



## Waste recycling in Nairobi slums

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NAIROBI, KENYA IS confronted with problems in the field of solid waste management. Undugu Society of Kenya, an NGO is involved for some time now with street children, community groups and micro-entrepreneurs in the removal of waste for employment and a clean environment.

In Kenya, with about 172 urban centres, with problems of waste recycling and disposal are varied and many. With an urbanisation rate of about 10 per cent per annum, and a rapid deterioration in the provision of services, Nairobi the capital city suffers from problems of unplanned settlements, lack of public awareness and education, insufficient human resources and enforcement of laws. Other problems relate to lack of finance technical and physical resources as they relate to waste collection and disposal.

Nairobi, with an estimated population of 2.3 million people has several informal settlements which act as home for over 60 per cent of the residential population. Due to diverse nature of the problem, attempts at upgrading solid waste disposal are isolated and unco-ordinated.

### Solid waste management

The residents of Nairobi generate about 920 tonnes of waste per day mainly at the household level. However, other sources include markets and institutions. This waste is currently collected by the Nairobi City Council using 56 vehicles and two private waste collectors. Although Nairobi City Council is empowered under the Public Health Act to collect waste in the residential and commercial areas, the lack of sustained resources has led to piles of garbage being seen all over the city. The city authorities are only able to collect about 44 per cent of the waste produced leaving the rest scattered in dumps in the city centre and residential areas. The presence of this type of waste mainly plastic, paper bones and horns, organic waste has attracted a group plastic, paper, bones and of entrepreneurs who are mainly street children and urban low income dwellers. However, compared to Asian countries, there is complete absence of micro-entrepreneurship which leaves the collector at the mercy of middle men and large scale recyclers.

Most of the waste that remains on the streets is either left to decompose, is incinerated on site by residents, used as animal feed and the higher quality waste is salvaged while only 6.2 per cent is collected by private waste collectors.

The bulk of the waste that is generated poses a health hazard on one hand but brings in a significant benefit

through income generation among defranchised communities.

As early as 1973, Undugu Society of Kenya realised the potentials that are generated through waste reuse and recycling.

### Initiatives

Undugu Society of Kenya was founded by Father Arnold Grol, a Dutch Catholic Priest, to assist and rehabilitate street children in Nairobi. Undugu is committed to the principle of upholding human dignity, decency and freedom with preferential love and concern for children in extremely difficult circumstances. Undugu is also committed to enhancing ecological and social awareness and giving voice to community needs through integrated empowerment processes aimed at achieving better environmental sanitation and self-reliance.

Based on these principles and in order to strengthen the existing solid waste management practices in the slums, Undugu undertook a survey on waste and found that there are issues of technology, legal and policy aspects, sanitation access to credit, equity aspects and employment.

It has been observed that of the 600,000 Kenyans who enter the labour market every year, only 10 per cent secure the 63,000 jobs availed by the formal sector. The rest move into the informal sector or remain unemployed.

### Community activities on solid waste

During the 1990 survey it was found that recycling technologies are mainly on large scale and the issue of waste has not yet become a policy issue. Also there is no integrated approach to waste recycling in urban areas and the handling of waste is left to a clearing department which has resource constraints. Although majority of the waste collectors are women and children, these vulnerable groups have no access to credit and equal rights to waste.

As early as 1987, Undugu realised the potential that exists in integrating Waste Recovery into mainstream community development activities like slum upgrading, basic education, women groups and other agencies. Below are illustrative examples of these community initiatives on solid waste recycling.

#### *Machuma school*

The waste recovery activities have of late proved promising. Initiatives for the underemployed population

and Undugu had taken the opportunity to create more income and employment in the informal sector and slums.

The initial idea stems from the Machuma Schools (scrap metal schools) which were initiated for street children in the slums in the early 1980s by Fr Arnold Grol and Church members in Mathare slum. The concept of collecting scrap metal bones, paper and plastic for half day and learning for the other half proved workable for these children. Today, the schools are being donor funded and the children still collect waste material and go to school at the same time. At present there are about 300 children in these schools who on average earn about Ksh 15 per day from sale of waste paper, bones and horns.

### ***The Rescue Centres***

In an attempt to address the issues of poverty with specific reference to street children, Undugu Society plus other interested agencies embarked on a project to 'rescue' street children. The rescue centres are places where the children get access to medical care, a meal and counselling facilities. Since these children are already engaged in waste collection, the activity is still encouraged at the Dandora Rescue Centre. The centre has a waste recycling group with about ten core boys who collect paper, bottles and other scrap from the International School of Kenya which has also a recycling project with an aim of improving the living standard of the street children.

The children are also trained on how to keep their environment clean and the art of saving money that could be used to enhance their well being and already 50 per cent of group members have stopped sniffing glue due to the counselling and rehabilitative measures being undertaken.

### ***Paper recycling***

In 1989 experiments were started at community level on briquetting of paper for fuel and there are ongoing and the briquettes are being improved. Already Jumuiya Group (80 former scavengers at Dandora dump) are being trained to make fuel briquettes for sale but the experiments on briquetting are still going on. Also the Metal Work Production Unit are in the process of improving the paper making machine which will eventually produce recycled paper for cards or envelopes.

### ***Plastic***

In 1992 Undugu was requested by communities to look into ways of recycling plastic which was blocking the drainage system in Kinyago and Kanuku village within the Kitui Pumwani integrated Development Programme.

### ***Waste candle wax***

Following requests also from communities, Undugu embarked on a search for the use of waste candle wax collected from Industrial Area. Following a series of experiments and searches, a simple low cost candle mak-

ing machine is now been prefabricated in the Metal Work Production Unit. Initial activities along this line revolved around sensitizing ladies who are involved in commercial sex (a major target group on how to make candles as an alternative income generating activity).

### ***Collaboration***

At another level, Undugu has tried to "rub on" the importance of community participation by involving multinationals like Coca-cola, (through plastic recycling) and the local authorities (through meetings, discussions) in environmental sanitation cum employment and income generation among the poor. This is in an attempt to change the attitudes and prevailing policy on waste disposal, recycling and attitudes of communities towards their own living environment. The other initiatives revolve around residents forming community groups to dispose off waste and already composting of organic waste is being done in the low income market areas of Nairobi (Dandora) and the compost is being sold to the high and middle income gardeners.

During the last 10 years there have been obstacles to the transfer of technology from the high levels to the small-scale entrepreneurs. Most of the waste is recycled in large scale industrial plants such as Kenya paper mills at Thika, Pan paper at Webuye and steel rolling mills in Nairobi.

### ***Current thoughts***

Current thoughts within Undugu focus on technology transfer from the industrial waste recycling to the informal (Jua Kali) sector through a series of product development workshops facilitated by the Business Development Unit of Undugu. However, the major constraints are lack of adequate financial resources and technical capability. Already Undugu has submitted a draft proposal to the Dutch Embassy in Nairobi for support in the area of waste removal and recycling. The main area of focus in this proposal is to facilitate an innovation programme on waste amongst several development agencies and communities. Already there are already on going collaborative activities between Undugu and Foundation for Sustainable Development in Africa, Kenya Youth and Habitat Organisation, Sustainable Agricultural Community Development Programme, Tropical Soil Biology Fertility Programme and UN Habitat. However, technical assistance is being resourced from Waste Consultants in the Netherlands. The major advantage is that Undugu is a grassroot organisation with a lot of experience in community mobilization and self reliance strategies.

Undugu's initiative along this line have also been to sensitize the micro-entrepreneurs and already the various programmes within Undugu are involved in research and development activities related to giving dignity to slum communities involved in solid waste management in Nairobi.

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