Uganda eCookbook

learn how to save time and money by electrifying your kitchen

MECS
Modern Energy Cooking Services

Foreword

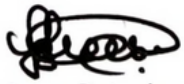
Firewood and charcoal remain the main source of energy for cooking in Uganda accounting for over 90% in the energy balance. The over dependency on firewood and charcoal for cooking is not only unsustainable but has negative impacts on the environment and on public health. To address this challenge, in 2013 Government put in place the Biomass Energy Strategy (BEST) for Uganda. BEST provides rational and implementable approaches to manage the biomass energy sector. The strategy has interventions to reduce the biomass demand which among others includes the use of alternative sources of energy for cooking such as electricity.

Currently, a number of Government-led efforts are underway to support and create demand for the use of electricity. Among them is the Charcoal to Power program. This is one of the strategies by Government to absorb additional power to be generated once Karuma HPP is commissioned in Mid 2022. Government is committed to promoting eCooking as a way of reducing over dependency on firewood and charcoal as we switch to using clean energy.

We are glad to note that the Modern Energy Cooking Services (MECS) has supported piloting the Electric Pressure Cooker (EPC) in Uganda. Among the areas of support by MECS to the Centre for Research in Energy and Energy Conservation (CREEC), Makerere University, is preparing this eCookBook that shows how the EPC can be the most time, cost and energy efficient way of preparing most traditional dishes in Uganda.

I want to thank MECS for supporting this initiative and CREEC for preparing the eCookBook for Uganda. This will be a very important tool for Government and key stakeholders in raising awareness regarding the reduced energy cost arising out of switching from expensive energy sources to cooking with electricity using the Electric Pressure Cooker.

I therefore call upon all the Government Agencies and our key Partners to read the eCookBook and use the valuable information in it to promote eCooking.



Irene Bateebe
Permanent Secretary
Ministry of Energy and Mineral Development

Uganda eCookbook

Published: March 2022, **updated:** September 2024

Lead authors: Agnes Naluwagga and Meron Tesfamichael

Contributing authors: Vimbai Chapungu, Jacob Fodio Todd, Jon Leary & Will Clements

Featuring: Lucy Nakiridde, Esther Nyambura, Jimmy Agaba

Photos: CREEC, Alex Catherine Nagawa

Lead Design: Vimbai Chapungu

Contributing Design: Jacob Fodio Todd & Jon Leary

The Uganda eCookbook was developed by the Centre for Research in Energy and Energy Conservation (CREEC), the country partner for the Modern Energy Cooking Services (MECS) Programme in Uganda, and funded by UK Aid.

This eCookbook is based on the findings of *Cooking with Electricity in Uganda: Barriers and Opportunities*. For the full methodology, findings and detailed references, please consult this report, available on the MECS website.

www.MECS.org.uk | www.MECSplus.org

Contact for EPC sales/purchases:
Tel: +256 757 102972 / +256 786 046418
Email: resilientenergyafrica@gmail.com

This material has been funded by UK aid from the UK government; however, the views expressed do not necessarily reflect the UK government's official policies.

Summary of the Uganda eCookBook

The Uganda eCookBook looks at the role **energy-efficient** cooking devices can play in Uganda's energy future. It is part of a series of MECS eCookBooks that seek to highlight the compatibility of energy-efficient electric appliances with local cuisine.

This eCookbook shows how **electric pressure cookers can be the most time, cost and energy-efficient way of preparing traditional Ugandan dishes**, such as matooke and beans. It aims to share information and knowledge about cooking with energy efficient electric appliances in Uganda, gathered during **kitchen laboratory studies** and other research conducted by CREEC in collaboration with the MECS programme in Uganda, and offer an alternative narrative about cooking with electricity.

In 2024 Ugandans still largely rely on charcoal, wood or other forms of biomass for their household cooking needs. Less than 1% currently use electricity for cooking. However, recent findings from controlled cooking tests (CCTs) carried out in Kampala, help to shed light on how **energy-efficient electric appliances can make a significant contribution to domestic cooking from a taste, cost, time and energy-efficiency perspective**.

This eCookbook shows you how!

over

80%

of typical weekly Ugandan menu can be cooked with an EPC

This eCookBook highlights the wide compatibility of Ugandan dishes that can be cooked using an EPC, especially for heavy foods, retaining the fantastic flavours of Ugandan cuisine.

It explores the opportunities for using electricity for cooking in Uganda!

Urban households

Electricity Access= 7 in 10 people

Using electricity as primary cooking fuel= 0 in 10 people

LUCY ESTHER JIMMY

It talks to cooks that have integrated eCooking into their daily lives and shows how to cook traditional and authentic Ugandan dishes using Electric Pressure Cookers!

up to

50%

time & cost savings using an EPC instead of charcoal

It showcases the significant energy, time and cost savings that are possible using energy-efficient cooking devices for typical Ugandan dishes.

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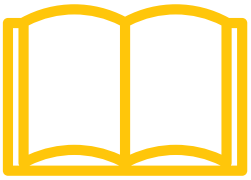

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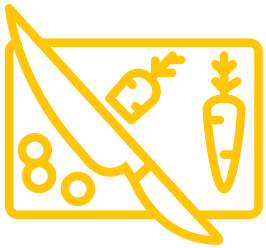


CLEAN COOKING & ELECTRICITY ACCESS IN UGANDA

05

Cooking in Uganda

Food, Culture and Diet

Regional Cooking Culture

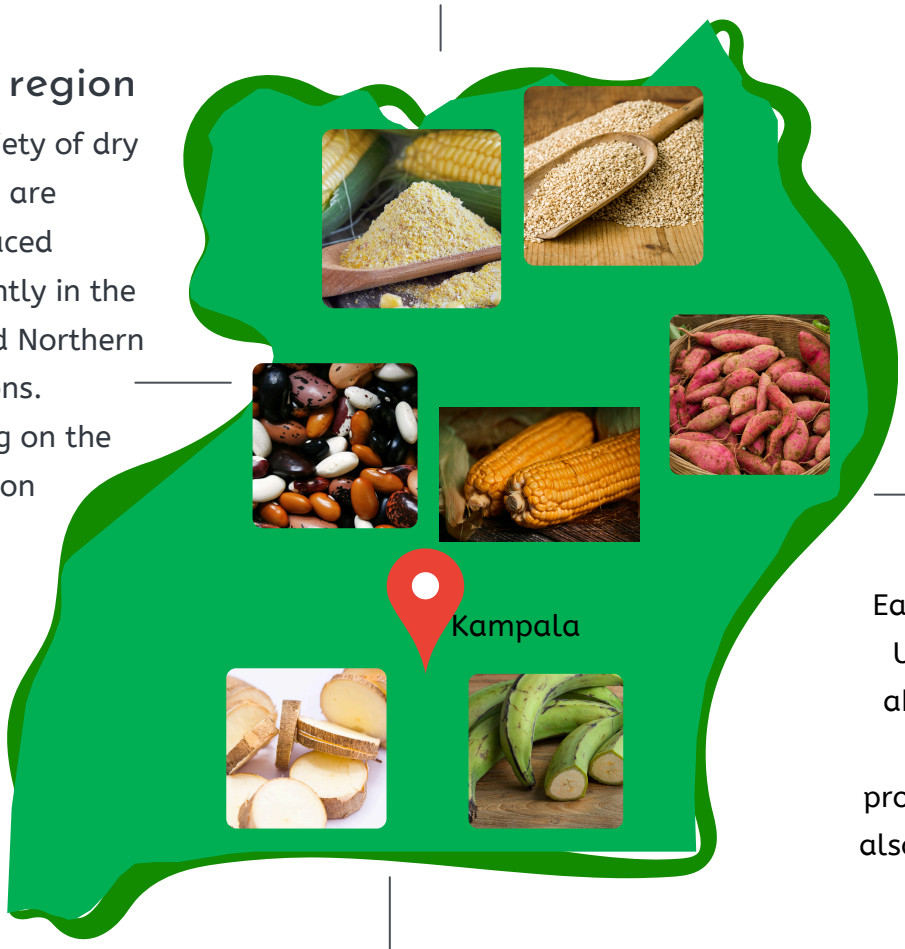
Cooking practices and types of foods regularly consumed vary from one region to another depending on factors like climate and land cover as well as by ecological zone and ethnic group.

Northern region

In the Northern parts of the country, the primary food crops include groundnut, cassava millet, sorghum, and simsim (sesame).

Western region

A wide variety of dry beans are produced predominantly in the Western and Northern regions. Depending on the season



Maize is grown country-wide, but mostly in eastern and western Uganda

Eastern region

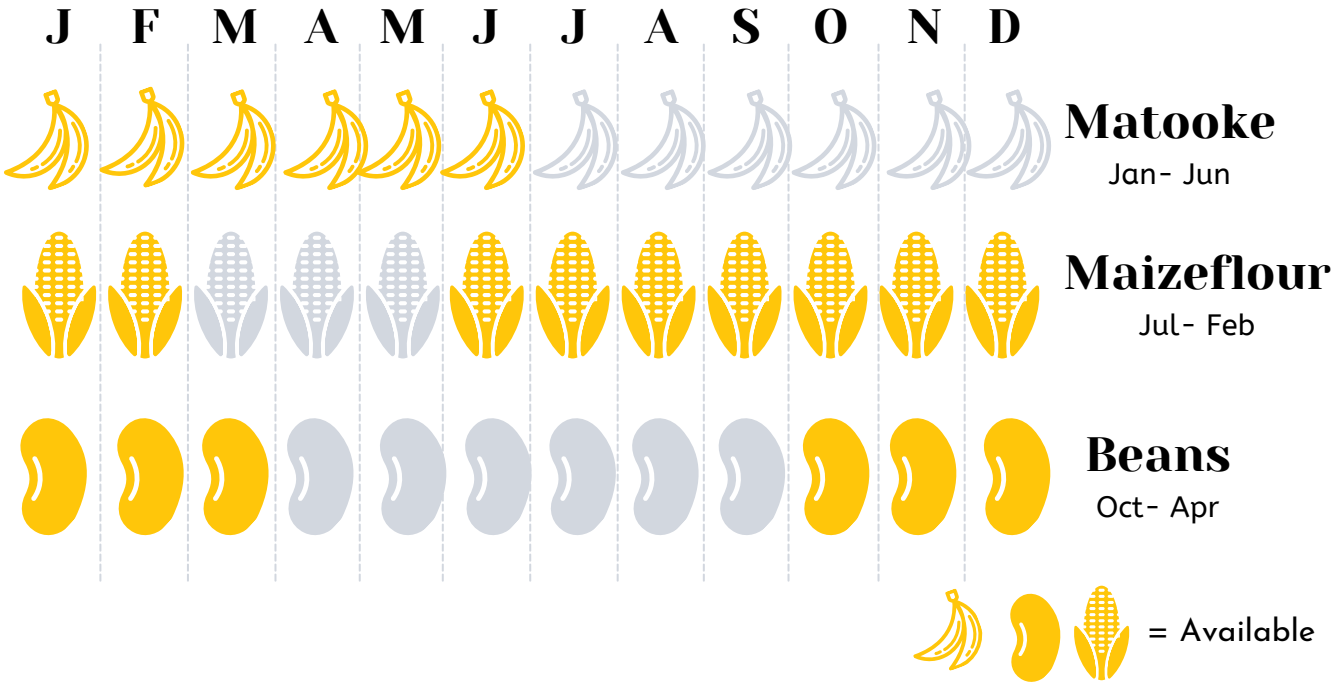
Eastern and Northern Uganda contribute about two-thirds of total cassava production. Matooke is also popular in Eastern Uganda.

Central region

Households in Central and Western Uganda heavily rely on matooke and sweet potatoes as their staple food.

Seasons

Seasonality Of Popular Foods



Dietary Patterns

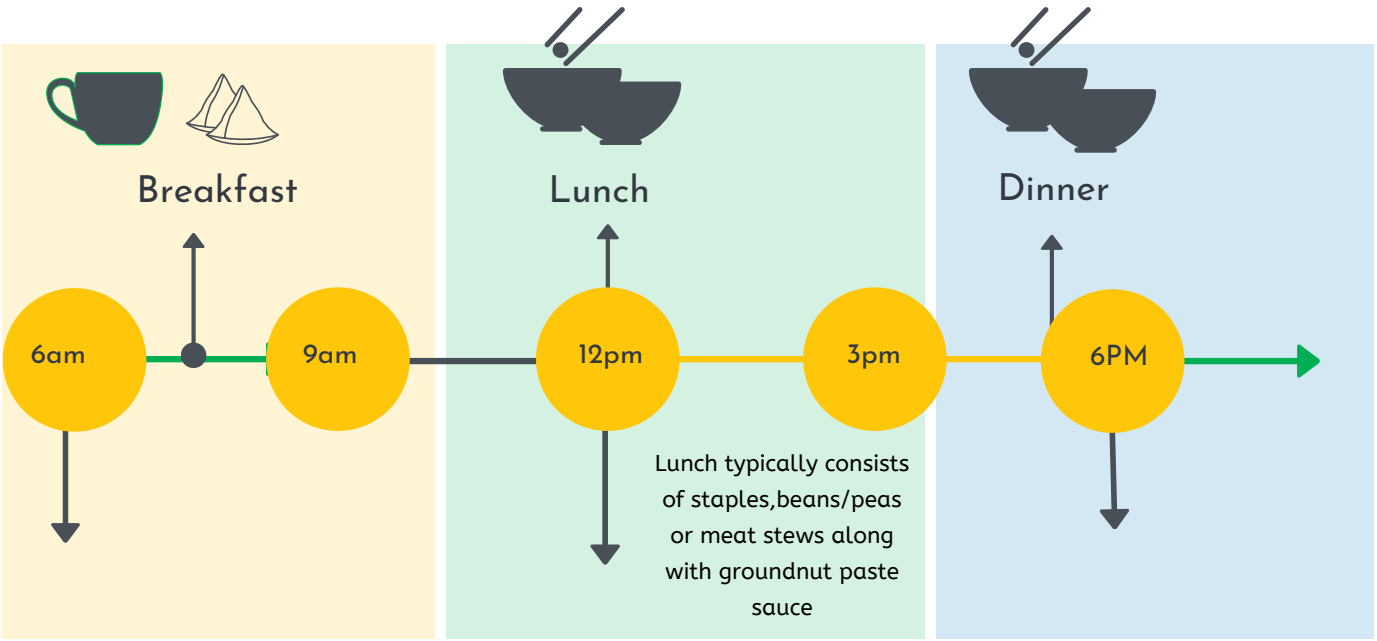
The Ugandan diet features predominantly plant-based foods, and most energy in people's daily meals comes from roots or tubers such as cassava, sweet potatoes, cereals such as maize and millet, and plantains. As much of the food production in Uganda takes place at the smallholder and subsistence level, under rain-fed conditions, food markets in urban areas are affected by food availability and fluctuating prices.

Matooke is central to the diet of many households especially in the Central and Western parts of Uganda. It is abundant from mid-January until the end of June, after which the availability goes down and the price increases. Seasonal dietary change revolves around the availability and cost of matooke especially in Kampala. Matooke, when expensive, is first replaced with rice, which is not a traditional staple food in Uganda although is increasingly popular in urban areas, and ultimately with posho (made from maize flour). Maize flour, which is sourced from all over Uganda, is available in abundance from July until February.

Fresh beans are available in abundance from October to April, while there is relatively regular supply of cassava and no known significant price hikes or scarcity.

Typical Daily Cooking Timeline

CREEC conducted an online survey to understand what households in Kampala cook, when and for how long. On average, households in Kampala cook two meals per day and spend four hours preparing it. Some people, especially workers who may be out for most of the day, also eat elaborate and filling meals such as Katogo for breakfast.



Saucepan

Tea/Spiced water	20mins
Milk	15mins
Katogo	40-45mins

Frying Pan

Fried eggs	10mins
Chapati	10mins

Bread*

Saucepan + frying pan

Cassava	20-40mins

*Usually purchased

Saucepan

Pumpkin	30-45mins
Meat Stew	40mins-1hr
Karo	20mins
Vegetables	10-15mins
Beans	1-2hrs
Cow Peas	1hr
Rice	20mins
Fish	15-30mins
Matooke	1-2hrs

Saucepan + frying pan

Cassava	20-40mins
Potatoes	40mins

Saucepan

Tea/Spiced water	20mins
Meat Stew	40mins-1hr
Rice	20mins
Posho/Ugali	20mins
Vegetables	10-15mins
Katogo	40-45mins
Fish stew	15-30mins

Oven

Roasted Meat	1-2hrs

Frying Pan

Fried egg w/Soup	15-20mins
Chapati	10mins

Saucepan + frying pan

Cassava	20-40mins
Potatoes	40mins

Foods typically cooked at home in Uganda

Boil & stir staples

Posho

Boiled staples/veg

Matooke (Stewed)

Katogo

Rice

Karo

Pumpkin

Pilau

Heavy foods

Matooke (Steamed)

Beans Stew

Meat Stew

Yams

Cow Peas

Groundnut Paste

Hot drinks

Tea

Hot milk

Lighter stews

Fish stew

Shallow Fried Dishes

Fried eggs

Fried fish

Flatbreads

Chapati

Pancakes

Deep-fried dishes

Cassava

Mandazi

Samosa

Roasted dishes

Muchomo

Roasted Meat

The Kitchen Lab

CREEC's Kitchen Laboratory

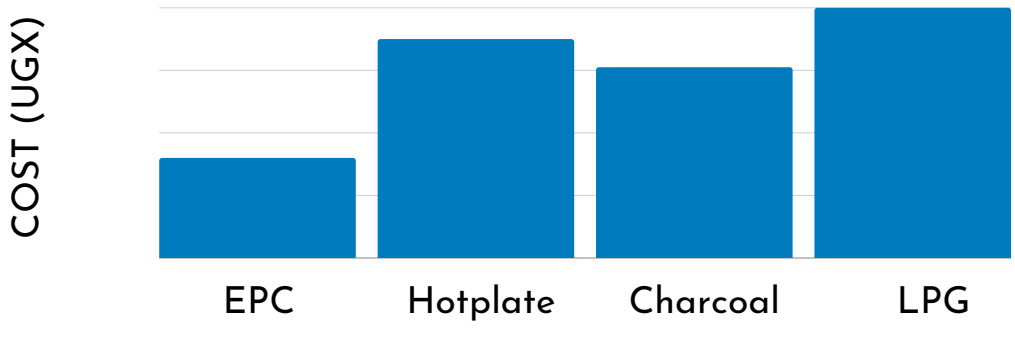
This eCookBook presents findings from a set of Controlled Cooking Tests (CCTs) carried out by CREEC in Kampala. CCTs involve selecting a dish that is representative of local cooking practices and using a standardised recipe to prepare the same dish in the same way using different cooking fuels and devices.

CCTs enable us to compare the performance of different cooking devices in terms of cooking time and fuel/energy consumption (and therefore cost). We also compared the experience of the cook and the quality of the finished dish by collecting feedback from the cooks, making observations on how they operated the stoves and tasting the food they cooked.

The CCTs were carried out by everyday cooks, who cooked each dish as they would normally do so at home. Data was captured by a research team with experience in stove testing. The full methodology and findings from the CCTs can be found at www.MECS.org.uk in the *Cooking with Electricity in Uganda: Barriers and Opportunities* report.

Appliance/Fuel Comparisons

For each dish we compared the energy, time and cost readings using four types of cooking devices: an electric pressure cooker, a hot plate, LPG and a charcoal stove.



Dishes Tested

The testing focused on a range of staple Ugandan foods that are regularly prepared at home. Three of the most time- and energy-intensive dishes are presented in this eCookBook, as this is where the EPC can offer the biggest savings.

Beef Stew

Stewing is a popular cooking method in Uganda, where all ingredients are cooked together at the same time in one pot. The ingredients are placed in at different times as the sauce cooks and finally thickens. Beef is one of the tougher meats cooked by Ugandan households, so usually requires boiling for at least an hour to soften

Bean Stew

A wide variety of dry beans are produced predominantly in the Western and Northern regions. Depending on the season, beans flow between Uganda and neighbouring countries. Beans are cooked and served as a compliment ("sauce") to other staples

Matooke

With more than 30 ethnic groups, Uganda does not have a single national dish that is universally eaten by all. However, matooke, a green banana is popular among many households, especially in the central and southern part of the country. It is either boiled or steamed, then usually mashed and cooked in or served with a sauce of peanuts, beans, fresh fish or meat.

Devices Compared

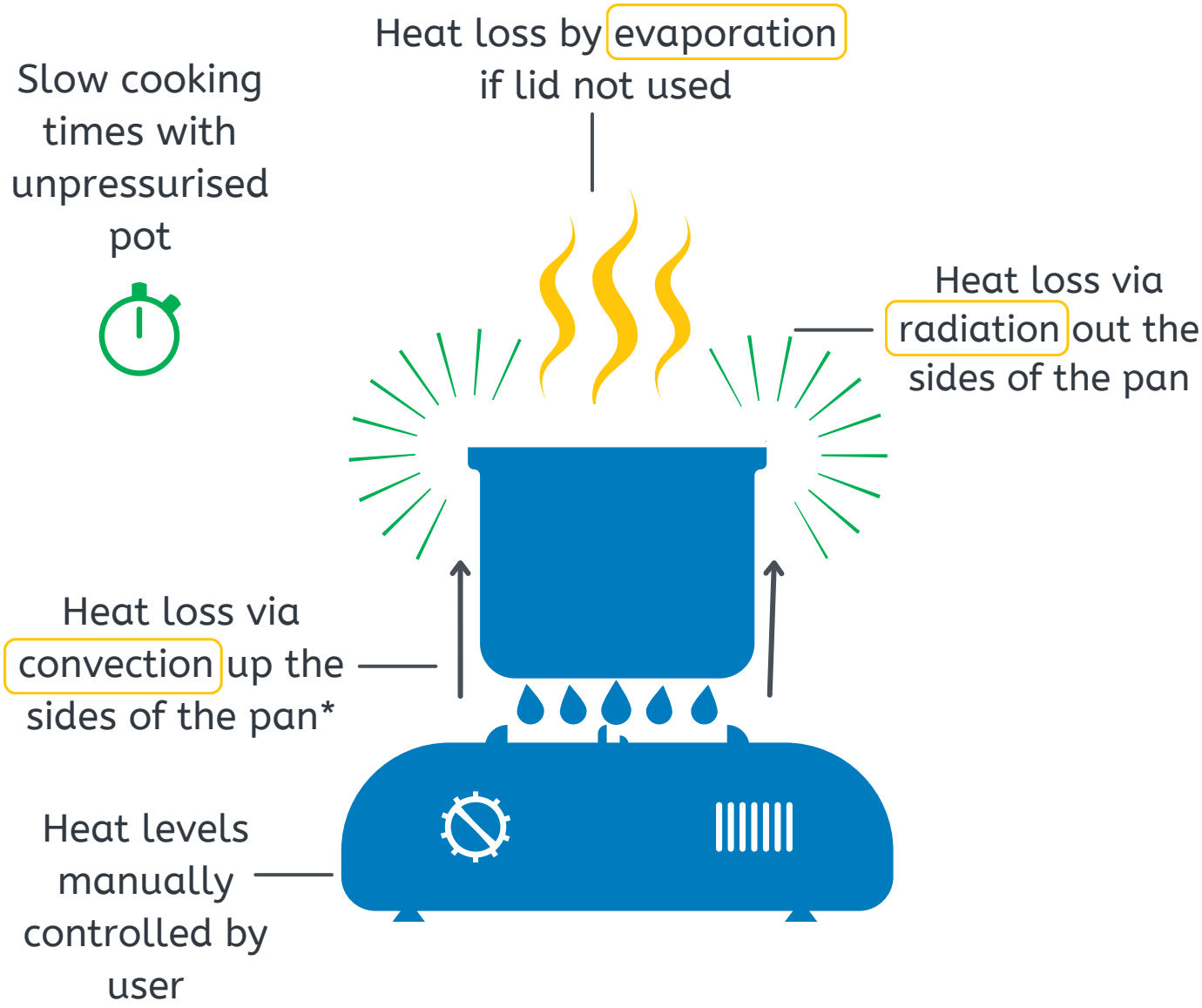
Cooking device & utensil	energy measurement equipment	energy unit cost*
EPC  Tower T16004 1000W EPC with 5L non-stick pot	 Plug-in Meter	948** UGX/kWh
Hotplate  Logik LGK-002 2600W hotplate with 7l flat bottomed aluminium pot	 Plug-in Meter	948** UGX/kWh
LPG  Single-burner stove with 6 kg cylinder, regulator & hose with a 7l flat bottomed aluminum pot	 Weighing scale	9,500 UGX/kg
Charcoal  Locally manufactured ceramic stove cooking power with 7l flat bottomed aluminum pot	 Weighing scale	1,500*** UGX/kg

*Prices were updated in September 2024 using the current electricity tariff (ERA) and research on fuel prices across the country to provide representative averages.
**Electricity unit includes 18% VAT on top of the base 803 UGX/kWh for units between 16 and 80 per month.
***In Kampala in September 2024 a bag of charcoal can actually cost as much as UGX 150,000, or UGX 3,000/kg, making charcoal cooking in the capital city very expensive.

The Inefficiencies of Conventional Cooking

Conventional cooking techniques (heating an uninsulated pan from below) waste energy through a variety of mechanisms, creating opportunities for modern appliances to reduce energy consumption.

Lower energy consumption = cheaper cooking.



*For electric hotplates, the efficiency of heat transfer from the hotplate to the pot is highly dependent upon the profile of the bottom of the pot, i.e. perfectly flat pots are most efficient

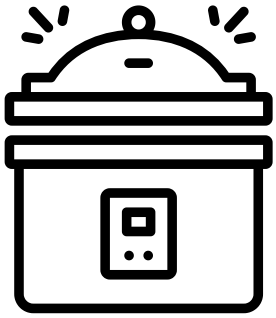
The Electric Pressure Cooker

How does it save energy?

Electric Pressure Cookers combine insulation, pressurisation and automation to deliver an extremely energy-efficient cooking service.

Insulation

reduces heat lost by convection up the sides of the pan & reduces radiation from the sides of the pan



Pressurised lid

reduces cooking time & reduces evaporation

Automation

turns off heating element as soon as operating pressure is reached

Why use it?

It is faster - pressure cookers raise the temperature in the pot above boiling point, which can cut boiling times in half.

It is cheaper - saving energy means saving money.

It is more convenient - the automated cooking experience allows you to put your feet up whilst the EPC takes care of the cooking for you.

EPC Safety Features

EPCs have multiple safety mechanisms, so even if one fails, there are several more there to protect you. This means that they are actually one of the safest cooking appliances on the market today. The most important safety mechanisms are:

pressure release valve & locking pin

The pressure release valve avoids pressure building above safe levels. Pressure inside the pot pushes up the locking pin, which means the EPC cannot be opened when pressurised.

temperature sensor

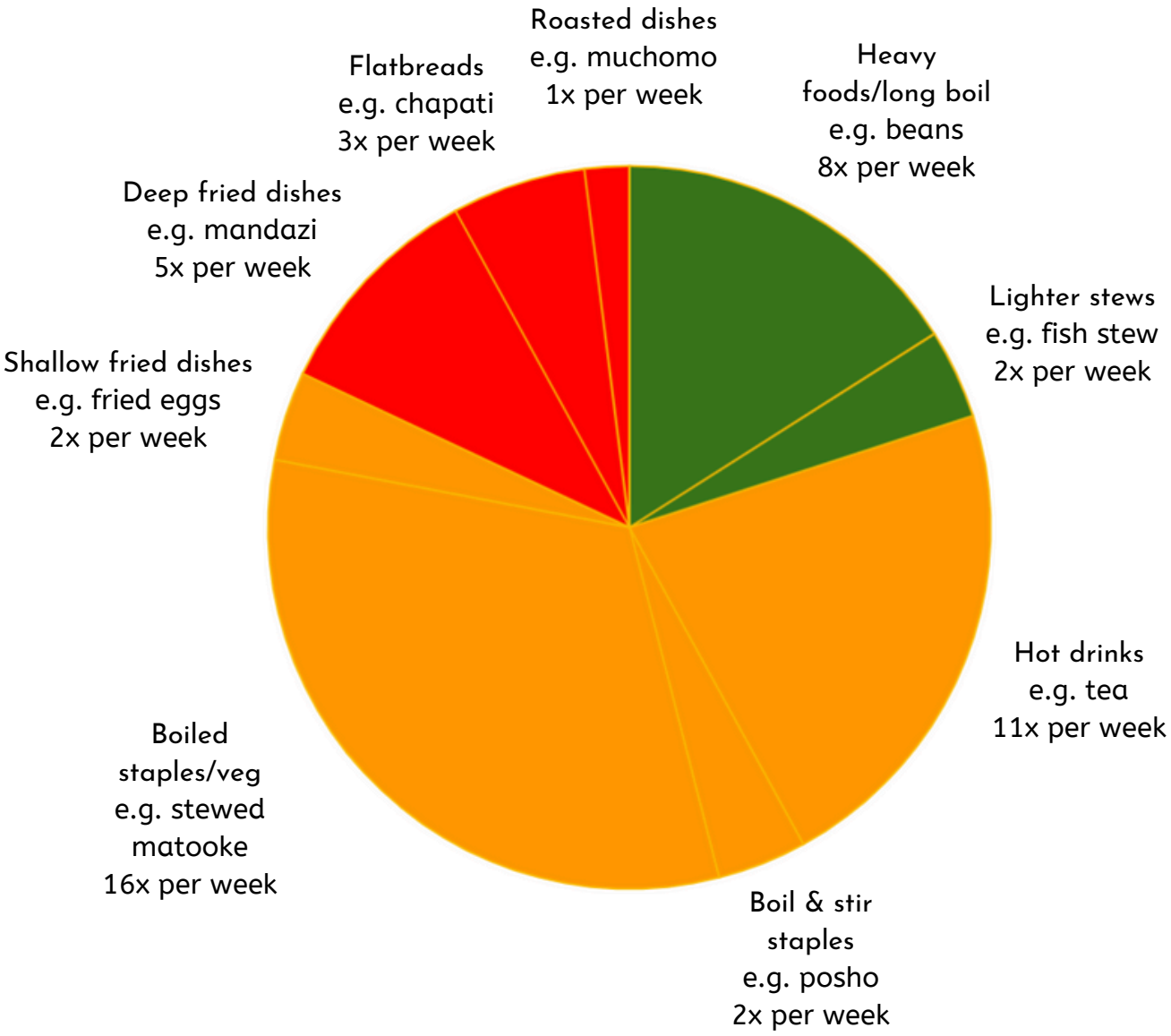
The temperature sensor at the bottom of the device avoids overheating. It automatically shuts off the power when the pot reaches its normal cooking temperature.

insulation & sealing

The lid and walls of EPC's are well insulated and the rubber sealing ring makes sure steam cannot escape. This prevents you from burning yourself if you touch the pot whilst its cooking.

How much of the Ugandan menu can be cooked with an EPC?

We mapped out a typical weekly menu for a middle-class urban Ugandan household and categorised the foods to work out which were most important:



= EPC is best choice for these dishes

= EPC likely to be used sometimes for dishes in these categories

= difficult to cook with an EPC

+ = **82%**

of dishes on this menu can be cooked using an EPC

The EPC is likely to be the first choice for

= **20%**

of this menu

EPC Top Tips

boil, fry & pressure cook!!

The EPC can do a lot more than just pressure cooking. If you want to boil or fry, simply leave the lid off and it will be just like cooking with a normal sauce pan.

reduce time & water

Reduce the cooking time when pressure cooking otherwise you'll end up with mush! Use less water or you'll end up with soup! When the EPC is pressurised, no water escapes, unlike a conventional pot, where steam is evaporating throughout the cooking process.

use non-abrasive utensils

The cooking utensils must either be plastic or wooden to protect the non-stick coating; and cleaning should be done with non-abrasive materials only

Stories from Kitchen

JIMMY

ESTHER

LUCY

Three cooks participated in CREEC's cooking diary study and appear as guest chefs in the Uganda eCookBook.

JIMMY

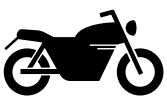
BACHELOR

I was born and raised in the Western part of the country not connected to the grid. Cooking is mainly done using firewood. I am so passionate about eCooking as cooking with traditional appliances have posed a health hazard to myself. The convenience and flexibility of using the EPC made me abandon the daily routine of going to restaurants as I can prepare food myself in the shortest time possible. When I start my own family, we will surely continue to use these time and energy saving appliances.

Monthly Cooking Fuel Expenditure*

UGX 85,000

+



UGX 80,000

delivery
UGX 5,000

UGX 30,000

UGX 30,000
Pays using mobile money

How did you learn to cook?

I learned cooking at an early age of my childhood. We were 3 boys and 1 girl. In a bid to not overload the girl child, we were trained to do most of the household chores, including cooking. I was always tasked to cook different dishes, with my mother's guidance.

What value does eCooking add to your daily cooking routine?

Cooking is simplified as I just set the time then concentrate on other activities since there is no need for supervision and fear of the food getting burned. Since the introduction of eCooking, my charcoal stove was put aside and I also purchased a small gas cylinder for standby in the cases of blackouts.

*Expenditure recorded in 2020, when Jimmy adopted eCooking

ESTHER

Mother of two

I am the one who makes very delicious meals using the EPC. I stay in Seeta with my two children. My inspiration comes from the fact that I cook to have the ones I serve wanting more. I want to cook such that even my husband himself should easily leave restaurant food and come home for my food.

How did you learn to cook?

Since I was young I have learnt and been taught cooking. Myself I have also picked a few tips from observing how different people cook, I find out from those I see cooking. Then I go and try out something different from what I have observed.

How has your experience of cooking with the EPC been?

The EPC itself has also been instrumental in my cooking. For beans, the EPC saves me a lot of time. With the charcoal stove, I could use up to three hours, where I have to keep monitoring and adding water. With the EPC, I take less than half the time– cooking the beans (boiling) takes about 45 minutes, while frying it takes about 30 minutes. A big advantage of the EPC is, once set to its time limit, it stops automatically which allows you to attend to other responsibilities, and does not require checking for water. You always find when the food is ready. Comparing the EPC to the charcoal stove, I would suggest that we do away with the traditional charcoal stove.

LUCY

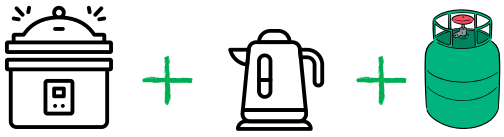
MOTHER

I am a wife and a mother to a little princess, an accountant by profession and marketeer, employed but also a vigilant businesswoman and a go-getter.

Monthly Fuel Expenditure*

UGX 130,000

UGX 65,000



How did you learn to cook?

I had to cook at home growing up as a little girl and we cooked both on the three stone fire and later started using the charcoal stove.

What value does eCooking add to your daily cooking routine?

I participated in one of the community studies at CREEC and with the help of the team I learned and enjoyed cooking with the EPC. Even though the study ended, I continue to use it. I love adventuring different dishes and ways of using it. Its versatility and speed help me balance my work and family life.

*Expenditure recorded in 2020, when Lucy adopted eCooking

Myth Buster

Lucy

Lucy has many concerns about cooking with electricity and has a conversation with Jimmy to help her get an idea of the truth behind cooking with electricity.

VS.

Jimmy

So Jimmy will help to address some of her concerns

Electricity is expensive

I believe cooking with electricity is expensive and is for high income earners who live uptown.

Energy-efficient appliances

Even if electricity is expensive, cooking with it can still be cheap as you only use a very small amount. Modern energy-efficient appliances such as the EPC use a fraction of the electricity of a hotplate to cook the same meal.

Electricity can shock someone while cooking

I'm worried that cooking with electricity isn't as safe or set up safely.

Check your wiring

Lighting a fire is much more dangerous than plugging in an appliance. However, do make sure the wiring in your house is strong enough for cooking - if in doubt, get it checked by an electrician.

Food cooked with electricity has no taste

Electricity is not compatible with Ugandan cuisine such as Matooke or the cooking processes we use regularly.

Try out our delicious EPC recipes!

The recipes in this eCookBook show how you can make many of your favourite foods with an EPC. All our recipes have been taste tested and are just as delicious as you would expect.

The Recipes

Meat Stew

Jimmy's EPC Recipe

Energy Used: 0.56 kWh Cook Time: 45 mins Servings: 8 portions

Ingredients :

- 1 kg meat/beef
- 1 big onion
- 2 cloves garlic
- 2 teaspoon cooking oil
- 1l stock (or 2 stock cubes / 1 teaspoon Royco and 1l water)
- Bunch coat-meal/coriander
- 1 green pepper
- 1 carrot (small)
- 1 teaspoon salt

Procedure :

STEP 1- Boil the meat

- Tenderize and cut meat into bitesize pieces.
- Place the meat in the EPC pot, cover and set to pressure cook for 30 minutes.
- Depressurise the EPC by opening the steam valve.

STEP 2- Fry the sauce

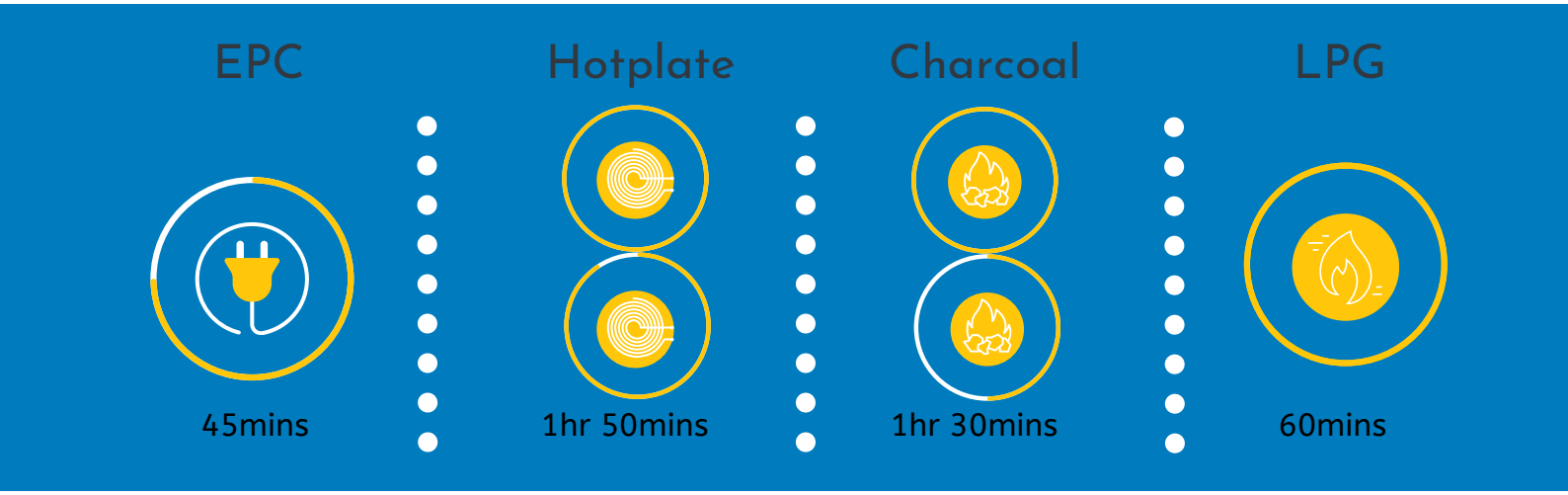
- Add oil and fry the boiled meat until its brown using the sautee setting.
- Chop the remaining ingredients and add into the pot and continue frying until it gives off a good flavour.

STEP 3- Simmer all together

- Add the royco and simmer the mixture.
- Pour in the water bring it to a boil.

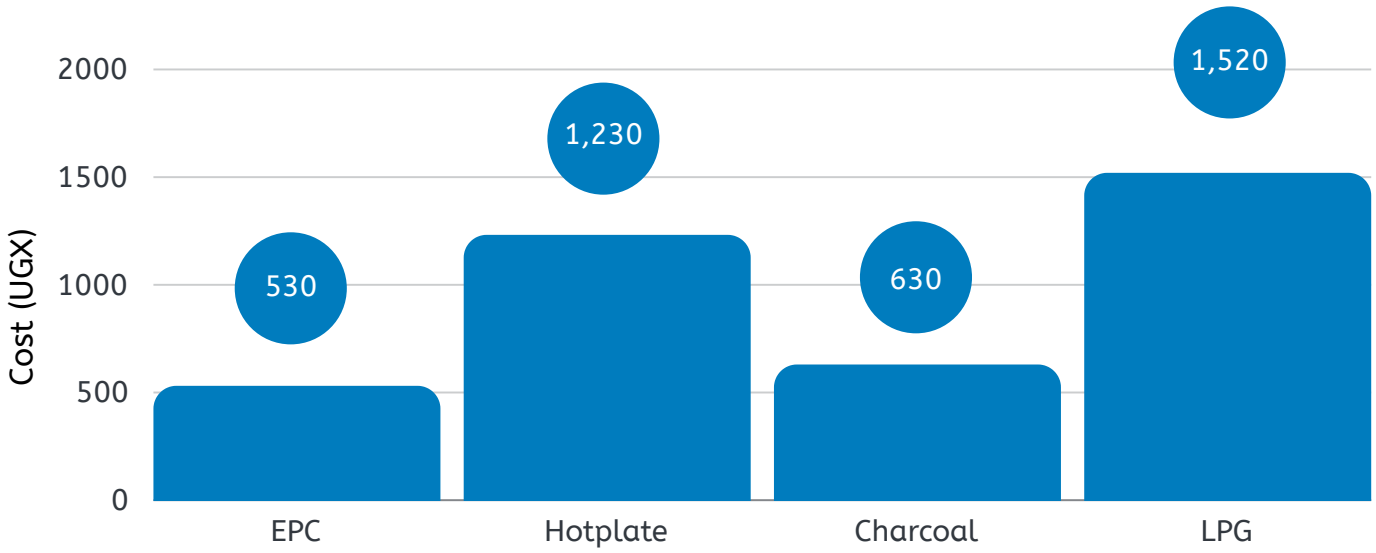
My inspiration comes from the ability to multi task while cooking since I get to have time to watch news to understand what is going on in the world. Also, the aspect of having to cook meat as in just boiling it at once with the ingredients and having to contain all the nutrients and the aroma.

TIME COMPARISON



The EPC is the fastest way to cook meat stew. It needs just half the time that it normally takes to cook meat stew using charcoal

COST COMPARISON



Cooking meat stew with the EPC costs slightly more than with charcoal. However, it is half the cost of the hotplate and one third the cost of LPG.

Esther's EPC Recipe

Bean Stew

Energy Used: 0.50 kWh Cook Time: 70 mins Servings: 8 portions

Ingredients :

- 1kg dry beans soaked overnight
- 2 onions
- 6 tomatoes
- 4 cloves garlic
- 1 green pepper
- 1 bunch coat meal/coriander
- 2 cubes Royco
- Paprika – 1/4tsp
- Salt – 1tsp
- Curry powder ("Tropical Heat") – 1tsp
- Curry powder ("Simba mbili") – 1tsp
- Cooking oil - 1 tbsp
- Water - 4 cups

Procedure :

STEP 1 - Boil the beans

- Pour the beans into the EPC pot and add 2½ cups of water.
- Cover the EPC, set pressure valve in place and set the cooking time to 45 minutes.
- Release the pressure and uncover the EPC.
- Empty the beans and rinse the pot in preparation for frying.

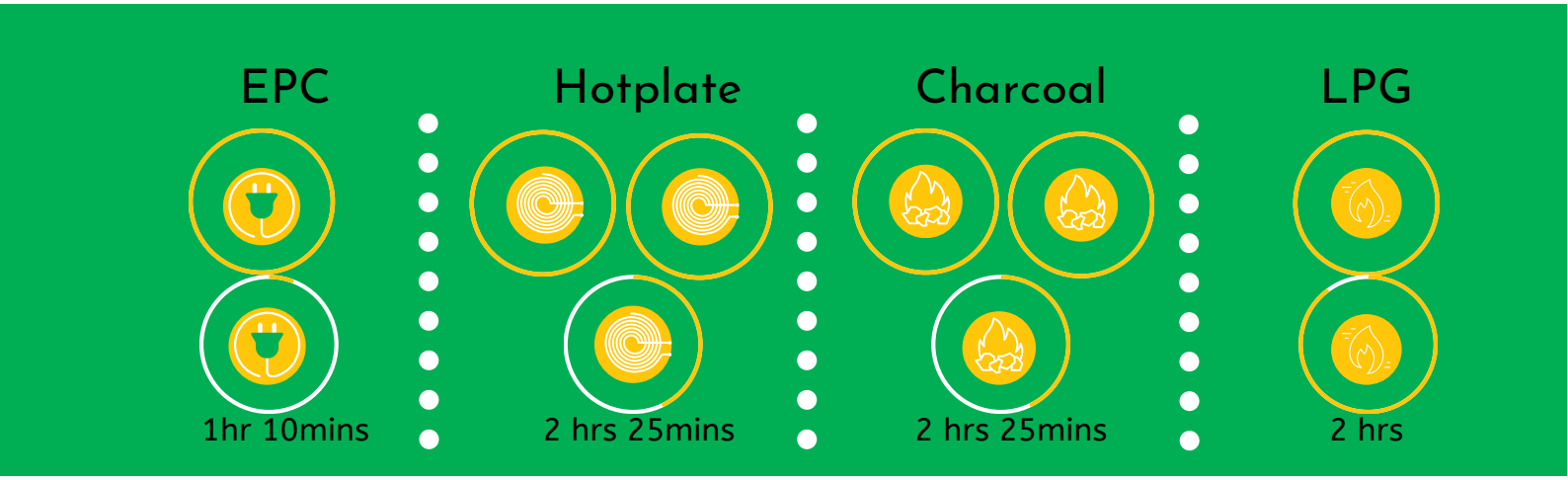
STEP 2 - Fry the sauce

- Prepare ingredients for the gravy
  - Peel & chop tomatoes, onions, garlic & peppers. Chop coat meal/coriander into small pieces
- Pour the cooking oil into the pot & set the EPC to sautee mode.
- After the oil heats up, pour in the onions & fry until they start to brown.
- Add the spices & other ingredients then mix to make gravy.
- Mix Royco with 1½ cups of water & pour into the pot with the cooked beans.
- Mix everything together & leave to simmer for 10 minutes.

> A big advantage is, once set to its time limit, it stops automatically, [which] allows you to attend to other responsibilities, and does not require checking for water. You always find the food ready.

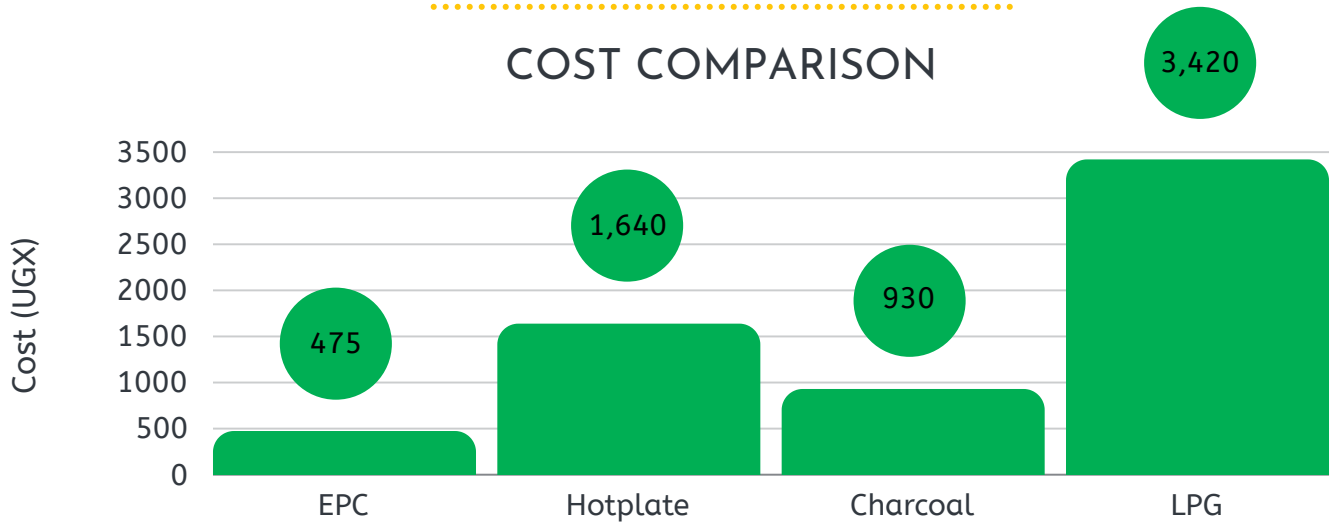
> The EPC has been very instrumental in my cooking... [it] saves me a lot of time. With the charcoal stove, I could use up to three hours, where I have to keep monitoring and keep adding water. With the EPC, I take less than an hour.

TIME COMPARISON



The EPC is the quickest way to cook beans. It is twice as fast as charcoal or the electric hotplate and 40% quicker than LPG.

COST COMPARISON



The EPC is also the cheapest way to cook beans. It is half the cost of charcoal, one quarter that of the hotplate and less than one seventh that of LPG!

Lucy's EPC Recipe

Matooke
(steamed)

Energy Used: 0.34 kWh Cook Time: 55 mins Servings: 5 portions

Ingredients :

- Matooke (banana plantain); 1.5 Kg (14 fingers)
- Banana leaves (for wrapping)
- Water for steaming (approx 2 cups)

Procedure :

STEP 1- Prepare the matooke

- Pour approx 1 cup water in the pan, making sure it doesn't come above the bottom of the steaming rack).
- Peel the matooke
- Wash the matooke after peeling
- Wash the banana leaves
- Wrap the matooke in banana leaves

STEP 2 - Steam

- Place the steamer stand in the EPC and pour water.
- Place the wrapped matooke in the EPC, cover the EPC and set timer to pressure cook for 30 minutes
- After the 30 minutes, release the pressure and uncover.

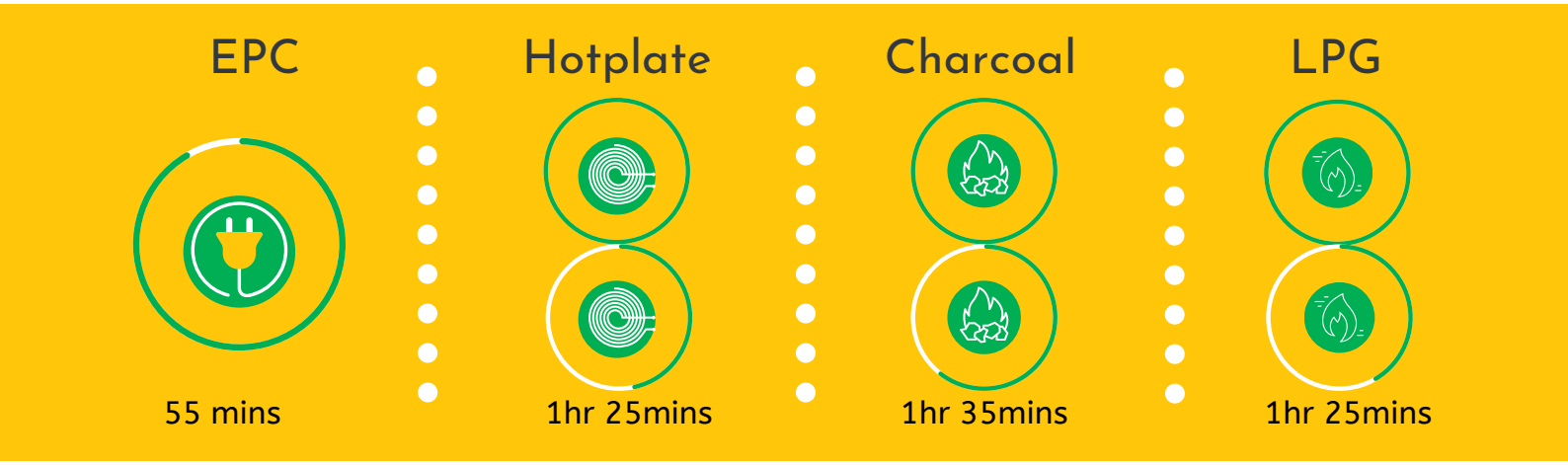
STEP 3 - Mash & steam again

- Remove the matooke and press / mash
- After pressing, add a little water (approx 1 cup again) into the EPC pot/pan.
- Steam for 10 minutes with the lid closed
- Serve and enjoy your meal

Lucy's top tips for matooke in the EPC

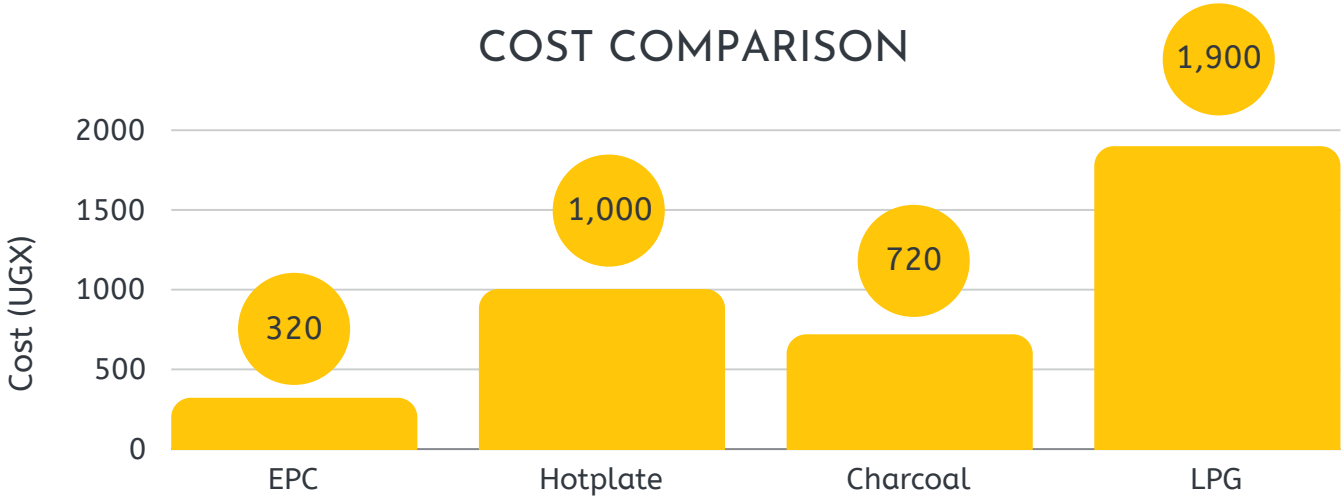
- Ensure the wrapped matooke fits nicely in the EPC pot & allow a little space to close the cover.
- Amount of water used should be below the steaming stand.
- For a better output, put the matooke back into the EPC after pressing to allow sufficient simmering time.
- You can also just boil the matooke in the EPC and mash thereafter, or cook Katogo.

TIME COMPARISON



The EPC is the fastest way to cook matooke. It is roughly 40% faster than LPG, charcoal or the hotplate.

COST COMPARISON



The EPC is the also the cheapest way to cook matooke. The cost of cooking with the EPC is less than half that of charcoal, while cooking with the hotplate is three times more expensive than using the EPC, and LPG is six times more expensive.

What else can you cook in an EPC?

It's also possible to prepare many other types of popular Ugandan dishes in an EPC, although the energy and time savings are more limited:

- Boiled staples/veg - e.g. rice, katogo, matooke (stewed)
- Boil & stir staples - e.g. posho
- Shallow fried dishes - e.g. fried fish, gonja, fried egg, sukuma wiki
- Hot drinks - e.g. tea, hot milk

The following section shows how you can cook sukuma wiki and posho in an EPC, as well as another less frequently cooked, but perhaps even more exciting dish: sponge cake.

Posho

Cook Time: 25 mins

Servings: 4 portions

Ingredients :

- 5 cups of water
- 3 cups of maize meal

Typical costs:

0.2kWh

190 UGX

Procedure :

STEP 1- Preheat water

- Add 3-4 cups of water in the EPC and bring to a boil
  - TIP: if you want to multitask, close the valve and set the timer to at least 2 minutes - when the timer goes off, open the steam valve and release the pressure.

STEP 2- Make a paste & pressure cook

- Make a paste of 2 cups of maize meal with 1 cup of water and add the paste to the boiling water in the EPC.
- Stir continuously and then close the lid and set the EPC to cook for 5 minutes at pressure.
- Open the steam valve to depressurise.

STEP 3-Simmer

- Take off the lid and put the EPC on sautee mode so that it keeps heating.
- Add more maize meal slowly and stir vigorously until thick enough.
- Cover and simmer for around 10 minutes and then stir again.
- Power off the EPC and serve.

Sponge Cake

Cook Time: 90 mins

Servings: 8 portions

Ingredients :

- Milk (1/2 ltr)
- Sugar (250g)
- Baking flour (500g)
- Icing sugar (250g)
- Butter (250g)
- Flavoring, e.g. vanilla essence (1 tea spoon)
- Eggs (6)

Typical costs:

0.56kWh

531 UGX

Procedure :

STEP 1 - Mix the batter

- Blend sugar and butter until mixture turns cream.
- Add eggs and continue mixing.
- Mix sieved baking flour with baking powder and add to the butter mixture.
- Add flavoring and stir further to form a droopy soft texture.

STEP 2 - Bake

- Grease a well dried EPC pot with cooking oil.
- Place the pot into the EPC, turn it on to pre-heat the pot and pour the mixture into the hot pot.
- Close the EPC well and bake by closing the pressure valve and setting the timer for 90 minutes.

STEP 3 - Let the cake cool

- Let the pressure release naturally after the timer goes off, then open the EPC and remove the pot with the cake inside from the EPC.
- Wait for the pot to cool before you can remove cake from it.
- Enjoy the cake if you do not want it iced, or wait for the cake to cool very well before you can ice it.

Sukuma wiki

Cook Time: 14 mins

Servings: 4 portions

Ingredients :

- 1 bunch kale or collard greens
- 2 tomatoes
- 2 small onions
- Spices (1/2 tsp cayenne pepper, 1 tbsp bouillon, 1/2 tsp black pepper)
- 2 tbsp oil (to fry)

Typical cost:
0.29 kWh
275 UGX

Procedure :

STEP 1- Wash and cut

- Wash and cut the vegetables and pour some hot water on it to make it soft

STEP 2 - Fry

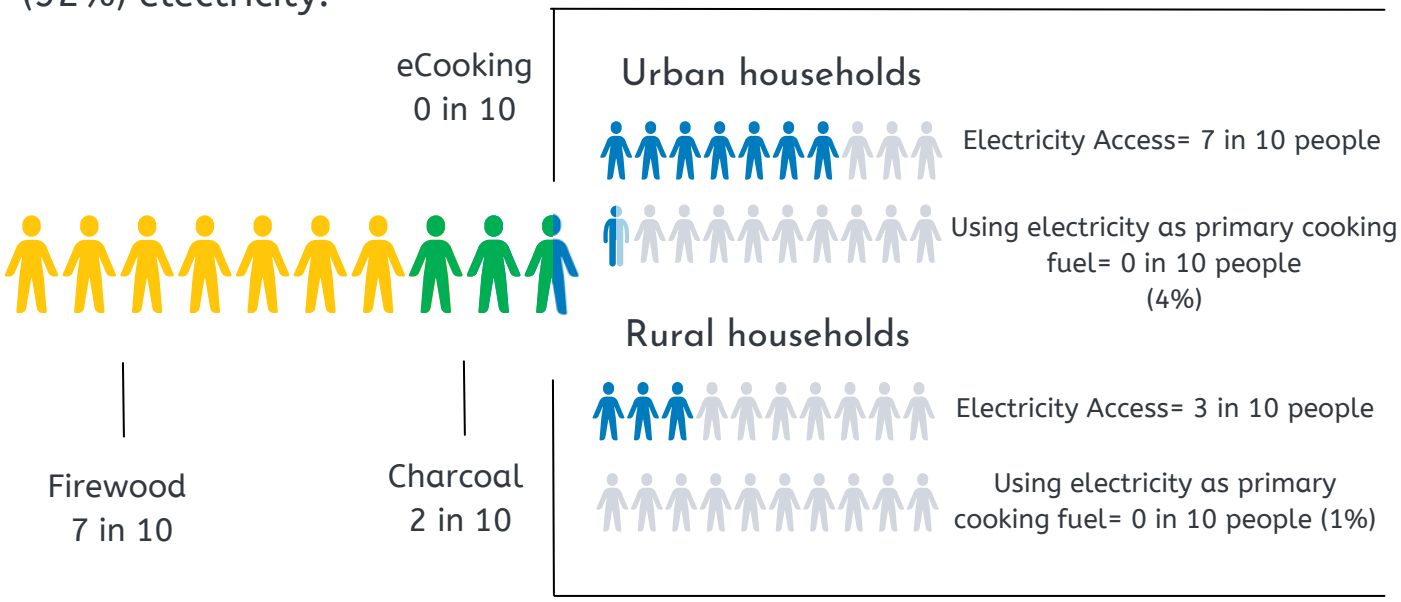
- Set the EPC on the preset sautee function and add cooking oil in the pot.
- When its heated, add the tomatoes, onions, spices and some salt. Fry whilst stirring for a few minutes to make gravy.
- Add the chopped greens and stir for about 7-10 minutes.

Clean Cooking & Electricity Access in Uganda

Electricity Access & Clean Cooking in Uganda

Despite historically low electrification rates, cooking with electricity is now becoming a viable and scalable option for Uganda. 24% of households now have access to grid electricity and 27% have access to off-grid systems. What is more, the Government of Uganda have recently set a target of connecting 300,000 new customers to the grid each year over the next 5 years.

The total installed generation capacity doubled from 600 MW to 1,238 MW between 2010 and 2020. This investment has helped to mitigate against the country's dependency on hydropower, which in 2005 led to significant, drought-induced load shedding and power outages. Uganda today produces an electricity surplus of almost double current demand and is proactively stimulating demand for its predominantly renewable (92%) electricity.



Urban Uganda presents a particularly attractive market for eCooking, as electricity connectivity rates are higher, supply chains are shorter and consumers are more familiar with modern appliances. Importantly, urban people are more likely to be paying for their fuel than their rural counterparts, which creates a more attractive business proposition, as this existing expenditure can be more easily converted into electricity units and repayments on a financed appliance.

Cooking with polluting fuels in urban Uganda

29% of urban Ugandans primarily use **FIREWOOD** for cooking.

Uganda currently loses about 2% of its forest annually, and firewood use is the second driver of this, after land-clearing and agricultural expansion

Safety	✗	Difficult to put out after usage
Cost	✗	Can be collected, but expensive in urban areas
Health	✗	Risk of respiratory disease due to household air pollution
Convenience	✗	Requires long time to light and collect from forests

57% of urban Ugandans primarily use **CHARCOAL** for cooking.

Intensive charcoal production is depleting forests and the population is set to double by 2050.

Safety	✗	Difficult to put out after usage
Cost	✗	Becoming more expensive
Health	✗	Risk of Carbon Monoxide poisioning due to improper usage
Convenience	✗	Requires long lighting time

Urban charcoal users are a particularly attractive market segment to target as they have a guaranteed existing expenditure on a polluting fuel that could be repurposed to electricity units.

2% of urban Ugandans primarily use **kerosene** for cooking.

Cooking with modern energy in urban Uganda

8% of urban Ugandans primarily use **OTHER COOKING FUELS** such as **LPG & BIOGAS**

Safety	!	Risk of fire if user is not well trained on how to operate equipment
Time	✓	Cooks fast and saves time
Health	!	No harmful smoke, however still needs good ventilation
Convenience	!	Refilling not convenient unless living near retail outlets or filling stations

4% of urban Ugandans primarily use **ELECTRICITY** for cooking

Safety	✓	No flames and EPC has insulated pot
Cost	✓	This eCookBook shows that you can make big cost savings with an EPC
Health	✓	No harmful smoke
Convenience	✓	Modern efficient appliances enable multi-tasking & EPCs reduce cooking times.

Accelerating the uptake of eCooking in Uganda

Enabling policy framework

Current usage of electricity for cooking is low in Uganda, however the government has recently put in place an array of policies and targets to facilitate the transition to cooking with clean, modern fuels. MEMD's Energy Policy for Uganda 2023, Uganda's Nationally Determined Contributions, and MEMD's National eCooking Strategy (2024) are all setting ambitious targets for increasing adoption of clean cooking and eCooking. The National eCooking Strategy is aiming for 18% eCooking by 2030, up from under 1%.

In December 2021 the Electricity Regulation Authority announced a new Cooking Tariff which will be served by Umeme Ltd in an effort to encourage cooking with electricity for domestic households and stimulate demand for their predominantly renewable electricity. See below for the latest tariff structure (**updated September 2024**).

Units	Lifeline tariff* <15 Units	Regular tariff 16-80 Units	Cooking Tariff 80-150 Units	Regular tariff >150 Units
Price	Ush. 250.0 per Unit	Ush. 803.0 per Unit	Ush. 412.0 per Unit	Ush. 803.0 per Unit

Consumer awareness

The evidence in this eCookBook can act as a valuable tool for raising awareness of the benefits of adopting eCooking by tackling the widespread perception that electricity is too expensive for cooking and that popular Ugandan dishes don't taste as good when cooked with electricity.

Strengthening the supply chain

Tax exemptions (similar to the LPG VAT exemption in 2020) and Results Based Financing (RBF) can incentivise appliance manufacturers and distributors to increase the availability and affordability of energy-efficient appliances in the Ugandan market. Consumer financing can break down the high upfront cost and enable consumers to utilise the savings they will make each time they cook to pay back the cost of the appliance in manageable repayments.

**Lifeline tariff is only accessible to customers with total monthly consumption below 100 units*

Energy Efficient Appliances

The EPC isn't the only energy-efficient appliance available on the market today. There is now an array of eCooking appliances to choose from, each optimised for a particular cooking process or processes.

All-rounders

Induction stove

Frying specialists

Electric frying pan, air fryer

Boiling and shallow frying

Electric pressure cooker

Boiling only

Kettle, rice cooker, slow cooker

Reheating

Microwave

Roasting

Halogen oven

eCooking Appliance checklist

Whichever electric cooking appliance you're planning to purchase, its important to think about the following considerations:

- ✓ Will it mainly be used for frying or boiling (or both)?
- ✓ Is it an insulated appliance, making it more efficient and therefore cheaper to cook?
- ✓ Does the appliance appear to be sturdy and durable? Is it made of materials that are long-lasting?
- ✓ Does the appliance come with a warranty, or has it passed internationally-recognised safety standards?
- ✓ Is the power rating of the appliance suitable for the quality of the electricity supply?

Contact for EPC sales/purchases:
Tel: +256 786 046418
Email: resilientenergyafrica@gmail.com

Conclusion

The Kitchen Laboratory experiments in this eCookBook have shown that:

Cost-savings

Ugandan households could make substantial cost savings (up to 50%) on dishes that require boiling or steaming for long periods by switching from charcoal to an EPC. LPG is currently expensive in Uganda and as a result, using the EPC is up to seven times cheaper.

Modern alternative

An EPC offers a modern alternative to the charcoal stove and is much more affordable than LPG. It is capable of cooking most (~82%) of a typical Ugandan weekly menu and is likely to be the first choice for around 20% of the menu.

Convenience

Using an EPC is more convenient as it is fully automated so can be left unattended, allowing the cook to multi-task. An EPC can cut cooking times in half for dishes with a long boiling/steaming stage.

The evidence in this eCookBook shows that an EPC can offer a viable alternative to charcoal, enabling households to make substantial cost and time savings, whilst also switching to a clean fuel that minimises the impact of cooking on health and the environment.

There is increasing interest in EPCs in Uganda amongst policy makers, the private sector and consumers. With a supporting enabling environment, a strong supply chain and greater consumer awareness in place, EPCs could enable Uganda to transition away from charcoal and towards renewably-generated electricity for cooking.