



# Transitioning Public Institutions to Clean Cooking:

A Policy & Budget Imperative

## Key Implementors



# Abbreviations

Abbreviation	Full Form
ARU	Ardhi University
CBE	College of Business Education
CO <sub>2</sub> e	Carbon Dioxide Equivalent
EPC	Electric Pressure Cooker
EWURA	Energy and Water Utilities Regulatory Authority
FYDP III	Third Five-Year Development Plan (2021/22–2025/26)
IFM	Institute of Finance Management
IUCN	International Union for Conservation of Nature
LPG	Liquefied Petroleum Gas
MoE	Ministry of Energy
MoH	Ministry of Health
NBS	National Bureau of Statistics
NDC	Nationally Determined Contribution
NEMC	National Environment Management Council
PO-RALG	President's Office – Regional Administration and Local Government (TAMISEMI)
REA	Rural Energy Agency
SDG	Sustainable Development Goal
TBS	Tanzania Bureau of Standards
UDSM	University of Dar es Salaam
UNCDF	United Nations Capital Development Fund
UNDP	United Nations Development Programme
VAT	Value Added Tax
WWF	World Wide Fund for Nature
O&M	Operations and Maintenance

# Executive Summary

In 2023, the Government of Tanzania issued a bold decree: all public institutions that prepare meals for 100 or more people must abandon firewood by 2024. The directive, anchored in the country's subsequent National Clean Cooking Strategy (2024–2034), recognises that institutional kitchens, schools, hospitals, prisons and colleges are both heavy biomass consumers and powerful agents of change. Former Vice President, Dr Philip Mpango,

speaking during national commemorations of World Environment Day held at the Jakaya Kikwete Convention Centre on June 5, 2025, said the institutions that have already made the switch, 495 are public, while 267 are privately owned. Through consultations conducted by Kengo Limited under the UNCDF Clean Cooking Programme in 2025, Dr Yangsen Mgogo – School Feeding Programme Coordinator, TAMISEMI reported that 331 government schools, including 117 in Dar es Salaam, had transitioned to clean cooking. Conversely, more than 80 per cent of Tanzania's 4,500 boarding schools and over 100 hospitals still rely on firewood. During the interview Kengo made with Adolf Kiyunge - Public Health Officer from the (The Ministry of Health (MoH), noted that that 26 of its 77 hospitals and colleges now use modern fuels. The Rural Energy Agency (REA) has converted 126 prisons, installed biogas systems, LPG cylinders and improved stoves under a TZS 35.2 billion programme.

New institutional actors are emerging. The University of Dar es Salaam (UDSM) launched a Randomised Controlled Trial (RCT) in April 2025 that tests whether smart-meter pay-as-you-go LPG and pressure cookers can overcome the high upfront cost of cylinders and encourage exclusive use of clean fuels<sup>1</sup>. The study involves over 150 households in Kinondoni District through a coordinated effort between academics, policy makers and private sector providers like M-Gas. College of Business Education (CBE) researchers, meanwhile, are advocating for the formalisation of Tanzania's charcoal sector, noting that it supplies over 95 per cent of urban households and employs around 2 million people. Their research underscores the need for legal reforms to manage biomass markets and stimulate investment in modern fuels.

In July 2025, the Kibasila Primary School - eCooking Model Kitchen became Tanzania's first fully electric institutional kitchen. A partnership between Sustainable Energy for All (SEforALL), the World Food Programme (WFP) and the government. The pilot installed multiple EPCs ranging from 45-litre, 65-litre and 80-litre, and refurbished the kitchen with new wiring, grounding, water connections and hygienic surfaces. The initiative sets the precedent for equipping 50 government schools with e-cooking technology in 2025, supported by UKAid's Modern Energy Cooking Services (MECS) programme. At Mwananyamala Referral Hospital, the Doris Mollé Foundation and Oryx Gas signed an agreement to distribute LPG stoves to nurses in 10 regions. The hospital's medical officer notes that more than half of its 500<sup>2</sup> outpatients suffer respiratory illnesses linked to dirty cooking fuels, illustrating the health imperative for cleaner kitchens.<sup>3</sup>



[1] [cleanairafrica.com](https://cleanairafrica.com)

[2] [https://ippmedia.co.tz/the-guardian/news/local-news/read/hospital-links-surge-in-respiratory-illnesses-to-dirty-energy-2024-04-21-074326?utm\\_source](https://ippmedia.co.tz/the-guardian/news/local-news/read/hospital-links-surge-in-respiratory-illnesses-to-dirty-energy-2024-04-21-074326?utm_source)

[3] <https://www.thecitizen.co.tz/tanzania/news/national/oryx-doris-mollel-foundation-partner-to-support-nurses-with-clean-cooking-energy-4598266#:~:text=Dar%20es%20Salaam,use%20of%20clean%20cooking%20energy>

Policy momentum is building, but coordination gaps persist. The Ministry of Energy (MoE) introduced VAT exemptions for institutional LPG cylinders and briquette furnaces in the 2025/26 budget; REA continues to subsidise conversions; and TAMISEMI is integrating clean cooking into education sector budgets. However, budget lines remain fragmented across ministries, procurement guidelines are inconsistent, and technical capacity at the local level is limited. Universities and hospitals point to a lack of training, monitoring tools and financing mechanisms that would enable sustained adoption.

This paper offers a comprehensive analysis of Tanzania's 2023 directive requiring all public institutions to transition, analysing incentives, coordination challenges, and financing levers that shape implementation. It proposes actionable reforms to better align policy intent with budget structures and delivery systems.



## Methodology and Sources of Evidence

### Document Review

The paper draws on a comprehensive review of national and sectoral frameworks, including the National Clean Cooking Strategy (2024–2034), FYDP III (2021/22–2025/26), the National Environmental Policy (2021), and relevant budget speeches and implementation reports. It also analyses programme documentation from the Rural Energy Agency (REA), recent Parliamentary Committee proceedings, and credible media coverage tracking institutional conversions. Quantitative data on public-institution conversions, LPG distribution, and biomass consumption trends were triangulated from REA progress updates (2023–2025), ministerial briefs, and validated media reports.

### Stakeholder Consultations

The preparation of this paper benefited from extensive consultations conducted under the UNCDF Clean Cooking Programme (2025), including, government ministries, regulatory agencies, private-sector suppliers, and institutional end-users. The aim was to capture both the policy-level perspectives shaping Tanzania's clean-cooking transition and the lived experiences of public institutions already experimenting with different energy solutions.

### Government Ministries and Agencies

Officials from the MoE emphasised ongoing fiscal incentives such as the VAT exemption on institutional LPG cylinders and furnaces for briquette production under the FY 2025/26 budget. TAMISEMI shared data indicating 331 schools have transitioned to clean cooking, while the MoH confirmed 26 hospitals and colleges are now using cleaner systems, with plans to launch a national Indoor Air Strategy to integrate clean cooking into health-sector policy. REA and the Tanzania Prisons Service highlighted lessons from the 126-facility biogas rollout, which has reduced fuel costs and improved waste management.

### Private Sector

Oryx Gas Tanzania outlined its role in LPG distribution, safety training, and technical support nationwide, as well as partnerships with development organisations and hospitals such as Mwananyamala. The company reported that targeted price incentives and community education campaigns have significantly improved acceptance of LPG among institutional and household users, although affordability and counterfeit products remain barriers.

## Higher-Learning Institutions

Higher-learning institutions provided valuable insights into the operational realities, safety challenges, and opportunities for scaling up clean cooking across large public facilities:

### Institute of Finance Management (IFM)

The cafeteria manager explained that IFM uses both LPG and charcoal: gas for light meals due to its speed and hygiene, and charcoal for foods requiring longer preparation times such as boiling beans. The installation of the gas system at the cafeteria was not supervised by experts, underscoring the need for certified technicians, subsidised installations, and user safety training. IFM also appealed to the government to enhance the affordability of gas and national distribution for easier access to campuses.

### College of Business Education (CBE)

The campus cafeterias in Dar es Salaam, Mwanza, and Dodoma now rely on LPG and briquettes purchased from private vendors. CBE reported significant improvements in kitchen cleanliness, reduced smoke exposure, and faster meal preparation. The college highlighted the need for routine safety inspections of LPG systems, training on occupational health, and regulation of suppliers to guarantee product quality.

### University of Dar es Salaam (UDSM)

The main cafeteria operates a dual system using natural gas (installed under a government project) and 38 kg LPG cylinders for larger meals. Staff reported that while natural gas is clean, its low pressure limits performance; LPG offers reliability but at a higher cost. They recommended technical training for staff, modern safety infrastructure, and stricter oversight of informal LPG agents who sometimes sell underfilled or unsafe cylinders.

### Ardhi University

The cafeteria operates three large gas stoves supplemented by limited charcoal use. LPG is favoured for its speed and hygiene, while charcoal is reserved for cost-intensive dishes like beans. Management called for government-supported installation grants, continuous safety education, and public awareness campaigns on alternative clean fuels suitable for institutional kitchens.

The experience garnered from the universities highlights that while the transition to clean cooking is technically feasible and widely accepted, affordability, technical capacity, and safety assurance remain the central gaps. Their experiences reinforce the case for a national institutional energy-safety framework coordinated by the Ministries of Energy, Education, and TAMISEMI, and supported by REA.

**Table 0.1 Case Snapshots: Higher-Learning Institutions Transitioning to Clean Cooking**

Institution	Energy Mix	Key Benefits	Challenges	Key Recommendations
IFM	LPG + Charcoal	Faster cooking, hygiene	Lack of training, gas price	Subsidised gas, technical training
CBE	LPG + Coal Briquettes	Cleaner air, lower cost	Need for regular inspection	Safety checks, institutional policy
UDSM	Natural Gas + LPG	Clean, safe	Low pressure, dishonest vendors	Regulation, modern tech upgrades
Ardhi University	LPG + Charcoal	Quick, clean cooking	Cost of beans with LPG	Govt support for systems, safety training

## Community and Demonstration Sites

Feedback from demonstration schools such as Kibasila Primary (eCooking pilot) and hospitals like Mwananyamala confirmed the same pattern: clean cooking technologies deliver better health outcomes, improved food hygiene, and operational efficiency. However, recurring challenges include upfront equipment costs, unreliable maintenance, and lack of accessible finance for service providers and school caterers.

### Table 0.2 Lesson from African Countries

#### Rwanda: institutional biogas programme

Rwanda's National Domestic Biogas Programme launched in 2008 aimed to install digesters in all schools and large health centres. By 2017, 86 institutional digesters were operational, and 11 of 14 prisons used biogas<sup>4</sup>. The programme reduced firewood consumption by 60 % in schools and 40 % in prisons, improved hygiene and produced organic fertiliser. The government provided a 50 % subsidy via microfinance, making digesters more affordable.

##### Lessons

- Subsidies and microfinance can overcome high capital costs. Institutional systems benefit from economies of scale compared with household digesters.
- Maintenance and technical support are crucial; many early digesters failed due to poor training.
- Biogas works best where feedstock (manure, food waste) is plentiful and there is land for digester construction.

#### Kenya: eCooking pilots in schools

The Modern Energy Cooking Services (MECS) programme tested 40 L EPCs in Tanzanian and Kenyan institutions and found they can cook over 90 % of typical meals. A pilot at IESR compared EPCs with LPG for cooking beans and githeri; the EPC's cost was less than half that of LPG. However, the high upfront cost of US \$250–600 per unit and limited supply chains constrain.<sup>5</sup>

##### Lessons

- Electric pressure cookers offer significant cost savings and are especially efficient for long cook dishes.
- Discounted electricity tariffs and financing instruments (leasing, pay as you go) are necessary to overcome upfront barriers.
- Local manufacturing and repair services need to be developed to ensure supply and after sales support.

#### Uganda: hospital electric cooking pilot

At the Mulago National Referral Hospital in Uganda, an electric cooking pilot supported by UNDP demonstrated that reduced electricity tariffs enable the kitchen to transition from biomass to electric<sup>6</sup>. The success informed broader policy efforts to reduce electricity tariffs for electric cooking in institutional settings. Uganda's prisons, however, still rely heavily on firewood; they consume 8 000 tonnes of wood fuel annually and an estimated 9 000 trees are destroyed daily, highlighting the urgency of scaling clean cooking beyond pilot projects.

##### Lessons

- Tariff subsidies can make electric cooking affordable even where grid electricity is relatively expensive.
- Without supportive policies, prisons and other institutions continue to rely on wood, leading to deforestation and high emissions.
- Pilots must be scaled quickly, with national policies and funding to avoid institutional inertia.

[4] <https://mecs.org.uk/wp-content/uploads/2023/01/Plan-of-Action-Rwandas-transition-to-modern-energycooking.pdf#:~:text=Sector%20Strategic%20Plan%20,biogas%20digesters%20have%20been%20installed>

[5] [adoptinglobalpartnership.org](https://www.adoptglobalpartnership.org).

[6] <https://www.undp.org/sites/g/files/zskgke326/files/2025-02/undp-no-time-to-waste-pathways-to-deliver-clean-cooking-for-all-v2.pdf#:~:text=National%20Referral%20Hospital%20kitchen%20and,for%20clean%20cooking%20can%20be>

# 1 Context and Rationale

## 1.1 Institutional Kitchens: Tanzania's "Missing Middle"

Tanzania's energy landscape has evolved over the past decade. Rural electrification, solar mini-grids, and LPG distribution have expanded modern energy access to millions of households. Yet a critical segment, institutional kitchens, remains largely reliant on biomass. Boarding schools, hospitals, prisons, universities and military barracks combined cook millions of meals daily. Estimates suggest that these institutions consume 6–8 million tonnes of firewood annually, releasing roughly 10 million tonnes of CO<sub>2</sub> equivalent and exacerbating deforestation and indoor air pollution.

Multiple ministries share responsibility for institutional cooking: the MoE sets standards and coordinates programmes; the Ministry of Education, Science and Technology manages school infrastructure; PO–RALG (TAMISEMI) oversees local government facilities; the Ministry of Health supervises hospitals and training colleges; the Ministry of Home Affairs manages prisons; and the Ministry of Defence handles military kitchens. This fragmentation has historically led to budget silos and diffuse accountability. The 2023 directive, which orders institutions feeding 100 or more people to stop using firewood by 2024, attempts to address this.

In practice, progress has been uneven. TAMISEMI reported that 331 government schools are now using clean cooking technologies, including 117 in Dar es Salaam (17 in Kigamboni, 13 in Kinondoni, 35 in Temeke, and 35 in Ubungu). The Ministry of Health confirmed that 26 of its 77 hospitals and colleges have adopted LPG, biogas or electric cooking. The REA–Prisons Service Programme invested TZS 35.2 billion to equip 126 prisons with biogas plants, LPG cylinders and improved stoves, covering 75 per cent of costs and demonstrating that large-scale conversion is viable.

Universities and research centres underscore why institutional kitchens matter. UDSM's School of Economics, through its Centre for Behavioural Studies, launched a seven-month randomised controlled trial in April 2025<sup>7</sup>. The study, titled Ondoa Moshi, Okoa Maisha (Reduce Smoke, Save Lives), explores whether pay-as-you-go LPG smart meters and pressure cookers can overcome upfront cost barriers and encourage exclusive use of clean fuels.

Researchers recruited over 150 households in Kinondoni District and partnered with M-Gas to test smart meters that allow small, frequent payments for LPG. This evidence is crucial because only around 15 per cent of Tanzanian households use LPG regularly<sup>8</sup> and many revert to charcoal for longer cooking due to cost perceptions. The RCT will measure impacts on fuel expenditure, gender roles, time savings and indoor air quality. Findings will inform subsidy design, behavioural campaigns and financing models.

The College of Business Education (CBE) takes a complementary approach. At the Third International TAFORI Scientific Conference in December 2024, CBE researcher Dr Nasibu Mramba called for the formalisation of Tanzania's wood-charcoal sector. Over 95 per cent of urban households rely on charcoal for cooking, and the sector employs more than 2 million people. However, the industry operates informally, leading to lost revenue, limited financing and environmental degradation. CBE advocates regulatory reforms, market infrastructure development, training and financial services for charcoal actors, arguing that formalisation is a necessary precursor to reducing biomass dependence. This aligns with academic research indicating that supporting functions - public-private partnerships, financial services, legal frameworks and market infrastructure is critical to formalising the charcoal business.<sup>9</sup>

Health facilities further highlight the human cost of traditional cooking. At Mwananyamala Referral Hospital in Dar es Salaam, more than half of the 500 outpatients are treated for respiratory illnesses linked to exposure to wood smoke.<sup>10</sup> Recognising this, the Doris Mollel Foundation and Oryx Gas Tanzania partnered in April 2024 to supply LPG stoves and cylinders to nurses in ten regions. Oryx's managing director noted that the company aims to ensure every Tanzanian can enhance their cooking practices, while the hospital's medical officer emphasised that respiratory disease is the number-one ailment among patients and is linked to charcoal. Such initiatives demonstrate the potential for health institutions to champion the clean-cooking agenda.

[7] [cleanairafrica.com](https://cleanairafrica.com)

[8] [thecitizen.co.tz](https://thecitizen.co.tz)

[9] [researchgate.net](https://researchgate.net)

[10] [thecitizen.co.tz](https://thecitizen.co.tz)

The energy transition in institutional kitchens aligns with multiple national and international commitments. Tanzania's National Clean Cooking Strategy (2024–2034) sets a target of 80 per cent clean household adoption to clean cooking by 2034 and recognises institutional conversions as a catalyst. The strategy supports the 2021 National Environment Policy, the Five-Year Development Plan III, and the country's Nationally Determined Contribution (NDC) to reduce greenhouse gas emissions by 30–35 per cent by 2030. Public institutions have a duty not only to reduce emissions and protect forests but also to lead by example in modern service delivery.

## 2 Scale and Opportunity

### 2.1 Energy Demand and Consumption Patterns

Institutional kitchens are among the largest consumers of biomass fuel. Boarding schools in East Africa typically use 150–300 tonnes of firewood per year (Clean Cooking Alliance, 2023), spending the equivalent of TZS 25–38 million annually (SEforALL, 2022). Large hospitals require USD 12,000–20,000 (TZS 30–50 million) for cooking fuels (MECS, 2022). Prisons often consume 150–250 tonnes of firewood annually (Penal Reform International, 2021). Collectively, schools, hospitals, and prisons represent a significant share of national woodfuel demand (FAO, 2020).

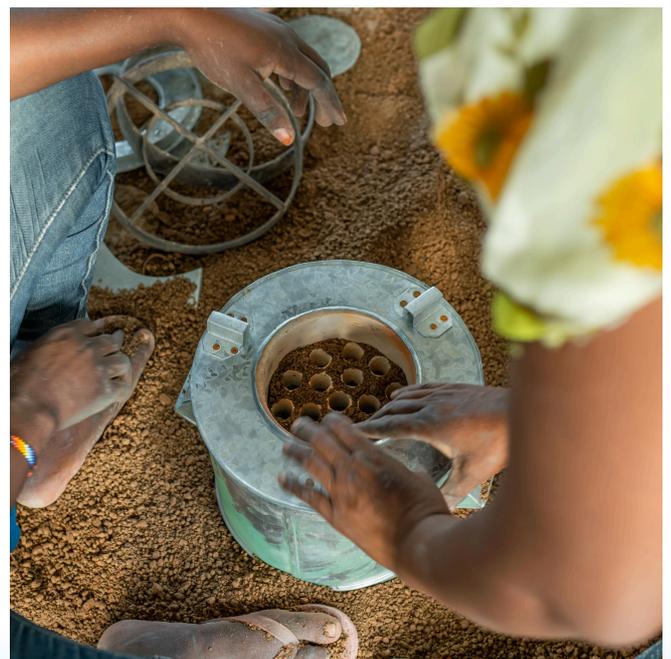
Schools with feeding programmes are the largest institutional users of biomass. According to TAMISEMI, over 4,500 boarding schools operate in Tanzania. 331 of these schools now use clean cooking, meaning that roughly 4,170 schools rely on wood fuel. In Dar es Salaam alone, 117 schools have transitioned; 17 in Kigamboni, 13 in Kinondoni, 35 in Temeke and 35 in Ubungu. With boarding schools preparing several hundred to several thousand meals per day, each conversion can save 300–500 tonnes of wood annually.

Hospitals present both a need and an opportunity. The MoH has converted 26 of 77 hospitals and colleges, with plans to scale up through an Indoor Air Strategy in FY 2025/26. Hospitals consume biomass not only for patient meals but also for staff canteens and kitchens in training colleges.

At Mwananyamala Hospital, the prevalence of respiratory ailments underscores the health and economic costs of biomass cooking. Converting hospital kitchens reduces indoor pollution and improves working conditions, leading to fewer sick days and better food hygiene.

Prisons are another significant energy consumer. The REA–Prisons partnership provides prisons with biogas digesters, converting organic waste into methane. Each prison can generate enough biogas to cook for inmates and supply LPG cylinders for staff. Installing 126 biogas plants is estimated to save 2 million tonnes of wood over ten years, reduce emissions and produce organic fertiliser for prison farms.

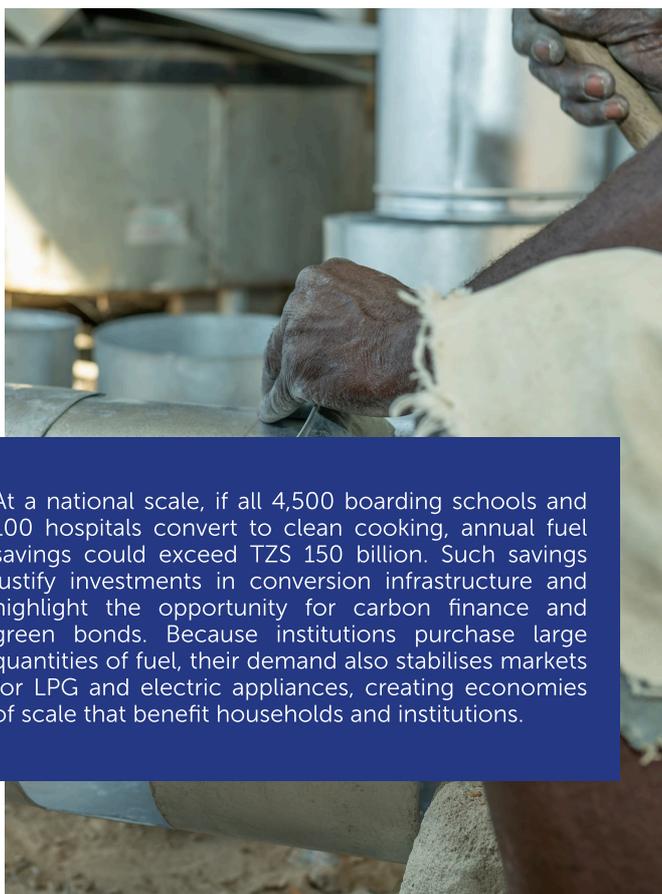
Universities such as IFM and CBE provide additional insight into institutional fuel dynamics. IFM's cafeteria serves large student populations using both LPG and charcoal - gas for lighter meals and charcoal for slow-cooked foods like beans. Managers note LPG's superior speed and cleanliness but emphasise cost sensitivity, as gas is only used when strictly necessary. CBE, with campuses in Dar es Salaam, Dodoma, and Mwanza, has replaced wood and charcoal with LPG and coal briquettes, reporting cleaner kitchens, lower smoke exposure, and reduced cooking time by nearly 40%. Similar hybrid approaches at Ardhi University and UDSM demonstrate efficiency gains but underscore the need for subsidised infrastructure and periodic system inspections.



## 2.2 Fiscal and Economic Opportunity

The financial case for clean cooking is compelling. Firewood and charcoal require continual procurement, transportation, storage and labour. Modern fuels like LPG and electricity, while requiring expensive upfront equipment, offer lower operating costs. For example:

- At Bwiru Boys and Girls Secondary Schools in Mwanza, converting from wood to LPG saved 30 per cent of annual cooking expenses. The school used the savings to purchase textbooks and improve sanitation.
- Mwananyamala Hospital plans to reduce its cooking costs by up to 40 percent by switching to LPG. These funds can be redirected to medical supplies and staff training.
- REA's prison biogas programme expects each prison to save TZS 20–25 million annually by eliminating wood purchases and generating fertiliser for prison farms.



At a national scale, if all 4,500 boarding schools and 100 hospitals convert to clean cooking, annual fuel savings could exceed TZS 150 billion. Such savings justify investments in conversion infrastructure and highlight the opportunity for carbon finance and green bonds. Because institutions purchase large quantities of fuel, their demand also stabilises markets for LPG and electric appliances, creating economies of scale that benefit households and institutions.

## 2.3 Market and Innovation Potential

The clean-cooking market in Tanzania is growing rapidly. LPG imports rose 16% between 2023 and 2024, reflecting rising demand. Private suppliers like Oryx Gas Tanzania have invested over US\$100 million since 2015 to expand distribution, and the company aims to convert 6 million households by 2034. Oryx operates a network of super-dealers and smaller retailers, provides safety training and offers discounted starter kits to schools and hospitals.

- Electric pressure cookers use up to 70% less energy than traditional electric coil stoves and reduce cooking time by 30–50% compared with both electric coils and biomass-based cooking (firewood and charcoal), according to MECS institutional cooking pilots in East Africa. The Kibasila model shows that installing 45-, 65- and 80-litre EPCs—supported by proper rewiring, grounding and safety upgrades - can deliver fast, smoke-free and cost-efficient institutional cooking. As Nutrition Teacher Madam Susana Mabelele explains: “We used to spend TZS 25,000 per day on firewood, but now we spend only TZS 8,000 on electricity,” reflecting a 68% reduction in daily energy costs. As grid reliability continues to improve, e-cooking is well-positioned to become a leading clean-cooking pathway for urban and peri-urban institutions.
- Biogas systems remain a viable solution for institutions with organic waste streams, and sewage systems serve as a feedstock for digesters. Biogas plants generate methane for cooking and produce slurry for fertiliser. Institutions with large kitchens and agricultural activities, such as prisons and vocational colleges, stand to benefit.
- Pay-as-you-go (PAYG) innovations are reducing barriers to adoption. The UDSM RCT tests smart meter LPG systems that allow users to pay for gas in small increments using mobile money. This model mimics the purchase of charcoal in small units and eliminates the need for large upfront payments. PAYG platforms also collect usage data, enabling the delivery of targeted subsidies and the verification of carbon credits.

## 3 Joint Policy Circulars and Budget Guidance

### 3.1 Need for Coordinated Directives

Despite clear national goals, implementation suffers from fragmentation. Each ministry budgets and procures for its own institutions, leading to inconsistent standards, equipment and training. To address this, stakeholders propose issuing a joint policy circular signed by the Ministry of Energy, Ministry of Finance, Ministry of Education, PO–RALG, Ministry of Health, Ministry of Home Affairs and Ministry of Defence. The circular should:

1. Mandate conversion timelines: set specific targets (e.g., 50 per cent of boarding schools and hospitals converted by 2026; 100 per cent by 2028) and assign responsibility to each ministry.
2. Define eligible technologies: list approved modern fuels (LPG, EPCs, biogas) and specify quality standards, safety certifications and maintenance requirements.
3. Create budget codes: establish dedicated budget lines for clean cooking within each ministry's vote, with ring-fenced allocations for procurement, installation and training.
4. Require safety and environmental audits: mandate annual inspections of institutional kitchens and compliance with waste management and fire safety regulations.
5. Establish monitoring protocols: require ministries to report conversion progress, fuel savings and health outcomes through a national dashboard.

By co-signing such a circular, ministries align their planning cycles, enable joint procurement and create accountability mechanisms.

### 3.2 Fiscal Instruments and Incentives

Budget guidance should pair mandates with resources. Several fiscal instruments are underway or proposed:

- **VAT and duty exemptions:** The 2025/26 budget exempts institutional LPG cylinders and briquette furnaces from VAT, reducing equipment costs and encouraging adoption.
- **Dedicated Clean Cooking Fund:** Stakeholders propose creating a pooled Clean Cooking Infrastructure Fund managed by the Ministry of Energy. Contributions would come from the central government, development partners (such as UNCDF and MECS), carbon credit revenues and private donations. Funds would provide grants or concessional loans for kitchen retrofits, focusing on rural schools and health facilities.
- **Results-based financing:** Institutions could receive partial reimbursement after independent verification of installations and exclusive use of clean fuels. This would incentivise timely and high-quality conversions.
- **Public–private partnerships (PPPs):** Companies like Oryx Gas could invest in kitchen infrastructure and recover costs through service agreements or PAYG models. The joint circular should outline PPP guidelines, risk-sharing mechanisms and profit caps.
- **Carbon credits and climate finance:** Each tonne of wood replaced by LPG or electricity reduces emissions. Tanzania could register a programme under voluntary carbon standards, selling credits to donors or private buyers. Revenues would feed back into the clean-cooking fund.



### 3.3 Role of Academia and Health Institutions in Policy

Universities and hospitals are not only beneficiaries but also thought partners. The UDSM RCT will provide empirical evidence on the effectiveness of PAYG LPG and pressure cookers. As results become available in 2026, they should inform subsidy design and behavioural interventions. CBE's research on formalising the charcoal sector guides complementary policies, such as licence reforms and market infrastructure investments. Health facilities like Mwananyamala can provide data on respiratory disease trends and cost savings post-conversion. Policy makers should institutionalise mechanisms for research uptake, such as annual policy dialogues, knowledge translation units and targeted research grants.

## 4 Framework Contracts and Procurement

### 4.1 Bulk Procurement Models

Tanzania's Bulk Petroleum Procurement System (BPS), introduced in 2011, centralises the purchase of petroleum products to reduce costs and ensure quality. The BPS could be expanded to include clean cooking equipment -LPG cylinders, hoses, regulators, EPCs, smart meters and biogas components. Centralising procurement offers several benefits:

- **Economies of scale:** Pooling demand from thousands of institutions reduces per-unit costs and strengthens negotiating power with suppliers.
- **Quality assurance:** The government can set specifications and certification requirements, ensuring safety and durability.
- **Fair distribution:** Central warehouses can allocate equipment to regions based on need, reducing disparities between urban and rural institutions.

To operationalise this, the Ministry of Energy should develop framework contracts with pre-qualified suppliers. Contracts would specify prices, delivery schedules, warranty terms, and training commitments. Suppliers would deliver equipment directly to institutions or regional depots. Framework contracts would also include service agreements for maintenance and repairs, ensuring sustainability.

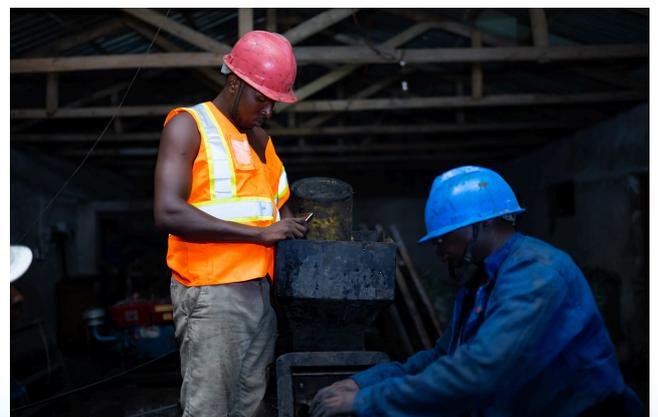
### 4.2 Inclusive Procurement and Local Industry Development

Procurement frameworks should prioritise local assembly and manufacturing where feasible. For instance, LPG cylinders are already produced domestically by companies like Oryx Gas. Electric pressure cookers could be assembled in Tanzania with imported components. Encouraging local production creates jobs, builds technical capacity and reduces import bills. Criteria such as value addition, employment generation and environmental compliance should be integrated into supplier selection.

Institutions must also be able to procure rapidly for urgent needs. A combination of centralised frameworks and decentralised petty cash for minor repairs and replacements can ensure responsiveness. Procurement rules should allow schools and hospitals to purchase small items (e.g., regulators, seals) directly while following framework guidelines for major equipment.

### 4.3 Infrastructure Upgrades and Civil Works

Modern cooking is not just about stoves and cylinders; it requires proper infrastructure. The Kibasila pilot shows that converting a kitchen to e-cooking involves rewiring, grounding, installing water lines, tiling floors and walls, adding sinks and improving ventilation. Many institutional kitchens lack adequate ventilation, hygiene and fire safety features. Procurement frameworks must therefore include civil works contracts for kitchen refurbishment. Budgeting guidelines should allocate at least 30 per cent of conversion costs to civil works. Standards should reference building codes and electrical safety regulations, and oversight should involve local authorities and certified engineers.



# 5 Operations, Maintenance, Safety and Training

## 5.1 Capacity Building

One of the greatest challenges highlighted by institutions is the lack of technical skills. Teachers, cooks, prison staff and hospital administrators often receive little or no training on LPG safety, electric cooker operation or biogas management. The consequence is misuse, breakdowns and accidents. Field consultations revealed that many institutions, such as IFM, UDSM, and CBE, installed LPG systems through self-initiated efforts without technical oversight. While this reduced initial costs, it exposed staff to potential hazards due to the lack of standardised installation and safety protocols. Respondents across institutions consistently recommended structured training programmes for kitchen staff, certified gas technicians, and mandatory safety inspections by REA or EWURA-accredited service providers. The call for continuous safety education and access to affordable spare parts reflects a recurring institutional gap.

To address this, the government should launch a national capacity-building programme with the following elements:

- **Training curriculum:** Develop standardised modules on LPG safety, EPC usage, biogas operation, basic electrical maintenance and fire safety. The curriculum should be tailored to different institutions (schools, hospitals, prisons) and include practical demonstrations.
- **Train-the-trainer model:** Universities such as UDSM and technical colleges like the Dar es Salaam Institute of Technology should train master trainers who will, in turn, train institutional staff across regions. Private companies like Oryx Gas can support by providing expertise and training materials. Women should be deliberately recruited as trainers to promote gender equity.

- **Certification:** Introduce a certification process for institutional cooks and technicians. Passing the training should be mandatory for operating clean-cooking equipment. Certificates should be renewed every three years after refresher courses.
- **Integration into TVET and higher education:** CBE and other universities should incorporate clean-cooking modules into business, engineering and environmental programmes. This will produce graduates who can design, market and manage clean-cooking solutions.

## 5.2 Operations and Maintenance (O&M)

Sustainable adoption hinges on proper O&M. Institutions must allocate funds for routine maintenance, such as replacing LPG regulators, checking seals, cleaning chimneys for biogas systems, and inspecting electrical components. The joint policy circular should specify minimum O&M budget allocations (e.g., 5 per cent of the equipment cost annually) and tie these to performance indicators. Framework contracts should include after-sales service agreements, with suppliers obligated to respond to faults within a specified timeframe.

Institutions should also keep logbooks of equipment usage, repairs and incidents. These records will support warranty claims, inform procurement planning and contribute data to the national scoreboard. Digital logbooks integrated with smart meters can automate data capture and reduce administrative burdens.

## 5.3 Health Facility Integration

Hospitals present unique challenges and opportunities. In addition to converting kitchens, hospitals can integrate clean-cooking messages into health education programmes. Nurses trained in using LPG at work can become advocates for clean cooking in their communities. Hospitals can also track respiratory disease cases and evaluate whether conversions reduce patient loads. Data from Mwananyamala can feed into national registries and support evidence-based policy adjustments.



## 6. Conclusion and Recommendations

Transitioning public institutions to clean cooking is not optional; it is a policy, health, fiscal and environmental imperative. Over two years, Tanzania has made significant strides: hundreds of schools and dozens of hospitals and prisons now use LPG, electricity or biogas. The Ministry of Energy, PO–RALG, the Ministry of Health and private partners like Oryx Gas provide strong leadership. Key recommendations for policymakers, donors, universities and private partners are as follows:

1

Issue a joint policy circular in early 2026, endorsed by all relevant ministries, to formalise conversion targets, technologies, budgets and accountability mechanisms.

2

Scale up financing through a dedicated Clean Cooking Infrastructure Fund, blending government resources, donor grants, carbon credits and private investment. Expand VAT exemptions and consider import duty reductions for clean cooking equipment.

3

Expand procurement frameworks to include modern cooking equipment and civil works, ensuring quality, safety and economies of scale. Encourage local assembly and manufacturing to create jobs.

4

Invest in capacity building by partnering with universities, technical colleges and private companies to deliver training and certification programmes. Ensure that women are equitably represented among trainees and technicians.

5

Establish a digital scoreboard with real-time data on conversions, usage, savings and health impacts. Integrate smart-meter data and link to carbon credit registries. Publish regular progress reports.

6

Leverage research from UDSM, CBE and other institutions to design behaviour-change campaigns, financing models and policy reforms. Formalise the charcoal sector to reduce biomass reliance and generate revenue for clean cooking.

7

Strengthen supply chains by incentivising private investments in LPG storage, distribution and retail networks, especially in rural areas. Promote pay-as-you-go and small-cylinder models to reach low-income users.

8

Integrate health messaging by involving hospitals and health workers in advocacy and monitoring. Document health improvements following conversions to build public support.

9

Plan for resilience by diversifying technology options (LPG, electricity, biogas) and aligning with electrification programmes. Ensure that institutions can switch fuels in case of supply disruptions.

10

Enable regional learning by sharing Tanzania's experiences at regional forums, learning from other countries and exploring cross-border partnerships for equipment and finance.

With coordinated policies, adequate financing, rigorous monitoring and broad stakeholder engagement, Tanzania can convert all institutional kitchens by 2030, catalyse household adoption and achieve 80 per cent clean cooking access by 2034. Universities, schools and hospitals have shown they are ready to lead. The next step is to scale these successes across the nation, turning clean cooking from a pilot into a nationwide norm.

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