



MECS-TRIID Project Report (public version)

SMART COOKING SOLUTIONS

Jikoni Magic Limited



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Executive Summary

The aim of this project was to offer smart cooking solutions to the Kenyan population, specifically those connected to the grid. Knowledge and access to existing modern energy cooking solutions is key because this underpins a sustainable, improved healthy living and reduced environmental degradation.

Through conducting our research from available publications, we found that majority of the population in Kenya, 73.42% is connected to the grid ¹ In the urban areas, which is where we conducted our research, the access to electricity increased from 58.2% in 2010 to 77.6% in April 2018. ¹ This, however, did not translate into them using electricity as their primary cooking fuel and we delved into it to uncover the reasons behind it.

Indoor air pollution is a real threat to the health of women and children who spend long hours in the kitchens cooking over charcoal or firewood for their families. Forest cover degradation which leads to increased global warming is also an ever-present scenario if trees keep being cut down for charcoal.

The Kenyan government has been pushing for the adoption of Liquefied Petroleum Gas (LPG) for cooking and to achieve this have imposed a ban on logging resulting in the prices of charcoal soaring up. They have also increased taxes on kerosene which has led to rise in its prices. ²

Throughout the project we encouraged the use of electricity as an affordable alternative or addition to fuel stacking in households when cooking. There was a lack of knowledge as well as availability of efficient, affordable and energy saving cooking appliances in the market. Most Kenyans are aware of the electric hot plates which are very expensive to use because they draw too much electricity rendering them impractical for everyday cooking. On the other hand, almost all Kenyans we spoke to during the project were aware of the rice cookers and some of them have them in their houses.

The Electric Pressure Cooker (EPC) is a new and emerging modern cooking appliance in the Kenyan market that is not widely available or known and yet it is highly compatible with most of Kenyan cooking, especially the long cooking foods that are cooked over charcoal.

We were also able to identify the barriers to adoption of EPCs and ways to overcome them in order to have them adopted at scale.

Partnerships and collaborations were established with Kenya Power and Lighting Company (KPLC) and other MECS-TRIID challenge fund winners (Bidhaa Sasa and Sun Culture) respectively to help further the agenda of clean cooking.

The report will give details on our findings, dissemination methods that were successful in ensuring that the EPC agenda reached the masses and also the way forward in the coming years about plans that have been set in motion to ensure that the scale up continues unabated.

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1. Introduction

The majority of Kenyans in the urban and semi-urban areas are connected to the national grid but continue using cooking methods and fuels that are costly, waste a lot of time and energy and also pollute the environment. This is because the use of electricity for cooking is considered an expensive affair, though there is no way of confirming this because energy meters are never employed to measure the actual amount of energy consumed when preparing a meal. As per Dalberg's report in 2018, dirty fuels continue to dominate in urban Kenya, notably charcoal (22%) and kerosene (29%). Along with LPG (28%), these are the principal "primary" household cooking fuels. However, fuel stacking (i.e. the use of secondary and/or multiple fuels by the same household) is widespread; therefore, charcoal and kerosene use is much higher than primary cooking fuel data indicates. The opportunity cost for spending time in hospital and missing work due to health issues arising from use of dirty fuels is also significant.

Continued dependence on dirty fuels poses serious health, environmental, and socio-economic costs for ordinary Kenyans.

Kerosene and charcoal remain dominant in urban Kenya because of the perceived affordability and relative availability of these fuels and the stoves used for cooking with them.

In terms of accessibility, kerosene and charcoal are widely available in urban Kenya – there are over 1,500 kerosene dispensing points in Nairobi alone and it's estimated that most people in Nairobi live within a 50-200-metre walk from a charcoal vendor.

In most households in Kenya, women and children suffer most from the consequences of using dirty fuels. This is because, in as much as the culture is changing, women still do most of the household chores which include cooking and taking care of the children. This means that children spend most of their time with their mothers and therefore suffer the consequences together. Also, in most rural areas, it is the work of women to go and search for firewood and due to the decrease in forests, they spend a considerable amount of time looking for firewood, time that could have been spent performing more gainful tasks.

1.1. Goals of the project

The initial goal was to encourage people to adopt smart cooking solutions by using modern cooking methods, specifically through the use EPCs when preparing their meals. To realize this, we leveraged our social media platforms that have large followings already (YouTube has over 51, 000 subscribers, Instagram has 4, 800 followers and Facebook has 9, 700 followers), live cooking demonstrations and in our cooking classes that we host at our premises. As the project went on our initial goal expanded to include ways in which we could overcome the adoption barriers and accelerate the uptake of EPCs at scale. The largest barrier was financial, which, could be viewed from two angles; the initial high cost of investment that was required in purchasing an EPC which is on average, 59.88 GBP and also the perception that cooking with electricity is expensive.

1.2. Objectives of the project

- Provide awareness to over 10,000 customers and sell over 100 electric pressure cookers in Nairobi.
- Make EPCs available to consumers at affordable rates by sourcing affordable, user-friendly and reliable models. we ended up finding local suppliers who were affordable

and had a reliable supply of EPCs.

- Make people aware of exactly how much electricity they consume for different dishes that are commonly cooked in Kenyan kitchens in order to eliminate the myth that electricity is expensive by use of energy meters.

2. Methodology

2.1. The following are the different ways in which we used to realize success of the project:

a) Live cooking demonstrations:

To realize the above goals and objectives we embarked on an aggressive sensitization campaign through live cooking demonstrations. We decided to take this approach because food, especially when it's being cooked live as people watch, is always a good conversation starter. During these sessions we would collect feedback on the current situation on the ground, the types of foods being cooked, how they were being cooked and at what frequency, what fuels were mostly being used, what was informing their choices on these fuels, what they thought of cooking using electricity.

Throughout our interactions with different and diverse audiences we gained a deeper understanding of how things stood and were able to map out an informed course of action. We came to understand that there were barriers to adoption that needed to be overcome and that even after the EPCs were purchased more needed to be done in order to ensure that there was meaningful impact in their lives.

b) Partnerships and collaborations:

We partnered up with Kenya power and Lighting Company Plc. (KPLC), from September 2019, so that we could tap into their trusted name that is known in all households in Kenya. KPLC owns and operates most of the electricity transmission and distribution system in Kenya and sells electricity to over 7.5 million customers as of January 2020. Through their platform we were able to attend and host live cooking demonstrations during their open days, customer awareness workshops, trade fairs, etc.



In addition to this, we were allocated regular slots in their state-of-the-art kitchen where we teach people how to cook using EPCs and other modern energy cooking appliances. These classes take place twice a week, each week, and they have resulted in a lot of people buying EPCs after getting convinced of the advantages.



We also collaborated with other MECS challenge fund winners, like Bidhaa Sasa where we got to gain a deeper understanding of the rural clients are looking for in modern cooking methods. We also collaborated with Sun Culture to develop recipes for their solar powered pressure cookers and through this have been able to gain a better understanding of what client on weak grid and off grid areas require.

c) Social Media

We leveraged our social media profile and also collaborated with other social media influencers in order to reach a wider audience online. This was to gain an understanding of the demographic that is mostly made up of people between the ages of 18 – 44 and how their adoption to the EPCs was going to be. We have also posted video recipes on YouTube, Instagram and Facebook to help people adopt the EPCs as well as have a point of reference when they need more ideas on what more they can do with their EPCs.

d) Recipe book:

We also created a pressure cooker recipe book to give more diversity to people once they purchase EPCs. In it we've also included the readings from energy meters to give indication of the approximate amount of electricity in KWh and Kenya shillings consumed.

2.2. Outline of the concept

- a) We came up with ways to overcome the barriers to adoption through starting of partnerships with SACCOS and cooperatives. Worth mentioning is that we were able to have EPCs stocked with DT Dobie SACCO where the members are able access them as loan and payback in instalments. We've also partnered up with ministry of Industrialization in order to be able to access cooperatives under their umbrella. They have a very wide network of SACCOS and cooperatives which we can tap into and overcome the initial high cost of investment.
- b) We also have customers who've purchased the EPCs call us whenever they are stuck so that they can keep using them instead of totally setting them aside from frustration.
- c) KPLC stocks some EPCs for us so that customers can buy them from their kitchen because this gives them further assurance that what they are purchasing is of good quality.
- d) We started by offering a better rate than supermarkets (after negotiating a good discount rate from supplier) in order to encourage uptake of EPCs. We are currently selling at 59.86 GBP compared to 67.34 GBP.

2.3. How the idea was generated

Kenyan foods and East Africa in general are not very well known outside of the region. Jikoni Magic as a brand was borne out of the necessity to promote Kenyan cuisine to the world by the use of online platforms.

- Jikoni Magic was involved in a programme that was run by Kenya Power and Lighting Company (KPLC), in 2017, that promoted the use of induction cookers. From there the idea of cooking fast using clean energy was born and we were quick to adopt it and bought one for our own use. This also became something we believed in and stood for.
- We were also using efficient cooking methods (saving on time and money) by using the stove-top pressure cooker and would share the same with our followers. When Dr. Jon Leary of Loughborough University UK approached us to take part in the launch of the MECS-TRIID East Africa project it tied in with what we were already practicing and stood for as a brand. Through this encounter we got to learn of the challenge fund and decided to apply for it so that we could utilize the funds to jump-start the project. This is because we understood that the funds were going to help create a greater impact than we could otherwise have been able to do on our own.

2.4. Intellectual Property Rights

- We have produced YouTube videos and a recipe book which are our original work.

2.5. Assumptions made

- That people on the grid would be willing to adopt into the use of EPCs.
- People with higher disposable income are willing and able to purchase EPCs
- Increased education on the benefits of EPCs would increase the purchase and usage of the same.
- People would have their doubts/ scepticism about what the EPCs were being claimed to do and whether or not the electricity consumption was as low as was being said

3. Implementation:

3.1. The work conducted

- Live cooking demonstrations
- Recipe book
- Contracting two social media influencers
- Posting cooking videos on YouTube, Instagram and Facebook.
- One on one direct marketing.
- Offering follow up services in-case the buyers have any queries.
- Collaboration with Kenya Power and Lighting Company (KPLC)

3.2. Challenges faced and their resolution/mitigation

- Resistance to EPCs because of the lack of safety aspect associated with the stove top pressure cookers they know: Educating them on the safety features embedded in the design of the EPCs which includes the drop test, temperature sensor, pressure sensor. Once they get convinced of these features, they are easily convinced to buy the EPCs.
- There is a general attitude towards items that promote the use of electricity. The first question asked was if it consumes a lot of electricity. We mitigated that by doing live demonstrations in people's houses and offices while using energy meters so we could give them exact numbers when it comes to the amount of money and electricity used.
- Perceived high cost of the EPCs - Worked through Saccos and Women Groups to enable payments through instalments
- Lack of energy meters in the local market, plus, lack of sufficient quantities of the UK type plug that's compatible with the Kenyan market. We've been buying them in small quantities from Jumia, an online platform, and so far, have only managed to get a delivery of eight. There are forty more that we're expecting in the middle of this month, March 2020.
- Lack of diversity of suppliers of EPCs in the Kenyan market which means that the prices aren't favourable yet to a vast majority of the population. There are currently only two brands that are widely available; Von and Sayona. We managed to negotiate a favourable rate for now so that we can transfer the same to the end users. We've also been exploring options of importing from either Dubai or China to see how the final price will compare to what is currently in the market.

3.3. How you made sure gender/equity was included – this may need a section on its own

Jikoni Magic, that operates under Kisambara Ventures Limited, has five employees, three of who are women.

Lucy Olero (the sales Manager) joined the project when expectant. Flexi hours were put in place, she was allowed to work from home, meetings were held at her house after delivery.

3.4. The project findings

- KPLC has been a very good partner to work with, the only issue has been the public perception of them as a company which they have been trying to change (from their end) through a lot of public relations. The perception is that they deliberately inflate the cost of electricity. This affected our projected sales during the ASK show where we expected to sell more EPCs than we did. The ASK show is known to attract upwards of 600, 000 people, but in the seven days we participated in the trade fair under the KPLC umbrella we only managed to sell six EPCs.
- We found out that live cooking demonstrations really do work. Once people saw for themselves how efficient the electric pressure cooker is, they were more open to purchasing it.
- Affordability has remained a challenge to many Kenyans. We noted during our live demonstrations that there were many people willing to buy but did not have enough financial resources.
- Initially people thought that we had somehow tampered with our power supply but once we showed them the EPCs in their homes and offices, the perception has changed.
- People are interested in energy meters. The only challenge is the availability of British-plug models that are compatible with most appliances in Kenya.
- Most people are open to new ideas depending on how they are presented and if they are solving a problem or meeting their needs. Once people were able to grasp the cost reduction in fuel, efficiency and convenience, it was easier to convince them to adopt the use of EPC.

3.5. How can the results help us move forwards with the solution to the problem you originally identified?

- There is a huge potential in the Kenyan market in as far as the EPCs are concerned because it is an emerging theme in the clean cooking sector and ties in with how we cook our foods very well. It does not disrupt cooking as we know it, rather, it comes in to enhance the user experience positively in terms of efficiency, cleanliness and affordability in the long term. We were able to sell over 150 EPCs in six months and counting. A lot of interest has been generated with KPLC coming on board to work with us. Ministry of Energy has expressed a very keen interest in what we are doing and talks are on-going on how we can work together.
- The financing mechanisms in place are very key in helping out majority of the people who aren't able to afford upfront payment of the EPCs. This could either be through the check-off payment system, chamas (investment groups), SACCOS, etc.
- There's a difference in the way men and women make decisions to buy the EPCs. The men are more technical and into the idea of saving their money and efficiency- they won't delve too much into how to actually cook the food but will take it home to the wives or partners. Women on the other hand are mostly interested in how their food will turn out and are very keen to learn how to use it. More research still needs to be done to unlock different household dynamics that go into decision making processes in terms of what foods are to be cooked, the appliances to purchase. The information we gathered was sufficient to help in selling the EPCs that we did, but to unlock this at scale is a working in progress.

3.6. Limitations of the innovation/approach/design/system

- a) **Initial learning curve / intuitive use:** Some of the EPCs present a hard-initial learning curve for most users especially the Von brand from HotPoint. They find its operation complicated. During our project, we were selling two brands of EPCs, the Sayona which operates by using a dial and the Von which operates using a digital panel of pre-set cooking modes. Most of the purchasers of the Sayona brand gravitated towards it because of its simplicity and the fact that the people who do most of the cooking in their homes are their childrens' nannies or maids. These employees are mostly of limited education, hence, having the Sayona gives their employers peace of mind.
- b) **Localization of operation menu:** Some people, especially the ones who don't cook often, find some of the terms confusing. For example, the term "saute" has drawn comments and questions where people wonder if simply writing, "fry" wouldn't have sufficed. In addition to this, some of the food on the pre-set programs do not resonate with Kenyans, like the chilli function. Most Kenyans will have either beans or meat but not the two together cooked in one pot.



- c) **An all-inclusive menu:** Comments of having some functions missing out or being highly desired are always there. For example, most women always ask about baking and deep frying.
- d) **Fit for purpose:** Most people wish there were bigger EPCs in the market because, in their opinion, the available ones are very small.

- e) **Aesthetics:** These play a very big role in decision making, especially for the women. Most would purchase the Von as their first choice when compared to Sayona because it would make a good addition to their counter space.
- f) **Shifting the cultural norms:** We had some bachelors buy the sayona for cooking “tumbukiza” a meal of beef, potatoes, onions and tomatoes boiled together until the beef become fork tender. It is a very good hangover cure and the “lazy man’s dish” which only requires someone to literally dump all the ingredients in the EPC at once and turn the dial to the required time and leave it trusting it will do its work and go off by itself.

3.7. How we overcome / mitigated the above-mentioned limitations:

- Educating the buyers of the EPCs on how to use them during the initial days and also being available on phone or email for any other queries they might be having. Live cooking demonstration sessions that we have been able to conduct in partnership with KPLC have helped first time (and also veteran users) know how to better operate their EPCs. These sessions also offer the opportunities to know how learn many more recipes that can be made in their EPCs.
- In terms of size, this was easily counteracted by explaining that the fact that the EPCs cook quite fast there is no need to cook very huge amounts to store for later. Also, once they realize that they can accommodate 1Kg of rice or 1.5 Kg of beans or even 4 Kg of beef most of them stop asking for bigger ones.
- In as far as the pre-set functions being desired or not necessary, these are issues that we’ve forwarded as feedback to the current suppliers for possible improvement. We are also looking to scale up eventually and be able to import our own EPCs with all the customizations that we’ve been able to pick up as being attractive to end users.

4. Practical applications of the concept to the national cooking energy system

- We have noted behavioural changes where men are now more involved in the kitchen due to the convenience that comes with the EPCs. Culturally, in many Kenyan households, men are rarely involved in Kitchen matters.
- We have gotten feedback from women who say that the process of cooking has become much easier because they can tackle cooking when they get in from work. They do not have to boil food in advance over the weekend and freeze it hence they get to consume food when it is freshly cooked. This also has helped people save the space in their freezers.
- Some minority of men believe that women will become lazy due to the ease of cooking and reduced time enabled by the EPC. This point has been reiterated by some women as well during some of our live cooking demonstrations, where they say that they will be chased away for being too lazy in the kitchen. This has been overcome by explaining about the energy and cost saving associated with the use of EPCs.

- Cultural beliefs and practices have affected uptake of the pressure cookers because people believe that if you don't cook food slowly over charcoal or other slow means, the food is not as sweet. The same belief applies to the use of a clay cooking pot producing sweeter beans or sweet potatoes.
- There's a culturally rooted belief (in some rural communities) that electricity is associated with bad omen, where for instance, it makes people thin. This makes it challenging for the same people to adopt the use of electricity for cooking.
- Initial cost of appliances is still prohibitive to many, these are appliances like the EPCs, rice cookers, induction and infra-red cookers, or even the hot plates (electric hot-plate). The cost of the charcoal jiko (stove) is Ksh. 400 while a kerosene stove is Ksh. 560 while the hot-plate (which is the cheapest of the electrical appliances) costs from Ksh. 1500 upwards.
- Even the consumers who have reliable and constant supply of electricity still perceive use of electricity in cooking to be very expensive.
- The government of Kenya has exempted some types of electric cooking appliance from paying the Value Added Tax. At the same time, the government of Kenya has been supporting the Kenya Power Company to connect people in rural areas through a programme called the **Last Mile Connectivity**.
- In as much as KPLC enable access of electricity across the country, they are also in the forefront of promoting clean cooking through cooking demonstrations held every Tuesday and Thursday at Pika na Power, Electricity house. All the demonstrations are done using electronic gadgets. After every class the recipes are shared with the attendees. This encourages/motivates the attendees to buy those gadgets.
- Inadequate knowledge on clean cooking, insufficient number of EPCs, Most EPC's manuals are written in English and therefore the illiterate and semi-illiterate people require translation.
- The wider impact of using modern energy cooking methods (especially the EPCs) is that they have more time on their hands to do other tasks within the house. The EPCs do not to be actively monitored once they have been covered to pressurize. This "extra time" can be used to do homework with the children. The reduced indoor pollution also results in improved health which leads to increased productivity.

5. Next steps

- We were able to identify the barriers to this taking off at scale – which is largely financial. We started exploring avenues to help overcome these barriers and are currently engaged in pursuing them actively. The first quarter of the year in Kenya records a lot of activities in SACCOS and cooperative groups (Annual General Meetings – AGM) and we're using our contacts at the ministry of Industrialization to give us a heads-up on when these are happening. We have formed a WhatsApp group with them where we are able to exchange ideas and information. We have also recruited them to help in driving sales of EPCs by giving them each a small margin for every EPC sold. We believe that this incentive is going to help in boosting EPC uptake.
- We are looking to expand to other counties within Kenya to try and replicate the success of what we did in Nairobi County. We will need more resources in terms of human resource

because we will also be looking to have additional human resources. They will be involved in carrying out live demonstrations simultaneously in different places as well as follow up. We anticipate to spend about £50,000 on staff alone in the next 12-24 months.

- Extra videography equipment to take pictures and footage in the different regions of the country because Jikoni Magic is an online company with a large following where we expect to spend about £1,000.
- Financial resources to be able to pay for the additional human resources and equipment which will be through sourcing and applying for more institutional financing or grants from donors.
- Importing our own EPCs from outside the country (which are customized to suit the Kenyan market) is most probably going to be cheaper and offer us more flexibility in terms of costing. This will give us room to be more competitive in the market as compared to the suppliers who are well established.
- Once we start importing EPCs we'll have to look into our own delivery and distribution channels which might call for a delivery van for more versatility and efficiency.

5.1. Further application plans:

We have already applied to the Ashden awards, MECS-ECO challenge and Cooking Industry Catalyst by Clean Cooking Alliance and will continue to do so to any other that will advertise in the future for any funding opportunities.

5.2. Partnership developments, new investors engaging with etc.

- Kenya Power and Lighting Company (KPLC)
- DT Dobie sacco – For instalment payment of EPCs as loans to members.
- Ministry of Energy
- Ministry of Industrialization
- HotPoint Appliances – They are the suppliers of Von brand of EPCs.

5.3. Dissemination Plan

- Jikoni Magic's Smart Cooking Solution project has been involved in a lot of live cooking demonstrations and we will continue doing so to disseminate the information and findings both locally and nationally. We already have some demonstrations lined up for the later part of the year with different saccoes and cooperatives. We plan to spend about £4,600 on demonstrations in the next one year.
- We will keep posting on our online platforms of YouTube, Facebook and Instagram in order to disseminate the information internationally. We have budgeted for £750 for marketing on social media.
- We plan to continue collaborating with saccoes so as to gain access to more people which will play a big role in dissemination of the information. In addition, we plan to attend open days which usually have a high attendance thus increasing our chances of reaching maximum audience at a go.

The response and feedback from our efforts have been quite positive and encouraging. We have mainly concentrated on informing the audience on the benefits of EPCs as compared to the fuel

solutions they are currently using (charcoal and kerosene), the reduced expenses as well because using electricity is cheaper.

We have also explained that the initial cost of buying the pressure cooker may be high but, in the end, the amount of money saved far outweighs the cost of buying it unlike buying cheap fuel which costs more in the long run.

We have been informing the buyers about the benefits of using the EPCs which include convenience in that they can undertake their normal cooking while at the same time attending to other duties, cost savings, health benefits because electricity is a form of clean energy among others.

Dissemination avenues used:

- Posting videos on our videos on YouTube, Facebook and Instagram.
- Live cooking demonstrations
- Forwarding recipes to the people who attend the cooking demonstrations via email at KPLC
- Going to peoples' houses to talk and demonstrate on a one-one basis
- We've been featured on BBC Swahili detailing the advantages of EPCs during the Global Off Grid Lighting Association (GOGLA) conference that took place in Nairobi and the episode has already aired. <https://youtu.be/Vifc40qv5Fo?t=190> We also took part in shamba shape up program that is yet to air on the largest TV channel in Kenya (in term of viewership).

5.4. How we are gauging the responsiveness of our audience:

- Our audience has been very responsive because they come back with questions or praises or criticism regarding the use of EPCs. They leave comments below YouTube videos, respond via direct messaging on Instagram, etc. Please find attached some of the responses that we've been taken screenshots of.
- The people who initially bought the pressure cookers have referred their friends and family to get pressure cookers of their own.
- We get phone calls from people who have bought inquiring on additional usage e.g. recipes of the EPCs.
- We have been invited back by KPLC and DT Dobie SACCO on multiple occasions to elaborate on the use of EPC.
- Through word of mouth, we're now being invited by different groups to go and do live cooking demonstrations for their members so that they can adopt the use of EPCs.

6. Conclusion

Even though most houses in Nairobi are connected to the grid majority of the families still use charcoal for their long boiling foods because of the perceived notion that it's cheaper. There is also a group that uses kerosene to cook their fast cooking foods like boiling tea for breakfast. Most households use fuel stacking to put food on the table. The fuels of choice include LPG, kerosene, charcoal and a small percentage that uses electricity.

Clean cooking, especially using EPCs is an emerging trend that has not yet been fully tapped and explored and more research is needed in order to unlock its full potential. There are several barriers to adoption that were found and they include initial investment cost of EPCs, peoples' cultural cooking beliefs and practices, perceived high cost of electricity and lack of awareness of the existence of EPCs.

Mitigating or (if possible) totally eliminating the barriers to adoption will greatly help in scaling up their uptake. Engaging with SACCOS and cooperatives is a very effective way of encouraging the members to take up the EPCs and start using them as they pay for them in instalments. Creating awareness through live cooking demonstrations has prove to be the highest contributing factor to the uptake of EPCs during the project.

Going forward, we will keep leveraging on the partnerships and collaborations that we've established to ensure the uptake of EPCs at scale is realized.

7. Abbreviations

- **EPC:** Electric Pressure Cooker
- **KPLC:** Kenya Power and Lighting Company
- **LPG:** Liquefied Petroleum Gas

8. Appendix

1. <https://www.kplc.co.ke/content/item/2485/kenya-leads-east-africa-peers-in-access-to-electricity>.
2. <https://www.businessdailyafrica.com/economy/Charcoal-prices-double-in-4-years-on-logging-ban/3946234-5480154-f38pwu/index.html>
3. <https://www.kplc.co.ke/content/item/1120/last-mile-connectivity>