



Report On

**Enforcement of Energy Efficiency
Legislative Instruments (1815, 1932 and
1958) at Ports of Entry
(With Relevant Indicators/Statistics)**

January – December 2019

By Inspection & Enforcement Directorate

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Summary of Key Findings

0.1 New Refrigerating Appliances

- A total of **387,622** cartons (2,968 containers) of new refrigerating appliances were inspected at the Tema Port in accordance with L.I. 1958 in 2019. Of this number, **380,257 cartons**, representing about 98.1% of the total imports, were regulated appliances¹, while 7,365 cartons, accounting for 1.9% of the total imports, were unregulated appliances².
- About 34.3% of all the regulated appliances were of 2-stars, 27.1% were 1-star, 19.5% were 4-stars, 18.9% were 3-stars and only 0.2% were 5-stars.
- A total of 214,845 cartons, representing 56.5% of the total regulated appliances, were fridge/freezers. The expected average annual consumption of each of these fridge/freezers is **323 kWh/year**.
- A total 128,527 cartons, representing 33.8% of the total regulated appliances, were chest freezers. The expected average annual consumption of each of these chest freezers is **391 kWh/year**.
- A total of 36,885 cartons, representing 9.7% of the total regulated appliances, were refrigerators. The expected average annual energy consumption of these refrigerators is about **208 kWh/year** per unit.
- About **2,558,622** new refrigerating appliances (including showcases) were imported through the Port of Tema since 2005.
- The **overall expected average** annual energy consumption of these new refrigerating appliances from 2017 is **334 kWh/year** per unit.
- About 97.0% of all the new refrigerating appliances are compliant in 2019.
- **Trends of New Versus Used Refrigerators Imports (2005 – 2019)**

The importation of the new refrigerating appliances into the country has seen an upward trajectory over the years while that of the used fridges has seen a drastic reduction. Historical data suggests that there is a decline in the importation of used fridges from 2013, as a result of the implementation or enforcement of L.I. 1932. Figure 0.1 shows that the proportion of new refrigerators imported into the country, however, has generally been on the rise, significantly from 2013.

¹ Fridge/Freezer, Chest Freezer and Refrigerator as defined in L.I 1958

² Showcase (Beverage coolers and display cabinets)

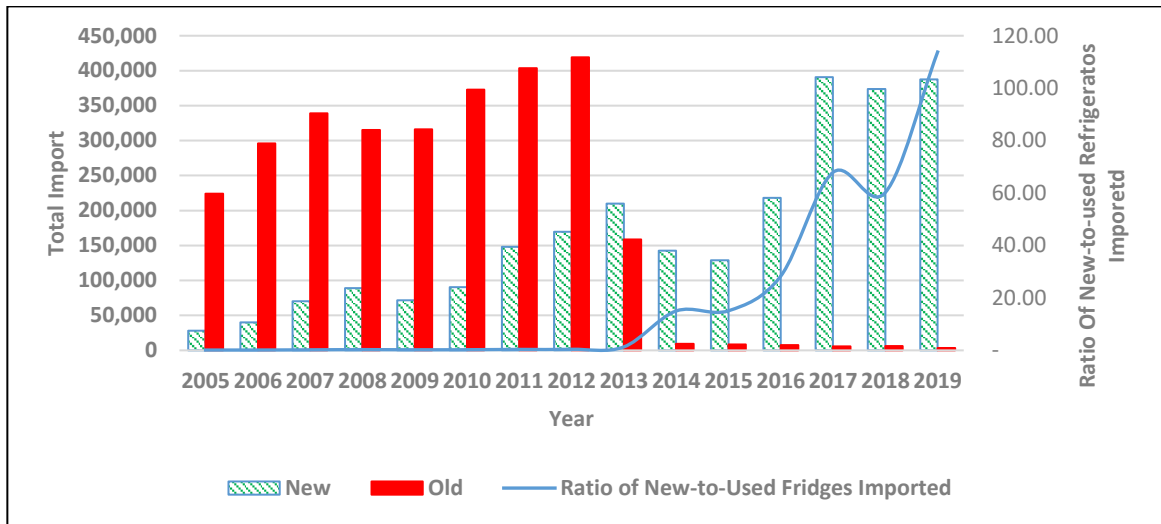


Figure 0.1: Trends in New Versus Used Refrigerators Imports (2005 – 2019)

0.2 Major Importers and Popular Brands of Refrigerating Appliances

- Electroland Ghana Limited was the largest importer of the refrigerating appliances in 2019. It accounted for 29.6% of the total imports. This was followed by Sun Electronics Ltd. (10.0%), Somotex Ghana Ltd. (9.0%) and Menkish Impex Ltd. (7.3%).
- NASCO was the most imported refrigerating appliance or brand (20.0%). This was followed by Hisense (10.0%), MIDEA (8.3%), Bruhm (7.4%), Legacy (7.3%) and Akai (6.4%).

0.3 Non-ducted (New) Air Conditioners

- About **163,290** cartons (860 containers) of new air conditioners were inspected at the Port of Tema in accordance with L.I. 1815. Of this number, 160,024 units, representing 98.0% of the total imports, are regulated appliances, while the remaining 3,266 units, accounting for about 2.0% of the total imports, were unregulated appliances (e.g. cassette/commercial and other ducted types).
- About 65% of the regulated air conditioners are of 1-stars, 17% are 2-stars, 14.5% are 3-stars and 3.5% are 4-stars. There were no 5-stars.
- About **732,450** new air conditioners have been imported and inspected at the Port of Tema since the enforcement of L.I 1815 begun in 2014.
- About 97.0% of the regulated air-conditioners are compliant.

0.4 Major Importers and Popular Brands of Air Conditioners

- Electroland Ghana Limited was the largest importer of the air-conditioning appliances in 2019. It accounted for two-fifths (i.e. 39.8%) of the total air conditioners imported and inspected. This was followed by Sun Electronics Ltd. (11.9%), Somotex Ghana Ltd. (9.1%) and TLC (3.6%).

- NASCO was the most popular imported air-conditioner or brand (28.0%), followed by MIDEA (10.4%), Hisense (8.1%) and BRUHM (7.1%).

0.5 Used Fridges and Used Air-Conditioners

- About 2,849 used fridges and 558 air conditioners were seized in 2019.
- About **41,782** old refrigerators and **10,325** air conditioners have been confiscation/intercepted at ports of Tema and Takoradi since the inception of the enforcement of L.I. 1932 in 2013.
- A total of **10,472** units of old and inefficient refrigerators have also been turned-in through the National Refrigerator turn-in and Rebate Scheme which commenced in July 2012.
- About **56 GWh** of electricity savings have been made as a result of the enforcement of L.I. 1932 and the National Refrigerator turn-in and Rebate Scheme.

CHAPTER ONE: INTRODUCTION/BACKGROUND

1.0 Introduction

This chapter provides the background of the Energy Efficiency Project, which is to enforce Legislative Instruments (L.I.s) 1815³, 1932⁴ and 1958⁵, which is being implemented at the Tema and Takoradi Ports. It also contains the objectives and significance of the project. Finally, it contains the organization of the report.

1.1 Background

Ghana started experiencing power shortfalls in 1984, due to persistent droughts which affected water inflows from the Volta River basin into the Akosombo dam. Apart from these draughts, another cause of the power deficits in the country is the increase in demand for electricity as a result of increasing population, citing of more industries and increase in commercial activities, without a corresponding generation capacity expansion. Also, household electricity demand has been on the increase over the years and it was believed that a sizable percentage of the household demand is wasted on the use of old, obsolete and inefficient refrigerating appliances imported into the country⁶. In 2015, household electricity demand accounted for about 49.0%⁷ of total generation.

The above claim that inefficient refrigerating appliances were responsible for the increases in the household electricity demand needed to be investigated. So in 2003, the Energy Foundation (EF) conducted a study into major electricity consuming household appliances in the country. The study confirmed the claims that refrigeration was one of the major electricity consuming appliances in households. Based on these recommendations from the EF, the Council for Scientific and Industrial Research (CSIR) under the auspices of the Energy Commission (EC) conducted a detailed survey/study into the energy consumption patterns of these refrigerating appliances in the residential sector in 2006-2007. The survey revealed that indeed these appliances consumed, on the average, 1,200kWh per annum compared to 500kWh and 400kWh per annum in Europe and the USA respectively.

In 2010, there was an estimated 1.67 million inefficient refrigerating appliances and about 1.14 million air conditioning units in the country⁶. To prevent these high energy consuming appliances

³ Energy Efficiency Standards and Labelling (Non-Ducted Air Conditioners and Self-Ballasted Fluorescent Lamps) Regulations, 2005.

⁴ Prohibition of Manufacture, Sale or Importation of Incandescent Filament Lamp, Used Refrigerator, Used Refrigerator-Freezer, Used Freezer and Used Air-Conditioner Regulations, 2008.

⁵ Energy Efficiency Standards and Labelling (Household Refrigerating Appliances) Regulation, 2009.

⁶ The Success Story of the Ghana Refrigerator Efficiency Project Implemented by the Energy Commission

^{7, 6} Strategic National Energy Plan: Energy Demand Projections-Draft Report (2016-2035).

from entering the country, the Energy Commission commenced the enforcement of L.I. 1932, passed in 2008, banning the importation or sale of used/illegal refrigerating appliances and air-conditioners, at the Tema Port in 2011, and later at Takoradi Port in 2017.

To give more impetus to L.I. 1932, the Government of Ghana, in July 2012, through the EC, launched the National Refrigerator turn-in and Rebate Scheme with the support of United Nation Development Programme (UNDP), Global Environment Facility (GEF) and Multilateral Fund of the Montreal Protocol (MFMP). The scheme, which encourages consumers to exchange their old refrigerators for new and efficient ones, available at a discounted prices, was to recover about 50,000 inefficient refrigerating appliances from homes and promote the use of more energy efficient ones and transform the refrigerating appliances market in the country. By mid-June, 2016, a total of 10,472 units⁸ of old energy inefficient appliances have been replaced across the country with new energy efficient ones, resulting in an annual electricity savings of 6.3 GWh. The ultimate goal of the scheme was to reduce national energy consumption, household electricity bills and its attendant environmental impacts.

To ensure that only energy efficient refrigerating appliances and air-conditioners enter the country's refrigerating market, the Energy Commission begun the enforcement of L.I.s 1815 and 1958 in 2012 which mandates all regulated appliances imported into the country bear/carry an energy efficiency label (energy guide). The enforcement activity includes filing of energy efficiency report (test report) for the appliances to be imported at the EC. The data in the test report are used to verify compliance with Minimum Energy Performance Standards (MEPS) at the port of entry by the Inspectors from EC (with specific attention given to the type of appliance, manufacturer, model number, refrigerant, climate class, annual energy consumption, fresh and frozen food volumes, energy star rating and cooling capacity). Appliances found to be compliant are released to the importer whilst non-compliant appliances are detained by the EC, pending compliance with the provision of the respective L.I's.

As the Energy Efficiency Project continues, the inspection activity seeks to collect information on these important parameters on these appliances on daily basis, ensuring that only energy efficient refrigerating and air-conditioning appliances enter the country's market.

1.2 Objectives of the Energy Efficiency Project

The objectives of the project are to:

⁸ UNDP office of the Energy Commission.

- i. ensure full and effective enforcement of regulations on standards and labelling of refrigerating appliances and air-conditioners at points of entry (i.e. L.I's 1815 and 1958);
- ii. achieve overall compliance level for both household refrigerating appliances and air-conditioners;
- iii. ensure full and effective enforcement of the ban on importation of used refrigerators and used air-conditioners (i.e. L.I. 1932); and
- iv. to assess the status of compliance with Energy Efficiency regulations.

1.3 Significance of the Project

The project is intended to highlight the compliance level of all the refrigerating and air conditioning appliances entering the Ghanaian market. These include energy efficiency star ratings and annual energy consumption patterns of all the regulated appliances. It will also highlight the number of unregulated appliances such as stock lots and coolers/display cabinets coming into the country and developing policies to deal with them. Finally, it will indicate the share of fridge/freezer, chest freezer and refrigerators entering the market.

CHAPTER TWO: ANALYSIS OF DATA AND KEY SUMMARY RESULTS

2.0 Introduction

The refrigerating appliances that are imported and inspected are characterised into three categories: Fridge/Freezers, Chest or Upright Freezers and Refrigerators (Fridges). Each category is broken down further into three sub-categories depending on the size or carrying capacity. These measures are listed below and for this report, these sub-categories will henceforth be referred to “Small” (\leq 340 litres), “Medium” (341 - 510 litres) and “Large” ($>$ 510 litres).

2.1 Analysis of Data and Key Summary Results

2.1.1 Overall Summary Statistics of the New Refrigerating Appliances

A total of **387,622** cartons of new refrigerating appliances were inspected at the Tema Port in accordance with L.I. 1958 in 2019. This represents an increase of about 3.7% of 2018 total imports. Figure 2.1 presents the monthly trend or breakdown of the total imports in 2019.

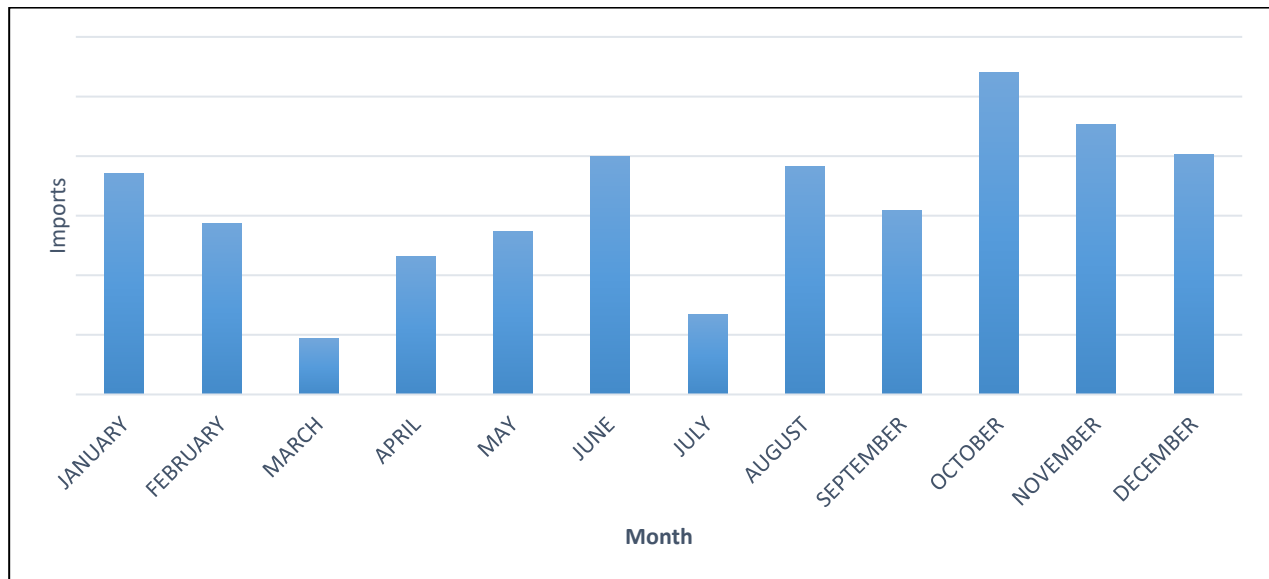


Figure 2.1: Trend in Monthly Imports of New Refrigerating Appliance in 2019

Of this number, 380,257 cartons, representing 98.1% of the total imports, were regulated appliances, while the remaining 7,365 cartons, accounting for 1.9% of the total imports, were unregulated appliances.

Of the regulated appliances, 214,845 units (56.5%) were fridge/freezers, 128,527 units (33.8%) were chest freezers and 36,885 units (9.7%) were refrigerators. Figure 2.2 shows the share of the various categories.

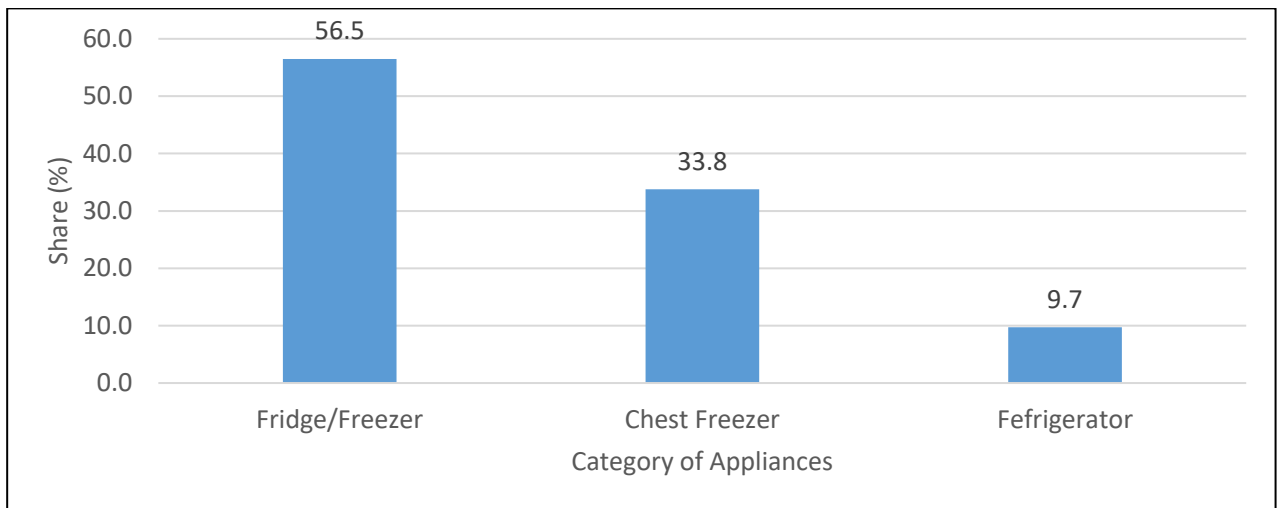


Figure 2.2: Share of Categories of New Refrigeration Appliances in 2019

The small fridge/freezer, small chest freezers and small refrigerators are the most popular forms of the refrigerating appliances imported and inspected. Figure 2.3 shows the shares of each of these sub-categories.

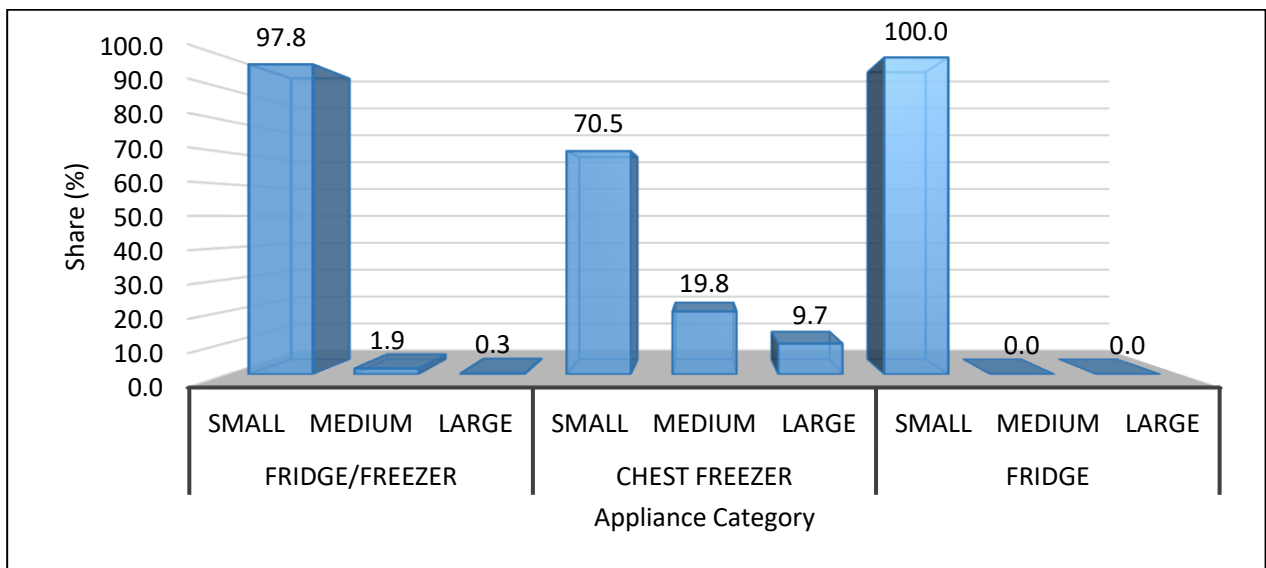


Figure 2.3: Share of Appliance Category in 2019

About **2,558,622** new refrigerating appliances (including showcases) have been imported through the Port of Tema since 2005. Figure 2.4 presents the yearly upward trajectory or trend of these appliances imported into the country from 2005 to 2019.

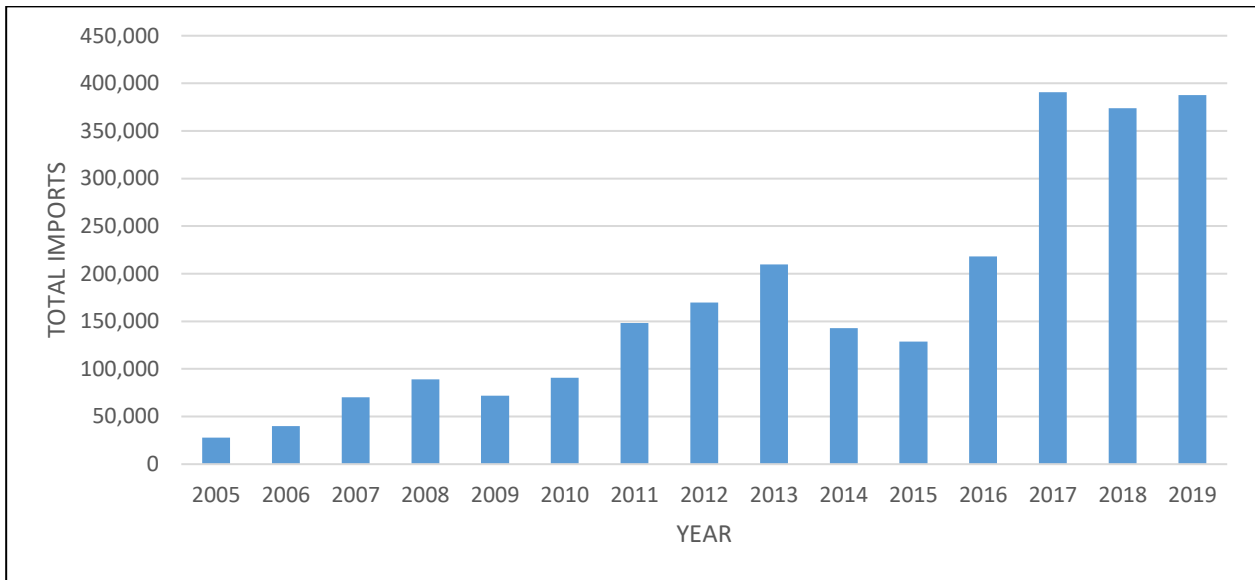


Figure 2.4: Trend in New Refrigerating Appliances Imports (2005 – 2019)

2.1.2 Summary Statistics of Regulated Appliance

2.1.2.1 Overall Energy Efficiency Star Ratings of the New Regulated Refrigerating Appliances

The overall energy efficiency star ratings for the regulated appliances in 2019 is presented in Figure 2.5. About 34.3% and 27.1% of the approved refrigerating appliances were 2-star and 1-star ratings respectively, thus making them the most predominant star rating appliances inspected. 19.5% were 4-stars, 18.3% were 3-stars and only 0.2% were 5-stars.

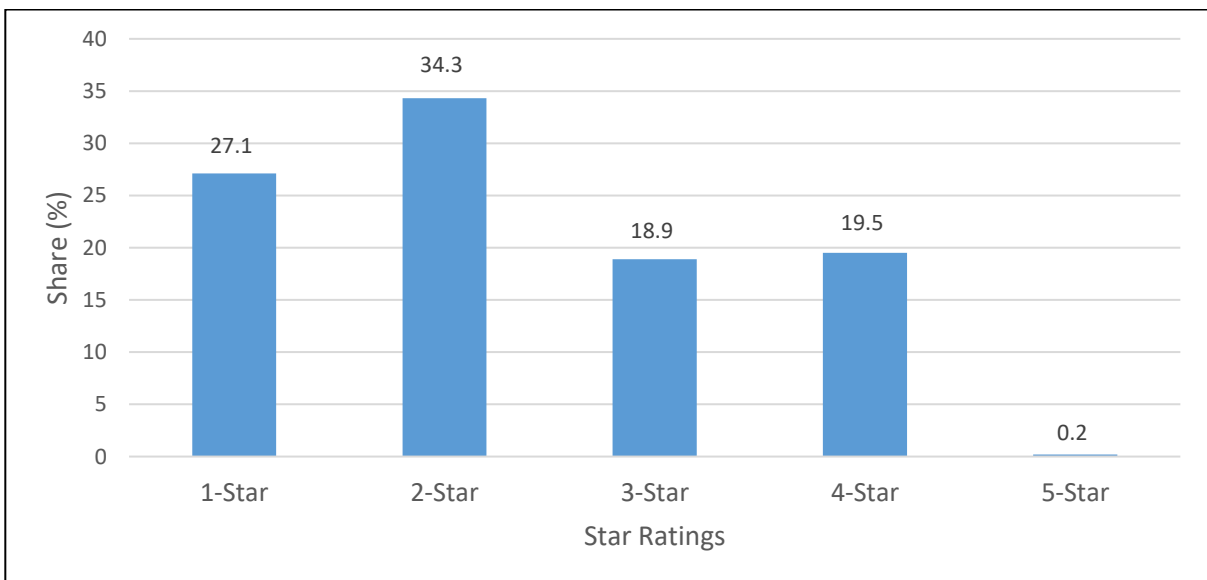


Figure 2.5: Overall Energy Efficiency Star Ratings for the New Refrigerating Appliances in 2019

2.1.2.2 Types of Refrigerants in Refrigerating Appliance imported and inspected

The types of refrigerants identified in the approved refrigerating appliances imported into the country included R600a, R134a and R290. Figure 2.7 shows the breakdown/share of the refrigerants: R600a (85.6%), R1354a (13.6%) and R290 (0.80%).

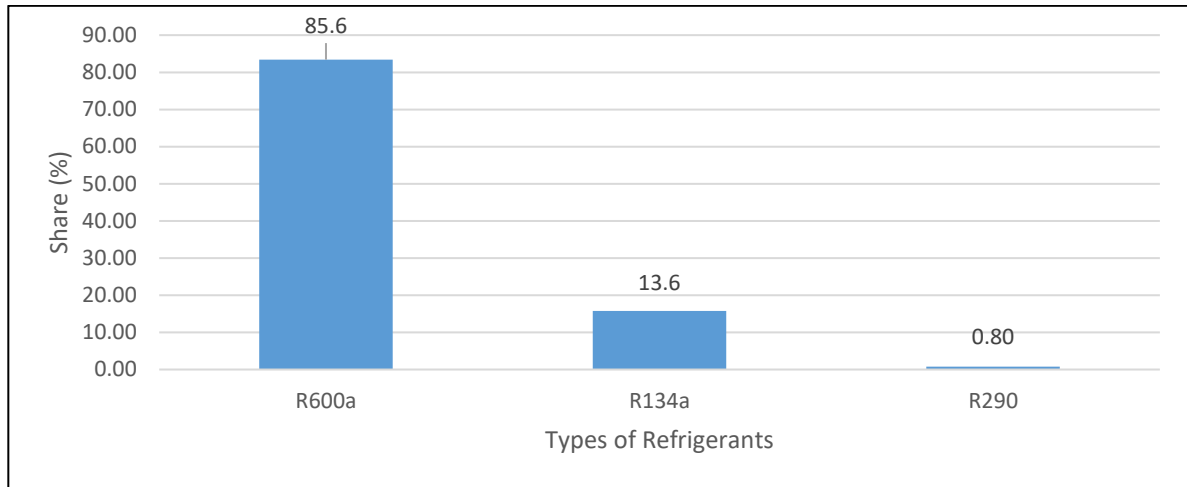


Figure 2.7: Share of Refrigerants in the Refrigerating Appliances in 2019

2.1.2.3 Climatic Classes for the Refrigerating Appliances

About 84.3% of the appliances imported and inspected were made for sub-tropical (ST) climatic condition while the remaining 15.7% were tropical (T) climatic condition. The result is depicted in Figure 2.8.

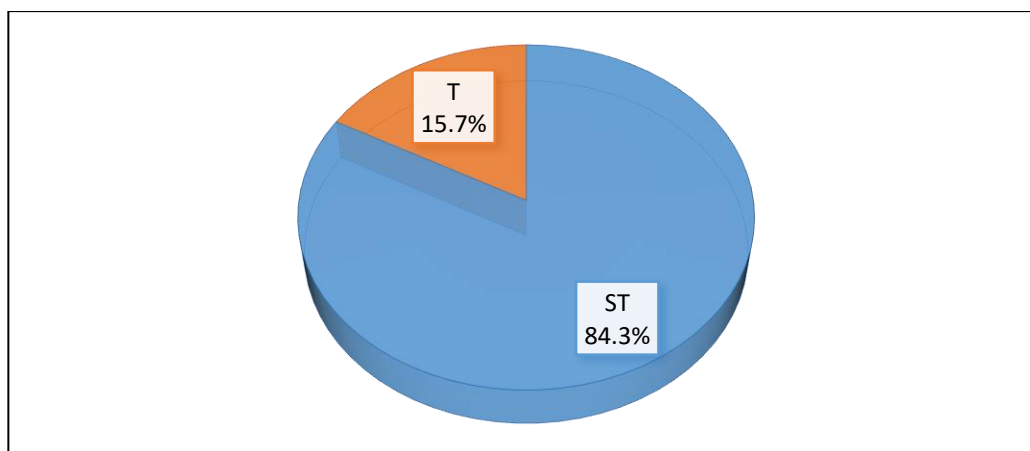


Figure 2.8: Share of Climatic Class of the Refrigerating Appliances in 2019

2.1.2.4 Annual Expected Energy Consumption Patterns of New Refrigerating Appliances

The central tendency values together with their minimum and maximum annual energy consumption values/figures (5-number statistics) for the various categories and sub-categories of the new regulated appliances in 2019 are presented in Table 2.1.

Table 2.1: Annual Expected Energy Consumption Patterns for New Refrigerating Appliances in kWh/year

| Statistic | Fridge/Freezer | | | Chest Freezer | | | Refrigerator | | |
|---------------|--------------------|----------------------|-------------------|--------------------|----------------------|-------------------|--------------------|----------------------|-------------------|
| | Small (=< 340L) | Medium (341-510L) | Large (> 510L) | Small (=< 340L) | Medium (341-510L) | Large (> 510L) | Small (=< 340L) | Medium (341-510L) | Large (> 510L) |
| Mean | 300.3 | 459.8 | 463.1 | 319.7 | 444.0 | 635.0 | 206.7 | 266.5 | N/A |
| Median | 297.5 | 434.0 | 438.0 | 319.4 | 458.0 | 636.0 | 174.0 | 266.5 | |
| Mode | 215.0 | 423.0 | 438.0 | 362.0 | 408.0 | 536.0 | 110.0 | N/A | |
| Minimum | 110.0 | 126.0 | 348.0 | 145.0 | 285.0 | 108.0 | 94.0 | 110.0 | |
| Maximum | 584.0 | 690.0 | 690.0 | 730.0 | 566.0 | 938.0 | 511.0 | 423.0 | |
| Category Mean | 322.8 | | | 390.8 | | | 207.6 | | |
| Overall Mean | 333.5 | | | | | | | | |

N/A = Not Available

2.1.2.5 Compliance Level

About 97.0% of the regulated refrigerating appliances are compliant at the point of inspection. The non-compliance cases, which range from no technical documentation to mislabelling, are forwarded to the market surveillance team at the Inspection & Enforcement Directorate via Google Drive for action.

2.1.2.6 Importers and Popular Brands of Refrigerating Appliances

Electroland Ghana Limited was the largest importer of the refrigerating appliances in 2019, accounting for 29.6% of the total imports. This was followed by Sun Electronics Ltd. (10.0%), Somotex Ghana Ltd. (9.0%), Menkish Impex Ltd. (7.3%), Melcom Limited (6.4%) and Madson Japan Eng. Co. Gh. Ltd. (6.8%). The most dominant/popular imported brand was NASCO (20.0%). This was followed by Hisense (10.0%), MIDEA (8.3%), Bruhm (7.4%), Legacy (7.3%) and Akai (6.4%). Table 2.2 presents the details of some of the major importers and their brands.

Table 2.2: Importers, Brands and the Market Shares (Refrigerating Appliances)

| NAME OF IMPORTER | BRAND | BRAND'S SHARE (%) | IMPORTERS ' SHARE (%) |
|-------------------------------------------|----------------|-------------------|-----------------------|
| ELECTROLAND GH LTD | NASCO | 20.0 | 29.6 |
| | SAMSUNG | 1.3 | |
| | MIDEA | 8.3 | |
| SOMOTEX GH LTD | TAMASHI | 0.6 | 9.0 |
| | BRUHM | 7.4 | |
| | LG | 1.0 | |
| SUN ELECTRONICS LTD | HISENSE | 10.0 | 10.0 |
| MENKISH IMPEX LTD | LEGACY | 7.3 | 7.3 |
| MELCOM LTD | AKAI | 5.8 | 6.4 |
| | SHARP | 0.4 | |
| | ELECTROLUX | 0.2 | |
| MADSON JAPAN ENG CO. GH LTD | WESTPOOL | 3.7 | 6.8 |
| | MUTSUI | 1.2 | |
| | SUZIKA | 0.9 | |
| | WESTPOINT | 1.0 | |
| BON ARRIVE | NOVO | 3.4 | 3.4 |
| LAVA LTD | YD | 0.8 | 3.4 |
| | MIKACHI | 1.0 | |
| | VIZIO | 1.6 | |
| AMIN GH LTD | ICONA | 2.0 | 2.0 |
| ESBEE LTD | TPROTECH | 1.5 | 1.5 |
| FOREWIN GH LTD | BEKO | 1.6 | 1.6 |
| NANKANI AND HAGAN | NAKAI | 1.2 | 1.6 |
| | MANPLUS | 0.4 | |
| SHREE BALAJI LTD | PEARL | 1.4 | 1.4 |
| HAANO CO LTD | NEXUS | 1.2 | 1.2 |
| INAMAR CO LTD | SAMSUNG | 2.4 | 3.4 |
| | CHIGO | 1.0 | |
| OTHER IMPORTERS ⁹ | OTHER BRANDS | 11.4 | 11.4 |
| TOTAL (%) | | 100.0 | 100.0 |
| TOTAL IMPORTS (INCLUDING SHOWCASE) | 387,622 | | |

⁹ This includes over 30 other smaller importers whose individual shares lie between 0.01% - 0.5%.

2.1.3 Trends and Summary Statistics on Used Fridges and Used Air conditioners

By enforcing L.I. 1932, about 3,407 used fridges and air conditioners have been intercepted/seized at the Ports of Tema and Takoradi in 2019. Since the inception of the enforcement of L.I. 1932 in 2013, about 41,782 old refrigerators and 10,325 air conditioners have been confiscated/intercepted at ports of Tema and Takoradi. Figure 2.9 presents the yearly downward trend in the seizures made between 2013 and 2019. Also, by mid-June, 2016, a total of 10,472 units of old energy inefficient refrigerators have been turned-in through the National Refrigerator turn-in and Rebate Scheme which commenced in July 2012. The average annual energy consumption of a used fridge is estimated to be 1,200 kWh/year. As a result of these two interventions, 56 GWh of electricity savings have been made so far on the used refrigerators.

About **2,886,146** used fridges have been exported to Ghana since 2005.

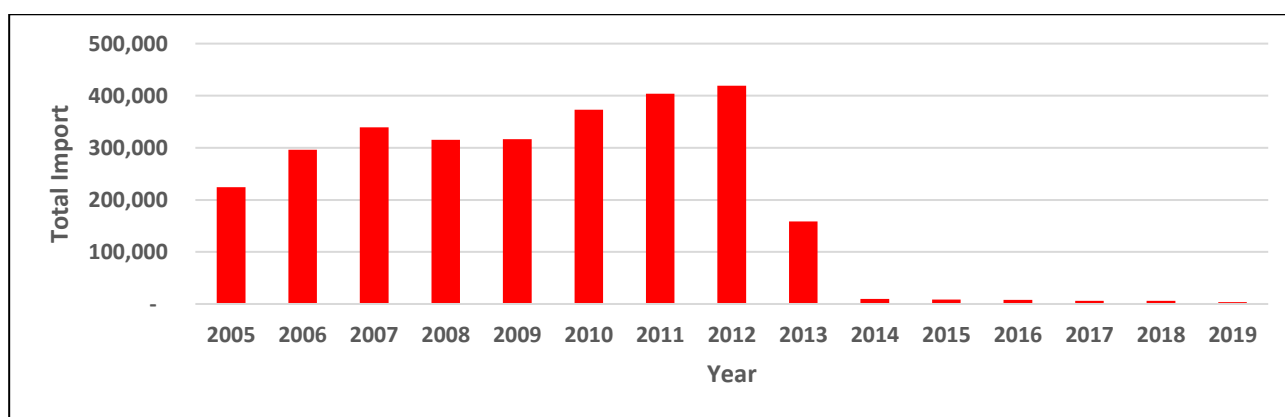


Figure 2.9: Yearly Trend of Used Fridges (2005 – 2019)

2.1.1.4 Top ten countries exporting used fridges to Ghana

Fig. 2.10 shows the top ten (10) countries exporting used fridges into the country. The United Kingdom accounts for 58% of the total export, Italy (10.46%), Netherlands (9.46%), Belgium (8.55%) and Germany (8.27%).

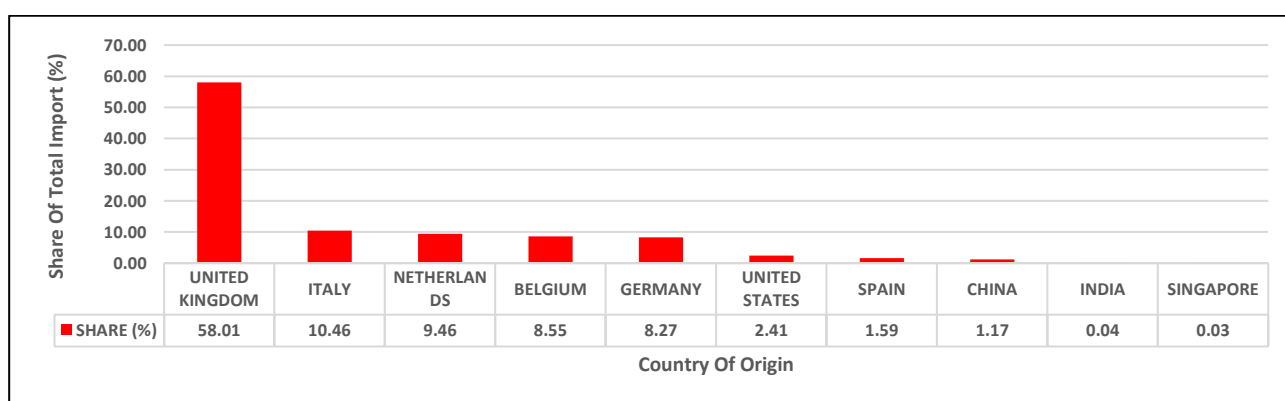


Figure 2.10: Top ten countries exporting used fridges to Ghana

2.1.4 Trends of New Versus Used Refrigerators Imports (2005 – 2019)

The importation of the new refrigerating appliances into the country has seen an upward increase over the years while that of the used fridges has seen a drastic reduction from 2013 due to the enforcement of L.Is. 1958 and 1932 respectively. Fig. 2.11 shows the number of refrigerating appliances imported into the country from 2005 to 2019. It is observed that in the years of 2000s, the number of ‘used refrigerators’ imported into the country kept on increasing and peaked in 2012, after which it started to decline. The proportion of new refrigerators imported into the country, however, has generally been on the rise, significantly from 2013. This rise in importation of new refrigerators is primarily due to strict regulations and control at the ports of entry to ensure that only appliances that meet the minimum energy performance standards (MEPS) are permitted into the Ghanaian market.

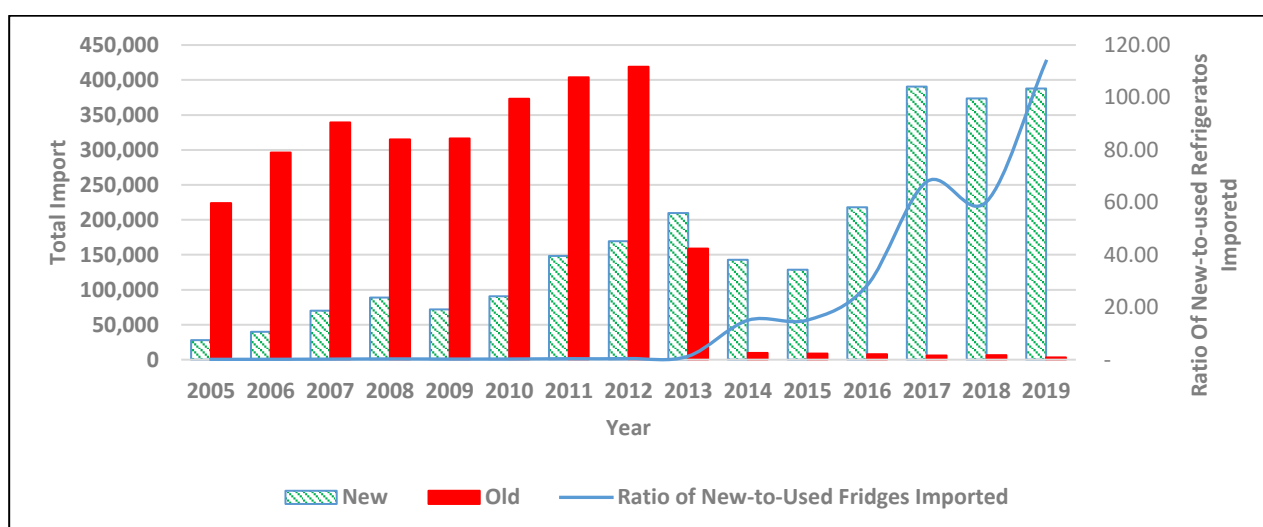


Figure 2.11: Trends in New Versus Used Refrigerators Imports (2005 – 2019)

2.1.5 Overall Summary Statistics on New Air Conditioners

A total of **163,290** cartons of new air conditioning appliances were imported and inspected at the Tema Port in accordance with L.I 1815. Of this number, 160,024 units, representing 98.0% of the total imports, were regulated appliances, while the remaining 3,266 units, accounting for about 2.0% of the total imports, were unregulated appliances (e.g. cassette/commercial or other ducted types).

About 65% of the regulated air conditioners are of 1-stars, 17% are 2-stars, 14.5% are 3-stars and 3.5% are 4-stars. There were no 5-stars. About 97% of all the imported air conditioners were compliant.

About **734,451** new air conditioners have been imported and inspected at the Port of Tema since the enforcement of L.I 1815 begun in 2014. Figure 2.12 presents the yearly trend/breakdown of these inspected air conditioners imported into the country.

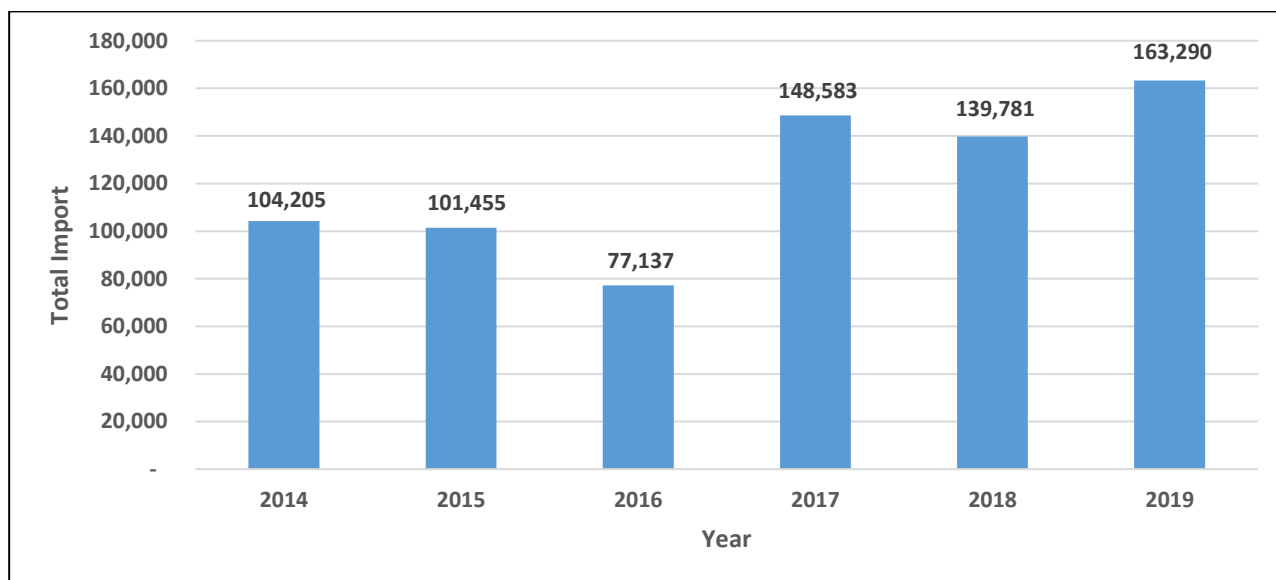


Figure 2.12: Yearly Trend in Air Conditioner Imports (2014 – 2019)

2.1.5.1 Types of Refrigerants in Air Conditioners imported and inspected

The types of refrigerants identified in the approved air conditioners imported into the country were R22 (64%) and R410a (36%). Figure 2.13 shows the share of the refrigerants.

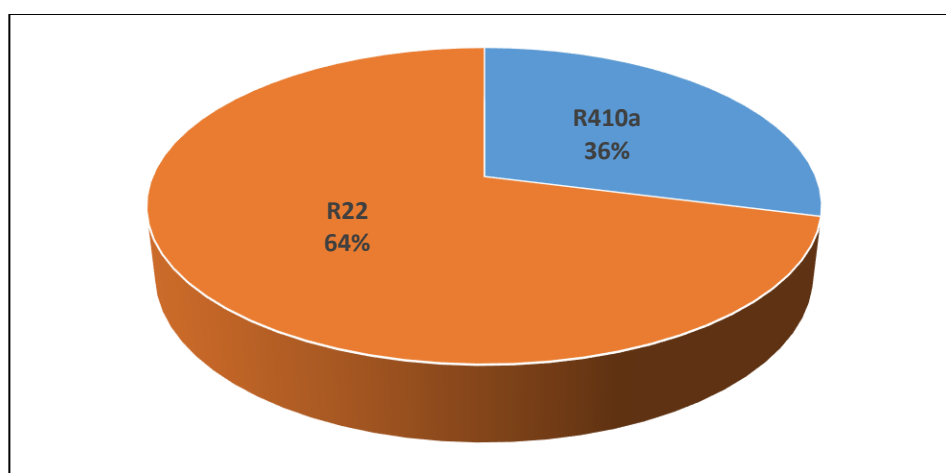


Figure 2.13: Share of Refrigerants in Air Conditioners in 2019

2.1.5.2 Air Conditioners: Importers and their brands

Electroland Ghana Limited was the largest importer of the air conditioners in 2018. It accounted for two-fifth (i.e. about 39.8%) of the total air conditioners imported. This was followed by Sun Electronics Ltd. (11.9%), Somotex Ghana Ltd. (9.1%) and TLC (3.6%). The most dominant/popular brand was NASCO (28%). This was followed by MIDEA (10.4%), Hisense (8.1%), and BRUHM (7.1%). Table 2.3 presents the details of some of the major importers and their brands.

Table 2.3: Importers, Brands and the Market Shares (Air Conditioners)

| NAME OF IMPORTER | BRAND | BRAND'S SHARE (%) | IMPORTERS' SHARE (%) |
|-----------------------------|----------------|--------------------------|-----------------------------|
| ELECTROLAND GH LTD | SAMSUNG | 1.3 | 39.8 |
| | NASCO | 28.1 | |
| | MIDEA | 10.4 | |
| SUN ELECTRONICS LTD | HISENSE | 8.1 | 11.9 |
| | AMCOM | 3.8 | |
| SOMOTEX | BRUHM | 7.1 | 9.1 |
| | LG | 2.0 | |
| TLC ELECTRONICS GH LTD | TLC | 3.6 | 3.6 |
| EDERICK LTD | WHIRLPOOL | 2.4 | 2.4 |
| MELCOM GH LTD | ELECTROLUX | 2.6 | 2.6 |
| FIRST EAGLE PRO. MAN. LTD | DAIKIN | 2.5 | 2.5 |
| INAMAR CO LTD | SAMSUNG | 1.0 | 2.8 |
| | CHIGO | 1.8 | |
| OLIVE AMIGOD | ROCH | 1.7 | 1.7 |
| MADSON JAPAN ENG TRD GH LTD | SAMSUNG | 1.8 | 2.4 |
| | WESTPOINT | 0.6 | |
| ALFA D TRADING CO GH LTD | GALANZ | 1.5 | 1.5 |
| COOL LINK LTD | CARRIER | 1.9 | 1.9 |
| FOREWIN GH LTD | BEKO | 1.4 | 1.4 |
| OTHER IMPORTERS | OTHER BRANDS | 16.4 | 16.4 |
| TOTAL (%) | | 100.0 | 100.0 |
| TOTAL IMPORTS | 163,290 | | |

CHAPTER THREE: CONCLUSION AND RECOMMENDATION

3.1 Introduction

This chapter presents the key summary results or the major findings, conclusions and recommendations for further action. The data analysis was performed on the daily data collected in the year during the physical examination procedures on all the containers with refrigerating and air-conditioning appliances. The statistical and analytical tools used for the analysis included SPSS, STATA, Google Drive and Excel.

3.2 Conclusions and Key Summary Results/Major findings

3.2.1 New Refrigerating Appliances

- A total of 387,622 cartons (2,968 containers) of new refrigerating appliances were imported and inspected in accordance with L.I. 1958 in 2019. Of this number, 380,257 cartons, representing 98.1% of the total imports, were regulated appliances, while 7,365 cartons, accounting for 1.9% of the total imports, were unregulated appliances.
- About 34.3% of all the regulated appliances were of 2-stars, 27.1% were 1-stars, 19.5% were 4-stars, 18.9% were 3-stars and only 0.2% were 5-stars.
- The expected average annual consumption of fridge/freezers is 323 kWh/year per unit.
- The expected average annual consumption of chest freezers is 391 kWh/year per unit.
- The expected average annual energy consumption of refrigerators is 208 kWh/year per unit
- About 97.0% of all the new refrigerating appliances are compliant in 2019.
- The importation of the new refrigerating appliances into the country has seen an upward trajectory over the years while that of the used fridges has seen a drastic reduction. Historical data suggests that there is a decline in the importation of used fridges from 2013 as a result of the implementation or enforcement of L.I. 1932.
- About **2,558,622** new refrigerating appliances (including showcases) have been imported through the Port of Tema since 2005.

3.2.2 Major Importers and Popular Brands of Refrigerating Appliances

- Electroland Ghana Limited was the largest importer of the refrigerating appliances in 2019. It accounted for 29.6% of the total imports. This was followed by Sun Electronics Ltd. (10.0%), Somotex Ghana Ltd. (9.0%) and Menkish Impex Ltd. (7.3%).

- NASCO was the most imported refrigerating appliance or brand (20.0%). This was followed by Hisense (10.0%), MIDEA (8.3%), Bruhm (7.4%), Legacy (7.3%) and Akai (6.4%).

3.2.3 Non-ducted Air Conditioners

- About **163,290** cartons (860 containers) of new air conditioners were imported and inspected at the Port of Tema in accordance with L.I. 1815. Of this number, 160,024 units, representing 98.0% of the total imports, are regulated appliances, while the remaining 3,266 units, accounting for about 2.0% of the total imports, were unregulated appliances.
- About 65% of the regulated air conditioners are of 1-stars, 17% are 2-stars, 14.5% are 3-stars and 3.5% are 4-stars. There were no 5-stars.
- About 97.0% of the regulated air-conditioners are compliant.
- About **732,450** new air conditioners have been imported and inspected at the Port of Tema since the enforcement of L.I 1815 begun in 2014.

3.2.4 Used Fridges and Used Air-Conditioners

- About 3,407 used fridges and air conditioners were seized in 2019.
- About 41,782 old refrigerators and 10,325 air conditioners have been confiscation/intercepted at ports of Tema and Takoradi since the inception of the enforcement of L.I. 1932 in 2013.
- A total of 10,472 units of old energy inefficient refrigerators have been turned-in through the National Refrigerator turn-in and Rebate Scheme which commenced in July 2012.
- About **56 GWh** of electricity savings have been made as a result of the enforcement of L.I. 1932 and the National Refrigerator turn-in and Rebate Scheme.

3.3 Recommendation

1. About 7,365 unregulated appliances, representing 2.7% of the total imports, were inspected at Tema Port in 2019. These appliances are projected to increase in the coming years as more supermarkets and shopping malls are built across the country. We, therefore, need legislation to regulate the influx of these appliances into the Ghanaian market so that they conform to the Ghana Energy Efficiency Standards and Labelling (Household Refrigerating Appliances) Regulation, 2009 Requirements.
2. The used fridges and air-conditioners are still being imported into the country, though the numbers seem to be decreasing over the years, probably as a result of the measures that we have put in place at the port. To completely stop the importation of these used appliances,

the punitive measures prescribed in L.I. 1932, including summary conviction to a fine of not more than two hundred and fifty penalty units or a term of imprisonment of not more than twelve months or both, need to be applied/enforced.

APPENDIX

A.1: Energy Guide Label for Refrigerating Appliance

The image shows a sample Energy Guide Label for a refrigerating appliance. At the top, a semi-circular graphic contains three stars and the text "THE MORE STARS THE MORE EFFICIENT". Below this is a red banner with "ENERGY" in large yellow letters and "guide" in a script font. A large black star with the number "3" is centered below the banner. To the left, a yellow arrow-shaped box contains the text "Energy Consumption kWh/yr* (Based on standard test result for 24h)". To the right of this box is the number "360". Below the arrow box is a list of appliance specifications: Refrigerator/Freezer Type: zyx; Manufacturer: Logo; Model No.: abc123; Fresh Food Volume l: XYZ; Frozen Food Volume l: XYZ; Refrigerant: Rxx; Climate Class: ST; Cooling Star Ratings: ****. To the right of the specifications is a small graphic of the Indian national flag with a star in the center. At the bottom, there is a disclaimer: "*Actual consumption will depend on how the appliance is used and where it is located. Further information is contained in product brochures. Removal of this label before first retail purchase is an offence under U 1541."

THE MORE STARS
THE MORE EFFICIENT

ENERGY *guide*

3

Energy Consumption
kWh/yr*
(Based on standard
test result for 24h)

360

Refrigerator/Freezer Type: zyx
Manufacturer: Logo
Model No. : abc123
Fresh Food Volume l: XYZ
Frozen Food Volume l: XYZ
Refrigerant: Rxx
Climate Class: ST
Cooling Star Ratings: ****

*Actual consumption will depend on how the appliance is used and where it is located.
Further information is contained in product brochures
Removal of this label before first retail purchase is an offence under U 1541.

A.2: Energy Guide Label for Air Conditioner

