

Putting the Cart Before the Horse? Traders' Compliance with Kenya's Ban on Plastic Carrier Bags

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Abstract:- Plastic bags are non-biodegradable materials and consequently harmful to the environment. In spite of that, plastic is light and easy to make hence the increased production across the globe. This study was conducted in the aftermaths of Kenya's ban on plastic bags with the intention of analyzing how traders have complied with the ban. Compliance levels were reported to be lower in Kibera (30%) compared to Karen (60%). The banned plastic carrier bags were still in circulation and manufacturers blamed poor enforcement from the government and porous borders. Purportedly, traders were not given time to prepare and comply neither were they adequately consulted. The low compliance levels were attributed to limited public participation of the traders hence the need to adopt a circular economy model where every item is of value and consumers are able to reduce, recycle, reuse and relevant government agencies able to provide ecofriendly and affordable alternatives.

Keywords:- Plastics; Ban; Compliance; Circular Economy; Enforcement.

I. INTRODUCTION

Plastic bags have become a global menace due the growing evidence of their impact not only to human life but also aquatic life and the aesthetic value of the environment, between 60% and 80% of litter in oceans is plastic and 275 metric tons of waste generated in 192 coastal countries is made of plastic (Zamparo *et al.*, 2018) depicting how dangerous plastics are. Plastics reduce aesthetic value and cleanliness of the physical environment.

The ban on plastic bags in Kenya has a history of previous failed attempts that were blamed on lack of

political will, inadequate preparedness and lack of alternatives (Guardian, 2018). The negative impacts the bags pose not only to the environment but to both animals and human beings has been informing the bans and hence the Ministry of Environment and Forestry decided to attempt the ban one more time.

Plastic bags constructed with and without gussets and used for primary and domestic packaging were the targets of the ban imposed through the gazette notice No. 2356, the bags, apart from clogging drainage systems and pose ugly scenes on the environment, also act as breeding grounds for bacteria causing lifestyle diseases. Prior to the ban on plastic carrier bags in Kenya, about 100 million plastic bags were used each year in supermarkets alone, impacting the environment, human health and wildlife especially in areas where waste management systems are inadequate. In Western part of the country, veterinary doctors claimed that in their lifetime cows ingest an average of 2.5kgs of plastic bags, among other plastics (UNEP, 2017).

II. LITERATURE

The globe is already unable to cope with the amount of plastic waste it generates which has been on a steady increase (*figure 1*) according to Geyer *et al.*, 2017. In the year 2015 alone, plastic packaging wastes accounted for 47% of the plastic wastes generated globally (300 million tons of plastic waste was generated), with half of the same appearing to have originated from Asia (Geyer *et al.*, 2011). Plastics have caused the deaths of most livestock including aquatic animals, butchers who slaughter livestock report losses attributed to reduced weight since a lot of plastic left carelessly on the fields are ingested by livestock as others are driven by run off into the water bodies where they negatively affect the aquatic ecosystem.

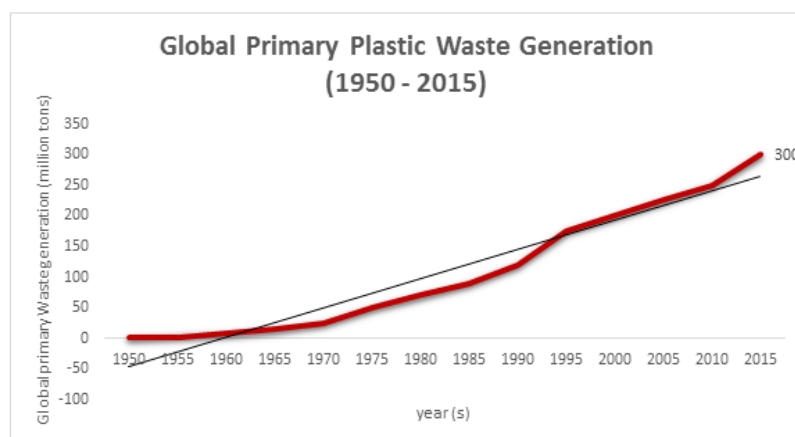


Fig 1:- Global Primary Plastic Waste Generation (1950-2015); Adapted from Geyer, Jambeck and Law, 2017

The proliferation of plastic production globally accelerates climate change, according to the Centre for International Environmental Law (CIEL) plastics contribute to greenhouse gas emissions at every stage of their lifecycle; from production to when it is managed as wastes and the annual CO₂ emissions from plastics could grow to more than 2.75 billion tons by 2050 if no urgent action is taken to halt it (Lisa *et al.*, 2019). Improper solid waste management is one of Nairobi's most visible environmental obstacles; the stench that welcomes one into the city as a result of pollution caused by wastes on the roadside is unbearable (Odhiambo, n.d.), and with the over 2 thousand tons of wastes generated daily, the county government has acknowledged it can't manage ("How Nairobi can fix its serious waste problem," n.d.). More than a year and counting since the ban took effect, the banned plastic carrier bags are still in circulation among and between traders and consumers, and the manufacturing body cited loss of jobs and lack of stakeholder engagements that led them to seek the quash of the ban in court (Olulshula, 2018) and unavailability of proper alternatives (Ocharo, 2018) coupled by minimal preparedness with no efforts to revive the sisal industry that could provide ecofriendly alternatives ("Traders and public unprepared for plastic ban - Daily Nation," n.d.).

A key indicator in governance effectiveness is how best regulatory systems are able to achieve their various policy needs (Wilthagen, 1997)). The response towards a given piece of legislation determines how effective its compliance will be. In Taiwan, a ban on plastics had to be reversed three years after it took effect due public and stakeholder outcry (Swanston and Jennifer, 2009), South Africa too had to settle for levies as a result of negative response to an intended ban from the key stakeholders. The understanding of whether individuals are sticking to their culture/habit or deviating from it to another could be the best indicator of compliance (Gilboy, 1998), the analysis of how traders responded to Kenya's ban on plastic carrier bags could therefore inform formulation and implementation of future policies.

➤ *Theoretical Underpinning*

This research study was guided by Herbert A. Simon's (Simon, 1996) theory of Bounded Rationality. The Bounded Rationality theory argued that when people make decisions, the mind is bound by cognitive limits and restricts itself in making decisions (Deshpande, 2010) further that, rationality is limited by amenability of the decision problem, the intellectual limitations of the brain and the available time (Reinhard *et al.*, 2002) hence the need to know what drove traders' response towards the ban on plastic carrier bags. The author highlights elements that informs decision making; alternatives to the decisions, for example what are the alternatives to the ban on plastic bags, satisficing with learning and adaptation through environmental feedbacks (Wall, 2002). Another element is on inspiration to decision, what inspires individuals to make decisions, and this is in line with the objective that aims at finding out the constraints and opportunities associated with the ban among traders. The aspirations and

goals of a decision maker normally is to adjust in response to the consequence of the decision to be made (Wall, 2002).

III. MATERIALS AND METHODS

This study was conducted in Nairobi County; Karen and Kibera estates in Kibra Division due to their close proximity and distinct social class with the aim of doing a comparative analysis on how the selected traders responded to the ban on plastic carrier bags. Karen is a suburb lying south of Nairobi's Central Business District majorly inhabited by relatively medium to high income earners with a population estimated to be nearing at least 30,000 people (KNBS, 2017). Major businesses taking place are wholesale and retail with small scale traders engaging in roadside businesses like food vending, retail shops, groceries, butchery among others. Most of these traders relied on plastic bags for packaging the traded products.

Kibera on the other hand is the largest informal settlement in Kenya and perhaps also the largest in Africa inhabited by low income earners; earning less than 1 dollar per a with unemployment rates being quite high (IMC, 2013). Most traders engage in food vending, in addition, there are numerous traders in retail shops, groceries and others are running butcheries and food vending (AI, 2018). Kibera's population across eleven villages is projected to be nearing at least 250,000 (KNBS, 2017) with the traders too being homogenous.

IV. RESEARCH DESIGN

The study was a cross-sectional study, employing both qualitative and quantitative data collection methods. It involved initial reconnaissance study to determine the number of traders (the selected categories) existing in the two areas of study. The key traders were the butchers, grocers, vendors and retails shops operators since they were the most affected with the ban on plastic carrier bags. During the reconnaissance study it was established no official list of traders was in place thus the number of traders in both Kibera and Karen was not known. Owing to the homogeneity of the traders in the eleven villages in Kibera, one (Makina) village was used as a representative of the eleven villages.

➤ *Sample Size Determination*

Based on the reconnaissance study, the population of the traders in Kibera and Karen unknown. Therefore, the researcher resorted to using Cochran's formula, when study population is unknown, to determine the sample size i.e.

$$n = Z^2 pq / d^2$$

Where;

Z is the standard normal deviation at 95% confidence level = **1.96**

P is the percentage picking a choice or response = 50% (**0.5**) – (Proportion in population based on pilot study)

d is the Standard error = ± **0.1** (10%), percentage at which the actual population is estimated at.

q is (1- **P**)

Using the above formula, the following was arrived at as the sample size for the study.

$n=1.96^2 \times 0.5 \times 0.5 / 0.1^2 = \text{Sample Size } (n) = 96.04$. An additional attrition of 10% gives the used sample size as **106**. This size was divided in the ration of 1:3 between the two areas based on the findings from the reconnaissance study which revealed that for every three traders in Makina Kibera, there is one such trader in Karen.

➤ *Sampling Procedure*

The study used more than one method in sampling the respondents due to their complex arrangements. In Karen, the researcher employed a purposive sampling method to gather the needed data from the four categories of traders since the distribution of the targeted respondents was sparse except for Karen and Hardy Markets where a systematic random sampling was employed in collecting data to achieve the desired representation and avoid bias.

In Makina (Kibera), the sample distribution was dense and in order to achieve the desired representation, the researcher employed a systematic random sampling all through where; traders were picked one after every three along the transects defined by major roads; for the grocers, vendors and retailers. However, for the butchers, sampling was done purposively due to their spread along the transect.

➤ *Data Analysis*

Data obtained was managed using the Statistical Package for Social Sciences (SPSS) and Microsoft Excel 2016. Analysis was done using means, frequencies and percentages. Additionally, a t-test was conducted to

determine how independent variables; location and gender influenced how traders responded to the ban on plastic carrier bags.

V. RESULTS AND DISCUSSIONS

➤ *Demographic Characteristics*

A total of 106 (one hundred and six) respondents interviewed came from Kibera and Karen estates which formed the study areas. The youngest respondents being 19 years and the oldest being 62 years of age; of the respondents interviewed 44% and 56% were males and females respectively, subsequently the distribution of the traders being even with majority being grocers at 41%. Most of the respondents interviewed were the owners of the business they were doing with 67% owning the business and 33% were either employed or family members; son/daughter or relatives. Additionally, majority of the traders had been in the business for at least two years (47%) making them useful for the study since the ban took effect one year before the study was conducted.

➤ *Compliance/Response towards the ban on plastic carrier bags*

The response of stakeholders towards a given piece of legislation determines how effective the legislation will be complied with. About 57 and 30 percent of traders from Kibera and Karen respectively reported that the ban was not necessary. While 44% of the respondents from Karen opined that the ban on plastic bag was both necessary and not necessary explaining that the environment had become cleaner despite huge business losses as a result of limited packaging alternatives.

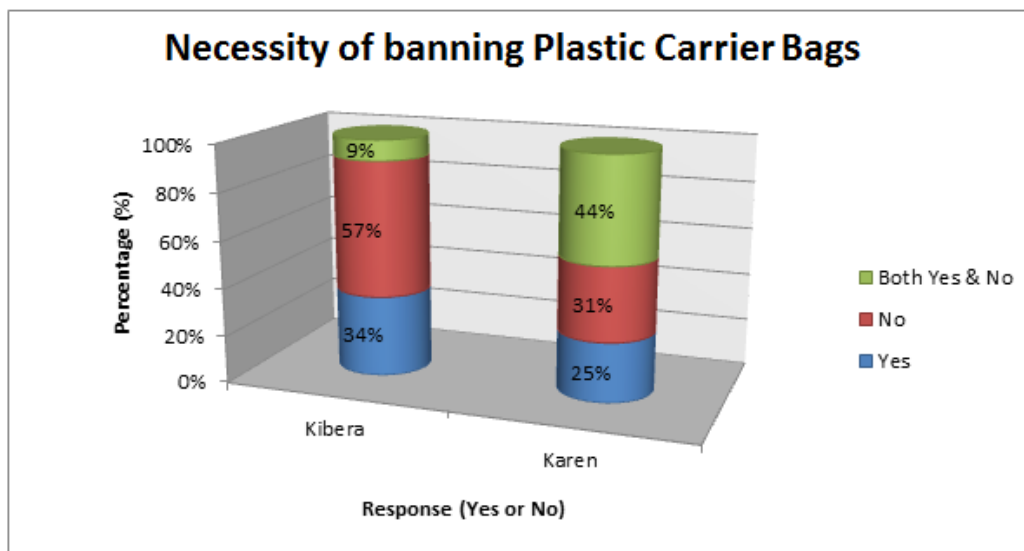


Fig 2:- Traders' response on whether it was necessary to ban the plastic carrier bags

Traders reported difficulty in doing business without the banned plastics bags because the reusable were deemed expensive and hence increased cost of business. About 80% of Kibera traders report that the physical environment remained dirty and littered despite the ban being intended to make surrounding cleaner. More than 60% of traders interviewed laments that there were no alternatives

provided to them. The lack of alternatives packaging to the banned plastic bags has proven to be a threat to nations that have banned plastic bags in the quest to achieve full compliance. Nations that have indicated having little or no reports on compliance cite lack of enforcement and clear alternatives as their biggest challenge (UNEP, 2018).

This study established that 70% of the respondents were not consulted and informed before the ban took effect. Whereas the 30% of respondents who were consulted reported having heard the decision to effect the ban on plastics through television and radio. Despite the importance of the ban to the traders' businesses there was no public forum in which they were involved to give their views on the plastic ban. About 50% of the traders, reported that they were not aware what kind of plastics had been banned thus complicating compliance among traders. Also a few key informants informed the study that traders were not given adequate time and neither were they extensively involved in the decision making before the ban

was effected; a situation that could best be described as putting the cart before the horse.

To cope with the ban on plastic bags, some traders switched businesses while others looked for ways to access the banned plastics through porous borders from neighboring countries. A trader from Kibera laments on how they have to access the banned bags from Uganda while not able to access the right alternatives from Kenya. A vendor in Kibera as illustrated in the figures 3 and 4 below, points out that since she doesn't want to lose customers, she ensures the customer is satisfied by serving those without packaging materials using the banned plastic bags.



Fig 3:- A food vendor serving her customer with the banned plastic bag in Makina, Kibera. Source; Fieldwork



Fig 4:- A trader from Makina serving a customer using a reusable container; Source - fieldwork, 2018

According to Bii, 2018, plastic bag trade still thrives after the ban with manufactures blaming the government for poor enforcement (Koech, 2018). The study established that in the four categories of traders interviewed, at most 30% haven't complied and despite that, there are no records of those arrested, charged or imprisoned. In order therefore to achieve full compliance, a needs assessment is required to identify better and healthy alternatives for the traders. In

table 1, there are traders who have stopped using the bags and have since switched the kinds of businesses they are doing, others too have not only stopped but gone ahead to introduce the reusable bags approved by the environmental agency. A NEMA officer laments that porous borders have made enforcement of the ban to be a challenge in the quest to end plastics in the country since there exist traders who can still access the plastics.

Compliance	Overall %				Karen %				Kibera %			
	Butchers (n=15)	Vendors (n=21)	Grocers (n=43)	Retailers (n=27)	Butchers (n=4)	Vendors (n=8)	Grocers (n=17)	Retailers (n=7)	Butchers (n=11)	Vendors (n=13)	Grocers (n=26)	Retailers (n=20)
Stopped using the plastics	67	38	70	56	75	25	82	57	73	46	62	55
Haven't complied	33	48	19	22	25	38	12	29	27	54	23	36
Introduced reusable bags/friendly alternatives	93	67	86	93	100	88	100	100	82	54	73	90

Table 1:- The Compliance Levels among traders in the study areas

Compliance with the ban is determined by many factors that include but limited to enforcement levels, location, gender, awareness levels and attitude towards/reception of a given piece of legislation (Ravara *et al.*, 2013). The study reveals that even more than a year after the ban, still there were those who were not aware of the ban arguing that it was not clear to them which bags were banned thus depicting the lack of awareness from the environment agency. In Ireland, a robust awareness on the plastic bags levy led to 90% drop in the consumption of the bags (Ferreira, 2008). It was established that location and gender have significance influence on how traders responded to the ban, ($p < 0.05$).

➤ Available Packaging Alternatives and their Health Implications

The banned plastic bags were the commonly packaging bags by consumers and traders in Kenya. The alternative packaging bags were hoped to be eco-friendly, affordable, healthy (easy to clean) and accessible. This study established that there was limited eco-friendly, clean and accessible alternative packaging materials. Traders reported that since the plastic carrier bags ban took effect, it has been difficult to do business and the blame is put on the lack of suitable alternatives to the banned plastic bags; it's like putting the cart before the horse.

The available alternatives to the traders after the ban included old/used newspapers, papers, non-woven reusable bags, net bags, and plastic cans. The packaged foods included fruits (both whole and sliced), cooked food, meat, vegetables and household goods. This implies that the traders had limited alternatives on how to package goods to the consumers. Additionally, about 40% of the traders were not sure whether the aforementioned alternatives were healthy and hygienic for packaging even though 20% of the respondents were bold that the alternatives were not healthy and hygienic. Additionally, about 15% point out that the available alternatives are somehow healthy while only about 25% are certain that the available alternatives are healthy. Even after knowing the alternatives are not healthy, they still use them because they have no alternatives. These findings resonate those of UNEP (2017b) which found that the lack of affordable, healthy and eco-friendly alternatives to the plastic bags has since proven to be a threat in the quest to eliminate plastics.

About eleven out of the sampled fifteen butchers relied on newspapers as the alternatives to the banned plastics as shown in *table 2* below. Studies suggest that used newspapers exposes consumers to chemicals that negatively affects human health (Klick *et al.*, 2012), these statistics therefore presents a health risk to consumers and needs to be dealt with.

Alternative	Butchers		Vendors		Grocers		Retailers	
	n=15	%	n=21	%	n=43	%	n=27	%
Papers e.g. from books	6	40	7	33	13	30	18	67
Used Newspapers	11	73	7	33	24	56	20	74
Net Bags	1	7	1	5	4	9	5	19
Reusable bags (non-woven)	14	93	20	95	39	91	27	100
Customers own items	6	40	4	19	23	53	9	33
Others e.g. cling film	0	0	1	5	3	7	2	7

Table 2:- Available alternatives to the banned plastic carrier bags

A study done in the University of Arizona and Linda University revealed that failure to wash the reusable bags provided as alternatives could pose greater health risks caused by Bacteria (Lyali, 2017). This may occur as a result of continuously using the bag without washing and additionally mixing the goods together in one bag, especially meat and other foodstuffs inter alia thus precariously exposing the consumers to health risks. The

reusable bags are prone to contacting germs and additionally act as agents to transmitting contagious diseases if not well handled (Aradi, 2017).

Canada at one point had to warn her customers on the potential dangers of cross contamination (Klick *et al.*, 2012). California banned plastic bags in 2007, but studies done after the ban indicate that mortality rate increased and

there were also frequent emergency room visits to health centers by consumers who had illnesses attributed to the use of reusable bags (Klick *et al.*, 2012). One of the available alternatives to butcher operators are papers and used newspapers/magazines, however, the respondents interviewed laments how unhealthy it is to use the papers because of the health risks that result from the inks used in printing and the chemicals that may come therein, this agrees with the findings from a study (Muncke, 2011) that established health risks resulting from using paper and paper products which exposes consumers to phthalates as well as other suspected endocrine disruptors including benzophenones as well as mineral oils.

VI. CONCLUSIONS AND RECOMMENDATIONS

➤ *Conclusions*

Kenya's ban on plastic carrier bags is one the greatest things that would ever happen to a developing nation with the desire to ensure environmental sustainability. Not only has it tamed the habits of consumers but also proven to be a step forward in ensuring that there is a clean and healthy environment as provided for by Article 42 of the Kenya's Constitution 2010. Whereas the ban on plastic bags was not necessary as reported by traders, Kenyans should embrace recycling, reuse and reduce model.

Majority of the traders were not involved in the processes leading to the ban hence the difficulty in compliance. Additionally, the available packaging alternatives were expensive thus increasing business operation costs.

There was a difference in compliance between Karen and Kibera traders (60% and 30% respectively). Compliance to plastic ban had picked up slowly occasioned by limited sensitization of the public on the ban, therefore public involvement is an important prerequisite for a successful implementation of the ban.

➤ *Recommendations*

All levels of governance ought to take center stage in key decision making especially those which affect the citizens directly, there is need for the government to revitalize the industries that will not only offer healthy alternatives but also create jobs; the sisal and cotton industries among others. The Ministry of Environment and Natural Resources and other government ministries should endeavor to have a broad range of stakeholder engagement in decisions regarding the plastic ban and other directives so as to ensure reasonable compliance levels. Additionally, the public ought to be sensitized on the adoption of a more circular model of economy that will ensure sustainable production and consumption with the overall goal being environmental sustainability.

➤ *Policy Implications and Practice*

The ability of government policies and legislative strategies to be predictable and consistent enough is pivotal in attracting and retaining investors (KAM, 2017). The results of this study prove the claims by KAM that the

stakeholders were not adequately involved before the ban was effected which is against the principle of public engagement entrenched in the constitution of Kenya (CoK) 2010 under article 118 and acknowledged by Public Participation Bill 2016 published through a Gazette Supplement No. 176.

The ban on plastic is a good move towards keeping the environment clean and reducing the amount of waste that goes into the land-fills. The involvement of stakeholders is crucial for the success of the ban. The current research revealed that the stakeholders were not adequately involved before the ban was effected yet the principle of public engagement is entrenched in the constitution of Kenya (CoK) 2010 under article 118 and acknowledged by Public Participation Bill 2016. Moreover, environmental education to educate the citizens on the importance of the 3Rs i.e. reduce, reuse and recycling of plastic bags and this ought to be picked up by the Ministry of Environment and Forestry in liaison with the Ministry of Education. Additionally, it's important to inculcate responsibility among the citizens; this is possible through initiating strategies like, 'Adopt a road, river and any other vital resources. This will not only be making individuals responsible but also build on the aspirations of the Article 42 of the Constitution of Kenya (CoK) 2010.

FUTURE RESEARCH

The study recommends that further studies need to be conducted on the chemical analysis of the alternatives to the banned plastic bags including the no-woven reusable bags. Additionally, there is need to understand how different categories of consumers/general public have been affected by the ban and their attitudes on the same.

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APPENDICES

➤ Appendix 1: Map of the study area

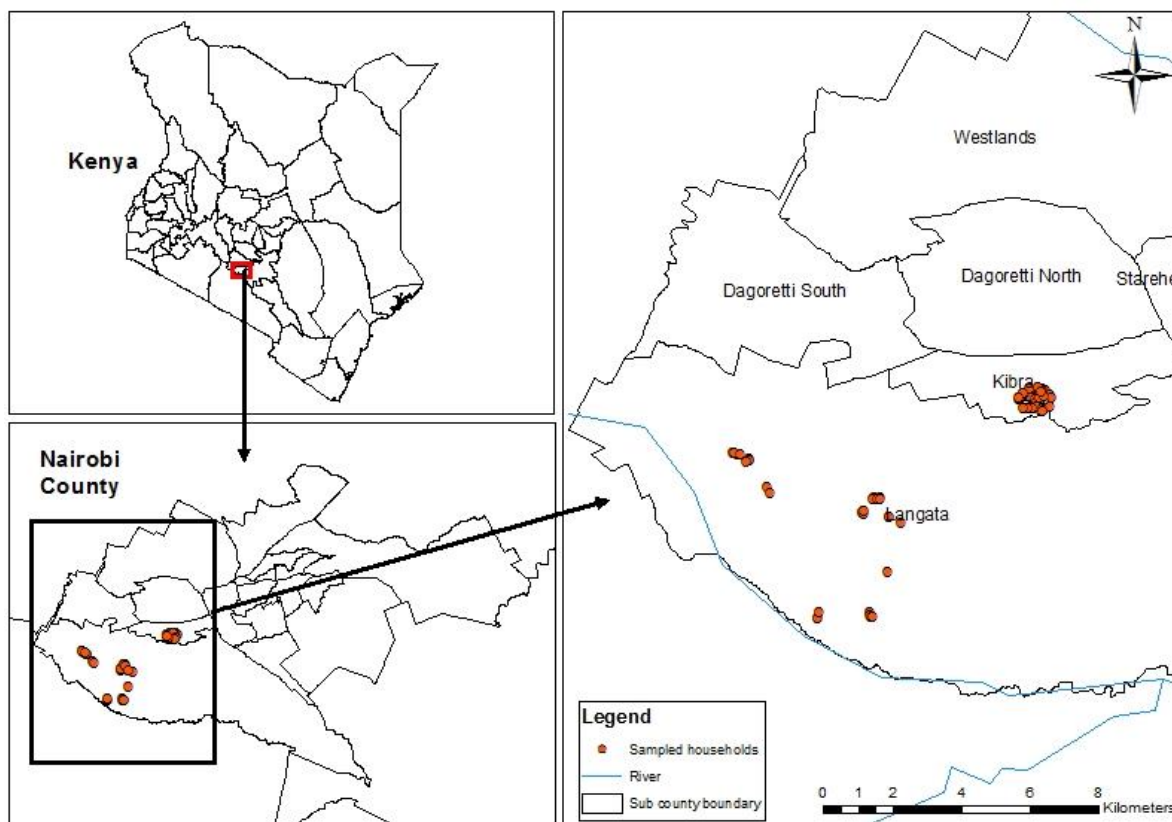


Fig 5:- Map of Study Area

➤ *Appendix 2: Result from a t-test on independent variables against response to the ban*

Variable (s)	Mean	Std. Deviation	Std. Error Mean	t	df	p-Value
Response to the ban						
Gender	-.34	.84	.08	-4.17	105	.000
Location	-.56	.73	.07	-7.84	105	.000
Level of education	-.04	1.02	.10	-.38	105	.705
Age	31.22	8.15	.79	39.45	105	.000
Age	-1.10	1.33	.13	-8.54	105	.000

Table 3:- T-test on independent variable against the response to the ban

➤ *Appendix 3: List of Abbreviations*

AI	: Amnesty International
CIEL	: Centre for International Environmental Law
CoK	: Constitution of Kenya, 2010
KAM	: Kenya Association of Manufacturers
KNBS	: Kenya National Bureau of Statistics
NEMA	: National Environment Management Agency
SPSS	: Statistical Package for Social Sciences
UNEP	: United Nations Environment Program