

**MOMBASA COUNTY- LEAD (PB) SMEALTER**



2018-2019

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## **1. INTRODUCTION**

Extractive industries are widely setting up in Mombasa County. Some of them concentrate on used lead acid battery recycling. Improper lead acid battery recycling presents a significant environmental and health problem in Kenya, violating the right to a clean, healthy and sustainable environment as assured in article 42 of the Kenyan constitution 2010. The discharge of the battery acid into the environment and remitting of the lead in open fires (recycling plants lacking up to date technology) are common practice in Kenya and few alternatives have been developed to date.

Poor management of lead wastes and smelting residue is a potent risk to the environment and to the surrounding populations. Left untreated lead wastes in arid and semi-arid areas can be full of lead bearing dusts for years, which is detrimental to humans, animals and the entire ecosystem. These effects include but not limited to stillbirths, anemia, and poor muscle coordination, effect on central nervous system, kidneys and miscarriages. So far, several extractive industries in Kenya deal with scrap metals and lead acid battery recycling has been identified with complaints from workers and community members. However, most of the major lead-acid battery recyclers have been shut down following the passing a law on export of lead. The law by the East Africa community parliament was as a result of advocacy and policy work by the Center for Justice Governance and Environmental Action (CJGEA) in a bid to stop pollution in Owino Uhuru slums. However, this law after being enforced ensured the closure of most of the smelters that were licensed to operate in Kenya.

This therefore, has led to smelting of lead on open and backyard smelting that highly exposes individuals to severe public health related diseases and dangerous pollution levels. Some of the smelters used in this study are described below.

### **1.1 AREA OF STUDY**

#### **1.1.1 Metal Refinery Ltd**

Metal refinery EPZ is located within an informal settlement in Mombasa County, on the coast of Kenya GPS coordinates S04 ° 00.438' E039 ° 36.957' that started recycling and smelting LABs in 2007. In 2009, Phyllis Omido the Executive Director-Center for Justice Governance and Environmental Action raised the concern of the factory's operations that was causing lead poisoning. A year later three children were tested for lead poisoning and the results came back positive and these agitated the Owino Uhuru community who rose up and demanded the shutting down of the smelter.

Ele	ppm	±2σ
Zn	587	22
Pb	10.5K	0.1K
As	98	61
Mn	413	57
Mo	5	3
Fe	10.2K	0.2K
Cu	47	15
Rb	37	4
Sr	335	7
Zr	251	7

Figure 1 XRF reading of 10500ppm of soil next to the base

### 1.1.2 Kenya Metal Refinery

Kenya metal refinery is located at the coastal parts of Kenya at GPS Coordinates S04°00.778'E039°36.627'. The refinery has been involved in lead-acid recycling and secondary recovery of lead for five years before it was shut down in 2014. The smelter was later converted into a garment Export Processing Zone with most of the working areas were barely renovated from recycling batteries to making garments. Lead still exists in the dust of the new business premises.



Figure 2 Former smelter, renovated Kenya refinery.



### 1.1.3 Aclara EPZ Ltd.

Aclara EPZ Ltd is located on the coastal parts of Kenya at GPS coordinates S04°00.046' E039°36.104'. The refinery has been involved in ULAB recycling and secondary recovery of lead for four years.

After it was shut down in late 2014, it was converted into a syringe, garment and other homecare materials processing area. The area still had the dumped solid waste and open effluent tank from the smelter that continued to expose the new industry and neighboring residents to risk of lead contamination especially the nearby river.



*Figure 3 Animals feeding from dumpsite at Aclara(left) and an effluent tank open even after the shutdown of the factory(right).*

## 1.2 Aims and Objectives

### 1.2.1 Overall objective

Using participatory rights (procedural rights;-Access to information and public participation) as a tool for inclusion in decision making, climate change mitigation and to improve civic space and the socio economic welfare of poor and marginalized communities that host extractive Industries. This will be achieved by building their capacity to acquire advocacy information a participation tools that will empower them, to participate in environmental governance and decision making in their own communities.

### 1.2.2 Specific Objectives

1. To support geographical expansion of Center for Justice Governance and Environmental Action Work in Mombasa, Lamu , Kilifi, Kwale and Taita Taveta Counties
2. This project seeks to empower communities through participatory action research to explore dimensions of (and impediments to delivery of) access to information and public participation as a tool for Peace, cohesion and climate change mitigation in five rural poor counties of coastal belt of Kenya.
3. Strengthen participation of communities in national processes on environmental governance by promoting cohesive opinion sharing in participation forums that represents the community concerns as a single voice.

4. Mainstream procedural rights into environmental governance systems to promote a climate regime in Kenya
5. To scale up platforms for socio economic rights empowerment, leadership development in communities in Kilifi Kwale, Taita Taveta, Lamu and Mombasa Counties
6. Develop and implement an advocacy strategy

## **2. DATA COLLECTION AND ANALYSIS**

### **2.1 Study area description**

The target population was the workers working in the identified lead acid recycling industries or involved in scrap metal dealing and the community members living on the informal settlements around these industries. The interviews involved both, the men and women. The children were represented by their parents or guardians. The study covered 3 study sites that are characterized by the smelter industries. At least 10 former workers and surrounding residents from each study site participated in the study.

### **2.2 Data collection**

Qualitative data collection methods were used to assess the environmental and health standards of the former workers and the neighboring residents that participated in the study. The researchers used observation, informal conversations for the illiterate and questionnaire based interviews for the literate. There was also photo documentation and soil sample collection in a labeled zip-locked sample bag to be analyzed by SGS labs. A few selected (putting in place all the ethical considerations) former workers/neighboring residents to an existing or former smelter were tested for lead poisoning in a private lab as well.

### **2.3 Soil Samples Analysis**

The soil samples collected in strategic points were delivered to the SGS laboratories that deal with environmental media to be analyzed for Lead. The soil and dust samples were digested and run into the Atomic Absorption Spectroscopy (AAS) machine to analyze lead element following the Shimadzu AA6300 standardized analytical method (Shimadzu, 2002).<sup>(6)</sup> The results are illustrated in the table below:

Kenya Metal refinery	3256.52mg/kg	Entrance area
Alcara EPZ	12946.10mg/kg	Behind the building nearest to community
Alclara EPZ	93742.10mg/kg	Collected after years of shutdown
Metal refinery EPZ	1656.63 ppm	Soil sample a few meters from the smelter
Metal refinery EPZ	23.63 ppm	Drainage water

As seen from the results above, lead persists for many years before degradation. For instance the metal refinery has been shut down for at least three years now but there are still high levels of Pb. This long term persistence of lead in the environment is what makes it a dangerous heavy metal both in the environment and human body.

#### **2.4 Blood Lead Level (BLL) Analysis**

The selected participants in BLL analysis with their consent provided their BLL results that they had been tested just a few months back by private laboratories and a few by the government chemist. Most of these had worked in either or all of these three coastal smelters i.e. metal refinery, Kenya Metal refinery and Alclara EPZ Ltd. Their BLL results are shown in the table below:

*Table 2: BLL results of selected study participants*

Wife to former worker	28.0 µg/dl	Kenya Metal Refinery
<i>Personal Description</i>	<i>BLL Results</i>	<i>Smelter nearby</i>
<i>Nearby resident</i>	<i>124.3 µg/dl</i>	<i>Metal Refinery</i>
<i>Nearby resident</i>	<i>99.3 µg/dl</i>	<i>Metal Refinery</i>
<i>Nearby Resident</i>	<i>24.0 µg/dl</i>	<i>Metal Refinery</i>
<i>Former worker</i>	<i>26.0 µg/dl</i>	<i>Kenya Metal Refinery</i>
<i>Nearby resident</i>	<i>24.0 µg/dl</i>	<i>Metal Refinery</i>
<i>Former worker</i>	<i>10.0 µg/dl</i>	<i>Metal Refinery</i>
<i>Former Worker</i>	<i>8.22 µg/dl</i>	<i>Alclara EPZ</i>
<i>Nearby resident</i>	<i>4.0 µg/dl</i>	<i>Kenya Metal Refinery</i>
<i>Food Supplier to factory</i>	<i>2.0 µg/dl</i>	<i>Metal Refinery EPZ</i>

The ten study participants whose blood was tested for lead poisoning were all positive. Eight out of ten had above the revised WHO standards of 5µg/dl BLL. This weakens their immune system risking ailments related to lead poisoning. Most of them mentioned that they have been treating the common tropical ailments since most of the hospitals in Kenya are not equipped to diagnose chemical diseases. Apart from metal refinery, very few study participants had thought of being tested for lead poisoning. Those that had worked in these smelters or lived closest had higher chances of having higher BLLs than those who had less contact with lead. The alarming thing was that the BLL levels were still this high even after a year of the shutdown of the smelter.

#### **Environmental, safety and health standards of the workers and the physical features of the lead smelting industries**

Due to the passing of the law on legality on export of lead by the East African law society, most of the smelters in Kenya have been shut down. Currently, most of the people interacting with lead and lead products are mechanics working in garages and those involved in repairing ULABs.





They pointed out that repairing/ recycling of ULABs in the country is on the decline in the country due to:

The price of a new ULAB has become cheap and most people can now afford new batteries.

Most of the cars on the road are fairly new and hence do not need battery replacement frequently.

- The raw material (lead) that they use in repairing ULABs is getting scarce and expensive due to the shutdown of the smelters. This makes repairing expensive and the cost is put on the consumer who prefers having a new battery instead.

### **3. KEY FINDINGS AND INTERPRETATION OF RESULTS**

#### **3.1 Education of Respondents**

Most of the respondents are educated and only a few are uneducated. Majority of the respondents have reached higher level of education, some have gone up to high school, others have reached primary level only but a few have not gone to school and among the few majority are elderly people.

#### **3.2 Civil Society**

##### **3.2.1 Civil Society Presence**

Mombasa being an urban area it presented more CSOs available the respondents could identify themselves with the existing CSOs. The respondents said that the CSOs are there in plenty but they have different thematic areas some are irrelevant to the needs of the communities. Some of the CSO available are HAKI YETU, HURIA, MUHURI, ECO ETHICS, KNCHR e.t.c.

#### **3.3 Modes of Communication**

##### **3.3.1 Television**

A common method of conveying information to people is via television. From the study, it was revealed that all respondents have access to Television. The respondents with Television sets, Citizen TV, KTN, NTV and K24 TV were preferred channel of choice to watch. We were able to learn that the respondent could even go to the public entertainment places just in order to what new. We also learnt that the entire respondents are digital connected

##### **3.3.2 Radio Transmission**

Radio is considered to be a major channel to convey information since majority of the residents owned radios. Most of the respondents listed Radio Salaam, Radio Rahma, KBC, Baraka FM, Radio Kaya and BBC as their preferred radio stations.



### **3.3.3 Mobile Phone**

All of the respondents owned mobile phones. 90% of the respondent's phones are connected to internet and 10% of them were not. Respondents with internet-enabled phones explained that they mostly use their phones for sending SMS' and making calls and browsing the social media.

### **3.3.4 Newspaper Access**

As part of access to information, respondents were also interviewed in regards to their access to newspapers and whether the newspapers received conveyed adequate environmental information.

Majority of the respondents have no access to newspapers and are able to access newspapers on a regular basis. The only problem is that most of the could not afford to buy on their own on a regular basis

A follow up question asked was whether the newspapers accessed by respondents offered information relating to the environment and whether this information was adequate.

½ of the respondents (5) who get newspapers stated that they get environmental information from the newspapers while the remaining ½ said they have no idea since they had never paid close attention to that.

## **3.4. Corporate Accountability of Mining and Extractive Industries towards Communities with a Focus On EHRD Work**

### **3.4.1 Familiarity with mining activities**

All of the respondents stated that they were familiar with the extractive industries. They further stated the name of the company conducting the activity.

### **3.4.2 Public participation**

Respondents familiar with the company's activities were then further questioned if the company involved them public in forums prior to its establishment. Some responded that there was a meeting held while others said no meeting was convened. We further noted that this was attributed by poor conveying of information and ignorance of the respondents.

### **3.4.3 Infringement of rights by the company**

All of the respondents said that the company was violating their human and environmental rights. The respondents stated that the company did not inform them of their activity on their land, and they



consider that as a violation of human rights.

#### **3.4.4 Environmental Human Rights Defenders**

All respondents admitted that there have been people who have been leading them in objecting to the company's work. CJGEA however identified them as [EHRDs](#) who lacked knowledge of who they are. The EHRDs identified admitted that they lack support from other community members and government to assist them in champion the right of the community members.

#### **Conclusion**

Host communities of toxic/extractive industries have very limited information on the potential risk of being exposed to lead as observed during the study. Furthermore, results of interviews established that most workers and the adjacent communities likely to be affected, were neither trained nor informed about occupational exposures to lead and associated adverse health effects during the Environmental Impact Assessment of establishing an industry. The risk of take-home exposures which many are not aware of is on the rise statistically. Violations of procedural rights has been observed especially on access to information and public participation in decision making in environmental processes and which are very well stipulated in the country's constitution. Most of these industries owned by corporate investors from China and India go through shortcut routes to acquire license for operations from mandated state agencies.

There are inadequate regulations and/or the enforcement capacity to reduce occupational and environmental lead exposures. Alternative means to encourage improvements in the industry should be implemented such as Better Environmental Sustainability Targets (BEST) certification standards that is developed with the involvement of key stakeholders outlining performance exposures for workplace exposures, emissions and extended producer responsibility to take back used batteries for proper recycling. Governments of these countries should play a role in controlling the pollution associated with backyard recycling operations in regulating the collection of used LABs. Chelating medication is far much expensive for any low to middle income person to afford and it is barely available in African hospitals. Environmental remediation which focuses on exposure reduction to lead, treatment and capacity building is the solution for various countries and adopting pilot projects such as that in Zamfara, Nigeria.