Efficiency for Access

MECS Modern Energy Cooking Services

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Making the Switch: The Deployment Handbook for Institutional E-Cookers

December 2025

Contents

Introduction

Why this handbook?

- Institutional e-cooking - using efficient electric appliances such as electric pressure cookers (EPCs), boilers, and induction stoves - is fast becoming a practical and affordable alternative to biomass cooking in schools, health facilities, and community institutions across Africa.
- This handbook was developed to help governments, schools, technology providers, and development partners plan, finance, and manage successful transitions to e-cooking. It draws from field experience in Kenya and builds on the Modern Energy Cooking Services (MECS) School eCook Transitions framework.
- This handbook focuses on how to deploy and scale e-cooking technologies in institutional settings — from initial readiness assessments to installation, financing, and long-term adoption.

What does the handbook cover?

- The handbook provides practical, step-by-step direction for organizations involved in institutional e-cooking projects. It outlines:
  - Assessment and planning – how to determine which institutions are ready to transition (pre-feasibility, infrastructure checks, and management readiness).
  - Installation and commissioning – design, wiring, appliance selection, and training of cooks and electricians.
  - Usage and monitoring – ensuring data collection, safety, and ongoing performance tracking.
  - Scaling and finance – expanding adoption through business models, carbon credits, and policy alignment.

Each section provides actionable guidance, suggested tools, and references to complementary resources.

Introduction (continued)

Who is this handbook for?

This handbook builds on Kenyan field experience and MECS research to help practitioners plan and scale e-cooking, specifically:

- Implementers and NGOs coordinating school or community e-cooking pilots.
- Government agencies and county authorities responsible for electrification, school feeding, or clean cooking programs.
- Technology suppliers and distributors installing or maintaining institutional appliances.
- Financiers and carbon project developers exploring results-based or blended financing.
- Researchers and donors seeking to align data collection, verification, and policy dialogue.

By drawing these actors together, the handbook aims to strengthen collaboration, increase the adoption of clean cooking technologies, and create shared benefits for institutions, communities, and the environment.

Photo credit: CLASP

> "Meals used to be delayed and sometimes weren't eaten until 7 p.m. when we were cooking with firewood. Since February - when the e-cooker was installed - all cooking is finished by 4 p.m., and students can eat as early as 5 p.m."
>
> Chris Sirma, Cook at ELCK Chelkalit Mixed Secondary School

Framework for institutional e-cooking transitions

Transitioning schools and similar institutions from traditional biomass to electric cooking requires a systematic, evidence-based approach. The Modern Energy Cooking Services (MECS) programme has developed an eight-stage framework that guides practitioners from initial screening through to sustained adoption and knowledge sharing.

Eight-stage framework for institutional e-cooking transitions

01

Pre-feasibility Study

Screen potential institutions based on size, meal volumes, menu types, kitchen layout, and electricity access to determine suitability for e-cooking.

02

Inception Survey

Gather detailed information from school management, cooks, and electricians on current practices, electrical infrastructure, and motivation to transition.

03

Baseline Cooking Study

Record comprehensive data on existing fuel consumption, meal preparation routines, and kitchen operations to establish cost, time, and energy benchmarks.

04

Design, Installation & Training

Identify suitable appliances, plan necessary kitchen or wiring upgrades, and deliver hands-on training to cooks and kitchen staff.

05

Transition Cooking Study

Assess early appliance performance, usage patterns, and cook adaptation immediately following installation to identify initial challenges.

06

Sustained-Use Study

Observe longer-term usage patterns and monitor for any reversion to previous cooking methods over several months of operation.

07

Follow-up Survey

Conduct qualitative reviews of user satisfaction, identify remaining barriers, and evaluate overall sustainability several months post-installation.

08

Learning & Dissemination

Share findings and insights with government bodies, financiers, and technology providers to inform effective scale-up strategies.

This handbook focuses on Stages 1 and 4 — Pre-feasibility Assessment and Installation & Commissioning — which represent the most critical entry points for practitioners actively planning institutional e-cooking projects. For comprehensive coverage of all stages, including detailed survey tools and evaluation frameworks, refer to the MECS publication "School eCook Transitions: Emerging Guidelines for East Africa" (September 2025).

Turning Up the Heat

The case for institutional e-cooking

Cooks preparing ugali at a school in Kenya.

The case for institutional e-cooking

- Across sub-Saharan Africa, social institutions such as schools, health centers, and correctional facilities remain some of the largest users of firewood and charcoal. In Kenya alone, nearly 9 in 10 institutions still cook with biomass, often using open fires or metal stoves without chimneys. [1]

- These kitchens operate daily at scale - preparing hundreds or even thousands of meals - making them ideal entry points for a shift toward clean, efficient electric cooking.

- Typical cooking solutions include the three-stone open fire, Kartech Improved Cooking Stoves (ICS), traditional metal cookstoves without chimneys, brick rocket stoves, and liquefied petroleum gas (LPG).[2]

Paying the price: The hidden costs of cooking with biomass

Continued reliance on traditional biomass fuels may seem affordable day to day, but their true costs – to the environment, the economy, and people – are far higher

Environmental costs

- A study by Dalberg[3] estimates that institutions collectively consume 7.5 Mt of firewood annually, leading to emissions of 12–14 $MtCO_2eq$, translating to between $575–668 million USD annually.[4]
- Greenhouse gas (GHG) emissions, which account for up to 26.5% of Kenya's total emissions.[5]

Economic costs

- Schools spend up to USD 600 million on firewood each year, funds that could otherwise support learning materials, nutrition programs, or infrastructure
- Gathering firewood for cooking further presents a considerable time burden for students in many rural schools, impacting their learning in classes.

Health impacts

- Cooks are exposed to high levels of indoor air pollution (e.g., PM2.5, PM10, and carbon monoxide). In Kenya, these cause chronic respiratory infections and contribute to 20,000+ premature deaths annually.[5]
- In schools, kitchens are often attached to classrooms and in close proximity to playgrounds, meaning smoke often drifts to learning and social spaces.

Students and a cook ferrying firewood to school.

A cook preparing ugali at a school in West Pokot county, Kenya.

> "We used to suffer without realising it, because we didn't know there were better options. One of our cooks had developed eye problems from the smoke and had to quit, but he came back when he heard we now had an e-cooker".
>
> Jacob Chesta, Principal at ELCK Chelkalit Mixed Secondary School


Photo credit: CLASP

“Before Ecobora introduced the e-cookstove, we used firewood, which produced thick smoke and made the kitchen very uncomfortable. Cooking large meals took many hours, and during the rainy season it was even harder because most of the firewood we sourced was wet. Meals like githeri could take up to six hours to cook. Since we began using the Ecobora e-cookstove, cooking has become faster, cleaner, and much easier. Githeri now cooks in just two hours, and on days when we prepare rice, it’s ready within thirty minutes.”

Rael Kiriama, Cook at Nyamira Primary School

Simmering challenges, rising opportunities

Despite growing interest and clear benefits, the shift to electric cooking in institutions remains slow. Understanding the barriers helps identify where the most impact can be made, and where opportunity already exists.

Challenges slowing adoption

- **High upfront costs**
  Most institutions rely on limited or unpredictable funding from government allocations, community contributions, or donor programs. Purchasing large-capacity electric cookers, upgrading wiring, or installing meters often feels out of reach without financing options.

- **Limited awareness and technical confidence**
  Many cooks and administrators are unfamiliar with e-cooking, perceiving it as unreliable or expensive. A lack of demonstrations, training, and peer learning slows trust and uptake.

- **Inconsistent power supply in some areas**
  Although grid access has expanded, voltage drops, and local transformer overloads still affect reliability in many schools and rural institutions.

- **Fragmented policies and slow procurement cycles**
  Energy, education, and finance programs often operate in silos, with unclear coordination between ministries and county governments. This leads to slow decision-making and uneven implementation.

- **Weak distribution and after-sales networks**
  Few companies currently supply or service institutional-scale appliances. Outside major towns, spare parts and technical support are often unavailable, discouraging early adopters.

Emerging opportunities

Expanding electricity access
Over three-quarters of Kenyan households and institutions are now connected to the grid, thanks to sustained investment through programs such as the Last Mile Connectivity Project (LMCP). Many facilities that once depended on biomass now have the power supply needed to cook electrically - or can combine grid and solar systems for reliability.

Rapid progress in appliance technology
Electric cooking appliances suited for large-volume meals - such as electric pressure cookers (EPCs), e-boilers, and induction stoves - are now available in Kenya. They cook faster, reduce energy waste, and adapt easily to familiar menus such as ugali, rice, and githeri.

Falling appliance costs and stronger markets
Local manufacturers are innovating to lower prices and improve durability. Bulk procurement and locally made components are bringing institutional systems within reach for public schools and community facilities.

Growing government and donor support
Recent frameworks - including the Kenya National electric Cooking Strategy (KNeCS, 2024), Clean Cooking Compact (2025), and Draft National Energy Policy (2025) - recognize institutional e-cooking as a critical pathway toward national clean energy goals. Counties are beginning to integrate e-cooking into school meal and electrification programs.

Digital monitoring and carbon finance
Smart meters and usage tracking tools are making it easier to measure real energy use, creating high-integrity data for carbon credit revenue that can subsidize appliance costs.

The potential impact of e-cooking in Kenya's institutions

Kenya's institutional cooking footprint is vast: over 35,000 primary and 10,000 secondary schools, 14,800 health facilities, and 136 correctional institutions — over 90% still cook with firewood or charcoal.

Transitioning all schools and social institutions to electric cooking could transform Kenya's energy, environment, and socio-economic systems – including reduced emissions, improved indoor air quality, convenience, alleviated drudgery, increased energy efficiency, and greater time savings.[6, 7]

If every institution made the switch:

- 5.1 MtCO_2eq avoided annually
- 5.7 million trees saved each year
- 400,000 new green jobs created across manufacturing, installation, and maintenance
- 10 million schoolchildren served with clean, reliable school meals[8]
- More stable grid demand from daytime institutional use

This transformation aligns with Kenya's recent policy frameworks discussed earlier.

Ecobora technicians fabricating e-cookstoves at their factory in Kenya.

Photo credit: CLASP

From the School Kitchen

Kenya’s recipe for change

The boiling point

Kenya offers a glimpse of what institutional e-cooking can achieve when readiness meets opportunity.

- With expanding grid access, a strong school feeding system, and growing collaboration among local manufacturers, development partners, and county governments, Kenyan schools are demonstrating that e-cooking is both feasible and transformative.
- Recent pilots across seven counties show that common school menus - from githeri (a boiled mixture of maize and beans) and ugali (a staple made from maize (corn) flour and water) to tea and porridge - can be prepared faster and at lower cost using electricity. [8,9]
- Early results from field studies underpinning this handbook confirm that e-cooking improves kitchen safety, reduces costs, and boosts reliability for feeding programs.

"The question is no longer *if* institutions will switch, but *how quickly* they can do it."

Photo credit: CLASP

A school cook in West Pokot, Kenya.

"As a school - including our teachers, parents, cooks, and learners - we are happy. The stoves have made work easier and reduced time wastage, truancy, absenteeism, and school dropouts. Enrolment has increased from 400 to 530 students. We are so grateful. No more deforestation for charcoal or firewood."

Sylivia Saruni, Headteacher at Olmapinu Primary School

Tested in the kitchen: Real-world results from Kenyan schools

Objective

➢ Asess the potential of electric cooking as a replacement for fossil-fuel-based cooking appliances in institutions.

Project design

- ➢ Field-testing of e-cookers in schools between September 2024 and August 2025.
- ➢ Project partners: CLASP through Efficiency for Access (technical research lead), MECS/Gamos EA (qualitative research support), Ecobora (technology provider).
- ➢ Utilized a mix of remote monitoring and in-person surveys to collect technical data as well as qualitative user feedback.

Outcomes & impacts

- ➢ Transitioned nine schools across seven counties in Kenya from biomass to e-cooking.
- ➢ Qualitative and quantitative data and insights were generated on energy performance (energy consumption), service delivery (cooking time, cooking costs, reliability, usage patterns), usability (safety, ease of use, learnability, aesthetics), and user preferences.
- ➢ Enabled access to clean cooking for over 15,000 users (students and staff) in Kenya.

The Heart of Learning

School meals are vital to education. In Kenya, they can help keep more than three million children facing inadequate access to nutrition in class and ensure girls can continue learning.[10] Clean, efficient kitchens make these programs safer, more reliable, and sustainable.

On the front burner: Partner spotlight

Company

Ecobora Company Ltd.

Primary products

- Solar powered e-cookstove

Country

Kenya

Website

https://www.ecobora.co/

ECOBORA
TRUE TO THE MISSION

About

Ecobora was founded in 2015 with a mission to provide affordable, sustainable, renewable, and environmentally friendly energy solutions for use in schools, industries, and homes, empowering lives and contributing to the achievement of the SDGs.

- 22 e-cookstoves installed (as of September 2025)
- 200 target units (October 2025–December 2026)

Impact

Ecobora's clean and affordable solar cookstove is transforming rural and peri-urban schools, enabling energy access for marginalized communities, significantly reducing indoor pollution, and preventing smoke-related deaths among women and children, all while conserving Kenya's forests.

The company launched four new product lines in 2025:

- i-fryer
- i-pan
- Household induction cooker
- Solar water heater

"We are reducing emission levels in schools from an estimated 240 tons of CO_2 per stove per school to zero through our cookstoves. We hope to expand across Africa and replicate this impact among communities, therefore reducing energy poverty and accelerating the transition to clean cooking."

Justine Abuga, Founder and CEO

Your recipe book: A step-by-step guide to institutional e-cooking

From planning and installation to operation and scale — practical tips for every stage of the journey

Photo credit: CLASP

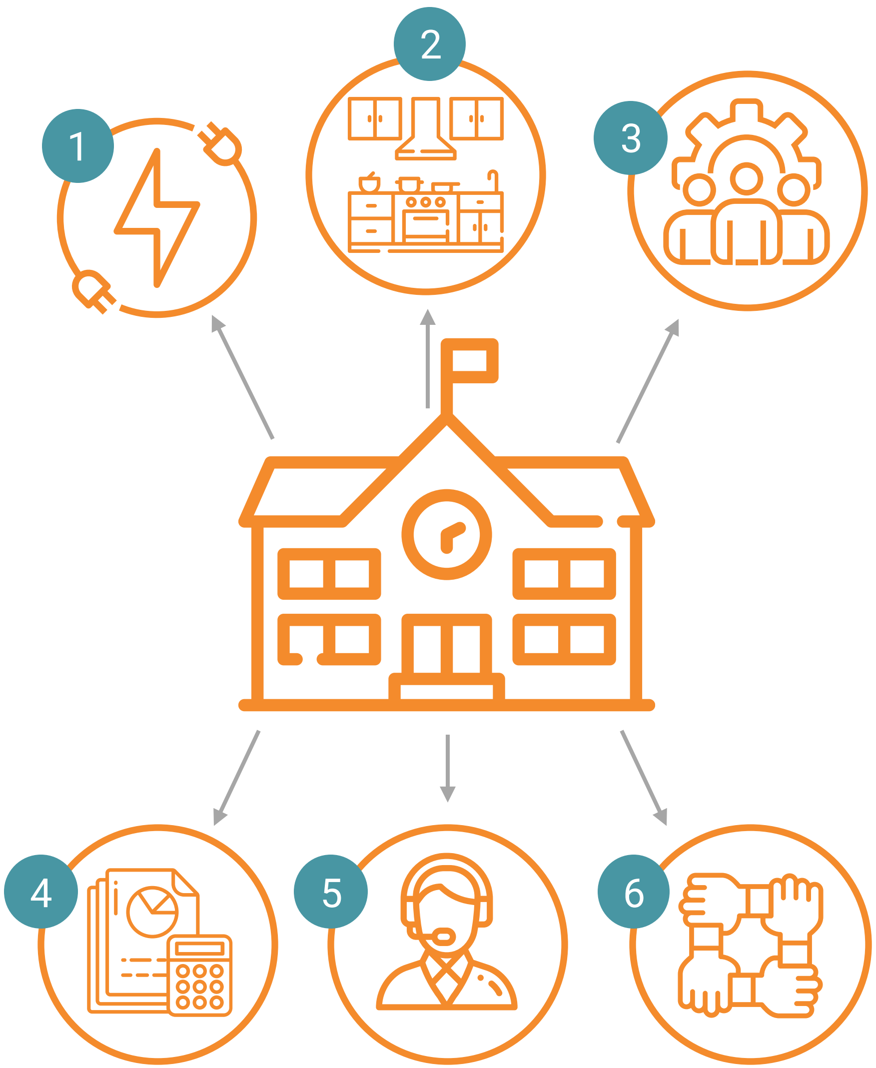
Ingredients

0. Before you start: assessing readiness and feasibility
1. Designing systems
2. Partnerships for delivery
3. Installation and commissioning
4. Operating, training, and monitoring
5. Financing and scaling

0. Gathering the Ingredients

Assessing readiness for e-cooking

Readiness checklist



1. **Electricity Access** – Stable connection (single or three-phase)? If off-grid, is there solar PV or hybrid capacity?
2. **Kitchen Layout** – Adequate space, ventilation, and hygiene (minimum 4 m² for a 300L unit)?
3. **Management Commitment** – Have administrators and cooks agreed to adopt and maintain the technology?
4. **Financial Planning** – Can the institution contribute to installation or service fees?
5. **Service Access** – Is there a local technician or after-sales provider?
6. **Community Support** – Is the institution board or user representatives (e.g. Parents Teachers Association for schools) involved in decision-making?

Institutions meeting at least four of the six criteria should proceed to the detailed inception survey and installation design stage. A sample questionnaire for readiness assessment is included in the annex.

1. The Right Recipe

Designing and installing e-cooking systems

1.1. Power supply & access to electricity

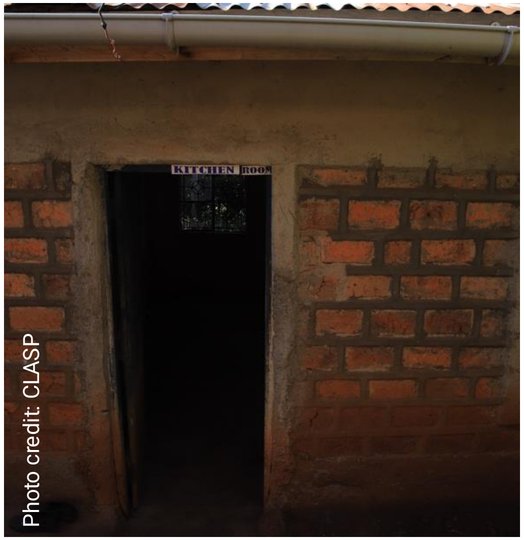
- The existing power supply for an institution should be evaluated to ascertain capacity and stability for a seamless transition to e-cooking. Institutions that already have electricity access generally rely on either single-phase or three-phase power supply, with the choice depending on their electrical power demand.
- Power supply points should be easily accessible (e.g., a distribution box located close to the kitchen), and any necessary modifications or additions to the existing system should ensure minimal disruption to normal operations within the institution.
- In most cases, institutions do not have dedicated transformers. Therefore, careful planning and, where possible, upgrades to the shared transformer to accommodate the additional load might be necessary to minimize potential power interruptions from electrical overloads.
- Off-grid locations should explore solar-powered solutions, which would require investments in power supply and backup (e.g., solar panels, an inverter, and batteries) in addition to the cookstove. Proper system sizing is critical to ensuring the cookstove operates consistently, reliably, and optimally, as any downtime can significantly impact the school program and learning activities.

Photo credit: CLASP

Power supply assessment at a school in Kenya.

1.2. Kitchen facilities

- **Space requirements**
  - The kitchen should have adequate space to accommodate an e-cookstove, ensuring adequate ventilation, hygiene, mobility, and safety around the kitchen. For a 300 L capacity cookstove, for instance, at least 4 square meters should be available, and the entrance / doorway should be at least 1 m wide to allow for the entry of the cookstove for installation. If not, substantial modifications – such as demolishing and reconstructing current structures – may be required to facilitate this transition. The space required for entry, installation, and clearance (distance from the wall) may vary depending on the choice of technology.
- **Electrical safety requirements**
  - An evaluation of the institution's existing electrical wiring is required to determine whether it is safe to integrate e-cooking solutions. The quality, type, and capacity of existing wiring, circuit breakers, and electrical panels should be assessed against BS 7671 regulations to determine whether upgrades are needed. Substandard wiring can degrade under high current loads, leading to insulation failure, short circuits, and electrical fires.
  - The presence of a functional earthing / grounding system and residual-current devices (RCDs) enhances safety. Earthing conductors should be sized appropriately based on the prospective *fault current of the institution. Earth continuity and resistance tests should be conducted before and after installation, with resistance values not exceeding 25 ohms. All installations must include RCDs to safeguard against leakage currents.



A kitchen at a school in Nyamira county, Kenya.

1.3. Cooking needs

Meal preparation at schools in Kenya.

- It is important to determine the stove capacity required based on the institution's population and the daily volume of meals prepared. This data is often already available. Larger institutions will require stoves with higher capacities to meet their cooking demands efficiently. Some institutions (such as those that cook students' and staff meals separately or serve multiple dishes per meal) may require more than one cookstove, each of varying sizes.
- Different types of meals will require different cooking times and power levels; i.e., some dishes (such as beans and *githeri* – maize and beans) may require prolonged cooking, while others (such as tea, porridge, and rice) may require specific temperature control. Dishes that require prolonged cooking may demand pressurized or high-power cookstoves, while simpler dishes may allow for lower-power systems or intermittent use.

1.4. Access to schools

Truck delivering e-cookstove components for installation at a school.

- Areas already served by the technology provider will have better access to ongoing maintenance and service support, whereas non-served regions will need to set up their after-sales ecosystem from scratch, requiring greater financial investment, human capital, and time.

2. Setting the Table

Safe installation and commissioning

Installation process

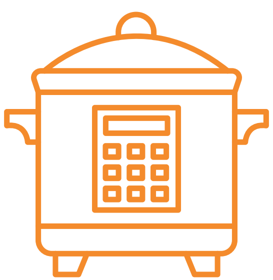
Illustration of the key steps to deploying an institutional e-cookstove:

Planning

- Identify the e-cooking solution that aligns with the school's needs and financial outlay.
- Check if the school has safe and reliable electricity with proper wiring (or if off-grid, check if the school has space and capacity to install a solar power system and potentially battery backup). If not, rectify before you proceed.
- Identify the technology provider.

Procurement & Installation

- Contracting between the institution and technology provider.
- Transportation and installation.
- Pre-testing.



e-Cooking

- Training and onboarding.
- Usage and monitoring.
- After-sales support.

2.1. Technology / appliance types & availability

- Given the nascent nature of the technology, there are only a few manufacturers and suppliers of institutional and commercial e-cooking solutions in Kenya, and even fewer that provide solutions specifically targeted at schools.
- Some local manufacturers, such as Ecobora and Feion Green Ventures, are pioneering providers of institutional e-cooking appliances. Long-standing companies like Sheffield Kitchens and Faith Energy Saving Engineering Works fabricate commercial-use appliances that can easily be adapted for e-cooking, with some exploring electric steam cooking. Across Kenya's borders, Pesitho in Uganda and SmartPika in Tanzania are offering hybrid solar–electric institutional e-cooking systems, among others.
- The technologies offered by these companies range from resistive-heating cookstoves to induction cookers, steam cookers, and electric pressure cookers. Further, these cookstoves can either be grid-powered, solar-powered, or a hybrid solution, depending on the manufacturer or setup of the target institution.
- The choice of technology for any given institution should be informed by a variety of factors, including their cooking needs (type, quantity, and frequency of meals prepared), access to and reliability of the power supply, and the business model.

Technology / appliance types & availability

Company	Ecobora	Feion Green Ventures	SmartPika	Pesitho
Product name / type	e-Cooker	Jiko-Kul (Electric Pressure Cooker)	Commercial Electric Pressure Cooker	ECOCA School (e-cookstove)
Capacity	20 to 800 liters	50 to 500 liters	45 to 100 liters; can make up to 500 liters	70 to 400 liters
Contacts	https://www.ecobora.co/ E: info@ecobora.co / joy@ecobora.co	https://feionventures.com/our-products/ E: info@feionventures.com	https://www.smartpika.com/ E: andron@afodabbo.com	https://pesitho.com/the-ecoca-new/the-ecoca-school/ E: info@pesitho.com
Product Image				

2.2. Electrical considerations

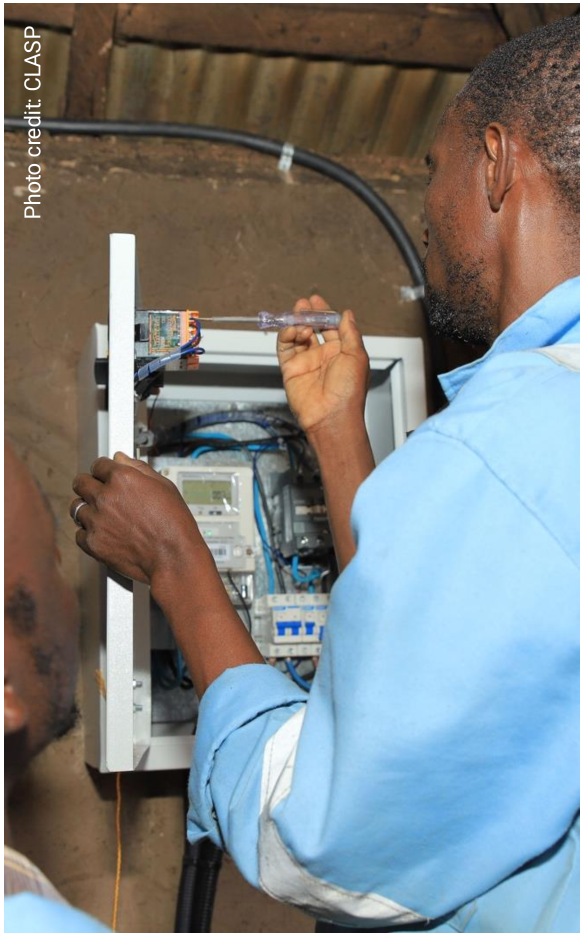
Safety of the installation

- Ensuring safety in high-power kitchen environments requires installing protective devices such as circuit breakers, fuses, and RCDs to prevent overheating, electrical faults, and potential fire hazards.
- Proper earthing is essential for protecting users from electric shocks, along with the proper positioning of the stoves' power supply points in the kitchen – which is categorized as a *wet location* under wiring regulations.
- The kitchen should be fitted with CO_2 fire extinguishers that are specifically designed to safely combat electrical fires without leaving residues that could damage equipment or increase conductivity. Staff should also be trained on their proper use.
- Electrical wiring and safety checks must be conducted by a certified wiring technician, who are listed on the Energy and Petroleum Regulatory Authority (EPRA) website. The technician should provide a wiring certificate to the institution and the technology provider, verifying that safety checks were performed prior to installation.
- Further, all electrical components must be sourced from legitimate dealers to ensure safety, as counterfeit components may result in electric hazards, additional costs, and installation delays.

A technician installing a control box for an e-cookstove.

2.3. Electrical considerations

Metering & load management



A technician performing post-installation checks.

- A comprehensive load analysis is crucial before installation to ensure that the existing infrastructure – wiring, electrical equipment, and connections – can support the cookstoves' power requirements. For example, a 12 kW cookstove will place a significant load on the power system, which may require upgrades to cabling, switchgear, and distribution boards.
- In larger kitchens with multiple high-power cookstoves, distributing the load across three-phase power is essential to maintain stability and prevent overloads.
- Dedicated metering is recommended to facilitate remote monitoring, allowing users to track energy use and enabling manufacturers to diagnose technical issues. This may also be utilized for billing purposes.
- The meter should belong to the utility / technology provider and must be sealed to prevent tampering and protect revenue.
- Additionally, metering may be used to better understand energy use for e-cooking, which can help inform policy decisions, such as the proposed e-cooking electricity tariff in line with the Kenya National e-Cooking Strategy (KNeCS).

2.4. Contracting

- Many institutional e-cooking technology providers and businesses are in the early and growth stages. Consequently, there are currently no established business and financing models supporting this market segment.
- The choice of business model will be influenced by factors such as the size of the system and use case; PAYGo or energy-as-a-service (EaaS) models may be preferred by social institutions, small commercial enterprises, and for systems larger than 100 L in capacity, while upfront payment models may be better suited for smaller system capacities and large commercial enterprises with adequate surplus cashflows.
- Nonetheless, sales and service agreements with clear purchase terms, including cookstove specifications, payment schedules, delivery timelines, installation, training and maintenance schedules, as well as repair and end-of-life commitments should be established between the supplier, institution, and program administrator(s) where applicable. This helps ensure effective program delivery and accountability from all stakeholders.

Contracting should be initiated between the institution and technology provider once a suitable e-cooking solution has been identified. Some key elements of such an agreement, which should be agreed on and signed by both the parties, include:

1. **Key basic details** – define the parties, their addresses and contact information, the scope and duration of the contract, product / service specifications, points of contact, etc.
2. **Obligations of the technology provider** – including delivery and installation, training and onboarding of the institution's staff, maintenance and repair, and end -of-life commitments.
3. **Obligations of the institution** – such as timely payments, proper operation and maintenance, provision of user feedback, and participation in data collection activities for research projects.
4. **Payment terms** – amount, frequency and duration of payments depending on the purchase terms (i.e., one-time cash payment or instalments), and ownership of the appliance upon completion of payments.

2.5. Procurement: transportation & installation

- It is best to plan transportation, factoring in the institution's accessibility and any special handling or storage needs to avoid appliance damage in transit. In cases where the appliance is being imported into the country, additional legal and administrative considerations must be taken into account to facilitate efficient import duties and customs clearance.

- Installation, which may typically require 2–6 hours, should be scheduled to ensure minimal disruption to the institution's activities – for schools, this may be during breaks, after school hours, or weekends.

- The installation process entails:

1. Preparation of the base / floor of the kitchen (where applicable) to provide a smooth and level surface for the cookstove.
2. Assembly of cookstove components for non-plug-and-play systems.
3. Connection of the power system.
4. Testing to ensure proper functioning and an acceptable range of all critical parameters, such as voltage, current, and temperature, prior to handover.

E-cookstove installation by technicians at schools.

2.6. Commissioning

- Commissioning of the system should be done after thorough testing is completed. The specific checks and handover process should be detailed in the purchase agreement between the institution and the supplier.
- Training and onboarding of an on-site technician(s) by the supplier can enhance user satisfaction. Supplementary checklists (e.g., an O&M plan) should be created for periodic actions to facilitate ease of execution.
- Coupling remote monitoring and diagnostics capabilities for preventive maintenance and energy usage optimization can further enhance service uptime and user satisfaction.
- Streamlined service support and a robust supply of skilled technicians, tools, and spare parts from technology providers are crucial for an effective and sustainable transition to e-cooking.

Post-installation checks by CLASP and Ecobora teams at a school in Kenya.

3. Keeping It Cooking

Designing and installing e-cooking systems

3.1. Training & behavioural adaptation

Training is a core determinant of sustained use. While this handbook summarises best practices, readers should refer to the MECS ‘School eCook Transitions’ guidance for detailed training curricula and session plans.

Cook training should balance technical competency with behavioural adaptation. Cooks are not just users - they are the custodians of the transition. Effective programmes combine on-the-job practice with off-service experimentation, ensuring cooks gain confidence in the technology before meal service hours.

Recommended Training Areas

- Appliance operation and safety (live demonstration)
- Recipe adaptation (e.g., less water for EPC cooking)
- Routine maintenance and hygiene practices
- Troubleshooting and reporting faults
- Peer-to-peer cook mentorship programmes

Click to view MECS detailed guide

“I had never used electricity before, and at first I was afraid, but the Ecobora team supported us closely for almost two weeks until we gained confidence. Now I enjoy it because I simply switch it on and off when the food is ready. After using it for almost a year, I’ve mastered the timing for every meal and often set an alarm so I can turn it on, attend to other school activities, and return when the food is perfectly cooked. The kitchen stays clean, there’s no smoke, and we’ve reduced both fuel costs and cooking time significantly”

Rael Kiriama, Cook at Nyamira Primary School

Photo credit: CLASP

3.2. Operations & after-sales support

- Operation and maintenance: Extensive training and onboarding on the proper use and operation and maintenance (O&M) of the appliance are crucial. Manufacturers should develop a comprehensive O&M plan that details an operations protocol for the school and kitchen staff, all relevant safety considerations, checks and troubleshooting procedures, and a maintenance schedule. Regular monitoring can help ensure preventive maintenance and energy usage optimization.

- After-sales support: Routine maintenance and repair should be conducted by the technology supplier or a certified service partner, ensuring fast and reliable after-sales support, i.e., very short response times for troubleshooting and repairs to avoid prolonged downtime. Therefore, a robust network of local, trained technicians to offer maintenance and repair services when needed is recommended. This ensures the appliance's longevity, thus protecting the institution's investment.

- Warranty, service agreements: A comprehensive warranty (e.g., the 3-year warranty offered by Ecobora) containing information on spare parts, troubleshooting and repair steps, and service centre / technician contacts should be provided by the supplier as part of after-sales support.

Post-installation onboarding of school staff on e-cookstove operation.

> "Before Ecobora's e-cookstove was installed, we used traditional three-stone fires, which made the kitchen smoky and very hot. It was hard to manage the large pots, and cleaning was always a challenge. With the Ecobora e-cookstove, the kitchen environment has completely changed - it's clean and much easier to work in. Cooking is faster (we used to prepare githeri overnight, but now I start at 8 a.m. and it's ready by 10 a.m.). Food quality has improved, and students now get their meals on time. The meals are so well prepared that even teachers now eat the students' food. It has made our daily work much more comfortable and efficient."

Janet Ondieki, Cook at Nyaramba Primary School

3.3. Monitoring & data use

Monitoring should not only record technical performance but also explain why data matters.
This connects the field experience to broader goals - policy learning, financing, and carbon verification.

Data from metering and surveys informs three levels of decision-making:

Why data matters

1. Operational – Identifies underperformance, ensures reliability, and triggers maintenance.

2. Strategic – Helps quantify time, cost, and energy savings to build evidence for expansion.

3. Financial – Supports results-based financing, carbon credits, and tariff reform proposals.

Examples of data to collect

- Daily logs
- Smart meter data
- User satisfaction surveys
- Cost tracking

Example templates for School Kitchen and Cooking Study (SKACS):

- Enumerator training guidance sheet
- SKACS Inception Survey
- Comprehensive Inception Survey for cooks
- Comprehensive Inception survey for management
- SKACS Measurement studies survey

4. Recipe for Success

Partnerships for effective delivery

Actors & enablers in the institutional e-cooking system

Delivering institutional e-cooking solutions requires coordinated action across the full value chain - from appliance production to sustained daily use.

The core delivery partners include:

- Manufacturers and suppliers – design and supply reliable, efficient appliances.
- Distributors and installers – ensure correct wiring, installation, and user training.
- Schools and institutions operate and maintain systems and ensure regular monitoring and payment.

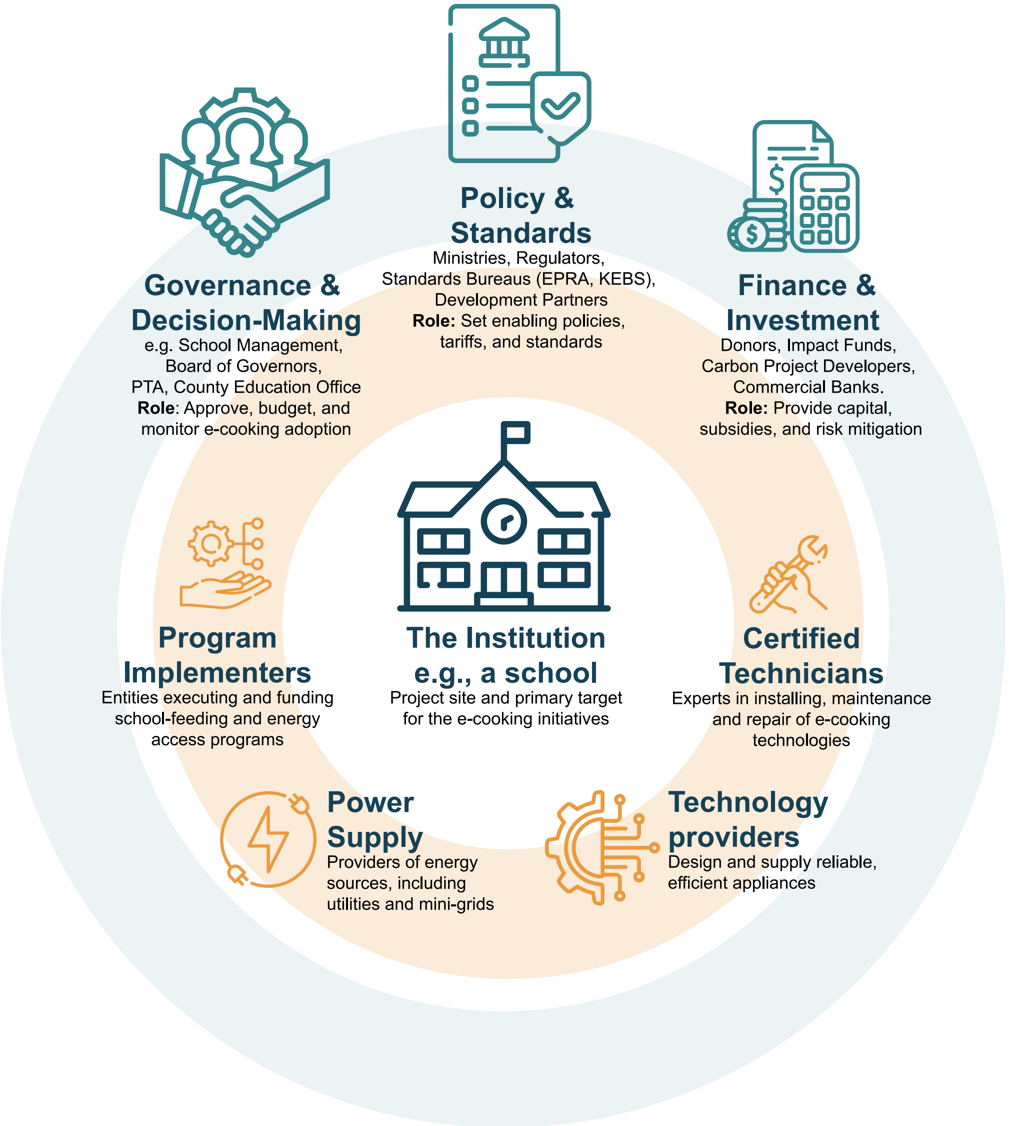
The enabling partners make scale possible:

- Financiers and donors – fund appliance acquisition, working capital, and carbon-financed scale-ups.
- Government and regulators – set tariffs, import standards, and inclusion in school feeding and electrification programs.
- Institutional decision-makers – boards, PTAs, and headteachers who approve expenditures and influence adoption.
- Development partners and NGOs – coordinate pilots, build local capacity, and share data for learning

Each actor plays a role in creating an ecosystem that is financially sustainable, technically sound, and socially accepted.

Actors & enablers in the institutional e-cooking system (continued)

Actors and Enablers in the Institutional e-Cooking System



Actors & enablers in the institutional e-cooking system (continued)

- The institution's ability to secure funding for, or contribute to, the procurement, installation, and maintenance of the e-cookstove (including any additional associated costs) is crucial to facilitate the transition from current cooking fuels, e.g., firewood.
- The program design and business models adopted must be relevant and applicable to the institution's context to guarantee financial viability, replicability, and sustainability for all stakeholders.
- As most institutions in Kenya are publicly funded, it is crucial to get robust buy-in from the institution's administration, management team, local leaders, government representatives, and community stakeholders for the successful adoption of e-cooking. For instance, schools with active parent–teacher associations (PTAs) or strong local community support may face fewer barriers to adopting and accepting new technologies.
- School meals programs are often publicly funded and therefore necessitate robust partnerships to ensure effective project delivery and a sustainable transition to e-cooking. Example of feeding programs in Kenya include as Food 4 Education, Dishi Na County, Cup of Uji

Engagement with the school management and board at Nyairicha Primary School in Nyamira, Kenya.

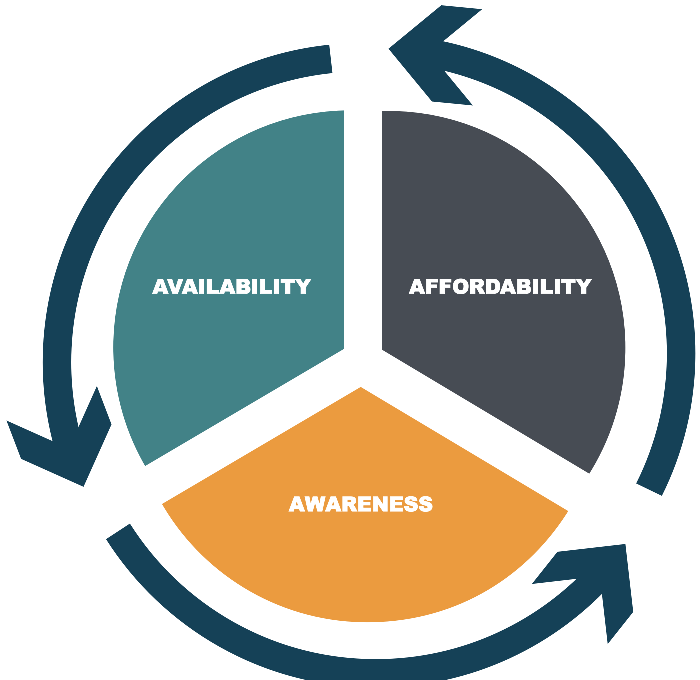
Relevant stakeholders must come together at every step of the value chain.

5. Vitamins for Growth

Financing and scaling institutional e-cooking

The three ingredients for scale

The scaling of institutional e-cooking hinges on financial innovation, supportive policy, and multi-stakeholder partnerships, and hinges on three pillars – Availability, Affordability, Awareness



- Robust distribution networks
- Product innovation

- Innovative financing models
- Smart subsidies & incentives
- Other cost reduction strategies

- Consumer campaigns
- Policy advocacy
- Cooking demonstrations & appliance use training

5.1. Availability – strengthening market access & product supply

Purpose: Accelerate the availability and uptake of institutional e-cooking appliances by improving distribution networks, promoting innovation, and enforcing quality standards.

Market Research

- Manufacturers and program implementers should conduct research on institutional cooking needs, kitchen layouts, and appliance usage patterns to guide product design and sizing.
- Energy planners and utilities should collect and share data on grid reliability, voltage fluctuations, and peak load capacity to inform appliance suitability and power management.
- Donors and research institutions can identify underserved regions and consumer profiles to prioritise pilot and scale-up locations

Testing & Standards

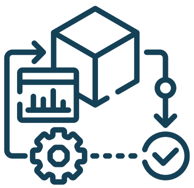
- Government standards agencies (KEBS, UNBS, TBS) should develop or adopt technical standards specific to institutional e-cooking appliances.
- Testing laboratories and research institutions should perform independent verification to confirm performance, efficiency, and safety.
- Manufacturers and importers must submit appliances for verification and display certification marks or labels to help schools identify compliant models.

Distribution Networks

- Manufacturers and distributors should establish regional depots and service agents to improve appliance availability, installation, and repair turnaround times.
- County governments and school procurement units can aggregate institutional orders to benefit from bulk pricing and coordinated logistics.
- Development partners should integrate appliance supply chains with ongoing school electrification or meal programme investments

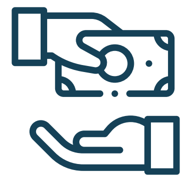
5.2. Affordability – making e-cooking accessible & financially viable

Purpose: Lower the cost of adopting and operating institutional e-cooking systems through innovative finance, targeted subsidies, and cost-reduction strategies.



Financing Models

- Financial institutions and impact investors can support innovative financing models such as Pay-as-You-Cook (PAYC) or Energy-as-a-Service (EaaS) models where schools pay per kWh used or per meal served.
- ESCOs (Energy Service Companies) can offer leasing or hire-purchase agreements, handling installation, maintenance, and performance guarantees.
- Development partners and donors should support risk-sharing mechanisms to make these business models commercially viable



Subsidies & Incentives

- National and county governments should introduce targeted capital subsidies or low-interest credit lines for institutional cooking electrification.
- Public procurement bodies can include verified e-cooking devices in approved supplier frameworks for school feeding and health programs.
- Regulatory authorities and ministries of finance can offer import duty waivers or tax rebates on efficient, certified appliances

Cost Reduction Strategies

- County education offices and NGOs should coordinate bulk purchasing and shared logistics among multiple schools to reduce costs.
- Manufacturers can invest in local assembly and repair training programs to minimize transport and replacement costs.
- Project developers and carbon consultants can design carbon credit mechanisms that monetize verified emission reductions and channel revenues into affordability schemes.

5.3. Awareness – building trust, knowledge, & demand

Purpose: Strengthen awareness and confidence in institutional e-cooking through demonstrations, cook training, and evidence-based policy dialogue.

Policy Advocacy

- Energy ministries and regulators should integrate e-cooking targets within national electrification and climate strategies.
- County governments and education ministries can align school meal programs and energy budgets with clean cooking objectives.
- Research and advocacy organizations should present pilot data and case studies to support tariff reforms and clean cooking subsidies.
- Government agencies, private sector actors, and development partners should foster inter-sectoral dialogue to build an enabling environment, align policies, and strengthen collaboration across the clean cooking, education, energy, and climate sectors

Consumer Awareness Campaigns

- Implementing partners and NGOs should organize community demonstrations and open kitchen days to showcase e-cooking's use, benefits, and safety.
- Media partners can share radio, social media, and video testimonials from schools that have transitioned successfully.
- Cooks and students can act as ambassadors, sharing their experiences with peer institutions.

Training and Capacity Building

- Culinary institutes, vocational schools, and implementing NGOs should develop short training modules for school cooks, technicians, and administrators.
- Appliance suppliers can provide user manuals, demonstration videos, and refresher sessions to promote proper use and maintenance.
- County governments can formalize a Cook Certification Program to recognize skilled staff as institutional clean cooking champions.

The Kitchen Drawer

Tools and resources

Not too many cooks

The people who made this possible

This report was authored by CLASP as part of the Low Energy Inclusive Appliances (LEIA) Program, under the Efficiency for Access Coalition (EforA), and the Modern Energy Cooking Services (MECS) Program.

Efficiency for Access

EforA is a global coalition dedicated to advancing high-efficiency appliances to enhance clean energy access for the world's most impoverished communities. Current EforA Coalition members have programs and initiatives spanning 62 countries and 34 key technologies.

Modern Energy Cooking Services (MECS)

MECS is a UK Aid-funded programme working to accelerate the global transition from polluting cooking fuels to modern, energy-efficient solutions. By integrating clean cooking into energy access planning, MECS supports research, innovation, and market development that make electric and renewable cooking solutions affordable, reliable, and scalable. The programme operates across Africa and Asia, collaborating with governments, manufacturers, financiers, and development partners to ensure clean cooking becomes central to everyday energy use.

This study has been funded by UK Aid, via the Transforming Energy Access platform and the MECS programme, and IKEA Foundation via the LEIA program; however, the views expressed do not reflect the opinions and official policies of the UK government or the IKEA Foundation.

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Thank you to the many partners, researchers, and practitioners who stirred ideas, tested recipes, and helped serve up this guide. Special appreciation goes to the staff, management, and students of the nine participating schools - *ELCK Chepkalit Mixed Secondary School, Ntharene Primary School, Nyairicha Primary School, Nyamira Primary School, Nyaramba Primary School, Nyawara Girls High School, PC Kinyanjui Technical Training Institute, Rombo Girls Secondary School, and Wote Technical Training Institute* - whose commitment and daily experience brought these lessons to life.

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Annex: Electrical infrastructure audit & feasibility study questionnaire

Category	Question	Response
General Site Information	1. Name of institution / school	
	2. Location	
	3. Contact person & designation	
	4. Number of students / staff using the kitchen facilities	
	5. Current cooking methods used (e.g., firewood, gas, electric stoves, etc.)	
	6. Available space for cookstove installation (Yes / No). If yes, specify minimum required space, e.g. 2 m x 2 m with adequate ventilation	
	7. Distance of kitchen distribution board (DB) from main electrical distribution board (meters)	
Electrical Supply & Capacity	8. What is the school's main power source? (Grid / Solar / Generator / Hybrid)	
	9. What is the available supply voltage? (Single-phase 230 V / Three-phase 415 V / Other)	
	10. What is the school's current sanctioned power load (kW)?	
	11. What is the current average power consumption (kWh / month)?	
	12. Is there a backup power source? (Yes / No) If yes, specify	
	13. Condition of earthing system (Corroded / Needs Maintenance / Good Condition)	
	14. Measured earth electrode resistance (Ohms)	
Kitchen Wiring & Infrastructure	15. Type of power supply to the kitchen (Single-phase / Three-phase)	
	16. Size and type of supply cable to the kitchen (mm^2, PVC / SWA etc.)	
	17. Does the kitchen distribution board have spare capacity? (Yes / No)	
	18. Rating of the kitchen distribution board (A)	
	19. Are RCDs installed in the kitchen circuits? (Yes / No)	
Safety & Compliance	20. Condition of electrical panels and terminations (Good / Needs Maintenance / Poor)	
	21. Has an electrical safety inspection been conducted recently? (Yes / No, Date)	
	22. Are fire extinguishers available in the kitchen / electrical room? (Yes / No)	
	23. Are staff trained in electrical safety procedures? (Yes / No)	