PSYCHOTHERAPY IN ASSESSMENT OF RECYCLABLE WASTE MANAGEMENT IN DEVELOPMENT OF SMALL AND MEDIUM ENTERPRISES IN KISII COUNTY, KENYA

Dr. Szumbah Mwanaongoro & Mr. Daglas Okwale Bikeri
Faculty of Commerce, Kisii University, Kisii, **KENYA**
Corresponding Author Email: dr.szumbah@yahoo.com

ABSTRACT

Kisii County (KC) which consists of Kisii town, Suneka, Keumbu, Ogembo townships, among others is in urgent need of an integrated waste management system (IWMS) because of acute shortage of land and landfills coupled with fast growing population density of 1259.44 people on an area of 183 sq. km- not to mention the hilly landscape. Most waste materials can be turned into useful inputs for manufacturing processes. IWMS in many low- and middle –income countries is largely driven by the small and medium enterprises and it involves source reduction, sorting of waste in order to facilitate recycling, reuse and material recovery. Unfortunately, the contribution of entrepreneurs to IWMS are not appreciated in many developing countries, Kenya included. Sustainable strategies for recycling of wastes are urgently required, considering that wastes generated in Kisii County which ends up polluting the environment are on the sharp increase because of increased business activities, growing informal settlements and fast growing population against scarcity of land for dumpsites. The objectives of this exploratory study were to: identify the various actors involved in waste management sector within KC, identify missing gaps affecting waste management in KC, identify industrial manufacturing and processing investment activities based on wastes generated in KC, minimize the environmental degradation through increased investment in waste sector and create public awareness on the looming environmental degradation and human health. Research findings will be useful to policy makers both at County and National governments towards promotion and development of small and medium scale manufacturing enterprises by using recyclable wastes. It will equally generate increased employment among the youths and economically empower "Chokoras" and mainstream them into the larger society in Kisii County. Such productive economic activities will lead to integrated process of upgrading solid waste management to include more than just eyesore dumpsites.

Keywords: Recyclable waste, Small and Medium Enterprises, Leachate, Refuse, Waste dealers

INTRODUCTION

Integrated solid waste management (ISWM) is an important environmental health service issue, and is an integral part of basic urban services. From the earliest primitive human society era there were attempts to safely dispose of solid and liquid wastes. Previously, waste disposal did not pose difficulty as habitations were sparse and land was abundantly available as dumpsites. Disposal of all types of waste has become problematic with the rise of towns, cities, informal settlements, and unplanned urbanization centers where large numbers of people started to congregate in relatively small areas in pursuit of livelihoods. In many developing and transitional countries, the infrastructure and organizational system of waste management is of a great concern. Townships and Counties as formal service providers can neither provide wastes collection service to all households, nor guarantee an effective and environmentally sound treatment and disposal of all wastes. Only about half of the population

in these countries is provided with sufficient and regular waste collection services (Gunsilius, E., 2010)

In most developing countries, SMEs contribute significantly to waste management and effective and efficient utilization of resources by collecting, sorting, trading and recycling of waste materials. In most cases collection and processing of wastes as business activities are undertaken by the entrepreneurs, without support from the County and National governments. This is the case in Kisii County. However, waste collectors/dealers and waste processing entrepreneurs are often of low status which is caused by the nature of their work and social background. In Kenya, waste pickers and collectors are referred to as "chokoras" or "street families" often regarded as the "underdogs" in society, yet they play a vital economic role. Their activities are regarded as illegal. Neither in temporary disposals sites, nor in final disposal sites are infrastructural facilities such as shelter and water provided. The national and county governments have tended to neglect the existence and important role of waste collection traders and dealers. Low payments to waste pickers, lack of SMEs involved in recyclable activities, and lack of integrated waste management system are the main reasons for the looming environmental disaster in Kisii County.

Kisii County consists of Kisii town, Suneka, Keumbu, and Ogembo townships, among others. Kisii County is faced with urgent need of integrated waste management system because of acute shortage of land and landfills compounded by fast growing population density of 1259.44 people on an area of 83sq.km (KNBS, 2009), not to mention the hilly landscape, thus making KC both surface and ground water resources vulnerable to pollution. Kisii County is the most densely populated county in southwestern part of Kenya. To this end, development and implementation of sustainable strategies for recycling of wastes are urgently required considering that wastes generated in KC which ends up polluting the environment is on the sharp increase because of increased business activities, growing informal settlements, fast growing population and urbanization against scarcity of land for dumpsites and lack of waste management systems. This calls for creative and innovative ways on the usage of wastes generated in KC through the promotion and development of SMEs involved in recycling and manufacturing of products based on such waste materials. This will generate indirect and direct employment among youths and economically empower the underprivileged "Chokoras" by mainstreaming them into the larger society.

The research study being exploratory in nature, purposive sampling was employed. Thus, the research design targeted all major sources of solid waste generation and pollution in Kisii County. The data was collected through questionnaires, interviews with the generators of solid and liquid wastes, those adversely affected by pollution, and entrepreneurs or dealers in wastes. The focus was on organic waste and all recyclable waste materials. Through recycling and manufacturing, most waste materials can be transformed into valuable final products as evidenced by Chandaria Industries Ltd in Nairobi which uses recycled waste paper and virgin pulp blending by manufacturing various hygiene products like toilet tissues, tissue napkins, paper towels, facial tissues, including recycling of cotton fibres into absorbent cotton wool.(Kenya National Cleaner Production Center, 2010). However, integrated solid waste management (ISWM) in many low- and middle –income countries is largely driven by the small and medium enterprises. It involves source reduction, sorting or separation of waste into organic from inorganic in order to facilitate recycling, reuse and material recovery. Unfortunately, the contributions of entrepreneurs to ISWM are not appreciated in many developing countries like Kenya, among others. The study was geared towards changing this perception.

The overall objective was psychotherapy in assessment of recyclable waste management and development of small and medium scale enterprises in Kisii County. The specific objectives of this exploratory study were to: identify the various entrepreneurs, dealers in waste materials and government agencies involved in waste management sector within KC, identify missing gaps affecting waste management in KC, identify industrial manufacturing and processing investment activities based on wastes generated in Kisii County, minimize the environmental degradation through increased investment in waste management systems and activities and also creating awareness among policy makers, environmental agencies and the public at large on the looming environmental disaster regarding air and water pollution and their accompanying health hazards. For example, water borne and respiratory diseases are already taking a toll on residents and communities of KC living near and or using water from Bobamba River and Esabagara River in Kanyimbo Location of Gucha District, among others. One of the major findings of the study is that all rivers near Kisii Town, Suneka, Keumbu, and Ogembo townships, among others are heavily polluted with refuse, polythene bags, liquid chemicals and heavy oils from auto-garages and vehicle washing points located near or on river banks, yet the same water is used for drinking purposes by surrounding communities and those downstream. Hence the looming danger to human, livestock and other living creatures lives cannot be overemphasized. The solutions to this "time bomb", lies in disaster prevention and preparedness rather than Kenya's now famous management style of "fire-fighting", or "management by crises", after the events or damages have taken place.

Statement of the Problem

Kisii County suffers from major environmental problems in waste management. This can be illustrated by the currently applied refuse disposal methods that are undoubtedly detrimental to the residents of the county, and their livestock. For instance, the insanitary dumping of refuse at the open-dumpsite behind KMTC-Kisii, on the banks of Bobamba River and the new dumpsite at Kanyimbo location of Gucha District on the bank of Esabagara River adversely affects the aquatic and air ecosystems. These rivers are sources of clean water for neighbouring communities and those downstream. The institutions hitherto charged with the responsibility of WM are Kisii County government (KCG) and National Environmental Management Authority (NEMA). The KCG has minimal impact because it is overwhelmed by institutional, infrastructural and financial problems such that it has become "people rich and activity/service poor". The lack of land for landfills and waste disposal has made the townships in KC to be littered with wastes. The emergence of waste collectors and waste dealers management, particularly in trading activities gives a ray of hope in mitigating this "hidden time bomb". The available information and data on waste generation rates by various densely populated settlement estates and increased businesses are generally still scanty and imprecise. The study, therefore, focused on the business opportunities derived from integrated waste management for promotion and development of SMEs through utilization of recyclable wastes

Contribution of the Study to Kisii County Economy and its Implication for Psychoterapy

Kenya's economy and by implication KC economy constitute predominantly "hawker, kiosk", and microenterprises consisting of small traders dealing mainly in imported products like second-hand clothes commonly known as "mitumba", fruits, among others. Imported products have zero value addition. No country has ever industrialized based on such activities. In the same breadth, promotion of inter-county, regional and cross-border trade and

investment are an effort in futility if a country or county does not produce significant tradable products or services. For this reason, KC and Kenya at large should move to the next level, that is, industrialization through SMEs especially those based on locally available raw materials like recyclable wastes in order to realize the "2030 Vision" on the economic pillar. SMEs can be defined as firms with capital outlay of KES 5-20 million and employment of 5-50 employees.

THEORETICAL FRAMEWORK

From a theoretical perspective, the researchers were guided by several entrepreneurial theories, namely:

(i) Joseph Schumpeter's theory of entrepreneurship: He viewed entrepreneurs as a force of "creative destruction" in which the old ways of doing things are replaced by new and superior ways. He also regarded entrepreneurs as "innovators" who changed the status quo by using new combinations of scarce resources and new business activities (quoted from Dr. Szumbah Mwanaongoro, J. Mod. Econ. Manag.2 (2013), No 1, 57-76). (ii) Carl Menger theory of entrepreneurship: His theory involves value added transformation of resources from raw materials stage into final goods and services resulting in industrial growth and development (quoted from Dr. Szumbah Mwanaongoro, J. Mod. Econ. Manag.2 (2013), No 1, 57-76). (iii) Being exploratory study, the researchers were also guided by their own experiences and observations which constitutes their strong view that the fundamental difference between hawkers, Kiosks, and micro- business owners who dominate the Kenyan economy, and small and medium scale enterprises owners is that the former are not generally associated with innovative practices while the latter are entrepreneurial in nature – they are driven by planning, growth, and innovative approaches. Hence, the latter's appropriateness in steering Kenya's National and County economies to higher heights of industrialization.

RESEARCH METHODOLOGY

The study used exploratory research design. Purposive Survey was used to gather data from people at various waste generating points, pollution points and residents affected by pollution. The major emphasis was the discovery of ideas and insights on ways of utilizing waste, minimizing environmental degradation and improving human health through opportunities afforded by recycling and reuse of wastes.Kisii County was identified for study because of poor waste management practices, acute shortage of land for dumpsites and landfill and increased urbanization that attracts inflows of people. Kisii County is the most densely populated in southwestern part of Kenya. Kisii town has population of 83,000; Suneka – 4,217; Keumbu-8843 and Ogembo-1,654 (Census 2009).

The target population consisted of forty eight waste pickers commonly referred as "chokoras", sixteen Itinerant waste buyers, eleven community based organizations, fifteen Motor vehicles Garages, fifteen Car washing Points. Purposive sampling was used to select entrepreneurs, generators of waste and pollution points, waste pickers, and waste dealers for the study. An exploratory research design was used in conducting the study. The nature of research necessitated the use of qualitative and quantitative techniques. This is because the study focused on both subjective and objective assessment of recyclable wastes through promotion and development of SMEs in maintaining environmental integrity.

Kisii town hosts a variety of businesses including manufacturing, trading (wholesale and retail), service, transportation and various agricultural activities. The four zones of Kisii County include: Kisii town, Suneka, Ogembo and Keumbu townships. They were purposively selected due to their high population density and commercial activities.The study employed primary and secondary data. A structured questionnaire and interviews were used to collect the data from the respondents. The interviews were administered to employees, traders in wastes, and waste pickers and collectors based in Kisii County. Photographs of solid and liquid wastes generators, pollution points, premises of waste traders, among others were taken for illustration purposes.

Interviews were conducted with respondents directly involved in environmental degradation at various waste generating and pollution points like car washing points and motor vehicles garage that drain waste directly into Mobamba river, and Esabagara river which are all vital sources of clean water to households and other economic activities such as livestock and irrigation. Interviews were also held with residents near dumpsites who are already inflicted with water-borne, respiratory and skin diseases.

For reliability and validity purposes, the researchers interviewed several experts from Gusii water Sewerage Company Ltd (GWASCO) and National Environment Management Authority (NEMA).

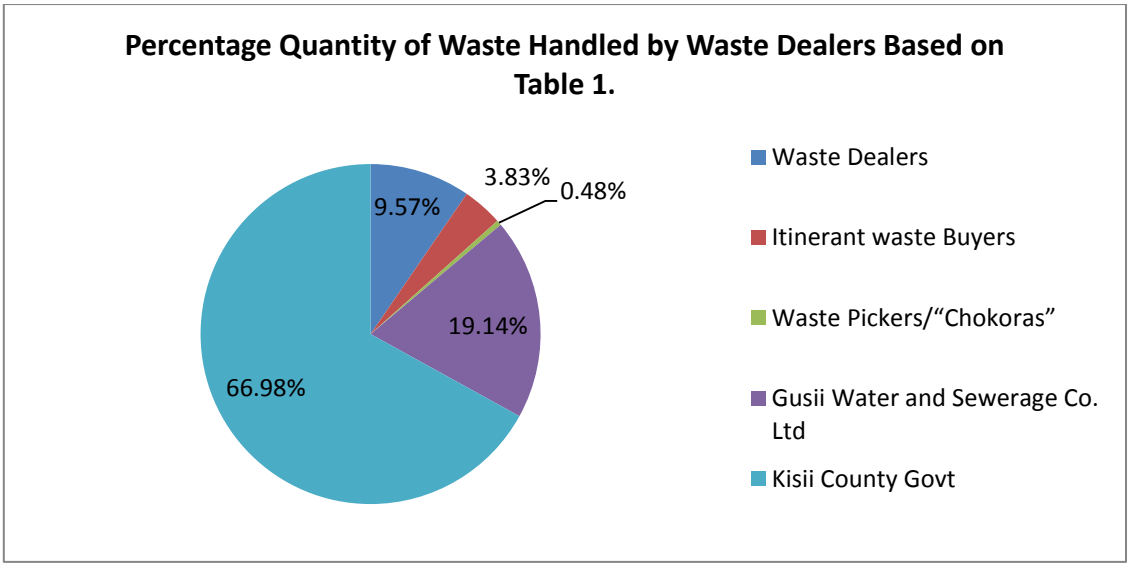
Data Analysis and Interpretation

Integrated waste management involves many actors whose interests are divergent. For example, in Kisii County the role of GWASCO and NEMA are directed towards environmental conservation. On other hand, solid and liquid waste collectors like "Chokoras", itinerant waste buyers, are driven by commercial interests. However, these players in solid and liquid wastes management sector play substantive and complementary roles in curbing environmental degradation leading to socio-economic development. As per Table 1, below, the categorization of various participants was relevant in knowing the type and quantity of wastes that each handled.

Table 1: The Quantity and Type of Waste Handled by Various Dealers in Kisii County

Actor:	Waste type:	Quantity(Tons)/ Per day	Percent (%):
Waste dealers/collectors	Metal + Plastics + E-waste + organic	10	9.57
Itinerant waste Buyers	Metal +plastics+ Old shoes	4	3.83
Waste Pickers/"Chokoras"	Solid waste	0.5	0.48
Gusii Water and Sewerage Co. Ltd	Organic Waste	20	19.14
Kisii County Govt	Solid waste	70	66.99
TOTAL		105	

Source: Researchers



Source: Researchers

Based on Table 1 above, the study determined that waste dealers handled an average of ten tons of recyclable waste with good commercial returns to their investment. Itinerant waste buyers contributed to an average of four tons of waste because of capital limitation. Waste pickers, emerged as the economical marginalized as result of over-exploitation by waste dealers and the itinerant waste buyers. Despite GWASCO and Kisii County Government handling greater quantities of waste, income generation from recyclable waste was conspicuously missing leading to suffocation of existing two dumpsites at Nyambera in Kisii town and Kanyimbo location in Kisii County. The two dumpsites contaminated the rivers with local residents decrying increased skin, respiratory, water-borne ailments, especially their children making them lose important school hours, not to mention growing health costs to the families with the resulting poverty increase.

As shown in Photo 1, below, the study found that the untapped organic manure derived from human waste at Suneka Sewerage Treatment Plant was just lying idle thereby becoming fertile ground for water hyacinth and other weeds. This currently wasted manure should be packaged and sold to the surrounding farmers for napier grass growing and other crops that would eliminate dependency on scarce natural grass for their livestock inside the Sewerage Plant. The resulting effects will be the elimination of vermins found in the food chain from animals drinking raw sewer.

Source: Researchers

Photo 1: Unused and Idle Organic Manure at Suneka Treatment Plant

As shown in Photo 1 above, the study revealed piles of unsold and unpacked manure in the compound of Suneka Sewerage Treatment plant. The effects of the unused and idle manure were manifested by cows grazing inside the Sewerage Plant which had several unprotected raw sewer ponds as shown by Photo 2, below, exposing animals to dangerous pollutants such as heavy metals and worms. The meat and milk from such animals pose grave health and economic consequences to human health.

Source: Researchers

Photo 2: Livestock Grazing Inside Suneka Sewerage Treatment Plant

A Photo 2, reveals, the disconnection between community and Gusii Water and Sewerage Company Ltd. Instead of closer and mutual collaboration so that the community can gain by getting cheap manure from the facility and also guard the facility from vandalism of the fence by looking for grass which exposes livestock to various hazards.

Source: Researchers

Photo 3: Recyclable Plastics Waste Ready to be Transported Outside Kisii County

As indicated in Photo 3 above, the study established that metal, e-waste and plastic wastes were all transported and sold to merchants and recycling plants in Kisumu and Nairobi thereby exporting jobs and other indirect economic benefits associated with establishing such facilities within KC. Above (Photo 3) were Plastic waste consignments in one of the dealer's storage facility for export out of Kisii County.

Table 2: A Table Representing the Impediments and Missing Gaps Affecting SME Development

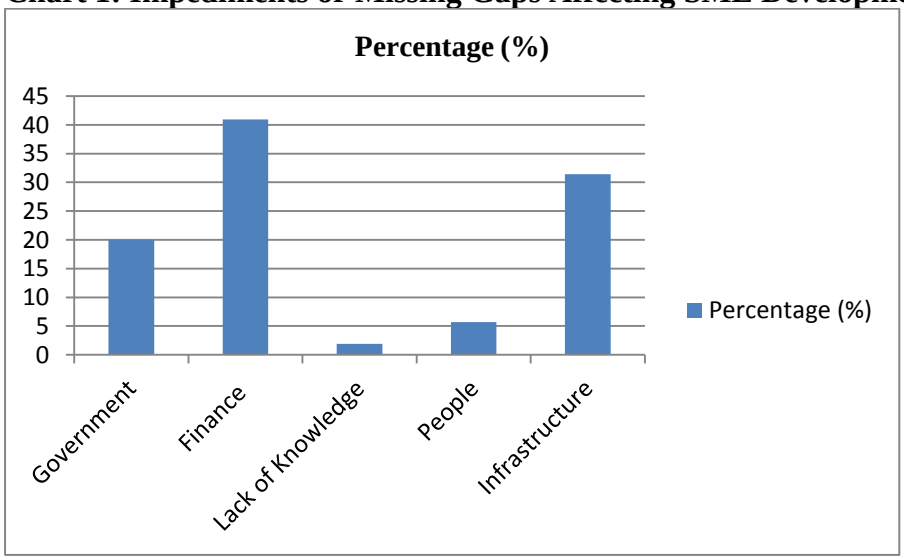
Obstacle:	Frequency (No. of respondents)	Percentage (%)
Government	21	20
Finance	43	40.95
Lack of Knowledge	2	1.9
People	6	5.7
Infrastructure	33	31.43
Total	**105**	100

Source: Researchers

The researchers sought to identify impediments and missing gaps to transformation of the waste sector in Kisii County to effectively and efficiently manage sustainably waste generated to avert the environmental degradation and human diseases. The information was sought from waste traders, itinerant waste buyers, and waste pickers and the Table 2 above shows the reaction on those impediments.

In Table 2 above respondents (traders and waste collectors) were asked to indicate impediments and gaps that stood in their way regarding engagement in value adding recyclable activities. The highest respondents attributed lack of access to credit from financial sector. The second highest gap was lack of infrastructural facilities. The third was attitude of government officials towards waste management. They viewed it as "black Market" activity.

Chart 1: Impediments or Missing Gaps Affecting SME Development



Source: Researchers

The bar chart 1 above is based on table 2.
Based on Table 2, new technologies need to be employed in recycling of solid and liquid wastes so as to enhance development of SMEs within the county and generate direct and indirect employment.

There is urgent need for county and national governments to come up with policies and incentives which can facilitate SMEs to invest in waste management activities.

Table 3: Profit Margins by Various Waste Products

Type of waste	Buying Price (Kes per Kg)	Selling Price (Kes per Kg)	Profit
Heavy Plastic	8	25	17
Paper	20	50	30
Construction	50	125	75
Scrap Metal	30	75	45

Source: Researchers

The study was able to establish the incomes flows of different types of wastes toward economic attractiveness. The Table 3 above shows the profit margins. The scrap metal businesses earned the entrepreneurs the highest profit margin per kilogram across the sector. Secondly, waste paper was found to attract least number of entrepreneurs despite massive production by various generation points including over twenty commercial banks, University campuses and Gusii Institute of Technology, among others. The study established that most waste Paper was burned in the dumpsites causing air pollution rather than being recycled.

Source: Researchers

Photo 4: A Car Being Washed in the Middle of Bobamba River; Urgent Measures are Required to Address the Rampant Water Pollution by Increasing Car and Motor Cycle Washing Points.

As shown in Photo 4 the study established that auto-garages and car washing points were most significant polluters of Mobamba and Getacho rivers as waste oil and contaminated

water drained into such rivers affecting the aquatic life, especially mudfish (commonly known as "chinkonye" in the local dialect), that used to be source of food to the local communities. Water from such rivers is used by communities downstream for drinking purposes, posing health hazards.

Source: Researchers

Photo 5: Raw Leachate from Kanyimbo Location near Esabagara River, Despite the River Being a Vital Resource for Human and Livestock in the Surrounding Community and Downstream

As shown in Photo 5, the study established that new dumpsite at Kanyimbo location discharged raw leachate into the Esabagara river. The dumpsite was poorly located in densely populated area whose only source of clean water is Esabagara river. The detriments of the dumpsite to the community have resulted in increased skin and respiratory diseases and death of livestock. The community at Kanyimbo dumpsite is against the dumpsite lamenting the swarm of houseflies and stench emanating from dumpsite. Also the village is littered with polythene paper or bags leading to further environmental degradation.

Source: Researchers

Photo 6: Recyclable Waste Dumped at Nyambera Dumpsite Adjacent to Bobamba River by Kisii County Government Officials

As shown in Photo 6 above, recyclable waste dumped at Nyambera dumpsite behind KMTC and at edges of river Bobamba by Kisii County officials. This wastes overflows towards Kisii-Marani road posing serious road obstruction to road users, notwithstanding the stench from the dumpsite.

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Findings and Conclusions

(i) The study established that the existence of open dumpsites, for example, one behind KMTC-Kisii on the bank of Bobamba river and one at Kanyimbo location –Gucha District near Esabagara river, garages and Motor vehicle and motor cycle washing points along river banks are seriously polluting water sources leading to water-borne and respiratory, and skin diseases which are already having a toll on Kisii County residents, especially those living near such rivers and downstream.

(ii) The study established that wastes such as organic can be recycled to produce organic manure on a commercial scale that can be packaged and sold to farmers within Kisii County and beyond. This will enhance agricultural productivity in Kisii County. For this reason piles of unused or idle manure witnessed at Suneka Treatment Plant should be commercialized immediately.

(iii) The study established that plastic waste exported mainly to Kisumu and Nairobi Counties from Kisii County can be recycled from within in order to boost the local economy by generating both indirect and direct employment.

(iv) The study found that most of the scrap metal dealers export the waste outside the Kisii County, denying Jua Kali artisans access to such raw materials. Consequently, Kisii Jua Kali artisans end up buying their raw materials from as far as Nairobi. This raises their production costs, hence product prices.

(v) The study established that waste paper recycling can lead to production of useful variety of products such as tissues, facial tissues, among others. However, most of the waste paper generated by businesses in Kisii County is burnt leading to air pollution.

(vi) The study established that light plastic such as polythene which has become a big environmental polluter in Kisii County by choking rivers, sewerage systems, breeding ground for insects such as mosquitoes and houseflies can be recycled to produce products such as artificial limbs and electric poles.

(vii) The study found that promotion and development of increased SMEs recycling activities in Kisii County will enhance aesthetic environment that encompasses aquatic, terrestrial, and air ecosystems because of reduced pollution.

Recommendations

(I) The study recommends further studies on the health of livestock grazing inside the Kisii Sewerage Treatment Plant at Suneka area of Kisii County as they were found to exhibit unhealthy symptoms because of drinking raw sewers with grave consequences to the food chain.

(II) Furthermore, more studies need to be conducted on the new dumpsite located at Kanyimbo location, Sameta Division, Gucha District of Kisii County that is sited adjacent to Esabagara River which is a densely populated area whereby untreated leachate finds its way to the river with adverse implication on human and livestock health downstream.

(III) Different measures should be taken by KCG, commercial banks in supporting waste dealers and entrepreneurs so as to realize maximum waste recycling activities.

(IV) Kisii County and the National governments should incentivize waste dealers and entrepreneurs to invest in recyclable wastes leading to promotion of value added products and services instead of dumping them in eye-sore dumpsites which are causing health hazards to Kisii County residents and those elsewhere across the country. SMEs as evidenced in other countries such as Zabbaleen of Egypt have successfully managed wastes with more than 80% recycled.

(V) The contribution of entrepreneurs in turning recyclable wastes into industrially viable ventures requires urgent support of county and National governments through provision of incentives to SMEs. If this development strategy is replicated by other Counties across the country it will transform Kenya's predominantly kiosk, hawker and microenterprise economy into a newly industrializing economy in line with 2030 vision with reduced environmental pollution and health hazards in townships or urban centers like Kisii County. This will lead to psychotherapeutic solutions by averting the looming environmental disaster in Kisii County and the country at large leading to increased productivity and healthy living in Kisii County.

REFERENCES

Abimbola, D.O., (1996). *Microenterprise Involvement in Municipal Solid Waste Management:* Some Experience in Kenya. Nairobi, Kenya.

Amin Zayani (2010). *Solid Waste Management.* Overview and Current State in Egypt.

Ahmed, S. A., Ali, M., (2004). Partnerships for solid waste management in developing countries: Linking theories to realities. *Habitat International 28 (2004) 467-479*

Areba T. (2010). *In Germany, recycling garbage is big business.* Financial Journal in The Standard Newspaper. Tuesday, March 2, 2010.

Dr. Szumbah Mwanaongoro, (2013). Business Entrepreneurship versus political Entrepreneurship: African's Socio-Economic Development Dilemma. *Journal of Modern Economy and Management. Volume 2 (2013), No 1, 57-76).*

Dr. Agnes Gerold. (2009). "*Integrating the Informal Sector in Solid Waste Management Systems"* GTZ-Partnerships for Recycling Management. Frankfurt, Germany.

Gunsilius Ellen, "*Role of the Informal Sector in Solid Waste Management and Enabling conditions for Integration Experiences from GTZ.*

JICA, Dealing with Africa's Waste. Africa is urbanizing rapidly. Report, 2012.

Kothari, C.R. (2004). *Research Methodology*. New Age International (P) limited, Publishers, New Delhi, India.

Kenya National Cleaner Production Center –Resource Efficient and Cleaner Production Programme- UNEP and UNIDO, Report, 2013

Mosago, F.A. (2010). *Factors influencing Solid waste management in Kisii Municipal Council, Kenya.* University of Nairobi, Kenya.

Rouse J. (2004). Absorbing Informal-Sector Entrepreneurs in Improved Urban Services. *Small Enterprise Development Journal, Vol 15, Number2, June 2004*.

Scheinberg, A., M. Simpson,Y. Gupt et al. (2010). Economics Aspects of the informal sector in Solid Waste Management. GTZ and CWG; Eschborn,Germany.

Statistical Abstract (2009). Kenya National Bureau of Statistics.