

**A COMPREHENSIVE PLASTIC WASTE MANAGEMENT STRATEGY FOR
THE CITY OF NAIROBI**

Prepared for the Pilot Project on Plastic Waste Management in Nairobi by:



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TABLE OF CONTENTS

	Executive Summary	5
1.0	Introduction	7
2.0	Background	8
3.0	The Strategy	12
4.0	Current Status	12
5.0	Anticipated Policy, Managerial and Technical Changes	14
6.0	The Evolution of the Strategy	15
7.0	Components of the Strategy	16
	7.1 The Rapid Results Initiative	16
	7.2 Stakeholder Participation, Public Education and Awareness	16
	7.3 Capacity Building and Technology Support	18
	7.4 Setting up of Plastic Waste Recycling Demonstrations	18
	7.5 Information Dissemination on Best Available Practices	19
	7.6 Policy Dialogue and Analysis	20
	7.7 Good Environmental Governance and Networking	21
	7.8 Prudent Financial Management	21
	7.9 Actual Plastic Waste Recycling	22
	7.10 Revision of Curricula	22
	7.11 Research and Development	22
8.0	SWOT Analysis	23
9.0	Budget	30
10.0	Potential Sources of Funding	34

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LIST OF ACRONYMS

3R	Reduce, Reuse, and Recycle
3 K	Keep Kenya Klean
RRI	Rapid Results Initiative
CBD	Central Business District
CBOs	Community Based Organizations
CCN	City Council of Nairobi
CDF	Constituency Development Fund
COMESA	common Markets for Eastern and Southern Africa
ERSWEC	Economic Recovery Strategy Paper on Wealth and Employment Creation
ITDG	International Technology Development Group/Practical Action
KAM	Kenya Association of Manufacturers
KNCPC	Kenya National Cleaner Production Center
KIPPRA	Kenya Institute of Public Policy Research and Analysis
LATF	Local Authority Transfer Fund
NEMA	National Environment Management Authority
PSC	Project Steering Committee
R&D	Research and Development
SWOT	Strengths, Weaknesses, Opportunities, Threats
SWM	Solid Waste Management
UN	United Nations
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
WSSD	World Summit on Sustainable Development
Y Gs	Youth Groups

EXECUTIVE SUMMARY

This comprehensive plastic waste management strategy for the city of Nairobi is based on the 3R approach that focuses on reducing, reusing and recycling generated wastes. The 3R approach was endorsed by the World Summit on Sustainable Development (WSSD) as an effective means of achieving sustainable consumption and production. A 3R policy calls for an increase in the ratio of recyclable plastic wastes, further reusing of raw materials and manufacturing wastes, and overall reduction in resources and energy used. It actually aims to set up a sound material's economy where the consumption of natural resources is sustainable. This strategy seeks to bring together in a form of a working partnership key plastic waste management stakeholders namely (City Council of Nairobi, relevant Government Ministries, regulatory agencies, business associations, plastic manufacturers, retailers, research institutions, Non Governmental Organizations (NGOs), youth groups, informal waste recyclers, community based organizations (CBOs), consumers, donors, and the media) into a functional Plastic Waste Return Scheme and/or buy back scheme that will facilitate the collection and returning for reuse, recovery and recycling all categories of plastics that find their way into the city environment under what is being referred to here as the "Expanded Stakeholder Responsibility". Key components of this strategy include the Rapid Results Initiative, stakeholder participation, public education and awareness; capacity building and technological support; setting up of plastic waste recycling demonstrations; information dissemination on best available practices; policy dialogue and analysis; good environmental governance and networking; prudent financial management; actual plastic waste recycling; revision of our education curricular and undertaking of R&D in plastic waste recycling. The City Council of Nairobi (CCN) with the active participation of neighbourhood associations will drive this strategy. The strategy seeks to reduce barriers to the national flow of recyclable goods and materials; cooperation among different stakeholders in the public and private sectors and the promotion of innovative science and technology for the promotion of 3 Rs. The functionality of this scheme will need massive awareness raising, serious consultations, attractive incentives and penalties as well, and active public and community participation and interaction.

A number of factors are critical in influencing the effectiveness of the 3R approach. These include an enabling policy framework; education and raising awareness of all concerned stakeholders; and capacity building and technology support, including human resources, technology, finance and other inputs. A critical aspect that cuts across the above three factors relates to the acceptance and implementation of this 3R strategy and related policies by principle stakeholders such as the City Council of Nairobi (CCN), the Ministry of Local Government, business associations, and the residents of the city of Nairobi. A number of problems exist in facilitating the smooth uptake of 3R policies and strategies based on lessons learnt in the developed world. Key among them is the gaps in information and practical application of sustainable solutions; access to appropriate and useful information; and of translating problems faced by industry into research priorities; and the implementation of innovative research outputs on the ground. Anticipated barriers to the concrete implementation of 3 R policies are related to policy, information, capacity building, financial and socio-cultural priorities. Ways and means for overcoming these barriers have been presented in this strategy for purposes of increasing the wide spread adoption of the 3 R philosophy.

The success of this strategy will largely depend on the right mix of facilitative policies and programs that are implemented at the community level. The key spheres of action will revolve around governance, education, technology and availability of finances. Solid waste management in the city of Nairobi is characterised by low service coverage, inefficient public services, immense pollution from uncontrolled dumping, uncontrolled private sector participation, lack of transfer facilities, lack of segregation at source, lack of key solid waste management infrastructure and over reliance on only one official dumpsite. The Ministry of Local Government with the support of the city council of Nairobi and other stakeholders should jointly seek to:

- Build capacity and commitment through knowledge management;
- Develop an enabling policy framework to further the 3R concept that should include economic and market based instruments; and
- Facilitate and provide accurate and timely access to information by all stakeholders. Activities implemented under these responsibilities include pilots and demonstration projects, capacity building, information sharing and knowledge/skills transfer.

For businesses, research institutions, consumers, civil society, and industry partners, the strategic elements that could guide their commitment and contribution to the 3 R Concept are:

- To facilitate economic development by creating markets around 3 R policies;
- To provide resources (technology, finance, and market) for facilitating the implementation of 3 R policies;
- To interact and network with other entities undertaking 3 R activities, including end-users and consumers so as to find out new business opportunities;
- To influence market trends by making sustainable and green trends through eco-labelling strategies;
- To ensure proper implementation of available resource efficient and environmentally sound technologies;
- To develop leading edge and home grown technologies and products;
- To support the development and implementation of policy frameworks by local and national governments;
- To support corporate's green procurement practices as a show of commitment to sustainable development; and
- To lead a sustainable lifestyle with minimum negative ecological footprints.

This strategy has been prepared to cater for the majority of Nairobians who live in informal settlements (slum areas). This is **a bold and remarkable** departure from conventional planning that has since independence been catering only for the more privileged minority. The strategy seeks to eliminate the current inequality in geographical service distribution. Its success therefore strongly depends on the ability of slum neighbourhoods to form associations or cooperatives that are sustainable. The City Council of Nairobi (CCN) with the active participation of neighbourhood associations (community based organizations CBOs especially Youth Groups - YG) will drive this strategy. CBOs are already making their localized contributions to sustainability in Nairobi through composting of organic waste, recycling of inorganic waste materials, and regular clean up campaigns. The ultimate goal is to have a sound material cycle society in which there is a simultaneous pursuit of both environmental preservation and economic development.

1.0 INTRODUCTION

The city of Nairobi produces waste at a rate that outpaces its capacity to collect and dispose it of in a safe and environmentally sound manner. Its current approaches to waste management are neither effective nor sustainable. This necessitates a paradigm shift in thinking. Traditional end-of-pipe solutions to waste management problems only deal with symptoms of poor management and not the root causes. As a result, indiscriminate dumping and littering is socially acceptable in the City. This strategy focuses on the management of the persistent plastic wastes that are associated with a wide range of human health problems due to soil and water contamination; livestock, wildlife and marine deaths occasioned by digestive system blockages; blockage of sewerage systems; and indiscriminate dumping and littering of the environment. Besides the littering problem which is apparent in most Kenyan urban centres, plastic waste, particularly carrier bags, are causing an increasing number of environmental and health problems that include the following:

- Choked soils: poly bags in the soil do not allow the free flow of water and air, thereby choking soil and plant life;
- Blockage of drains: poly bags choke drainage and sewerage systems thereby causing disruption of the infrastructural function and leading to water logging which in turn leads to environmental health problems such as the spread of malaria;
- Animal deaths: poly bags ingested by animals, result in death by obstructing their intestines; and
- Food hazards: this is a hazard associated with the additives used to colour the bags, which permeate into food products, when the poly bags are used for storing food.

However, Plastics have opened the way for new inventions and have replaced other materials in existing products. They are light, durable and versatile, as well as resistant to moisture, chemicals and decay. Yet these are the same properties that present environmental challenges.

This strategy seeks to achieve sustainable plastic waste management practices that aim at:

- Methods of minimizing the production of plastic waste at source;
- Initiating programs for stimulating a sound material cycle society that is based on the 3R approach of reducing, reusing and recycling;
- Developing an enabling policy framework for purposes of furthering the 3R concept through economic and market based instruments;
- Providing resources (technology, finance, and markets) for facilitating the implementation of 3R policies;
- Addressing appropriate technologies for increasing service coverage, effectiveness, and environmentally sound modes of disposal;
- Ensuring increased interaction and networking of all entities involved in 3R activities, including end-users and consumers for purposes of creating new business opportunities;
- Building capacity and commitment through knowledge management and transfer;
- Facilitating and providing accurate and timely access to information by all stakeholders through capacity building and institutional strengthening;

- Creating a culture of green procurement
- To create an integrated approach to plastic waste management.

In most of Africa, Kenya included, we do not know how to manage waste, but instead, we only know how to dump it. It is absolutely true that the residents of the city of Nairobi have become a throw away society and one that does not value the importance of a clean and safe environment. This attitude will obviously present the single most greatest challenge to the operationalization of this strategy. The city of Nairobi is inhabited with two generations of people. A minority of those who lived in it when it was referred to as the “green city in the sun” and a great majority who were born into a city where indiscriminate dumping and littering of the environment is socially acceptable. This underscores the importance of the much need multi-stakeholder awareness raising that will form the backbone of this plastic waste management strategy. The different types of plastic materials used in the city of Nairobi can be broadly classified into the following categories: polyethylene terephthalate (PET), high density polyethylene (HDPE), polyvinyl chloride (PVC), low density polyethylene (LDPE), polypropylene (PP) and polystyrene (PS). They are manufactured using a wide range of technologies that includes injection moulding, calendaring, blow moulding, extrusion, film extrusion and moulding. The strategy seeks to augment already existing Government enabled initiatives to a clean environment such as the Rapid Results Initiative (RRI) and the Keep Kenya Klean (3K) Campaign.

2.0 BACKGROUND

The city of Nairobi manufactures a total of 192,836 tones per year (t/yr) of plastics from a raw material input of 239,602-t/yr. Out of this manufactured total, 49,022 t/yr equivalent to 25% of the total manufacturing comprises of plastic carrier bags. An additional 27,813-t/yr of finished plastic products are imported into the city. Of the total plastic carrier bags produced in the city, approximately 50% (24,511-t/yr) are less than 15 microns in thickness, and are primarily used for carrying consumer products. They present a serious environmental problem as it is uneconomical to have them recycled. The total plastic consumption in Nairobi is 211,316-t/yr, a figure that takes into account both the imported plastic products (27,813-t/yr) and a local production level of 192,836-t/yr less annual plastic exports estimated at 9,333-t/yr. Out of this annual plastic consumption of 211,316-t/yr, 38,516-t/yr (18%) are retained and reused while 172,800-t/yr (82%) are indiscriminately dumped into the environment with serious environmental consequences.

The city of Nairobi is inhabited by over 3 million inhabitants who generate a combined total of over 2,400 tons per day of solid wastes, out of which 20% comprises of plastics. This amount of solid waste generation is getting worse by the day as a result of increasing population that is fuelled by large-scale rural-urban migration into the city. A JICA study (Interim Report: 1997, p.1) estimated that about 1,450 tons of Municipal Solid Waste (MSW) was generated daily in Nairobi in the late 1990s. The study put the MSW per capita generation at the time at 0.67kg/day, which translates to about 245 kg per person per year. A recent study (ITDG, 2004) puts the daily solid MSW generation at a relatively higher value of 2,400 tonnes. The study estimates a per capita solid waste generation of about 253kg per person per year. This figure falls within the range specified by IETC for African urban centres. The City Council of Nairobi estimates for daily waste generation is between 1,600 to 2,400 tons which appears to be a projection based on the JICA study. The corresponding estimate of per capita generation is 0.65kg/person day and is again based on the JICA study (Maranga, 2005).

It can be observed that many current behavioural practices of the residents of the city of Nairobi are largely unsustainable. We can only move towards sustainability if we are ready to change our behaviour. Much of the city resident's behaviour drifts away rather than towards sustainability. We are simply materialistic and wasteful. Consequently, majority of the residents consume more than they actually need. The environmental sustainability of the city now and in the future relies on the resident's ability to adopt more sustainable behaviour patterns. The residents need to decouple their sense of prosperity from over consumption and only consume what we actually need. Our national model of citizenship should value sustainable behaviour and not conspicuous and wasteful consumption. As a result, the retail outlets in the city (supermarkets, kiosks, and outdoor markets) are the biggest plastic waste producers into the city environment at an estimated release level of over 11 million plastic carrier bags per year, with supermarkets contributing the lion's share of 73%.

This strategy plans to bring together in a form of a working partnership key plastic waste management stakeholders namely (City Council of Nairobi, relevant Government Ministries, regulatory agencies, business associations, plastic manufacturers, retailers, research institutions, Non Governmental Organizations (NGOs), youth groups, informal waste

recyclers, community based organizations (CBOs) especially Youth Groups, consumers, donors, and the media) into a functional Plastic Waste Return Scheme and/or buy back scheme that will facilitate the collection and returning for reuse, recovery and recycling all categories of plastics that find their way into our environment under what is being referred to here as the “Expanded Stakeholder Responsibility”. The City Council of Nairobi (CCN) with the active participation of neighbourhood associations will drive this strategy. The functionality of this scheme will need massive awareness raising, serious consultations, attractive incentives and penalties as well, and active public and community participation and interaction. The three pillars of this strategy include policy intervention, the need to recycle plastics and awareness raising and education for the public. The policy intervention involves providing input for the design and implementation of economic instruments to change plastic consumer behaviour and accompanying policy measures through multi-stakeholder consultation; the recycling efforts should be up-scaled so as to increase the percentage of plastic waste recycling through the provision of support to community-based plastic recycling groups; and the need to conduct awareness and education programmes for the general public on rational utilization and disposal of plastic products.

An effective strategy for plastic waste management in Nairobi should be based on changing consumption patterns that will result in the minimization of plastic waste. In this respect, the potential for plastic waste recycling, reuse and recovery will play a key role in preserving natural resources, the environment, and providing income to the urban poor. In addition to the overall environmental benefit through the reduction and recycling of plastic waste, the implementation of this strategy is expected to lead to the creation of employment to unemployed youth and women groups who would be supported to be engaged in recycling of post-consumer plastic waste. The experience to be gained from the implementation of this strategy is also expected to provide useful lessons that could be replicated in other Kenya urban centres and the entire African continent. This strategy is designed to be implemented through a broad stakeholder participation framework in which the City Council of Nairobi takes the lead responsibility in implementing the strategy while UNEP, UNDP and other collaborating agencies would facilitate the required institutional and technical support. A series of consultations have been held with partner institutions with the objective of defining their possible roles and contributions.

The Japanese Experience

Under the Home Appliances Recycling Law that was established in 2001, consumers must pay the processing fee to have their old appliances (refrigerators, washing machines, televisions and air conditioners) taken away and recycled. Retailers are also obligated to collect and transport the discarded appliances, and the manufacturer is obligated to recycle the materials. With consumers bearing the cost of disassembling appliances in the form of a disposal fee to recycling firms, which can come to USD 60.00 for a refrigerator and USD 35.00 for a washing machine, the pressure to design appliances that are easily and cheaply disassembled is strong.

The highlight below presents encouraging attempts made by supermarkets with respect to plastic waste management that this proposed strategy would build on.

Chain Stores: The Case of Nakumat and UCHUMI

Supermarkets, kiosks and outdoor markets are estimated to release 11 million plastic shopping bags per year of which 8 million are from supermarkets. The situation is even worse in informal settlements and slums where plastic consumption is higher than the above figure. Since the level of re-use and recycling of post-consumer flexibles in Nairobi is very low, approximately 173,000 tonnes/year of plastic waste are released into the waste stream. Out of these plastic waste approximately a meagre 1% is recycled (ITDG 2005), while the rest is left in the waste stream. About 30% is collected by Nairobi City Council and private waste handlers collect and dump in Dandora. The rest is either dumped in illegal dumpsites, open burning or left littering the environment.

Nakumat and UCHUMI are the two biggest supermarket chains operating in Kenya. They provide customers with free, branded- and plain plastic shopping bags. A discussion with one of the stores of UCHUMI in Nairobi revealed that, the chain store encourages customers to bring back used plastic shopping bags. To facilitate this, collection bins have been made available by most of its outlets. Although alternative carton packaging and brown paper bags are available, most customers opt for the plastic bags. The cost of plastic bags is part of the overhead expenses of the stores and not transferred to customers (Kimathi, Loise. 2 July, 2005. Personal interview). Further communication with the management revealed UCHUMI's views and strategy on the plastic bag waste management (Karanja, Sam. 2005, July 18. E-mail communication). The management affirms that UCHUMI has availed bins at its outlets to facilitate the return of post-consumer plastic bags. Its approach to deal with the issue is codified as a "4R Strategy", namely Reduce, Re-use, Recycle and Recover. Regarding the 30µm minimum thickness recommended by KIPPRA, the company believes that this will have considerable cost implications to consumers. Hence, it supports a gradual approach of first moving to 20 micron thickness before raising the same to the 30 micron mark. UCHUMI acknowledges the success achieved in South Africa in reducing plastic bag use at retail outlets as a result of the South African government intervention, which demanded consumers to pay full costs of bags issued. The only concern to UCHUMI is loss of promotion as people resort to re-usable bags or other alternatives and the use of 'mixed' bags bearing the marks of different retailers in one shop. The company also believes that there should be a clear mechanism by which plastic litter in the environment could be collected. It encourages its customers to return the bags they have checked out to collection points at the outlets. Currently, the feasibility of resorting to biodegradable and degradable materials is being evaluated by the chain store. Discussions with Nakumat personnel indicated similar results.

In an effort to curb the plastic bags menace, *Nakumat*, officially introduced 'degradable shopping bags' in one of its shops on the 6th of July 2005 in the presence of the Minister of Environment and Natural Resources. The minister, at the time, urged consumers to use the new bags "not only to reduce environmental pollution but also to stop the ugly scenes of bags hanging on trees." (Daily Nation, 2005, July 7). The scene of plastic bags hanging from trees is probably the most telling impact of post-consumer plastic bags in the Kenyan environment- the case of Nairobi- Naivasha road being well known. The launch reportedly placed Kenya in the world environmental protection programme in the fight against global pollution and was reportedly the result of Nakumat's choice to support the programme. (The Standard, 2005 July 13). The bags were developed for Nakumat by Packaging Industries Limited (PIL), and were treated with additives, which makes them photodegradable with time. Nakumat stores have also availed bins to facilitate return of packaging by consumers, e.g. tins, plastics, etc; but plastic bags return rate is poor. To this end, a company called ACME Containers collects the materials weekly for recycling.

The ability of the CCN to collect and dispose of solid waste safely has been eroded by the City's accelerated urbanization and population growth. This has compelled high and middle-income residential households to start paying for solid waste management services to private collectors. It is the duty of the CCN to issue licences to these private waste collectors. Even though this service has been largely privatised, there is still no segregation of waste at source. This means that most of the plastic wastes find their way into the Dandora dumpsite. Plastic

waste recovery at this dumpsite is one of the economic activities that supports the livelihoods of informal waste recyclers.

Although, there is a significant level of private sector involvement in the solid waste collection services from predominantly middle to high-income households and business/industrial premises in the city, no such services exists in the low/informal settlements of the city that unfortunately hosts over 60% of the city population. This presents a big challenge to the promotion of waste segregation and recycling practices. Private collection services are provided under an open and completely unregulated but competitive environment; that is, private companies/organizations are free to provide services anywhere in the city and collect varying tariffs directly from customers. The City Council does not have contractual involvement with private companies but simply regulates them through a licensing procedure that is hardly monitored. There is no formal policy and law that governs private sector involvement in SWM at the Central Government Level. At the City Council level, an attempt was made to develop SWM By-Laws, which provides for CCN to contract the SWM services to its agency in whichever form it may find appropriate. These By-Laws are yet to be approved by the Ministry of Local Government since they were submitted in February 2005. It is important for CCN to regulate this private sector if they are to deliver quality services to the residents.

3.0 THE STRATEGY

This strategy has been compiled by KNCPC in close collaboration with the City Council of Nairobi (CCN) in consultation with a wide range of stakeholders namely, non-governmental organisations (NGOs); community based organisations (CBOs); Youth and Women Groups; Ministries of Education, Trade & Industry, Planning & National Development, and Local Government; research institutions; business associations; and donors. The strategy seeks to functionalise a multi-stakeholder return and/or buy back scheme that will facilitate the collection and return for recycling and reuse all categories of plastics that normally find their way into our environment. This strategy targets both the local market for recycled plastics as well as export markets such as China and India for palletised and value added plastics that under normal circumstances fetch more returns. If all the 172, 800 tons per year of plastics that litter the city environment were collected by the by the youths and neighbourhood associations and value added for export, this will fetch the country a whopping 8 Billion Kenya Shillings. The City Council of Nairobi will play a pivotal role in the operationalization of this return scheme and/or buy back scheme. A three-prong approach has been adopted with a view to demonstrating quick and visible results that are to be sustained in both the short and medium term phases.

- (i) A **bridging phase** that involves activities that will lead to quick and visible results on reduction of plastic waste littering in Nairobi under the Ministry of Local Government's Rapid Results Initiative (Results to be seen in 100 days);
- (ii) A **short-term phase** that will involve the piloting of the strategy in the Embakasi area of the city of Nairobi (for a period of 3 years); and
- (iii) A **medium-term phase** that will involve the up scaling up of the project to the rest of Nairobi and, in the long-term, replicating the lessons learnt in other Kenyan municipalities and towns (for up to 10 years).

Apart from the action plan in the bridging phase, additional actions will include waste minimization, plastic waste collection and segregation, its transportation & safe disposal; establishment of enabling policy & legal instruments; monitoring & enforcement of best practices; recycling, reusing & recovering; networking and information exchange; plastic waste management planning; capacity building; awareness raising, education & public participation; adoption of appropriate and innovative manufacturing technologies and research and development (R&D).

4.0 CURRENT STATUS

Practical Action or the International Technology Development Group (ITDG) is actively involved in supporting community based recycling in the city of Nairobi. It has already undertaken some social mapping and identified 13 functional plastic waste collection points, 37 recycling groups and 1,613 individuals in the city's East lands Area that can spearhead the recycling program through a legally defined cooperative framework. The registered cooperative is operating on a 5-year business plan. In partnership with the Jomo Kenyatta University of Agriculture and Technology (JKUAT), Practical Action has developed appropriate technologies for recycling plastics, namely the CleanMax™ and the Transextruder. The Group is keen on establishing a revolving fund that will facilitate the buy back scheme for plastic waste. Financial support for the creation of a soft loan scheme to support community based plastic waste recycling is being sought from the DGIS Netherlands, the French Embassy and the Comic Relief of the United Kingdom. Other groups that are actively involved in plastic waste recycling the city of Nairobi include RH Devani, Green Loop International and Eurasia Plastics.

In order for the plastic waste management strategy to be operated in an effective and sustainable manner, the Kenya Institute for Public Policy Research and Analysis (KIPPRA) is recommending a mix of three broad categories of policy instruments, namely regulatory, economic and voluntary based ones. The regulatory component will address issues such as regulation of technologies, performance and provision of public goods. Economic instruments manifest themselves in form of prices (taxes, charges, subsidies, deposit-refund schemes, and liability systems) or property rights such as creation of property rights for plastic waste handling. Voluntary based instruments involve the provision of information through public awareness and setting up of voluntary codes of practice. On the international scene, levies, charges and taxes have been successfully applied in South Africa, China and Tanzania; outright bans/setting of minimum thickness standards have been successfully embraced in Rwanda, South Africa, Bangladesh, India, Hong Kong and Somalia; introduction of cleaner alternatives have been successfully adopted in South Africa; and Rwanda, India, Hong Kong, and Singapore also rely on information creation and awareness.

KIPPRA proposes for immediate implementation the following:

- Minimum thickness standard of 20 microns to be later revised to 30 microns with an aim of reducing the thin plastic menace in the city's environment
- Innovative Financial support for recycling and upgrading of plastic waste management infrastructure such as financial incentives to promote private-public partnerships in the development and management of waste infrastructure
- The stepping up of consumer awareness and anti-littering campaigns so as to create a responsible use and disposal of plastics
- A voluntary code of practice for retailers, consumers and manufacturers aiming at rationalising the issuance of plastics, increasing the usage of plastic bags made from recycled material, creation of convenient and accessible recycling stations to customers, and setting up of better standards for imported packaging plastics

- The creation of a plastic waste management fund with contributions from voluntary contributions from industry, Government and other donors; and these contributions be tax exempt
- Setting up of differential power and water tariffs to increase the level of recycling
- Zero- rating of recycled products to create a vibrant market for recycled products
- Creation of a plastic bags levy
- Supporting the development of alternative bags that are more durable, reusable and recyclable

5.0 ANTICIPATED POLICY, MANAGERIAL AND TECHNICAL CHANGES

The successful implementation of this strategy will be critically dependent on the ability of stakeholders to initiate changes at policy, managerial, and technical levels with a view to changing consumption patterns. Specific recommendations need to address the following:

- Policy formulation and implementation for plastic waste management should consider the needs of all levels of the community. The social responsibility for plastic waste management should be initiated at all levels of our education system, right from the primary school level upwards.
- The role of the community (church, youth and women groups) in plastic waste management should be strengthened.
- The need to develop indigenous and homegrown technologies for plastic waste management is paramount as it is essential for the sustainability of the strategy.
- Primary collection and involvement of informal waste recyclers (scavengers) is of prime importance in plastic waste management, as it will help reduce costs and also enable the collection of waste from inaccessible areas.
- The Kenyan Government should be made aware of the positive benefits of plastic waste recycling so that they can include recycling in national policy formulation and budgetary support. Coordination and networks should be formalized between ministries so as to create appropriate policies with the aim of increasing benefits from the recycling industry.
- There is need to encourage the minimization, reuse and recycling of plastic wastes by all solid waste producers. Alternative uses for recycled goods should be developed and brought to the attention of the community and manufacturers. There is need for source segregation of waste. Manufacturers should be encouraged to use recyclable/reusable items as raw materials for their production processes. There is therefore need for more information on simple, on-site recycling activities and technologies that are environmentally safe and cost-effective. Incentives such as tax rebates and/or soft loans for all scales of plastic recycling should be made available.
- There is need to develop quality standards and have them implemented for all plastic recycled products.
- There is need for constant information exchange on best available practices and technologies.
- An enhanced and sustained market for recycled plastic products will ensure better prices using preferential government purchase, better conditions for informal recyclers (scavengers) and also stimulate all levels of plastic waste recycling.
- The City Council of Nairobi (CCN) will coordinate and champion this plastic recycling and re use strategy with the support of stakeholders.
- The local community should be made aware of the health and safety aspects of all levels of plastic waste recycling.
- There is a requirement for land for purposes of developing small-scale plastic recycling industries and the City Council of Nairobi should assist in this constraint.
- There is need for political will, enthusiasm and top commitment on the side of the Government, NEMA, CBOs and the City Council of Nairobi so as to assure adequate allocation of resources.

- There is need for quick gazettelement of waste management regulations developed by NEMA and approval and enforcement of anti-littering laws by the City Council of Nairobi.
- Creation of a Plastic Bags Levy
- Innovative ways of fund raising for plastic waste management that prioritises community involvement need to be developed.
- There is need for capacity building and strengthening of solid waste management infrastructure at the City Council of Nairobi.
- The Government should create an enabling environment for plastic waste recycling by reducing electrical/water tariffs and if possible waive 16% VAT on recycled plastic products (differential power and water tariffs/ zero-rating of recycled products)
- Promotion of a voluntary national code of practice for retailers, consumers and manufacturers on environmental sound ways of managing plastic wastes.
- Processing of the plastics for the COMESA region should be undertaken within the Exports Processing Zones (EPZ) as an incentive measure.

This strategy will need to be continuously reviewed and adapted so as to address practical realities and changing needs, priorities and preferences of consumers. The strategy also takes cognisance of the fact that it will be difficult to address plastic waste management challenges in total isolation of the entire solid waste management problem. Hence, the successful implementation of this strategy will also depend on the presence or absence of an effective solid waste management program.

6.0 THE EVOLUTION OF THE STRATEGY

The evolution of this strategy went through the following steps.

Phase I: The Inception Phase: Consultative meetings between KAM and NEMA in 2003 lead to the development of the 10-point action plan (Appendix 1) on plastics management. This was followed by consultative meetings between KAM and KNCPC on how to cost-effectively implementing the 10-point action plan in the following year. In September 2004, a workshop on plastic waste management, that was funded by UNDP and organized by KNCPC, recommended the development of prioritized and time-bound action plans for short- medium- and long-term solutions to the plastic management challenge in the country and also identified priority areas and the need for adequate funding. It is at this meeting that UNEP committed itself to facilitating the development of a comprehensive plastic waste management strategy for the City of Nairobi that will act as a pilot case study for other local authorities in Kenya and the rest of Africa. This was followed by an inception workshop for the formulation of this strategy during the month of June 2005. This inception workshop created four task forces with specific mandates of dealing with policy/economic instruments; community based plastic waste recycling; awareness and public education; and the development of the strategy itself under the guidance of a project steering committee (PSC).

Phase II: The Situation/Baseline Analysis Phase: Each of the four specialist task groups undertook a situation/baseline analysis that identified waste management issues, its related problems and challenges and how they can be overcome. The synthesis of these findings form the basis of this comprehensive plastic waste management strategy.

Phase III. Stakeholder consultation: Several consultative meetings were held with the other three task groups, the City Council of Nairobi and the Ministries of Local Government, Trade and Industry, Education, and Planning and National Development so as to enable them make contributions to the strategy. The task groups consulted widely in their mandated areas.

Phase IV. Stakeholder validation: The draft strategy document was circulated to the relevant stakeholders and was presented and discussed at a stakeholder's forum that was organized under the context of the pilot project.

7.0 COMPONENTS OF THE STRATEGY

7.1 The Rapid Results Initiative

The Rapid Results Initiative (RRI) is part of the Results Based Management approach adopted by the Government as a vehicle for delivering the goals of the Economic Recovery Strategy (ERS) paper on wealth and employment creation. The ministry of Local Government and the CCN have targeted solid waste reduction in the city's Central Business District (CBD) and developed an action plan for this initiative. The objective is to contribute to activity 8 of the 10-point action plan (Appendix 1) that aims at reducing plastic litter in Nairobi within three months. This will be achieved through awareness raising on source segregation of waste, setting up of solid waste collection and dropping points, collection of plastic litter, its transportation, networking of recyclers and final disposal. Given the amount of plastic litter and its associated environmental impacts, the Ministry of Local Government and Local Authorities themselves are under immense pressure too act quickly and help create the desired change.

7.2 Stakeholder Participation and Public Education and Awareness

Plastic waste management is basically a welfare and development matter and it is commonly accepted that public participation is essential for its success. Stakeholder participation entails the involvement of all categories of people on the identification of their felt needs, mobilization of resources, and deciding on the direction and execution of programs and projects. It should take place at all levels of planning and management, including training, problem identification, implementation, monitoring and evaluation. Awareness, on the other hand, is the process of awakening and raising people's sensitivity to concerns, in this case the plastic waste management problem in the city of Nairobi. Awareness can be created through formal and non-formal education with the assistance of both the print and electronic media. This strategy will form part of the Rapid Results Initiative being sponsored by the Ministry of Local Government.

Environmental education with respect to plastic waste management, both formal and non-formal, is vital to changing people's attitudes to appreciating a clean and safe environment, and leads to their empowerment in enabling them to manage their wastes sustainably. It also creates responsibility among the different communities, increases environmental accountability and governance and encourages the rational use of environmental resources. There is need to create a mechanism for stakeholder participation and dialogue so as to empower and enable the public participate in sound environmental practices. The activities in this component will include:

- Coordinating the preparation and distribution of posters in both English and Kiswahili on how to innovatively manage plastic wastes in Nairobi;
- Coordinating the preparation and presentation of weekly radio and TV programs on the environmental impacts of indiscriminate dumping and littering of the urban environment with plastic litter;

- Commissioning of the preparation and publication of bi-monthly feature articles in the print media on environmentally sound strategies of dealing with plastic wastes;
- Coordination of the holding of public meetings in all divisions to sensitize the people on the negative impacts of plastic waste management and the need to have them reused and recycled;
- Coordinating and facilitating the organization of environmental competitions among local communities, youth and women groups, divisional schools and other institutions on innovative approaches of plastic waste management;
- Making use of the “Environment Day” and other public days to disseminate best practices and technologies for managing plastic wastes;
- Produce a film/video on environmental issues in each division with special emphasis on plastic waste management and use them for environmental awareness in each respective division;
- Preparation and issuance of brief policy statements on the environment in general and plastic waste recycling in particular.
- Assess the current quality of environmental education offered in primary, secondary and tertiary institutions in terms of curriculum content, capacity of trainers and the level of impact;
- Develop a new syllabi on environmental education at all levels of our education system;
- Assess the current non-formal environmental education in the country in terms of coordination,, training needs, available capacity of trainers and level of impact;
- Train trainers of non-formal environmental education, at least 5 from each of the 9 divisions that make the city of Nairobi and use them in turn to train local communities in enhancing their full participation in plastic waste recycling;
- Reviewing of existing environmental policies and laws with the aim of formulating new harmonised ones that will strengthen stakeholder participation in overall environmental planning and management;
- Launch education and awareness campaigns to empower all stakeholders from national to local levels to actively participate in environmental management;
- Train NGOs, civil society, youth and women groups, civic leaders, lead agencies, the provincial administration and the private sector in modern ways of plastic waste recycling;
- Develop and implement best practice demonstration projects in plastic waste recycling in all the Nairobi divisions.

7.3 Capacity Building and technology Support

Capacity building and technology support issues are important in ensuring that the appropriate plastic waste recycling solutions are used in industrial, manufacturing and market activities, and technologies used have a minimum impact on the environment, producing the least amount of wastes possible. This will also include building of human resources, policy and decision-making capabilities, and other inputs. These issues are also primarily the responsibility of business associations, business intermediary organizations, and professional engineering and research institutes. The component activities include:

- Undertaking of a Technology Needs Assessment;

- Development of a data bank of plastic waste recycling technologies and contacts of technology suppliers;
- Learning about collection, transportation, treatment and disposal of plastic wastes;
- Training of youth groups in techno managerial skills and technology upgrading;
- Setting up of a plastic waste recycling technology service centre;
- Organization of study tours to plastic waste recycling plants of excellence;
- Setting up demonstration projects that will show the economic and environmental efficacy of plastic waste recycling.
- Publishing a waste minimization, reuse, and recycling guide for plastic waste generators;
- Setting up and distributing calendars and leaflets containing appropriate messages to house holds;
- Development of an inventory of health and safety concerns of plastic waste management;
- Develop appropriate technologies for collection, sorting, transportation, recycling and selling of plastic wastes;
- Development of appropriate posters for prominent locations;
- Strengthening the techno-managerial and infrastructural capacity of the CCN;
- Establishment of Plastic waste recycling network based on a Sound Material Cycle Society.

7.4 Setting up of plastic waste recycling demonstrations

Demonstration projects will be used by this strategy for purposes of demonstrating the profitability of plastic waste recycling in the city of Nairobi. The piloting of this project will be undertaken at Embakasi area of Nairobi. The feedback obtained during this piloting phase will be used to improve the effectiveness of the scheme during the up scaling phase that will target the remaining 8 divisions of the city of Nairobi. The activities for this component are:

- Secure adequate land for the proposed plastic waste recycling activities;
- Test the ability of the proposed incentive scheme in attracting informal waste recyclers to collect plastic waste from the environment for recycling;
- Mobilization of city residents to form active neighbourhood associations and youth groups;
- Lobbying and having local authorities increase their involvement in neighbourhood associations;
- Lobbying professional groups and associations, research institutes, and universities to strengthen their links with grass root environmental issues at neighbourhood level;
- To build capacity and commitment through plastic waste recycling knowledge management;
- To create lessons that will make informed input into the development of an enabling policy framework for furthering the 3R concept including economic and market based instruments;
- To facilitate and provide accurate and timely access to information by all stakeholders;
- Document best practices and techniques for replication;

- Design and development of indigenous technologies for plastic waste recycling;
- Document the challenges of plastic waste recycling in Kenya.

7.5 Information dissemination on best available practices

The relationship between public awareness and demand for sound environmental management may be challenging. A lot of information is required for the grass root population to understand and appreciate the importance of managing plastic wastes in an environmentally sound manner. The public also needs to know what their rights and responsibilities are in as far as plastic waste recycling is concerned. Extensive and intensive sensitisation is essential in enabling people to bring sound environmental practices into focus. An extensive program of sensitisation of the general public is required that targets the different strata of society. Two levels of sensitisation are proposed. The first is to inform people generally about the dangers of dumping plastics into the environment and the second should target specific individuals, groups and sectors so as to enable them maximise the plastic waste recycling opportunity for job creation. General sensitisation activities should aim at ensuring that more of the population has access to essential plastic waste management information. This may necessitate further development and dissemination of reader friendly materials in English and Swahili, information packs and briefing materials to different stakeholders; and a massive media campaign. A citywide information system should therefore be created to provide answers to routine questions and common constraints by linking dispersed plastic data/information custodians, to a set of information seekers.

Provision of information and data to decision makers and the public, including government departments and agencies, non-governmental organizations, civil society organizations, and the private sector is essential for sustainable management of plastic wastes in Nairobi. It is necessary to influence policy adjustment so as to promote equitable access to and enjoyment of a clean and health environment. The activities in this component will include:

- Establishment of a plastic waste management documentation centre;
- Establishment of a plastic waste recycling information data base and steering committee to be hosted by the CCN;
- Establish and implement data/information collection and management mandates, guidelines, publications/dissemination, standards, and quality;
- Establish and maintain mechanisms and procedures for networking, access, harmonization and exchange of data and information (including cost implications) by users and custodians;
- Establishment of a data bank of cost-effective and environmentally friendly plastic waste recycling technologies and how they can be sourced locally;
- Networking through centralization of resources and acquisition of plastic recycling equipment;
- Strengthening of the political voice of the civil society;
- Establish and implement appropriate costing, pricing, and marketing procedures for data and information for purposes of cost-recovery and sustainability of this information program; and
- Develop and manage a plastic waste recycling web site.

Education and awareness building issues among all concerned stakeholders, and the need for comprehensive networking among themselves at the local level. These issues focus focus on the provision of appropriate and timely information to decision makers, targeting stakeholders in the public and private sectors, but also communities and consumers alike.

7.6 Policy dialogue and analysis

Policy dialogues are carefully constructed, deliberative meetings that address both politically controversial and technically complex aspects of an issue in dispute such as plastic waste management. They seek to exchange information and build consensus recommendations between the public, private and civic sectors through leaders who are in a position to forge alliances, make decisions, or strongly influence the trajectory of a possible solution to a challenging issue. It is typically used in regulatory, policy, and community conflict situations. Successful policy deliberations tend to progress through three broad phases: issue focussing and convening; information exchange and discussion; and solution seeking and consensus building. Some of the activities for this component include:

- Strengthening of the public private sector partnerships;
- Integration of youth groups and neighbourhood associations in solid waste management;
- Appraising of the situational problem of plastic waste management in the city of Nairobi;
- Organizing stakeholder leadership, sponsorship, and willingness to convene sessions on a routine basis;
- Gaining the participation of key stakeholders (CCN, regulatory agencies, business associations, community groups, youth groups);
- Establishing of protocol and forging working agreements on the plastic waste management issues to be addressed from different perspectives;
- Organizing productive and respectful exchange of plastic waste management information and lessons;
- Pushing the parties to understand the plastic waste position for Nairobi and the underlying interests of all key stakeholders;
- Assisting parties in making informed choices on plastic waste management;
- Capturing the agreements and helping ratify, memorialise, and prepare for implementation.

7.7 Good Environmental Governance and Networking

Governance issues include policy instruments such as laws, legislation, rules and procedures and the development of an enabling environment where market based instruments can be used to facilitate the uptake of the 3 R concept. Currently, there is no policy on plastic waste management in the country. The absence of laws, rules and regulations in solid waste management means that this strategy is developed on the premise that there exist problems of failed collective action, institutional fragmentation, and deficient authority within the current plastic waste management approaches. Environmental management involves complex arrangements and for it to be properly executed, key players must assume their proper roles, be well coordinated and operate in an environment where linkages exist. The

much-needed solid waste management policy should be developed to cater for inter-ministerial synergies and mechanisms of coordination. There is also need to create a mechanism for exchanging data, lessons learnt and other information between waste generators, collectors, recyclers, policy makers, regulators, technology providers and other related players.

7.8 Prudent Financial Management

The question of sustaining environmental management in Kenya requires financial support from both the private and public sectors of the economy. Both parties must pay for environmental management since it is both a public good and a private responsibility. A system must be put in place to ensure the generation of resources. It is therefore proposed that a multi-stakeholder fund raising unit be established. Guidelines and regulations relating to the financial management needs to be established. This is intended to facilitate proper, cost effective and efficient use of the scarce financial resources in the processes of implementing this strategy. The activities for this component include:

- Establishment and operationalization of a multi-stakeholder resources mobilization unit;
- Appointment of a fund raising officer;
- Development of a data base of reliable funding agencies and contacts;
- Development and implementation of a fund raising strategy;
- Instituting of the networking mechanism for fundraising;
- Sensitisation of city MPs and CDF committees on the need to allocate a portion of CDF funds on waste management
- Strengthening Local Authorities to account more transparently on the use of LATF
- Development of proposals for the Youth Enterprise Fund
- Establish and maintain a plastic recycling green fund;

7.9 Actual Plastic Waste Recycling

This will involve strengthening and expanding the current community based plastic waste recycling initiatives, starting new ones, improving the efficiency of current technologies, improving market access of recycled products and provision of incentives such as lower energy tariffs, tax rebates, and awards. It will also involve the setting up of drop off centres for materials destined for recycling. Resource recovery can reduce the costs of disposal by reducing quantities that go to the dump site, providing employment for those who collect and process the recyclable materials so that the demand for virgin material is reduced.

The strategy seeks to start at pilot level plastic waste recycling in the Embakasi division of the City of Nairobi during the first year. Feed back from this pilot plastic waste recycling will be incorporated in the planned up scaling of the recycling project in the remaining 8 divisions of the City.

7.10 Revision of the Curricula

Curricula should be developed so as to enable the integration of formal environmental education in the national education system, and also cater for non-formal environmental education for the general public. There is therefore need to assess the current environmental education being offered at primary, secondary and tertiary institutions (if any) in terms of adequacy of curricular content, capacity of trainers and the desired impact. Additional activities will include:

- Development of a new syllabi on environmental education at all levels of our education system;
- Incorporate in this curricular elements of education for sustainability;
- Assess the current non-formal environmental education in the country in terms of coordination, training needs, available capacity of trainers and levels of impact;
- Train trainers of non-formal environmental education in all the 9 divisions of the city; and
- Coordinate the implementation of non-formal education at national and municipality levels.

7.11 Research and Development

Research and development will be necessary if this proposed strategy has to be fully embraced by the residents of the city of Nairobi on a sustainable basis. There are currently scattered plastic waste management R&D activities in the country currently being spearheaded by universities, NGOs and research institutes that are in dire need of coordination if these results are to be used for the much-needed replication. Key areas of concerns with respect to R&D include:

- Development of the waste management infrastructure of the city by establishing litter collection systems, solid waste collection and transfer points, and landfills development;
- Undertaking of a technology needs assessment with respect to plastic waste recycling;
- Research on the development of plastic waste recycling technologies that are cost effective and environmentally friendly;
- Undertaking of R&D in the broad area of sustainable consumption and production:
- Research on consumer behaviour and preferences and on modalities of making the return scheme and/or buy back scheme functional;
- Research on the appropriate application of the incentive scheme and market instruments;
- Research on sustainable approaches to waste minimization, cleaner production and waste segregation at source;
- Research on occupational health and safety concerns associated with plastic waste recycling;
- Research on alternative packaging materials;
- Research on innovative ways of reaching out to the consumer so as to educate him on the need to change some consumption patterns;

- Research on market preferential for recycled plastic products;
- Research on the streamlining and strengthening of the waste management services through the active involvement of the private sector and the community-based organizations;

8.0 SWOT ANALYSIS OF NEIGHBORHOOD ASSOCIATIONS

Community Based Organizations (CBOs) especially the Youth Groups (YGs) under the CCN regulated and licensing scheme and with the full backing of the Ministry of Local Government will be the principle drivers of this strategy. Consequently, the sustainable functioning of this strategy will depend on addressing measures that will maximise the CBOs' strengths and opportunities while minimizing on their weaknesses and potential threats. The potential for job creation and improved livelihoods is enormous especially when the plastic wastes are collected, cleaned and converted in value added products for expanding markets in China and India. Exported value added plastics fetch seven times more money per kilogram. The table below highlights a SWOT Analysis of the CBOs in Nairobi.

SWOT – ANALYSIS

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS	PRIORITIES
ECONOMIC PERFORMANCE AND INTEGRATION INTO SOLID/PLASTIC WASTE MANAGEMENT SYSTEM				
<ul style="list-style-type: none"> ▪ Youth Groups (YG) are already offering basic waste collection services ▪ YG sort and sell garbage ▪ Employment opportunities can be created in plastic waste recycling ▪ YG identify with their localities ▪ Best knowledge of areas difficult to access ▪ Youth Groups collect garbage as income-generating activity ▪ Self-help activities are mushrooming ▪ Waste-collection improves overall-situation ▪ First-hand knowledge ▪ Youth Groups are more easily accepted in the community ▪ Work is done by registered Youth Groups 	<ul style="list-style-type: none"> ▪ Bad management within Youth Groups ▪ Alcoholism and drug abuse ▪ Laziness and ignorance ▪ Lack of follow-ups on ideas ▪ Weak faith in future improvements ▪ Lack of perseverance ▪ Lack of access to technologies ▪ Lack of transportation facilities ▪ Lack of knowledge to properly handle garbage ▪ Lack of designated proper dumpsites ▪ Lack of access to markets 	<ul style="list-style-type: none"> ▪ Creation and increase of jobs and income through formalization of informal employment ▪ Improvement of living-conditions ▪ Improvement of working-conditions ▪ Coverage of bigger areas ▪ Access to external funding ▪ Fight poverty ▪ Increase of income through collection of larger amounts of recyclable and sellable waste ▪ Complete coverage of area ▪ Possibility for municipality to improve living conditions in informal settlements 	<ul style="list-style-type: none"> ▪ Lack of income ▪ Economic constraints weaken improvement of performance ▪ Bad management wastes scarce resources ▪ Lack of knowledge about situation in slums in greater Nairobi leads to exclusion ▪ Lack of economic sustainability could lead to the breakup of Youth Groups ▪ Bad management leads to ineffective work and threatens the existence of the groups ▪ Neglect of community activities might widen the gaps between formal 	<ul style="list-style-type: none"> ▪ Foundation of a cooperative ▪ Detailed situation-analysis ▪ Coordinated awareness-raising campaigns ▪ Capacity-building on management, handling of waste, publicity & marketing ▪ Set up intervention measures that address the listed weaknesses, opportunities and threats.

<ul style="list-style-type: none"> ▪ CCN is responsible to guarantee basic service delivery 	<ul style="list-style-type: none"> ▪ Lack of tools and equipment ▪ Lack of capital ▪ Youth Groups are not involved in formal SWMS ▪ Youth Groups are not involved in decision-making process ▪ Lack of external funding 		<p>and informal sector and might lead to resignation of community groups</p>	
REUSE OF WASTE				
<ul style="list-style-type: none"> ▪ YG sell plastics for recycling ▪ YG compost organic waste 	<ul style="list-style-type: none"> ▪ Lack of knowledge to recycle and compost waste ▪ Lack of space for storing and sorting 	<ul style="list-style-type: none"> ▪ Reduction of dumped waste ▪ Integration into process chains ▪ Widening of economic basis ▪ Avoidance of wastefulness 	<ul style="list-style-type: none"> ▪ Competition might reduce income 	<ul style="list-style-type: none"> ▪ Create markets for recycled plastic products ▪ Create markets for composting ▪ Undertake training in waste recycling and composting ▪ Develop recycled product's Quality Control Standards ▪ Create land area for waste sorting and recycling.

HEALTH, ENVIRONMENT AND LIVING-CONDITIONS

<ul style="list-style-type: none"> ▪ YG clean drainages and sewage systems ▪ YG clean up the public environment ▪ Garbage collection offers direct lessons on hazardous impact of dumped waste ▪ Clean-up activities strengthen awareness on health and environment ▪ Activities affect future behaviour 	<ul style="list-style-type: none"> ▪ Hazard to health and environment ▪ Unprotected contact with garbage and hazardous items ▪ Uncontrolled dumping ▪ Pollution of rivers and environment ▪ Burning of all kinds of garbage 	<ul style="list-style-type: none"> ▪ Improvement of health situation ▪ Possibility for municipality to alleviate poverty and to improve environmental and health situation ▪ Possibility to include sustainability in policies on slum-upgrading ▪ Clean-up of hazardous dumpsites 	<ul style="list-style-type: none"> ▪ Unregulated dumping of waste threatens environment and health ▪ Lack of proper training on waste management exposes garbage collectors to health hazards ▪ Under-equipment threatens the health situation ▪ Blocked drainages lead to spread of diseases ▪ Hazardous living-conditions threaten life-expectancy, economic performance and integration 	<ul style="list-style-type: none"> ▪ Source segregation of solid wastes to avoid mix up with hazardous wastes ▪ Need for awareness raising campaigns to change consumption and behavior patterns ▪ Integrate youth groups in urban solid waste management ▪ Set up intervention measures that address the listed weaknesses, opportunities and threats.
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NETWORKING, COLLABORATION AND COMMUNITY INVOLVEMENT

<ul style="list-style-type: none"> ▪ Decentralisation of garbage collection ▪ YG cooperate with institutions, civil society and academia ▪ Prevention of crime and idling ▪ Youth Groups change the lifestyle of the community ▪ Youth Groups have access to communities ▪ Waste Management goes along with awareness-creation ▪ Youth Groups organize voluntary and participatory waste collection campaigns ▪ YG involve community in clean-up campaigns ▪ Clean-up days raise community awareness 	<ul style="list-style-type: none"> ▪ Unequal gender participation ▪ Many youth do not want to get involved with dirty work ▪ Lack of education and illiteracy ▪ Lack of networking and cooperation ▪ Competition on scarce resources ▪ Lack of NCC support in waste management system in informal settlements ▪ Lack of communication between Youth Groups, within the community and the municipality ▪ Weak position of negotiation ▪ Awareness on impact of waste is not present ▪ No cooperation 	<ul style="list-style-type: none"> ▪ Exchange of ideas ▪ Spread of experience ▪ Best-Practice Model to serve as example for other areas ▪ Strengthening of political voice ▪ Access to people ▪ Creation of linkages between municipality, NGOs, UN and CBOs ▪ Access to other cooperatives ▪ Cooperation with aim at improvement of overall-situation ▪ Start of a bottom-up approach ▪ Opportunity for cooperation ▪ Clarification of responsibilities, roles and areas of work ▪ Awareness within the community ▪ Rethinking of attitude towards waste and reckless 	<ul style="list-style-type: none"> ▪ Lack of support from local authorities impedes general improvement of situation ▪ Lack of awareness within the community weakens position of Youth Groups and aggravates environmental situation ▪ Lack of communication between Youth Groups, community, civil society and authorities further excludes inhabitants within informal settlements ▪ Lack of cooperation intensifies competition 	<ul style="list-style-type: none"> ▪ Set up intervention measures that address the listed weaknesses, opportunities and threats.
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	<p>with professional waste management firms</p> <ul style="list-style-type: none"> ▪ Access to community – Youth are easily suspected of crime ▪ No willingness to pay for garbage collection services ▪ Lack of appreciation and acceptance within community 	<p>dumping</p> <ul style="list-style-type: none"> ▪ Education of young generation ▪ Better access to municipality ▪ Better contacts and access to private firms ▪ Sharing of equipment, tools and transport facilities ▪ Visibility ▪ Strengthening of position ▪ Strengthening activities of communities in informal settlements 	<ul style="list-style-type: none"> ▪ Mistrust towards Youth Groups complicates collaboration ▪ Lack of community involvement blocks the progress ▪ High competition for scarce resources obscures positive effects of collaboration ▪ Municipality might not react to efforts of Youth Groups 	
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9.0 BUDGET

Detailed Action Plan and budget for the Implementation of the Strategy on Plastic Waste Management for Nairobi

Components/Activities		Year			Implementing agency	Budget (KShs)	Verifiable indicators	Assumptions
		1	2	3				
1	<p>Bridging activity: Rapid Results Initiative (Within 100 days from 1/3/2006)</p> <p>-Litter collection in the CBD</p>				CCN, MoLG, KNCPC & others	25.00 million	- Reduced litter in the City	- High-level support from the MoLG - Adequate awareness campaigns with sufficient lead time
2	<p>Stakeholder Participation, public education and awareness</p> <ul style="list-style-type: none"> - Awareness campaign - Stakeholders trained in each division - NGOs, civil society and youth groups, environmental clubs trained in each division - Preparation of posters - Radio programs prepared and presented - Feature articles in print media prepared and presented - TV programs prepared and presented - Public barazas - Interpretation of recycling information on plastic materials - Environmental competitions - Mass media sensitisation - Workshops for professional organizations, manufacturers, consumers, retailers, policy makers, NGOs, civil society, CBOs held - Develop resource materials (e.g. videos, posters, handbooks) for use by various stakeholders to cover (Source segregation, Storage, timing & transportation, Anti-littering & illegal dumping, The 3R's, markets for recycled products, Willingness to pay for waste management services, Voluntary schemes). 	1	2	3	CCN NEMA KNCPC KAM Media Houses Plastic Manufacturers Plastic retailers Consumers NGOs Provincial Administration Relevant Government ministries	35.00 million	-Posters printed and distributed -Radio and TV programs presented -Public barazas on plastic management held -Competitions held -Policy proofs and statements -Workshops held -No. of awareness raising campaigns held -Reduced levels of plastic waste littering -Adopted source segregation practices	- City Council of Nairobi and NEMA and other stakeholders will be willing and motivated to fund raise and support this initiative. -There will be enough money to mount and sustain an awareness campaign.

3	<p>Capacity Building and technology support</p> <ul style="list-style-type: none"> - Setting up of plastic technology data banks - Training of CBOs and youth groups - Establishment of a plastic waste recycling resource centre - Study tours - Printing of plastic waste management guides - Set up waste segregation system - Designate waste collection and drop-off points - Provide separate bags for different solid waste streams - Purchase of one tipper (provided by CCN contractor) for plastic transportation - Training of CCN enforcement officers in waste management in general and in plastic waste management in particular - Development of a Code of practice for CCN for improving operational standards. 			<p>CCN KNCPC NEMA KAM KIRDI ITDG</p>	<p>13.00 million</p>	<ul style="list-style-type: none"> -Data banks -No. of Trainings -Resource Centre -Study tours -Waste management guides -Drop off points identified -One tipper purchased -No. of trainings held -No. of people trained -Completed code of practice 	<p>-The concerned parties will be willing and are motivated to work together. -Support from political leaders and strong desire by Nairobi residents to see a lasting solution to the plastic waste menace.</p>
4	<p>Setting up of plastic waste recycling demonstration projects</p> <ul style="list-style-type: none"> - Adequate land acquisition - Pilot testing of the incentive return and/or buy back scheme - Setting up of public-private sector partnerships - Documentation of best practices - Development of appropriate indigenous technologies - Enforcement of CCN's anti-littering laws - Strengthen and expand current plastic waste recycling initiatives: - Set up recycling centers - Provide incentives e.g. favorable energy tariffs, tax rebates on equipment (shredders, bailers and granulators), Energy Efficiency Awards etc - Improve the efficiency of current technologies - Improve market access of products from recycling 			<p>CCN KIPRA NGOs KAM KNCPC KIRDI Civil Society</p>	<p>15.60 million</p>	<ul style="list-style-type: none"> -Adequate recycling land secured -Best practice documents -Networking scheme -Prosecutions -Convictions -Level of compliance -No. of recycling facilities -No. of drop-off centres -Value of recycled products 	<p>-The concerned parties will be willing and are motivated to work together. -Political will -Availability of markets for recycled products</p>

5	Information dissemination on best available practices <ul style="list-style-type: none"> - Setting up of a plastic waste management documentation centre - Setting up of a plastic waste management information data base - Creation of networking mechanisms - Plastic website development - Establish management structure for data base, information and communication - Establish a network of plastic waste management stakeholders - Establish a database on plastic waste management - Establish appropriate means of communication to network members and others 			CCN KNCP NEMA KAM KIRDI ITDG NGOs CBOs	5.50 million	-Documentation centre -Information data bases -Website development -No. of people using the web site -Hire of a network manager	-The concerned parties will be willing and are motivated to work together. -Political will
6	Policy dialogue and Analysis <ul style="list-style-type: none"> - Strengthening of public private sector partnerships - Seeking ways of integrating youth groups into urban solid waste management - Holding of routine and interactive policy dialogue sessions. - Development of policy briefs - Review and development of policies - Inclusion of plastic wastes in the draft solid waste management by-laws - Development & enactment of a national solid waste management policy - Development of CCN's SWM policy - Revision, approval & operationalization of CCN's policies on recycling and composting - gazettment of NEMA's WM Regulations 			CCN KNCP NEMA KAM KIRDI ITDG NGOs CBOs	7.60 million	-No. of policy dialogue sessions held. -Approved SWM by-laws and policy on recycling and composting - A national policy on SWM -Gazetted waste management regulations	-The concerned parties will be willing and are motivated to work together. -There will be money to fund the process. -Sufficient political will
7	Prudent Financial Management <ul style="list-style-type: none"> - Establishment and operationalization of a multi-stakeholder resources mobilization unit; - Appointment of a fund raising officer; - Development of a data base of reliable funding agencies and contacts; 			CCN KNCP NEMA KAM KIRDI ITDG NGOs	5.00 million	-Functioning fund raising unit -Resources generated into the green fund -Donor data base set up and useful contacts made	The concerned parties will be willing and are motivated to work together.

	<ul style="list-style-type: none"> - Development and implementation of a fund raising strategy; - Instituting of the networking mechanism for fundraising; - Establish and maintain a plastic recycling green fund. 			Banks CBOs		-Fund raising strategy	
8	Revision of the environmental education curricula <ul style="list-style-type: none"> - Assessing the current level of environmental education in the country - New syllabi development - Assessment of non-formal environmental education - TOT of non-formal environmental educators - Strengthen the Environmental Clubs - Coordination of environmental education 			CCN KNCPC NEMA KAM KIRDI ITDG NGOs KIE CHE Universities MoED Research Institutes CBOs	5.00 million	<ul style="list-style-type: none"> -Assessment report on current environmental education -New syllabi developed and implemented -Assessment report on non-formal education -Training sessions in Environmental Education 	<ul style="list-style-type: none"> -The concerned parties will be willing and are motivated to work together. -There will be enough money to fund the process.
9	Undertaking of R&D <ul style="list-style-type: none"> - Infrastructure development - Technology needs assessment - Environmentally friendly plastic recycling technologies - Sustainable consumption and production - Incentive scheme and market instruments - Cleaner Production, waste minimization and segregation at source - Health and safety concerns - Development of alternative bags - Consumer behaviour and preferences - Markets for recyclable products 			CCN KNCPC NEMA KAM KIRDI ITDG Universities Research Institutes	10.00 million	<ul style="list-style-type: none"> -Number of Scientific publications -Number of applied patents 	There will be adequate money for research.
Total					121.7 Million		

10.0 Potential Sources of Funding

- Prudent utilization of the Local Authority Transfer Fund (LATF) fund
- Allocations from the Constituency Development Fund (CDF) fund
- Investments supported by the newly created Youth Enterprise Fund
- The Community Development Trust Fund (CDTF) from the European Development Fund
- Funding support from the EMCA created Environment Trust Fund
- Funding Support from the Green Belt Movement
- Funding from the EMCA Created General Fund
- Funding from the EMCA created National Environment Restoration Fund
- Bilateral and multi lateral Donor Agencies

Appendix 1: Ten-point Action Plan: Mid-2005 Status as Reported by KAM

Activity		Immediate Action to kick start and timing	Expected Completion date	Targets
1.	Recycling	Directive from NEMA immediately to all stakeholders	By July 2006	<ul style="list-style-type: none"> • 15% recycling by manufacturers by 2005 • 75% Recovered by retail and restaurant outlets by 2006
2.	Introduction of standard thickness	Finalize the standard on thickness immediately	By July 2005	All manufacturing concerns
3.	Phasing out currently flimsy plastics	Phase out purchase and production immediately	By July 2005	All users and manufacturers
4.	Economic measures	Drafting to start immediately	By July 2006	Finance Bill of 2005
5.	Reduced Tariff on electricity	KAM to draft them immediately	By July 2005	Finance Bill of 2005
6.	Recover by retailers	Cooperative awareness and directives	By July 2005	Adopt recovery and re-use strategy
7.	Enforcement of thickness standards	Publication of draft standards	July 2004	Full-scale enforcement within one year
8.	Collection of plastics already in the environment	Instructions to local authorities, retail chains, etc.	Immediately and continuous	No plastics in Kenya major cities by July 2005
9.	Legal measures on littering	Local and corporate regulations formulated	By July 2005	Each City and Municipal Council to have a bye-law on plastics
10.	Selection of disposal methods	Development of disposal guidelines	By July 2004	Disposal guidelines for plastics by 2005
<p>Important Notice: NEMA calls on all stakeholders, particularly manufacturers and dealers of plastic and polythene materials, including plastic cards to join current efforts. NEMA will in due course invoke the provisions of the Act on actors who fail to comply, especially the “polluter pays’ principle”. In accordance with the Environmental Management and Coordination Act regarding lead agencies, the District Environment Committees, Local Authorities, manufacturers and garbage handlers should provide leadership in implementing and enforcing the plan of action.</p> <p style="text-align: center;">Prof. Ratemo W. Michieka Ph.D., EBS DIRECTOR-GENERAL</p>				