

Understanding Repair and Maintenance of Cooking Appliances in Myanmar



January 2022

Authors: (Aventura Research Myanmar)

Umakant Singh

Nay Chi Ko Ko

Kyaw Htin

Hein Thu Nyi Nyi

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ACKNOWLEDGEMENTS

Modern Energy Cooking Services (MECS) is pleased to present the research report on Understanding Repair and Maintenance of Cooking Appliances in Urban Myanmar. The research has been undertaken by MECS and funded by UK Aid through the Foreign, Commonwealth, and Development Office (FCDO).

The research would not have been possible without the assistance of many individuals. We would like to thank all the respondents interviewed during the research for giving their time freely and sharing their experiences and opinions openly and candidly.

This research was undertaken by Aventura Research Myanmar (ARM). The team was led by Umakant Singh and consisted of Nay Chi Ko Ko, Kyaw Htin and Hein Thu NyiNyi.

We would like to thank Dr Nigel Scott and Melinda Barnard-Tallier from Gamos Ltd, who provided excellent support and advice throughout the research.

1. INTRODUCTION AND BACKGROUND

The objective of this research report is to explore issues related to the repair and maintenance of modern energy cooking devices in specific urban contexts in Myanmar.

1.1. CONTEXT OF STUDY

MECS is supporting the transition of low-income economies from biomass to the use of modern energy cooking services (i.e. cooking with electricity or gas). It calls for a greater focus on modern energy as the source of clean cooking, and has evidenced that cooking with modern energy using energy-efficient appliances can be cost-effective, particularly for urban communities.

A wide range of electrical cooking appliances are becoming increasingly accessible and affordable to (predominantly urban) populations across Southeast Asia. As these markets continue to attract the attention of appliance manufacturers and distributors, the MECS programme is working pro-actively to understand the economic and environmental implications of these trends in priority countries.

The increasing availability and circulation of electrical appliances has implications for systems of distribution, repair, and waste in urban environments. The market for modern cooking appliances is shaped in part by linear production models ('take, make, waste'), which shorten the life spans of products and contribute to higher emissions and larger volumes of waste.

The concept of the 'circular economy' attempts to limit the impact of wasteful economic activity, primarily through the '4R strategies' of reduce, reuse, remanufacture and recycle. It, therefore, follows that the growing supply of (and demand for) modern cooking appliances is not solely an indicator of progress, innovation and development, but also an indicator of eventual technological breakdown and waste, repair and restoration. Appliances are not simply produced, sold, used, and disposed of; value is generated through circular processes of repair, recycling, and reuse.

Anecdotal evidence from MECS research suggests that consumers express concern about the quality and durability of different kinds of electric cooking appliances that are available in the market. However, it is unclear how poor product quality impacts countries' transitions to modern energy cooking. It is unclear whether the most common appliance faults can be easily repaired, whether careful maintenance of the appliances can improve their durability, or whether households seek to repair the appliances rather than disposing of them, storing them away, or repurposing them.

1.2. RESEARCH OBJECTIVES

The overall objective of this research is to explore issues related to the repair and maintenance of modern energy cooking devices in specific urban contexts. The specific objective of the research was to explore the following research questions:

1. What are the scenarios in which urban residents seek to repair, re-purpose, or dispose of an electric cooking appliance, and how are these activities carried out in practice?
2. How do consumers respond when an appliance fails?
3. How do consumers prefer to have an appliance repaired?
4. What are the different typologies of appliance repair workers and second-hand appliance dealers operating in urban environments?
5. How readily available are parts needed to make the necessary repairs?
6. What do consumers do with an appliance when it is beyond the point of repair?

2. METHODOLOGY

The research design used a qualitative approach and comprised of three approaches:

- Desk-based research to understand the types of appliances available and in use in the chosen context, and the types of repair infrastructures that exist in the local area.
- 9 interviews with a variety of stakeholders including cooking appliances brands manager, recycling management company and e-waste experts, to get a broader understanding of the opportunities and markets for repair and second-hand retail.
- 12 interviews with repair shop owners/second-hand dealers to shed light on the common faults and practicalities of repair concerning the most popular cooking appliances, and the potential repair implications of newer, more automated cooking appliances entering the market.

All repair shop owners and second-hand dealer's interviews were conducted in Yangon in person. There are 3-4 electronic repair shops in most of the townships in Yangon. Most households prefer to repair electronic items in their neighbourhood repair shop. Most repair shops are small in size and operate from their home. Most repair shops are owned and managed by 1 person working as the main technician. Based on the business, some repair shops hire 1-2 outside assistants or a family member who provides a helping hand. Some repair shops expand their business by buying and selling second-hand electronic items in addition to the repair service. Each of the 12 repair business owners/second-hand traders were from 12 different townships of Yangon. Shops of most of the second-hand dealers are located in downtown Yangon such as Pabedan, Thingangyun and Bothahtung townships.

The research instruments were developed by ARM and MECS in partnership. The interviews were unstructured and personal and respondents were probed by one of our qualitative moderators to encourage participants to elaborate on their answers or to continue the discussion further. Experts'

interviews were conducted by team leaders and researchers. All repair and second-hand dealers and expert respondents were based in Yangon. Each IDI lasted approximately 30 to 45 minutes. Interviews were audio-recorded and detailed backup notes were taken by the interviewers. Please refer to Annex A for a full list of the participants.

The research team conducted an ongoing analysis of data through regular, scheduled team meetings and informal discussions among team members. After the fieldwork, IDI data was transcribed into both in Myanmar and English and as far as possible, verbatim.

The team used descriptive and thematic analyses to examine the data. Validity was ensured through data triangulation (i.e., the convergence of multiple data sources) wherever data was available. Based on the analysis, the team developed findings, conclusions and recommendations.



3. DESK RESEARCH SUMMARY

3.1. Electric cooking appliances in Myanmar

Myanmar imports most of its electric cooking appliances from China, followed by Thailand. In 2018, China accounted for 69.6% of Myanmar's global electrical machinery and equipment imports, followed by Thailand (11.2%), Singapore (5.3%), and India (2.3%).¹ Table 1 shows examples of the models, prices and popular brands of electric cooking appliances in Myanmar.

Table 1: Summary Model, Price and Brands of Electric Cooking Appliances in Myanmar

	Rice Cooker	Electric Pan (Redpot)	Kettle	Induction Stove	Microwave Oven	Electric Grill	Electric Pressure Cooker	Air Fryer	Toaster	Coffee Maker
No of Models	6	7	4	3	4		3	8	2	4
Lowest Price (in Kyats)	18,000	16,500	7,100	26,200	72,000	22,000	35,000	67,200	26,000	21,000
Maximum Price (in Kyats)	385,000	65,400	238,000	148,000	425,000	265,000	478,000	1,028,000	128,000	99,000
Median Price (in Kyats)	38,500	36,000	29,800	66,000	152,500	33,650	108,250	135,000	47,500	50,500
No of brands	19	14	32	7	6	6	9	8	5	5
Popular brands										
Samsonic										
Cornell										
Philips										
Midea										
Panasonic										
OTTO										
Nakita										
Toshiba										
Nibban										
Kangaroo										
Sokany										
Nakita										
Masuta										
Jaguar										
Misushita										
Escort										

Source: <https://www.seingayhar.com/> and <https://www.shop.com.mm/>

Market exchange rate as of 24 January 2022: 1 USD = 1950 Kyats

¹ Export-Import Bank of India, Working paper no. 90, India-Myanmar Trade, and Investment: Prospects and Way Forward, 2019

We collected the information from two online stores, which sell electric cooking appliances. They were [Shop.com.mm](#), a Myanmar-based online shopping mall, and Sein Gay Har, a leading retailer in Yangon with 10 physical locations and an online store ([seingayhar.com](#)). People in Myanmar prefer to purchase electronic appliances from physical stores. According to a consumer survey conducted by Deloitte in 2021,² an overwhelming 88% of respondents still prefer to make a physical purchase following a physical trial.

3.2. Illegal trade across the border of Myanmar

Data from the Central Statistical Organization of Myanmar and UN Comtrade show that undocumented trade (i.e. informal/illegal trade) on the Myanmar side was worth over US\$1 billion in 2006 and over US\$870 million in 2008. Trade across borders may be formal (legally documented) or informal (illegal, licit, and illicit).³ Informal undocumented cross-border trade with neighbouring countries (especially Thailand and China) is due to various requirements such as a licensing system, lengthy financial transaction procedures, an export first policy, prohibition of certain products, floor price settings, etc. Both formal and informal cross-border trade has become increasingly significant since the West first imposed sanctions in 1997, then in 2003, then in 2007, then in 2008, and most recently in 2021.

3.3. E-waste management policies in Myanmar

The management of e-waste in Myanmar is in its infancy, but is one of the fastest-growing waste streams in the country due to increased consumer demand, rapid advances in technology, the invention of new electronic devices, and the availability of cheap imports.⁴ E-waste is currently disposed of in landfills together with household waste due to the lack of an effective management system.⁵ Myanmar has a variety of national and local policies, laws and regulations on environmental conservation and pollution control, which contain some provisions related to e-waste. Table 2 below summarizes these.

² Deloitte, The Myanmar Consumer Survey, Finding bright spots amidst the uncertainty, 2021.

<https://www2.deloitte.com/content/dam/Deloitte/sg/Documents/consumer-business/sea-cb-myanmar-consumer-survey-2021.pdf>

³ Aung, Winston. Informal Trade and Underground Economy in Myanmar, Research Institute on Contemporary Southeast Asia, 2011

⁴ National Waste Management Strategy and Master Plan for Myanmar (2018-2030), Environmental Conservation Department (ECD), Ministry of the Natural Resources and Environmental Conservation (MONREC), the Republic of the Union of Myanmar, 2018

⁵ Waste Management in Myanmar: Current Status, Key Challenges and Recommendations for National and City Waste Management Strategies, Institute for Global Environmental Strategies (IGES), 2017

Table 2: E-waste management policies in Myanmar

Title of regulation	Description
Environmental Conservation Law	To lay down and carry out a system of EIA and SIA as to whether or not a project or activity to be undertaken by any government department, organisation or person may cause a significant impact on the environment;
Environmental Conservation Rules (ECR) (2014)	This rules provides for the owner or occupier of any business, material or place which causes a point source of pollution shall install or use an on-site facility or controlling equipment in order to monitor, control, manage, reduce or eliminate environmental pollution (if impracticable, it shall be arranged to dispose the wastes in accordance with environmentally sound methods).
Myanmar Investment Law (2016)	The objectives of this law include: to develop responsible investment businesses which do not cause harm to the natural environment; This law provides for several investments categories including investments requiring a permit: businesses which have a large potential impact for the environment and the local community.
National Environmental Quality (Emission) Guidelines and Environmental Quality Standards	This guideline applies to the management of municipal solid waste and industrial waste including waste receipt, unloading, processing, and storage; landfill disposal; physico-chemical and biological treatment; and incineration.
Myanmar’s National Waste Management Strategy and Action Plan (NWMSAP)	Objectives include: Goal A: Extending sound waste collection service to all citizens and eliminate uncontrolled disposal and open burning as a first step towards environmentally sound waste management Goal B: Extending sustainable and environmentally sound management of industrial and other hazardous wastes Goal C: Substantively prevent waste through 3Rs (reduce, reuse, recycling) and thereby establish a resource circular society
Agenda 21 Myanmar	Agenda 21 commitments (1997) calls for improving solid waste management and the promotion of environmentally sound management of toxic chemical and hazardous wastes.
Master Plan for Hazardous Waste Management in Myanmar	The plan includes: relevant policy and strategies, current management of waste, current industrial and hazardous waste generation and management practices, current regulatory framework and institutional arrangements, possible waste treatment options, cost recovery and financing, and recommendations for an improved hazardous waste management system in Myanmar.

- The City of Yangon Development Law (1990)
- The Development Committees Law (1993)
- The City of Mandalay Development Law (2002)
- The Nay Pyi Taw Development Law (2009)

A number of City and Township Development Committees have promulgated local policies and bylaws aimed at establishing a legal basis for action related to environmental conservation.

Source: Adapted from <https://www.gsma.com/mobilefordevelopment/e-waste-legislative-framework-map/>

4. FINDINGS

The main findings from this study are organized into different sections according to the life cycle of the products from a repair and maintenance point of view. The findings analyse the perceptions and knowledge of repair and second-hand dealers about consumers' behaviour regarding the repair and maintenance of electric cooking appliances. The last findings section summarizes the e-waste management situation in Myanmar.

4.1. Profile of Repair shops / second-hand dealers

For this study, we spoke with 12 owners of electric cooking appliance repair shops, five of whom also buy and sell second-hand electric cooking appliances. A few of them also sell new electric appliances. Table 3 below displays the experiences and primary training of respondents in the repair business. They have been providing repair services for an average of 15 years, ranging from 1 to 38 years. Four respondents inherited the business from their father and learned it from him. Others got into the business because they were interested in repairing electronics and learned on their own or while working for other repair shops before opening their own. Few people learn how to repair newly introduced digital cooking appliances by viewing YouTube videos and others by asking their peers. Because of the demand from lower-income households, some started dealing in second-hand electric cooking appliances; nevertheless, this is only a minor part of their business. In a typical month, a repair business receives 150 electric appliances to repair. They do repair service for all kinds of electric cooking appliances including rice cookers, redpots, kettles, 3-minute noodle-maker, electric coil stoves, induction stoves, microwave ovens, toasters, coffee makers, air fryers. Some of them also perform wiring services and repair fans, washing machines, refrigerators, and air conditioners. The electric rice cooker and redpot are the most common appliances which come in for repair.

Table 3: Respondents Experience and Repair Training

	Respondent Business	Gender	Years of Experience	Primary Training on Repair
1	Repair & Second-hand dealer	Male	20	Learned from father
2	Repair	Male	10	Self-learning
3	Repair	Male	6	While working for other shop
4	Repair	Male	1	In Thailand, while working for other shop
5	Repair	Male	20	Self-learning
6	Repair & Second-hand dealer	Male	15	Learned from father
7	Repair	Male	38	Schooling at an electrical institution
8	Repair	Male	4	While working for other shop
9	Repair	Female	33	Learned from father
10	Repair & Second-hand dealer	Male	30	While working for other shop
11	Repair & Second-hand dealer	Male	6	Learned by hiring a professional staff
12	Repair & Second-hand dealer	Male	20	Learned from father

No training institute or company provided training for the repair person in Myanmar. Repair people learn the trade by themselves or through knowledge transfer from one generation to the next. As electric cooking appliances are becoming more digital with many new features, repair workers learn how to repair them by watching YouTube videos or from their peers.

"I learned everything from my dad. Now, I keep updated by learning from online. I also share knowledge with my friends who are doing the same business."
Ko Htut, repair and second-hand dealer, Thingangyun Township, Yangon

4.2. Buying electric cooking appliances

There are no manufacturing or assembly plants for electric cooking appliances, except Nibban which import parts from China and assemble in Myanmar. Hence there are no after-sale services for most of the electric cooking appliances in Myanmar.

Electric cooking appliances from China dominate the Myanmar market, followed by Thailand. Most consumers buy Chinese products because it is affordable. The price difference between Chinese and Thai or Japanese products can be more than double. Households with higher incomes choose products from Thailand or Japan, which has better durability and quality. Generally, Chinese products use thin materials and Thai products use thicker materials and so are more durable.

"Japanese products are good. But most people can't afford to buy them. They are really expensive. The price differences are more than twice. If a China made rice cooker costs about 20,000 Kyats, a Japanese product will cost about 60,000 Kyats. China and Thailand products are not so bad. If they are used properly, they can last for at least two years."
Ko Aung, repair & second-hand dealer, Daw Pon Township, Yangon

Most of the Chinese brands have 3-4 models for an electric cooking appliance with different prices and quality. However, households from a lower socio-economic status choose price over quality. They tend to buy lower-priced cooking appliances. Electric rice cookers and electric pans, commonly known as "redpots", are the most common electric cooking appliances used by most households. The use of an electric coil stove is more or less disappearing. Most households also have a kettle and a 3-minute noodle-making pot. Microwave ovens and induction stoves are common in affluent households. In such households, air fryers (which use air to cook food and require less or no oil for deep frying, grilling, baking and roasting) and electric pressure cookers (EPCs) are becoming increasingly popular.



Redpot



3 Minutes Noodle Maker



Air Fryer

An electric cooking appliance can last anywhere from a few days (such as Chinese-manufactured kettles or 3-minutenoodle-makers) to years (branded rice cookers, redpots, induction stoves, microwaves) without any repair. For example, some products that only cost around 5,000 Kyats last only 3 to 4 days. A redpot generally lasts 2-3 years and a rice cooker for 4-5 years. A high quality branded rice cooker might last up to 10-12 years without requiring repair.

“Depends on country. China products have both good quality and bad quality ones. Very bad ones last only a few days, maybe 4-5 days. Typical ones last usually 6-7 months. Some users who use very properly and carefully, they can use for years without breaking.”

Lin Lin, repair and second-hand dealer, South Oakalapa Township, Yangon

“It depends on the location. In sub-urban, they just buy cheap ones or second-hands. In the urban area, people buy branded products.”

Ko Ko, repair shop owner, Bahan Township, Yangon

4.3. Maintenance of electric cooking appliances

Good maintenance and correct use can prolong the life of electric cooking appliances. However, most consumers do not do proper maintenance, apart from cleaning and drying their appliances, due to a lack of awareness. Some of the maintenance tips suggested by respondents were:

- reading the instruction manual and following the dos and don'ts of the appliances;
- check the power on/off button and turn it off after cooking;
- redpot should not be used for an extended period otherwise the cable will become hot and break;
- the voltage should not be too low or too high;
- inspect the wear and tear on the power cable and replace any broken cables.

Some respondents believe that after cleaning, appliances need to be properly dried, but many do not do so and believe this to be the cause of more broken appliances.

“If we use electric cooking appliances well, the product life will be longer. Some people don't use products properly.”

Ko Ko, Repair Shop owner, Bahan Township, Yangon

“People in our country don’t do maintenance of electric devices. They just use things until they break. The way they’re using the products are also not proper, which leads to more damages.”

Aung Aung, Repair shop owner, Thanlynn Township, Yangon

“China and Thailand products, both are quite good equally. It depends on whether or not they are used properly. If people don't maintain the appliances well, they'll break sooner or later.”

Ko Ye, Repair shop owner, South Dagon Township, Yangon

The manufacturer's instruction manual usually includes useful information and best practices for operating and properly using the appliance. However, most consumers do not read the instruction manual unless the appliance is of high value, such as a washing machine, refrigerator, or microwave that costs between 300,000 and 500,000 Kyats. Electric cooking appliances such as rice cookers and redpots cost only 35000 to 50000 Kyats.

“70% of users don't read at all. Only for those who buy branded products at expensive price, they'll read and use properly. Majority of users prioritize price over quality. Nowadays, there are many cheap alternatives available in the market. Since they're cheap, they have lower quality. Due to their low cost, users don't really care much about proper usage anymore.”

Aung Aung, repair shop owner, Thanlynn Township, Yangon

Consumers also face a language barrier, as some manuals are written in English, Thai, or Chinese, especially for illegally imported appliances across the border.

“Most consumers do not understand how to use an electronic item. Only few people read the user manuals. Nowadays, most of the electronics are from China and they do not include a user manual. If include, some of them are written in Chinese.”

Ko Aung, repair & second-hand dealer, Daw Pon Township, Yangon

4.4. Most common faults in electric cooking appliances

Based on the observation of repair workers, the most common faults in different electric cooking appliances are summarized in Table 4 below. Improper use and maintenance, as well as poor product quality and durability, are the causes of faults. They are frequently linked to one another and affect one another.

“The most common fault in the rice cooker are - the cable magnet doesn't stick anymore, the bottom of the plate got rusts and no longer brings out heat, the cable head got loose from plugging in and out too often. In case of Redpots, the cable heads mostly break.”

Ko Kyaw, repair shop owner, Tarmwe Township, Yangon

Table 4: Most common faults in the electric cooking appliances and reasons for the faults

Appliance	Most common faults	Reasons for faults
Electric Rice Cooker	The bottom of the plate got rusts and no longer brings out heat	Poor use and maintenance
	Heating plate not working/coil problem	Poor quality/durability
	Centre magnet doesn't work properly	Poor quality/durability
	Spring gets broken	Poor quality/durability
	Power switch broken	Poor quality/durability
	Cable head got loose	Poor use and maintenance
	Auto switch problems	Poor quality/durability
Electric pan (redpot)	Burned cable	Poor quality/durability Poor use and maintenance
	Circuits board not functioning	Poor quality/durability
	Cable socket problems	Poor quality/durability
	Coils burn or break	Poor quality/durability
Electric coil stove	Coils break	Poor quality/durability
	Coil rust	Poor use and maintenance
Electric kettle	The base socket not functioning	Poor quality/durability
	On/off switch	Poor quality/durability
3-minute noodle pot	The base socket not functioning	Poor quality/durability
	On/off switch	Poor quality/durability
Induction stove	The touch panel not working	Poor quality/durability
Microwave oven	Microwave magnetron not working	Poor quality/durability

4.5. Repairing of electric cooking appliances

Myanmar consumers, particularly those from lower- to middle-income households and older generations, prefer to repair rather than replace their broken electric cooking appliances. A young and affluent household tends to buy new appliances with an upgrade.

“Among 100 people, 99 will try to fix it first.”

Ko Htut, repair & second-hand dealer, Thingangyun Township, Yangon

“Repairing or buying a new appliance depends on the generation. For older generation, they like to keep the old ones. But for young generation like us, we like to buy the new ones.”

Mi Han, programme manager, Geres Myanmar

People consider buying a new cooking appliance if the cost of repairing a broken appliance is more than half the cost of buying a new one. A rice cooker and redpot repair costs between 2,500 and

3,500 Kyats, compared to roughly 35,000 Kyats for a new one. Similarly, the cost of repairing an electric kettle, including spare parts, is often 1,000 to 1,500 Kyats, compared to a new one, which costs a minimum of 7,000 Kyats.

“If repair doesn't cost much, they get it fixed by me. If the repair cost is more than half of buying new one, they think to buy a new one.”

Ko Ko, repair shop owner, Bahan Township, Yangon

“Mostly they repair and reuse. If they buy new, it's more costly. Repairing is cheap. For redpot, including spare parts, it usually costs around 1500-2000 Kyats.”

U Myint, repair shop owner, Thaketa Township, Yangon

Some of the consumer challenges in the repair of cooking appliances are ineffective warranty service by most brands, longer wait times to have appliances repaired at service centres, non-availability of repair service at sales stores/showrooms/supermarkets, and non-availability of spare parts by brands.

Most people repair electric cooking appliances, such as electric rice cookers and redpots, at the neighbourhood repair shop. People do not go to the store/showroom where they bought their appliances or to the brand service centre because of the higher transportation costs (in Yangon, motorcycles are prohibited, and a taxi ride costs at least 2000 to 2,500 Kyats) and longer waiting times of 3-4 weeks for any cooking appliances as opposed to the neighbourhood repair shop where the wait time is 30-60 minutes for rice cookers and redpots, and 1-5 days for microwaves and digital stoves.

“If the appliance is expensive for example, microwave oven and warranty is still valid, they go to the service centre. For rice cooker, no one goes to the service centre. They can easily get them fixed for 2000 or 3000 Kyats at repair shop like mine. The transportation cost itself will be 2000 to 3000 Kyats if they go to the service centre. The service centre will charge for the spare parts. And it takes too long (a week) in the service centre normally and whereas it takes 1-2 hours at repair shop like mine.”

Ko Htut, repair & second-hand dealer, Thingangyun Township, Yangon

Repair costs depend on the damage. The majority of repair workers charge a set service fee plus the cost of the spare parts. Some repair workers charge a flat fee of 1,000 Kyats or 1,500 Kyats for all electric cooking appliances, while others charge a varied fee depending on the device. The repair time and cost of electric cooking appliances are shown in Table 5 below.

Table 5: Repair time and cost of electric cooking appliances

Appliances	Repair time	Service fee in Kyats	Spare parts cost in Kyats	Total repair cost in Kyats
Kettle	10-20 minutes	1,000 - 1,500	1,000 - 2,000	2,000-3,500
3-minute noodle-maker	10-20 minutes	1,000 - 1,500	1,000 - 2,000	2,000-3,500
Rice cooker	20-60 minutes	1,000 - 2,000	2,000 - 3,000	3,000-5,000
Redpot	15-60 minutes	1,000 - 2,000	2,000 - 3,000	3,000-5,000
Induction stove	1 to 5 days	3,000 - 4,000	5,000 - 30,000	8,000 -34,000
Microwave	1 to 5 days	4,000 - 5,000	9,000 - 35,000	13,000 -40,000

A faulty electric appliance such as rice cooker, redpot, kettle and 3-minute noodle maker takes from 30 minutes to an hour to repair on average. Microwaves and induction stoves take at least a day to repair due to a lack of spare parts, which must be sourced from numerous locations.

“Repair time depends on the damage. Rice cookers usually take 20 minutes. Redpots take 15 minutes; 10 minutes for kettles.”

Lin Lin, repair and second-hand Dealer, South Oakalapa Township, Yangon

The customer experience at the service centre is not satisfactory. Most shopkeepers are salesman and not well versed in technical details of repair or broken appliances. At the shop, consumers can only meet with the salesman and not the repair technician. Consumers are generally not satisfied with the repair experience because they expect answers to the following questions: What is wrong with the appliance? How long it will take to repair? What will the cost of the repair be? These answers are not immediately available from the salesman of the shop, but are immediately known at the neighbourhood repair shop. Also, most consumers do not trust warranty service centres because warranty terms and conditions are generally confusing. Most brands do not have service centres to provide warranty service; in most cases, the cost of spare parts is not covered by the warranty and getting appliances repaired takes 2-3 weeks of service because brand spare parts are typically purchased from abroad.

“Customers don't know if there is warranty with the product. And customers don't believe in those warranty terms. They think service centres are useless. The transportation is not easy, too. So, customers don't go back to those service centres.”

Ko Ko, repair shop owner, Bahan Township, Yangon

A household that uses electric cooking appliances must use them on a regular basis to meet their cooking needs. Some households, for example, may not have additional cooking tools or a rice cooker to cook rice. A redpot is also required when making a main dish such as curry or soup. Households must have them fixed as soon as possible if they break. They don't want to be kept waiting for more than a few hours or a day at most.

“Customers want to get their devices back quickly. No one wants to leave their devices here not more than one day. As they use those devices daily, they want to get them back quick.”

Ko Htut, repair & second-hand dealer, Thingangyun Township, Yangon

4.6. Availability of spare parts of electric cooking appliances

Most brands of electric cooking appliances in Myanmar do not sell spare parts separately. It is even more difficult to get the spare parts of expensive branded appliances such as Toshiba or Panasonic. Generally, brand service centres do not keep spare parts; they order them from abroad, which can take weeks to 1 month. To repair an appliance, repair workers use working parts from old unrepairable appliances as well as parts from another brand that they have on hand as spare parts. If they don't have it, they can get most of the spare parts for electric cooking appliances from big second-hand dealers. They will, however, need to visit several dealers, which could take several hours.

“I buy spare parts from second-hand dealer at 28th and 29th street (in downtown Yangon). For new parts, we can buy it from companies. But it will be expensive. I have worked with Panasonic, but it was not easy. The parts are expensive and not easy to buy. Even though we take the parts' photos, they don't sell those parts easily to us.”

Ko Ko, repair shop owner, Bahan Township, Yangon

“Microwaves take very long to fix. Especially when we don't have spare parts. We need to look for spare parts in second hand shops.”

Ko Kyaw, repair shop owner, Tarmwe Township, Yangon

Spare parts of Chinese products are more readily available than Thai products.

“Chinese products have more spare parts available. Thailand products don't have many parts available. When Thai products come to repair, I need to source another whole unit from Thailand and replace the broken parts.”

Ye Gyi, repair and second-hand dealer, Bothahtung Township, Yangon

4.7. Warranty services

All respondents said that they do not use warranty services provided by manufacturers. Instead, they visit a neighbourhood repair shop for all their repair needs. Consumers do not use warranty services because the cost of travel to the shop/showroom where cooking appliances was bought can be more than the repair cost at the neighbourhood repair shop; showroom service centres take longer to repair; some consumers are not even aware if products come with a warranty, and many consumers do not keep the warranty card properly even if it is available.

“People don't go back to shop where they bought from even if they have warranty. Repair time takes too long. So, they just come to us and we repair immediately.”

Lin Lin, repair and second-hand dealer, South Oakalapa Township, Yangon

“No one actually go and claim the warranty because of the travelling costs. The product is not that highly expensive too. Consumers also need to wait a long time to get them fixed.”

Ko Kyaw, repair shop owner, Tarmwe Township, Yangon

Appliances with warranties are more expensive and warranty services are not very helpful most of the time, therefore customers prefer to buy less expensive appliances that may or may not come with a warranty. Chinese appliances generally do not come with a warranty as there are no service centres of Chinese brands in Myanmar.

“With warranty, they're more expensive. But I'm sure people don't just go back to the store just because they still have warranty.”

Ko Ye, Repair shop owner, South Dagon Township, Yangon

4.8. End of Service Life

When electric cooking appliances are not repairable, wear out or become obsolete, they all need to be replaced or disposed of. As Myanmar has no regulations requiring manufacturers to take back appliances to recycle the materials and most of the electric cooking appliances are imported, there are no manufacturers to voluntarily take back appliances for recycling. If a customer does not take back an appliance that cannot be repaired, repair shops dismantle it. The useful parts are kept and used to repair another appliance later. The parts that are no longer useful are sold or given free of cost to cart buyers.

“For the items which cannot be repaired at all, we gave them back to the customers. We do not keep it. If the customers don't wish to take back, we call them several times to pick up.”

Ko Lin, Service Center Manager, Nibban Co. Ltd

“There are no rules requiring manufacturer to take back damaged electronic items, currently enforced by the government in Myanmar and we also don't have polices like that. Within my knowledge, I didn't hear that other companies in Myanmar are also recollecting their damage items.”

ZawZaw, Marketing Manager, Global Hope Company (Phoenix Brand appliances)

For most old household electronic items, there are scavengers or “rag pickers”, cart buyers, and second-hand dealers who collect the default or broken electronic items. In Myanmar scavengers or “rag pickers” are called *A Mite Kout Thu*. They search through other people's garbage and pick out plastic bottles, glass or anything salvageable they can recycle or sell. Cart buyers are called *A Haung Wel Thu*, and are individuals who buy used home goods, broken appliances, plastic, bottles, paper, books, and other unused items.

Cart buyers go to repair shops and second-hand dealers to buy parts no longer useful to them. Repair shops and second-hand dealers sometimes buy from the cart buyers any broken appliances they may have collected from households.

Scavengers and cart buyers sell their collections/things to a refurbishment centre or aggregators. A refurbishment centre repairs used and discarded electronic items and give them new life. They

replace damaged parts with new spare parts. An aggregator is a person/business that specialises in aggregating a small number of products for recycling, such as compressors, computer keyboards, circuit boards, plastics, metal, and aluminium.). The refurbishment centre and aggregators keep the useful parts and sell the scrap plastic to factories or recyclers who use it for other purposes. The appliances are sold by refurbishment centres as second hand after refurbishing. The aggregator sells the useful parts to other businesses and factories.

In Myanmar, a broken, unused, discarded, old, and obsolete electric cooking device is not disposed of and recycled in the same way. Depending on the wear and tear on the appliance, some are repaired and sold as second-hand products, while others are dismantled and the various parts are used in the repair of other appliances or sold to various aggregators.

Many households in Myanmar like to keep old and broken electronic devices at home. They do not like throwing valuable items away. Also, there are no electronic disposal centres in Myanmar.

“Common Burmese people love their electronic things and they tend to keep their things. And I am also one of these people. For example, I have a lot of phone charger cables like hundred of them.”

Dr. Maw Gyi, Director, Pollution Control & Cleansing Department, Yangon City Development Committee

4.9. E-waste in Myanmar

Myanmar's e-waste management and policy development are at an early stage. The stakeholders we met were not aware of any specific e-waste regulations in Myanmar. Only one respondent from the Pollution Control & Cleansing Department at the Yangon City Development Committee said that e-waste regulations were included in the National Waste Management Strategy and Master Plan for Myanmar (2018-2030), however, they have yet to be implemented.

“Yes, we have laws and legislation of waste management for the e-waste management. But it cannot be practically implemented because seniors/high officials are not interested in this.”

Dr. Maw Gyi, Director, Pollution Control & Cleansing Department, Yangon City Development Committee

Myanmar has no e-waste management companies with the right technology or chemicals to destroy or dispose of electronic waste. One expert estimates that 90% of Myanmar's e-waste is recycled. Most of the e-wastes are picked up by scavengers who sell them to aggregators or second-hand dealers. Aggregators sell useful e-waste to other small businesses/people.

“There are no proper e-waste management companies in Myanmar. Some companies claim to do e-waste management. But they do not have proper system to destroy or dispose of electronic items. In other countries they have technologies or chemical to dispose it. But here they just dissemble it, dump it or recycle it into other parts. Actually 90% of e-waste are recycled and reused in second-hand market “

Mg Phone, Project Manager, Recyglo, Yangon.

5. CONCLUSION AND RECOMMENDATIONS

The market for electric cooking and repair and maintenance and e-waste are at an early stage of development in Myanmar. Though the Myanmar government has taken early steps in e-waste management, its implementation will not happen in the next 10-15 years. There is no support for the repair and maintenance sector. The following are overall recommendations based on the findings from the study:

- Organizations working on the use of modern energy cooking services should support the entire value chain. This should include:
 - Working with appliance manufacturers to promote innovation in electric cooking appliances which are environmentally friendly, energy-efficient, fault-free design, make the lifetime of our products longer, reduce the raw materials needed, makes repairs and recycling possible and easy.
 - All electric cooking appliances should come with a user manual in Myanmar Language. 'Do's and Don'ts' of using electric cooking appliances in the Myanmar language should be printed on the appliance's surface.
 - Increase awareness among consumers on the safety of the product, 'Do's and Don'ts' of using different electric cooking appliances and maintenance to increase appliance durability.
 - Work with relevant government institutions to train repair persons on different electric cooking appliances. Training courses on repairing electric cooking appliances can be included in the existing vocation training institutions. Many electric cooking appliances have more digital and advanced features. For any new product launched with an advanced feature, electric cooking appliance companies should provide refresher training to repair personnel.
 - Work with manufacturers to ensure spare parts are available widely by brand, especially those from Thailand and Japan. Standardization should be promoted so that a spare part can work on all brands of electric appliances.
 - Developed countries with advanced technology for e-waste management should do technology transfer to Myanmar. The technology transfer can be to either a government institution or a private sector entity.
- Myanmar people like to keep old and unused electronic items at home instead of disposing of them. Research can be conducted to assess the volume and types of electronic waste kept at home. Some of the reasons for electronic hoarding at home include Myanmar people's love for their electronics, a lack of knowledge about how to responsibly dispose of electronics, and a lack of awareness that older devices contain parts that can be recycled which is environmentally friendly.

6. ANNEX

ANNEX A: LIST OF PARTICIPANTS

No	Pseudonym Name	Sex	Location	Type of respondent
1	Ko Aung	Male	Daw Pon	Repair & Second-hand dealer
2	Ko Kyaw	Male	Tarmwe	Repair
3	U Myint	Male	Thaketa	Repair
4	Ko Ye	Male	South Dagon	Repair
5	Ko Ko	Male	Bahan	Repair
6	Ko Htut	Male	Thingangyun	Repair & Second-hand dealer
7	Aung Aung	Male	Thanlynn	Repair
8	KhineGyi	Male	Thamine	Repair
9	San San	Female	Kyauktada	Repair
10	Mg Oo	Male	Pabedan	Repair & Second-hand dealer
11	Ye Gyi	Male	Bothahtaung	Repair & Second-hand dealer
12	Lin Lin	Male	South Oakalapa	Repair & Second-hand dealer

No	Pseudonym Name	Sex	Designation	Organization
1	Mg Phone	Male	Project Manager	Recyglo Myanmar
2	Maw Gyi	Male	Director (Deputy Chief Engineer)	Pollution Control & Cleansing Department, Yangon City Development Committee
3	ZawZaw	Male	Marketing Manager	Global Hope Company (Phoenix Brand appliances)
4	Ko Lin	Male	Service Centre Manager	Nibban Co. Ltd.
5	Alex	Male	Program Leader - Access to energy	Geres
6	Mi Han	Female	Program Manager	Geres Myanmar
7	Ko Htike	Male	Director	Electrical Inspection Department, Industrial Supervision and Inspection, Ministry of Industry
8	Soe Lay	Male	Plant Manager	Yangon Waste to Energy plant, Yangon City Development Committee
9	Ko Thiha	Male	Engineer	Htain Pin Waste Management, Yangon City Development Committee

ANNEX B: REFERENCES

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