

Study Report

Availability and Efficacy of Mercury-free Products in Kenya

Prepared by



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Executive Summary

The study was commissioned to check the availability of mercury free alternatives in the Kenya market, as a means to gauge the country's preparedness towards the phase out of mercury added products.

The study relied on literature review, key informant interviews, and review of import data from the revenue authority. A questionnaire was used to collect data from retailers and distributors of products under the categories listed in annex..... of the convention. Research assistants were trained and used in administering the questionnaire.

A total of 36 companies were visited during the survey. This included companies dealing with electronics, medical equipment, agrochemicals, and cosmetics. Of the Visited companies, Majority (57%) were dealing with both mercury free and mercury added products, while 37% were stocking only mercury free products

Mercury added products on sale include: Clinical thermometers (29%), sphygmomanometer (24%), and bulbs (energy savers) at 19%. Only 16.7% of distributors/retailors of measuring devices said they were not having mercury free alternatives to measuring devices.

Mercury is also imported into the country as mercury metal and industrial metal in large quantities.

- **Thermometers:** the study reveals shifting preference to digital and infrared thermometers evidenced by the large volumes imported compared to mercury thermometers.
- **Sphygmomanometers:** The digital mercury-free sphygmomanometers are already available locally; with import data showing more digital mercury-free sphygmomanometers being imported compared to mercury added ones.
- **LEDs:** LEDs are quietly replacing the energy saving bulbs that contain mercury. The LEDs are readily available and the cost is almost equal to the cost of energy savers in the local market.
- **Button cells and Switches:** It was not easy getting information on button cells and switches that contain or do not contain mercury, since they were not clearly labeled.
- **Cosmetics:** Importation of mercury added cosmetics is illegal in the country; however, study reveals availability of some in the market, though it was difficult to estimate quantities.

Conclusion

The study shows that the country is ready for transition towards mercury free alternatives, since they are already readily available in the local market. There is need to shift efforts towards consumer sensitization on benefits and availability of mercury free products.

There is also need for clear labeling of mercury added products so as to inform consumer choice of products.

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1. Chapter One: Introduction and Background

1.1. Background

Mercury is recognized as a toxic and persistent element, and it is documented that it has serious impacts on human health and environment. When released it is transported globally in the atmosphere and is as such a global problem. Due to its unique chemical properties, mercury has been used in a wide range of products over the years, but currently most of it is used in electrical and electronic devices, switches (including certain thermostats) and relays, measuring and control equipment, energy-efficient fluorescent light bulbs, batteries and dental amalgam. Smaller amounts of mercury are used in some laboratory equipment and in some cosmetics, pharmaceuticals, paints and jewelry (UNEP 2008). These items release mercury into the environment when broken or improperly disposed. If spilled, mercury absorbs into many materials while slowly evaporating into the air over time, allowing for exposure.

To reduce the risk from anthropogenic mercury releases to human health and the environment the UNEP governing council decided in 2009 to develop a global legally binding convention on mercury. The Minamata Convention on Mercury is a global agreement to protect human health and the environment from the adverse effects of mercury. The text of the Convention was adopted by the conference of the delegates on 10 October 2013 in Japan. The Convention calls on parties to control and reduce mercury emissions to the air, from a number of industry as well as certain products. The overall objective of the convention is to protect the human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds by providing controls across a range of mercury products.

Article 4 of the convention deals with Mercury-added products and requires that Each Party take appropriate measures to reduce the manufacture, import or export of mercury-added products listed in Part I of Annex A by the year 2020, except where an exclusion is specified in Annex A or the Party has a registered exemption pursuant to Article 6 (see annexed document).

Kenya Signed the Minamata convention on 10th October, 2013, and is currently working towards its ratification. The country will therefore be required to Phase down/Phase out certain mercury added products by the year 2020. This forms the basis for this study.

1.2. The Study

Centre for Environmental Justice and Development (CEJAD) in collaboration with its international partners, the European Environmental Bureau (EEB) and the Zero Mercury Working Group (ZMWG) are working towards the early ratification and implementation of the Minamata Convention by Kenya. This study aims at establishing the availability of mercury free alternatives as we move towards the phase out of the mercury added products. The study will achieve this by conducting a national inventory of systems for information provision of mercury-added products (goods/articles) to give a general overview of the available data on the total amount of mercury products categories, applications, alternatives, destinations/manufacturers imported into Kenya towards efficient and effective ratification and implementation of Mercury Treaty.

1.2.1. Specific Study Objectives

- I. Identify the common mercury added products in the country, their sources and possible quantities
- II. Establish the availability of mercury free alternatives in the Kenya market
- III. Establish the challenges/constraints towards assessing mercury free alternatives
- IV. Generate baseline data that will help to institute partnership towards promoting safer mercury alternatives, shift in policy and proper management of mercury.

1.2.2. Study Focus/scope

The study scope is limited to the following products listed in annex 1: Batteries, sphygmomanometers energy-efficient light bulbs, and cosmetics.

1.2.3. Study Limitations

Data on button cells containing mercury was very difficult to disaggregate due to lack of information on the same in the market.

2. Chapter TWO: Study approach and Methodology

2.1. Study Approach

The study was undertaken by a team of in-house personnel at CEJAD. However, the study benefited greatly from the input and guidance of a project Steering committee. The study therefore took the following approach

Pre-Inception

- I. Establishment of a Project support Group
- II. Facilitation of an Initial Project support Group Meeting
- III. Sharing of Project activities and plans
- IV. Preparation of Data Collection tools and sharing with PSG for Input
- V. Finalization of Data collection Tool

Data Collection Phase

- I. Identification of Possible Data Sources
- II. Recruitment and training of Research assistants on the data collection tool
- III. Field data Collection

Delivery Phase

- I. Collation of Field data
- II. Data analysis and interpretation
- III. Draft Report Preparation
- IV. Validation of draft report
- V. Final report Preparation

2.2. Methodologies used

2.2.1. Desk Study/Literature Review

This entailed the review of various import/export data for mercury added and mercury free products in the country. The data was collected from government sources such as statistical abstracts, import/export data from the various ports of entry, as well as other similar studies in the country.

2.2.2. Key Informant Interviews

Key informant interviews were held with key suppliers/distributors and consumers of the target products under study to ascertain their sources, and quantities used, as well as the preference factors determining type of product used. The data was corroborated with Key Informants from government agencies such as Kenya Bureau of Standards, Kenya Revenue Authority, and Line ministries. Non state actors such as the Kenya Association of Manufactures, Kenya Association of Traders.....

The data was collected using semi structured questionnaires.

3. Study Findings

3.1. Kenyan Context

Kenya is a net Importer of the products since the manufacturing sector has been on a decline due to cheap imports. Like many other countries, Kenya faces environmental issues on importation of technologies that use mercury. The country also imports mercury for use in various industrial and educational processes. However, the mercury problem in Kenya has not been evaluated adequately because of lack of supporting data and information. Data available is disaggregated and found in different sectors thus there exists challenges in getting full details on supply; import, export and use of mercury.

The only sector that has been comprehensively addressed in legal intervention is the cosmetics industry. The Kenya Bureau of Standards issued a public notice in the media in 1998-1999 to inform and educate consumers about the harmful effects of mercury, hydroquinone, and hormonal preparations and oxidizing agents contained in some cosmetic products available on the market. These products did not comply with approved standards and the products had been inappropriately used for skin lightening purposes. The prohibition/ban is aimed at protecting unsuspecting consumers and discourages dumping of these products in the Kenyan market.

3.1.1. Mercury Import in Kenya

Data from Kenya revenue authority for the year 2014/15 shows that there were several thousands of kilograms of mercury imported in to the country by various actors. However, the study did not ascertain the purpose of importation of mercury into the country.

Summary of import data for mercury is provided in table below. The total findings are an estimate extracted from the various information sources.

3.1.2. Mercury Import Data

Product	Quantities	
Industrial Mercury	3087	Kgs
Mercury Metal	14737	Kgs
Merury	4102	Kgs
Total	21,926.00	Kgs

3.1.3. Import Data on Thermometers

By compiling data from the Kenya revenue authority, the study managed to estimate the quantities of products imported into the country in the year 2014/2015.

Product	Quantities	
Unspecified assorted thermometers	6,172,	Units
Alcohol Thermometers	537	Units
Infrared Thermometers	1451	Units
Electronic thermometers	115	Units
Digital thermometers	19,947	Units
Mercury thermometers	759	Units
Total	22,809	

3.1.4. Import Data on Sphygmomanometers

Product	Quantities	
Mercury sphygmomanometers	604	Units
Digital sphygmomanometers	13,111	
		Units
Total	16,235	

3.1.5. Import Data on Bulbs

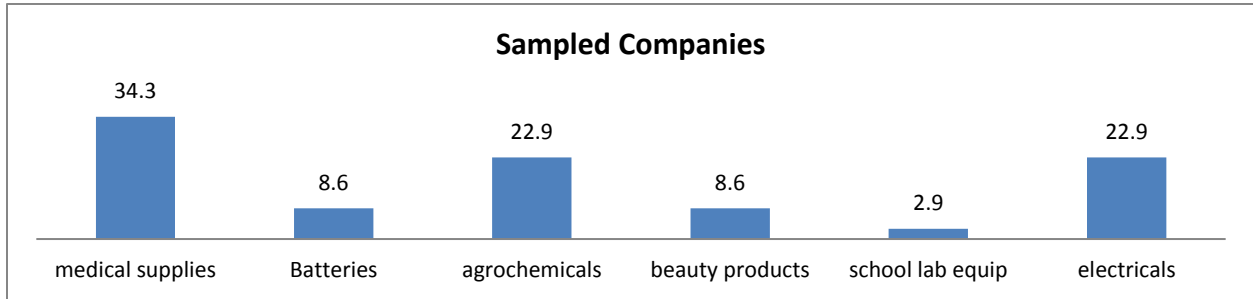
Product	Quantities	
LED	71,182	Units
Energy Savers	1,273,797	
HID		Units
Incandescent	34,351	Units
CFL	29,471	Units
Unspecified bulbs	43465	
Total	8,061,861	

3.2. Data from Retailers and Suppliers

3.2.1. Sampled Companies and Products

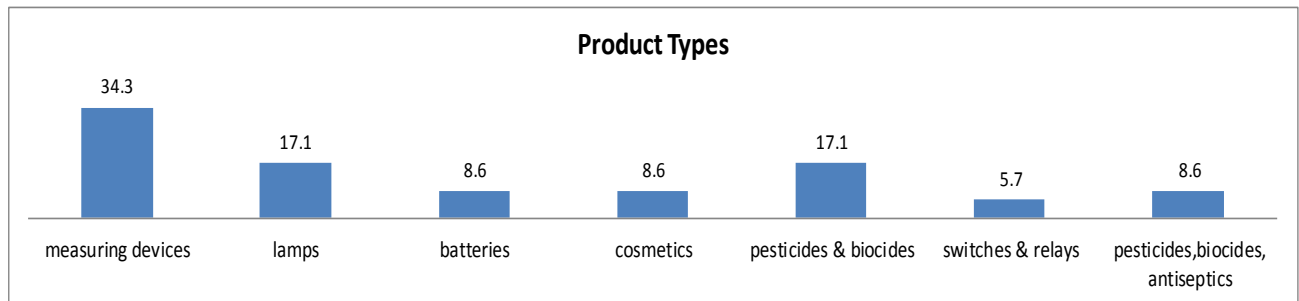
A total of 36 companies were visited during the survey as summarized in table 1 below. Majority of them were dealing in medical and laboratory equipment's (34.3%), followed by agro-chemicals (22.9%) and Electricals and electrical Products (22.9%).

Figure 1: Visited Companies by Product Type



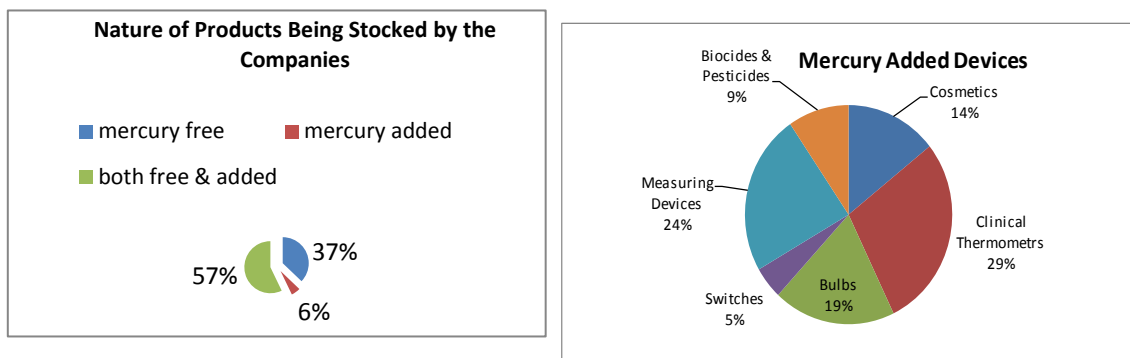
The bulk of products being stocked in the market included measuring devices, lamps, and pesticides and Biocides as shown in figure 2 below

Figure 2 Product type



3.2.2. Stocking of Mercury Added Products

Of the Visited companies, Majority (57%) were dealing with both mercury free and mercury added products, while 37% were stocking only mercury free products.

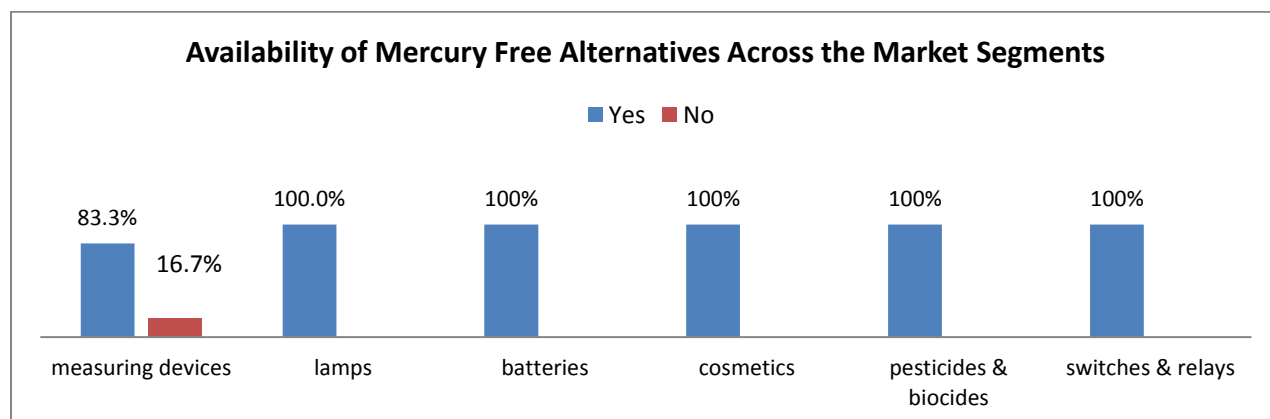


The bulk of mercury added products on sale include: Clinical thermometers (29%), sphygmomanometer (24%), and bulbs (energy savers) at 19%.

3.2.3. Stocking of mercury Free Alternatives

The proprietors were asked if they stocked, or were aware of the availability of Mercury free alternatives to the products they were selling. Only 16.7% of distributors/retailors of measuring devices said they were not having mercury free alternatives to measuring devices. All the other product segments had readily available mercury free alternatives to their products.

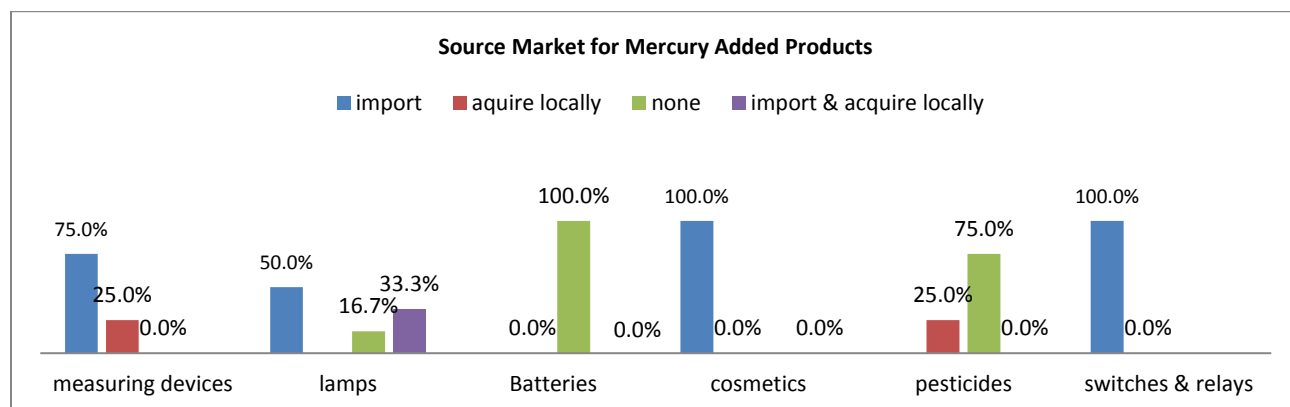
Figure 3: Availability of Mercury Free Alternatives



3.2.4. Source of products

The bulk of mercury added products were being imported into the country. Majority (75%) of mercury added measuring devices, 100% of mercury added cosmetics, as well as 100% of mercury added switches and relays had been imported into the country. Mercury added products stocked included thermometers (25%), sphygmomanometers (21%) and bulbs (25%)

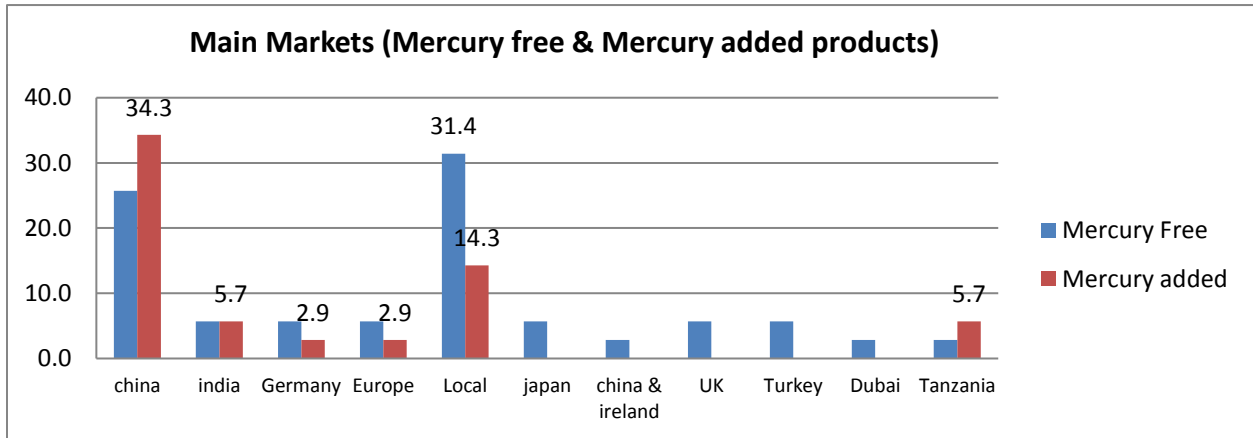
Figure 4 Source of mercury Added Products



China is the leading market source for both mercury free and mercury added products in the region. This could be attributed to the fact that the bulk of imports in Kenya are from China. About 14.3% of mercury added products were also sourced locally. It's important to note that mercury added items claimed to be

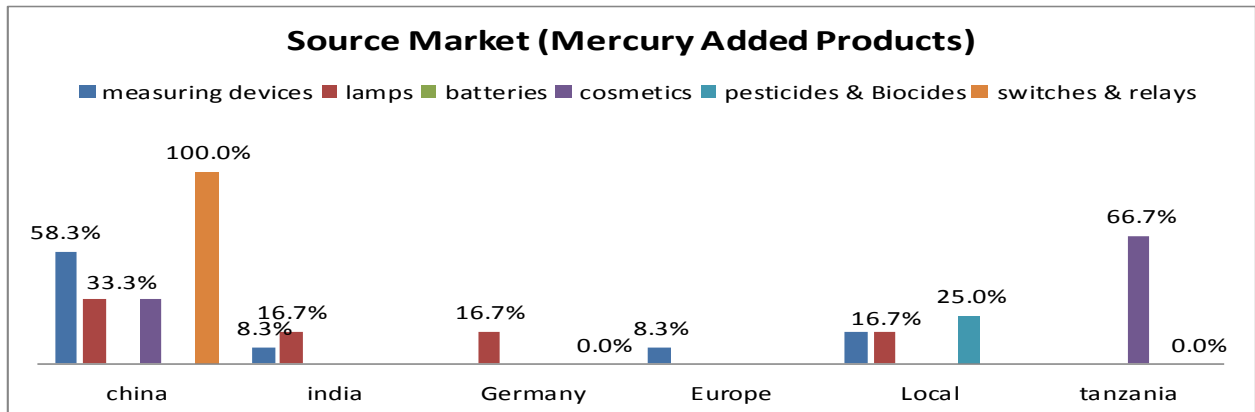
sourced locally were mainly being sold by retailers who have bought them from the main importers of such products.

Figure 5 Main Market Sources for Mercury Free and Mercury Added Products in Kenya



A breakdown of mercury added products and their source reveals that 100% of mercury added relays and switches were imported from China, while the main source of mercury added cosmetics was from Tanzania.

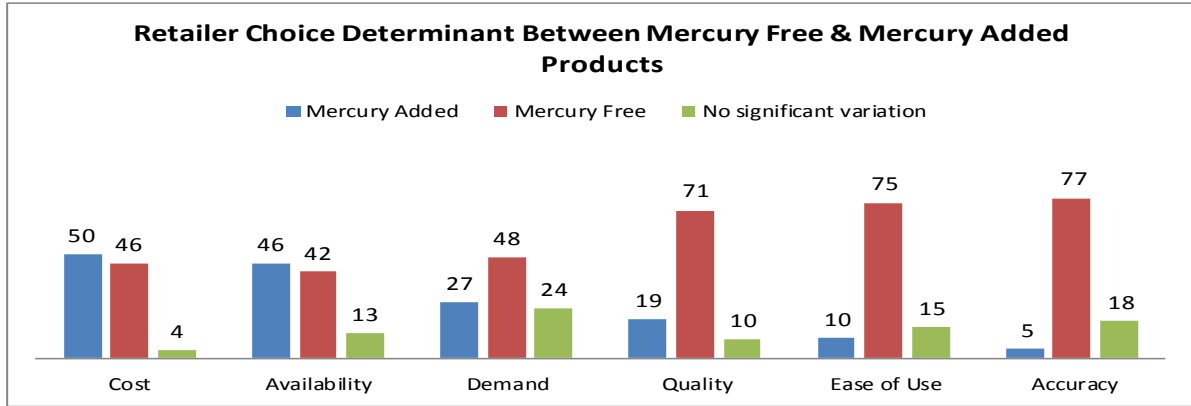
Figure 6 Mercury Added Product and Source



3.2.5. Factors Shaping decision to Stock Mercury Free or Mercury Added products

In terms of stocking products (both mercury added and mercury free), the decision was analysed based on cost, availability, demand, ease of use, accuracy of result, as well the build quality of the products. The results show that mercury free products are considered by the sellers as of better quality, accurate, and easy to use. 50% of the sellers claimed that their decision to stock mercury added products is based

on cost, compared to 46% whose decision to stock mercury free products is also based on cost. This shows no significant variation in cost as a factor for stocking mercury free or mercury added product. In terms of demand, 48% stock mercury free products due to demand factor, compared to 27% who stock mercury added products.



4. Synthesis and Conclusion

Analysis of the information from Kenya Revenue Authority and the retailers and suppliers point to the following conclusions

Thermometers: Import Data as well as information from suppliers and retailers point to a shifting preference to digital thermometers and infrared thermometers that are considered more accurate and easy to use. Other alternatives include alcohol based thermometers, magnetic thermometers, and electronic thermometers. This therefore means that alternatives are readily available in the market. Many of the private health organizations prefer using the digital measuring devices because they are easy to use, accurate and convenient. Therefore, supplies have focused on stocking the digital thermometers to meet the demand of the devices. Institutions like the government hospitals, research centres and schools are still using the mercury added thermometers.

Sphygmomanometers: The major alternative technologies available in the market was the digital sphygmomanometers. Data shows the availability of these alternatives in the market. Three countries reported zero demand for mercury containing sphygmomanometers.

Luminaries: as part of campaign towards energy efficiency, there has been a rapid uptake of energy saving bulbs in the country, to replace the use of incandescent lamps. The import data shows large volumes of energy saving bulbs coming into the country. The data also shows cases of importation of high pressure mercury vapour lamps (HPMV) for general lighting purposes, cold cathode fluorescent lamps and the energy saver bulbs. However, LED technology has also picked up in the country as evidenced by the rising import of LED bulbs that are considered more durable, brighter and energy efficient. However, the re cost is still slightly more expensive than the energy savers and CFLs.

For motor vehicles, there was presence of High Intensity Discharge (HID) Automobile Lamps, some of which contain. However, there are alternatives in the market that include mercury-free halogen lamps and LED lamps. HID headlamps that use zinc iodide as a substitute for mercury are also available in the market.

Button cells: It was not easy getting information on button cells that contain or do not contain mercury, since they were not clearly labeled. Literature review point to availability of Mercury Free alternatives which include: Non-mercury lithium, alkaline manganese, silver oxide, and zinc air button cells Mercury is commonly used in button cells. These points to the need to have button cells imported to the country

clearly labelled as mercury free or mercury added to enable consumers to choose, as well as make it easier to regulate use and disposal.

Switches: disaggregated data on switches containing no mercury or switches with mercury was not readily available during the study. This also points to the need to switches imported to the country clearly labelled as mercury free or mercury added to enable consumers to choose, as well as make it easier to regulate use and disposal.

Cosmetics: Importation of mercury added cosmetics is illegal in the country. However, data from the retailers point to availability of the same in the market. The bulk of this is said to be from the black market therefore challenges with estimating the quantities involved.

Consumer perspective: Most respondents during the study are not aware of the Minnamata Convention and the phase out dates. There were also challenges in that most distributors/retailers especially of products such as batteries, lamps and switches admitted to not knowing the existence of mercury in their products.

For pesticides and biocides, since the sector is mainly run by professionals in that field, the levels of awareness of constituents of the pesticides and biocides was slightly higher. They pointed to availability of both mercury added and mercury free biocides/pesticides in the market. Respondents stocking biocides and pesticides also claimed that pesticides used on animals do not contain mercury because of human consumption of animal products. The interviewee in this case scenario explained that they have strict guidelines ensuring that no elements of heavy metals especially mercury are used in the processing of animal health products.

Consumers: Generally, the consumers are not aware of which products contain or do not contain mercury in the markets. This therefore hampers consumer choice on what is ideal for their health and the environment, thus the need for a sustained consumer's sensitization program. Most distributors do not educate their buyers and they don't let them in on the existence of alternatives to mercury products. For instances, Many cosmetics suppliers are not aware of the mercury content in their products and they stock based on what is available in the market.

5. Annexes

5.1. Study Questionnaire

Project study on the availability and efficacy of Mercury-free products in Kenya

Target groups: Traders / Distributors

Introduction:

Mercury is toxic to human health and the environment. However it is still used in various products for specific applications even though Mercury-free alternative products have been produced for many of these same applications. Since 2013, more than 120 countries including Kenya have signed on to the Minamata Convention on Mercury, a global treaty which aims to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds. In the above context, the NGO; Centre for Environmental Justice and Development (CEJAD) in collaboration with its international partners, the European Environmental Bureau (EEB) and the Zero Mercury Working Group (ZMWG); are working towards the early ratification and implementation of the Minamata Convention in Kenya.

Rationale:

As part of current activities on the Minamata Convention being undertaken by the Government of Kenya, CEJAD is conducting a project pertaining to the phasing out / phasing down of Mercury-added products in Kenya by the year 2020, in accordance with the Minamata Convention.

Accordingly, CEJAD would be most grateful for your kind participation in contributing to the gathering of information on Mercury-free alternative products to replace mercury-added products that are currently imported, distributed and sold in Kenya. The aggregated data will be presented to government and stakeholders prior to inclusion in a consultancy report.

Should you be agreeable to participate in this survey, provided below are several questions we would like you to answer. The interview should take only around 15 minutes to complete.

Thanking you in advance and looking forward for your participation.

Questionnaires for Suppliers/Distributors

Preliminary Information

1. Company Name Years of Operation
2. Nature of products:
 Medical supplies [] School lab equipment [] Batteries [] Lamps []
 Others (specify.....)
3. Product types:
 Thermometers [] Sphygmomanometers [] Lamps [] Switches and relays [] Batteries []
 Cosmetics [] Pesticides [] Biocides [] Topical antiseptics []
 Others please specify.....
4. Source of Products:
 Manufacture [] Acquire locally [] Import []
5. Nature of activities:
 Imports for own use [] Import and distribute [] Retail sales [] After-sales services []
 Others Please Specify

Information on Mercury Free/Mercury Added Products

6. What Mercury added products do you stock/supply (List)

Product	Source/Origin	Quantities (2013/2014/2015)	Main Market Segment Supplied (e.g. schools, private hospital, government facilities, private companies, others etc)

Notes

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7. Are there available alternatives for mercury-added products that are mercury free and/or Convention compliant? Please describe.

Product	Source/Origin	Quantities (2014/2015)	Main Market segment supplied

Notes:

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8. What informs your choice between mercury added and mercury free/convention compliant products (**focus on Costs, Availability, Quality, Consumer preference/sales**)

Criteria	Product	
	Mercury Free / Convention compliant	Mercury Added
Cost		
Availability		
Demand		
Built Quality/Durability		
Ease of use		
Accuracy and Reliability of results		
After sale service/Technical Assistance from manufacturer/original supplier		

Notes.....

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9. In case repairs and/or calibrations (as stated above) are arranged by your company, please specify whether these are done locally or abroad, and if there are any differences between Mercury-added and Mercury free/Convention compliant devices in this regard (e.g. easiness, time needed) ?

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10. Are there any obstacles/prohibitions /challenges to importing mercury-free/convention compliant products?

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