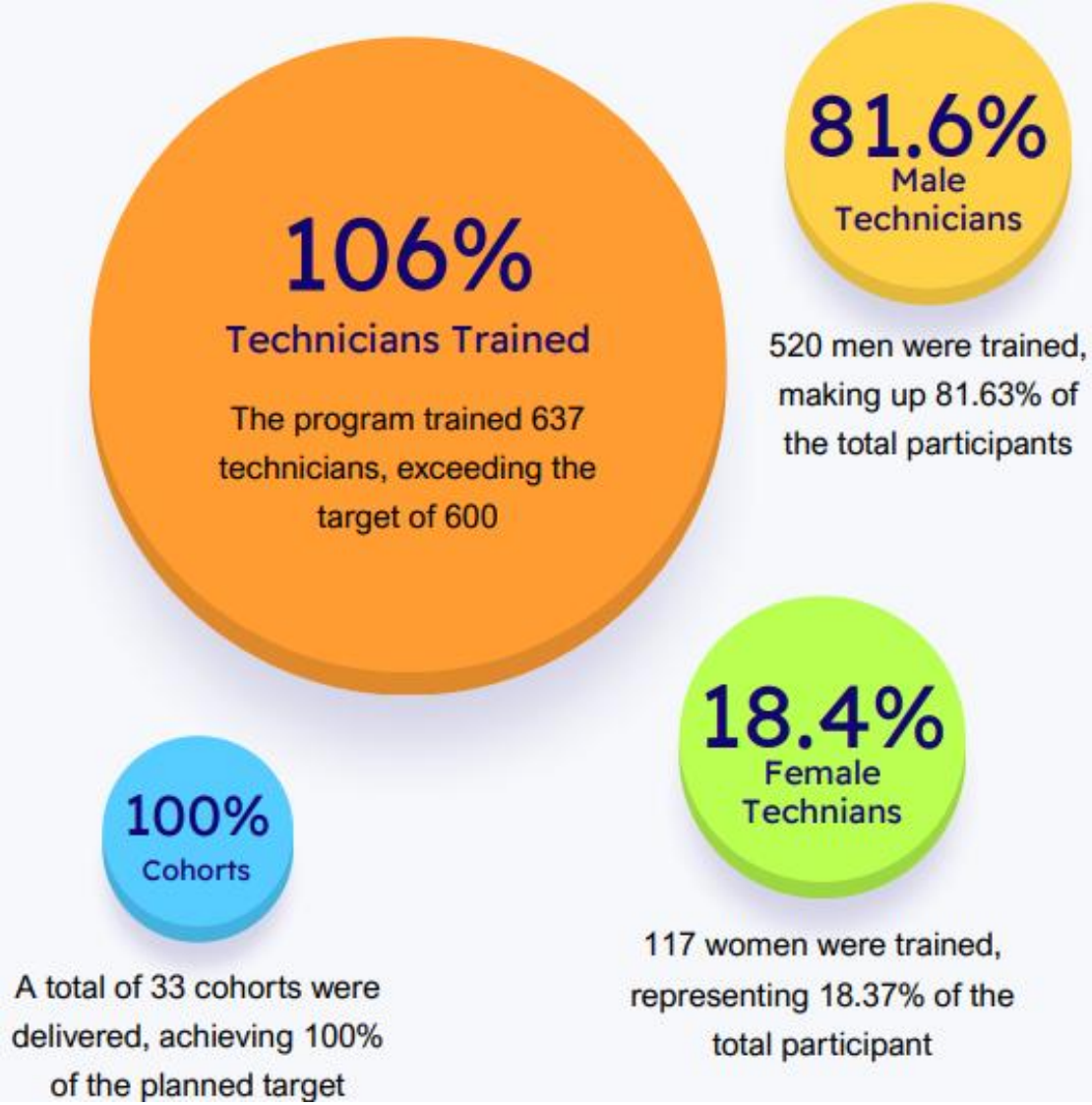
Participant Selection

- Foundational knowledge in appliance repair
- Technicians located in or near target communities
- Participants who have access to Tools
- Technicians with strong ties to their local community
- Participant mix (women, youth, refugees, and host communities)
- Literacy in English or Local Languages
- Candidates who can, in turn, train others (train-the-trainer model) to maximize the impact of the program
- Availability for Training
- Reference by the community

Training Delivery

- Training implemented between October 2024 and December 2025 across all regions of Uganda
- Delivered through a phased, decentralised rollout aligned with institutional calendars and regional logistics
- 33 training cohorts conducted at VTIs and community-based venues, covering urban, peri-urban, and regional centres
- Decentralised delivery enabled participation from technicians in formal workshops, informal roadside repair settings, and small service businesses
- Collaboration with host institutions and local authorities supported mobilisation, venue access, and local adaptation
- Standardised facilitation guidelines ensured consistent training quality, with flexibility for local conditions
- Participant profile: 33 cohorts delivered (100%), training 637 technicians (106% of target), comprising 117 women (18.37%) and 520 men (81.63%)

Participants Profile



Districts Covered

Central

- KCCA Area
- Mukono Area (Municipality, Katosi, Nakifuma)
- Wakiso Area
- Masaka
- Luwero
- Kiboga
- Buikwe
- Lugazi
- Kyotera

Western

- Mbarara
- Lyantonde
- Fort Portal
- Hoima
- Kabale
- Ntungamo
- Ishaka

Northern

- Gulu
- Arua
- Nebbi
- Lira
- Moroto
- Kiryandongo/ Karuma
- Nwoya

Eastern

- Jinja
- Kamuli
- Mbale
- Tororo
- Busia
- Soroti
- Kumi
- Lugazi

Curriculum Outline

1

Foundations of Electric Cooking Appliances

Introduces electric cooking appliances, covering appliance types, energy efficiency, safety, and core electrical and mechanical principles.

2

Diagnostics, Repair, Maintenance, and Safety

Provides hands-on skills in fault diagnosis, repair, preventive maintenance, use of tools, and safe working practices

3

End-of-Life Management and Environmental Responsibility

Covers appliance lifecycle management, energy-efficient use, and environmentally responsible disposal and e-waste handling

4

Customer Service and Repair Entrepreneurship

Builds customer service and business skills for managing repairs, finances, warranties, and sustainable repair enterprises

Training session pictures

Knowledge Management and Training Methods

- High-pictorial, easy-to-use training manuals developed
- Participatory methods used, including:
  - Group discussions
  - Brainstorming and Q&A
  - Experiential learning
  - Limited lectures for complex concepts
- Training handouts provided at the end of each module

Monitoring and Evaluation

01 Used a mixed-methods M&E approach to track progress, learning outcomes, and support adaptive management

02 Conducted pre- and post-training assessments to measure gains in technical knowledge and skills

03 Gathered real-time digital feedback to assess training quality and relevance

04 Tracked attendance and completion against training targets

05 Used facilitator reports and field observations to assess engagement and delivery challenges

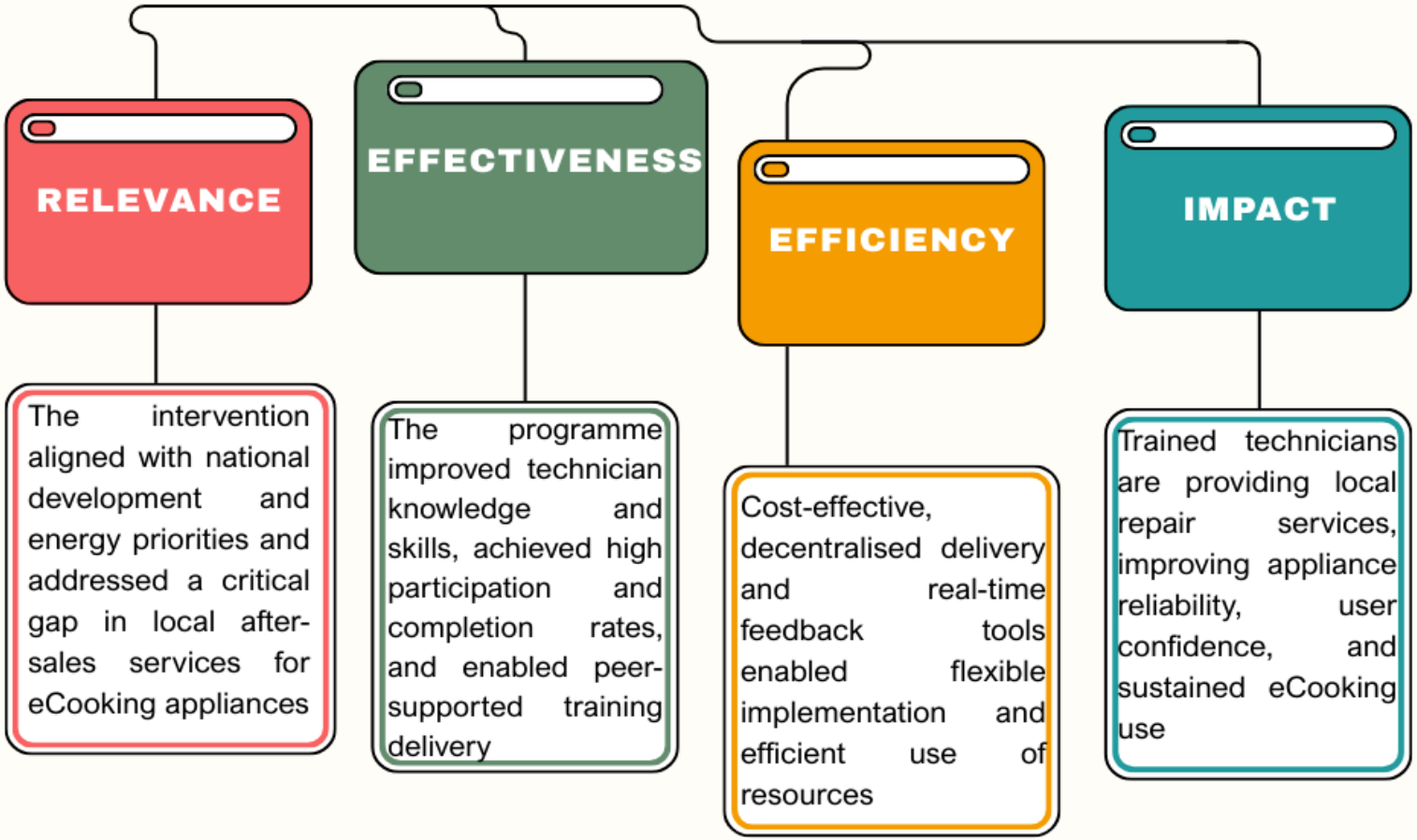
06 Evaluated performance using OECD DAC criteria: relevance, effectiveness, efficiency, impact, and sustainability

Inventory of Common eCooking Appliance Faults

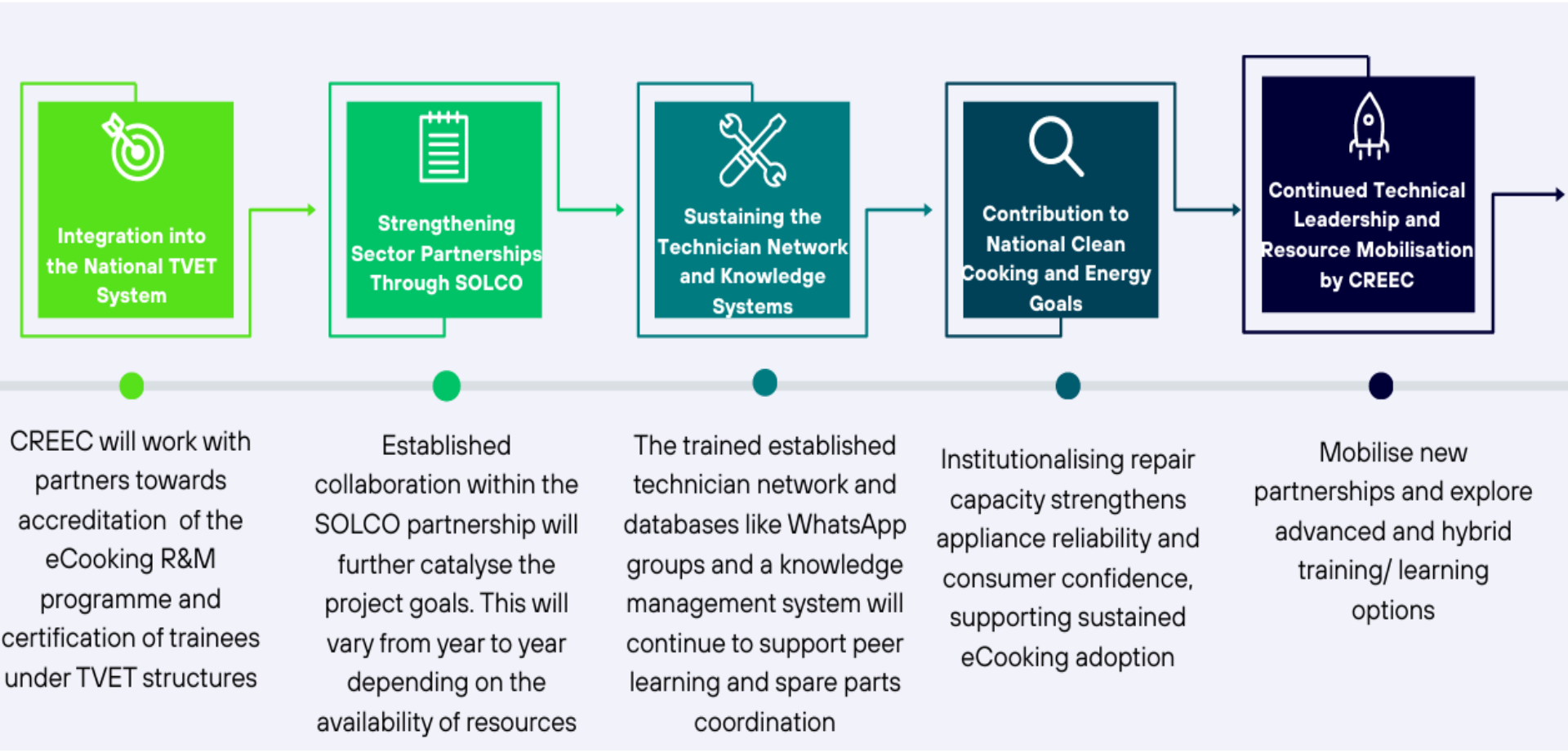
- Developed a practical inventory of common electrical, mechanical, and user-related faults for key eCooking appliances, informed by hands-on diagnostics, technician experience, and supplier consultations
- Used and continuously updated the inventory as a living tool to guide training modules, diagnostic exercises, and competency assessments in response to market and appliance changes
- Strengthened training relevance, standardised repair practices, and supported broader sector learning and after-sales service credibility within Uganda's eCooking ecosystem

Photo Credit: CREEC

Performance Assessment



Project Sustainability



Project Sustainability

https://www.linkedin.com/posts/creec-1112b3a8_solcopartnership-cleancooking-solarelectriccooking-activity-7415043115381919745-B0n2?utm_source=share&utm_medium=member_ios&rcm=ACoAABbTJ90B4a0shj1T8oIqN5Ur3XiXQJx1iTs

Lessons Learned

- After-sales service capacity is essential for eCooking adoption
- Decentralised, institution-anchored training improves reach and sustainability
- Hands-on, fault-based training is critical for effective skills transfer
- Targeting active technicians accelerates market impact
- Gender inclusion requires intentional, purpose-built strategies
- Digital monitoring tools support adaptive management, enabling real-time feedback

Challenges and Adaptive Management

Challenges	Adaptive Mechanism
Low female participation due to structural gender barriers	Targeted outreach through women-focused networks, inclusive recruitment messaging, adjusted training schedules, and identification of mentorship and bridging support for future phases
Wide variation in participants' baseline technical skills	Increased focus on foundational concepts, expanded supervised practical sessions, strengthened peer learning
Limited access to specialised tools and spare parts post-training	Engagement with suppliers and training institutions to improve tool access and spare parts information
Institutional and facility constraints at some host VTIs	Flexible scheduling aligned with institutional calendars, use of community-based venues
Challenges in tracking post-training technician activity and impact	Use of digital feedback tools and facilitator observations, with plans for stronger long-term tracking through institutional linkages

Conclusions

- The training strengthened Uganda's eCooking after-sales service network
- Improved repair capacity reduced appliance failure risks and built user confidence
- R&M training proved essential to eCooking market development
- Decentralised, institution-based delivery enabled cost-effective national reach
- Practical training of active technicians led to early real-world impact

Recommendations

- Integrate eCooking R&M into national TVET and certification systems
- Provide post-training support for tools, spare parts, and supplier linkages
- Apply targeted, gender-responsive recruitment and mentoring strategies
- Strengthen coordination with appliance suppliers and clean cooking programmes
- Improve long-term tracking of technician activity and market outcomes
- Expand training to underserved major towns and refugee settlements
- Introduce additional intakes in high-demand locations
- Support technicians' access to advanced diagnostic tools

Contact

+256 (0) 414 532008 | +256 (0) 393 106496

 info@creec.or.ug  www.creec.or.ug

 CREEC  c.r.e.e.c

Prepared by

Jimmy Agaba

jagaba@creec.or.ug

Located at: Located at Plot 7 Cornwall Crescent
K10 Village, Kyambogo Lower Estate, Nakawa Division
P.O Box 118800 Kampala-Uganda