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**WATER, SANITATION AND HYGIENE:
SUSTAINABLE DEVELOPMENT AND MULTISECTORAL APPROACHES**

**Community-based sanitation entrepreneurship in Mukuru
and Korogocho informal settlements, Nairobi**

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Umande Trust and GOAL Ireland are partnering in an urban sanitation project in informal settlements within Nairobi. One of the components of the project is the development of community-owned sanitation enterprises. Through these enterprises, the project seeks to achieve the following: link sanitation services with child protection and community health services; reduce costs to access sanitation services without interrupting the livelihoods of local small scale service providers; and partially recover capital costs in order to reinvest into further environmental health interventions. This paper documents strategies to achieve these objectives as developed in collaboration with CBO partners, and suggests how sanitation service provision through CBOs can compliment and support the initiatives of private small-scale service providers.

Introduction

The African Population and Health Research Centre claims that the mortality rate of the African Urban poor is now higher than residents from any other population sub-group including the rural poor. This is attributed to inadequate access to health services, compounded by unhealthy living environments encountered in rapidly growing urban informal settlements (APHRC, 2002). Rapid urban growth of this nature is typified in Nairobi, where mainly due to rural to urban migration, the population has grown from 120,000 in 1948 (Muwonge, 1980) to 2.3 million in 1999 (Republic of Kenya, 2001). It is now estimated that over 60% of Nairobi's population lives in informal settlements (UNHabitat, 2006). The Kenyan Government has made progress in addressing issues related to rapid urbanisation through the establishing decentralised funds that can reach informal settlements, devolving the water sector and setting up the Kenya Slum Upgrading Programme. However while service delivery represents only 4% of the City Council of Nairobi's annual budget (UNHabitat, 2006) and very little of it is allocated to informal settlements, the urban poor in Nairobi live in severely inadequate environments and rely on services provided by small-scale service providers (SSSPs) and CBOs.

Mukuru and Korogocho

Mukuru Kayaba with surrounding villages along Aoka Road, South B is an informal settlement in the industrial area of Makadare District it has an estimated population of 185,000 in 10 villages. Korogocho is an informal settlement in Kasarani District adjacent to the light industrial area of Kariobangi and has an estimated population of 125,000 in 10 villages. GOAL, an Irish NGO has been running a children and youth focussed programme in both communities over the last decade through partnerships with local organisations. The programme provides non-formal education, vocational skills training, child protection, community health and HIV/AIDS services. GOAL's community health project has found that some of the most common diseases encountered in children and youth in the Nairobi's informal settlements are diarrhoea, skin infections and worms. These diseases accounted for 40% morbidity in 2006 and are caused by poor environmental health conditions (GOAL Kenya 2006). As a starting point in addressing environmental health issues, a Participatory Urban Appraisal was undertaken in these two settlements.

Participatory urban appraisal

The PUA involved working with community members in mapping and assessing all water points, toilets, showers, drains and waste collection points, undertaking household surveys to understand knowledge, attitudes and practices on environmental health issues, and running focus group discussions in each village to feed back information learnt and initiate discussion. The mapping exercise found that in Mukuru an average 480 people share a single working toilet cubicle, although in some villages this is more than 1000. Most latrines are made of iron sheets and are either pit latrines or exhaust directly into rivers. Only 15% of latrines are well maintained and at least 50% are badly maintained and infrequently exhausted. The scarcity and poor maintenance of latrines, as well as lack of security at night, accounts for 40% of drains containing human waste, (in one village, this is 90%). Human waste is frequently found along the river edge and in open areas, where children play. Washrooms are scarcer than latrines; an average 791 people share a single working bathroom cubicle, and in some villages this is over 3000. Most people wash in their houses and this contributes to water lying stagnant in drains and in houses, forming breeding grounds for mosquitoes and causing a threat to crawling children who wade in and sometimes drink the contaminated water (GOAL Kenya, 2008).

Most latrines and washrooms are provided by structure owners and are included in the cost of rent, but in areas where latrines are scarce, SSSPs and some CBOs have built latrines and showers. These vary in quality from badly serviced makeshift iron huts to well-maintained permanent structures and charge between 2 and 3Ksh for toilet use and 5Ksh for shower use.

Household Surveys found that open defecation is done mainly by children. Children are often discouraged by adults to use latrines provided by structure owners and are even intimidated in order to keep queues down or because they are perceived to be untidy in their use of latrines. Children are generally not given money to pay for the privately operated toilets. Wrap and throw (flying) toilets normally appear in the mornings, as people are reluctant to use latrines at night due to feelings of insecurity.

In Korogocho the situation while similar is less acute due to lower density and more communal toilets. While the PUA also considered water, waste management and drainage, focus group discussions in both settlements concluded that inadequate sanitation was the most pertinent environmental health issue that should be addressed. Participants suggested that improving the maintenance and operation of existing sanitation facilities, providing more facilities and advocating for improved and more affordable water and sanitation services from small-scale and institutional service providers would be the way forward. Informal settlements in Nairobi are frequently visited for research purposes or for 'soft' projects, sometimes to the point of fatigue. GOAL felt that it would be appropriate to build new sanitation blocks in parallel with capacity building, advocacy and hygiene promotion activities, as visual progress in sanitation through the construction of sanitation blocks would add weight to the less visual process of capacity building. The sanitation blocks would also act as pilot projects.

Umande Trust

Umande Trust is a Kenyan rights based civil society organization and has been working in informal urban settlements in Kenya since its inception in 2004. Umande's primary focus is in realizing the rights of residents of informal urban settlements to a decent living environment, through advocacy, support of institutions and CBOs and through physical community-owned interventions. Umande Trust has developed the BioCentre concept and has completed 12 of these biogas generating community latrine blocks and is in the process of constructing a further 24 blocks in Nairobi.

BioCentres

The BioCentre is a community latrine block, owned, built and operated by CBOs and designed in collaboration with the local community. They contain around 12 cubicles for toilet and ablutions on the ground floor. Inspired by Sulabh International's Biogas toilets in New Delhi, Umande's BioCentres mix human waste and water in underground anaerobic digesters, which generate biogas that can be used for cooking. In-situ treatment allows sanitation blocks to be provided in poorly serviced settlements. This technology is also significant in reducing carbon emissions, as methane, a natural product of decomposing human waste, is contained and combusted to form carbon dioxide and water. Harnessing the biogas for cooking substitutes natural resources such as charcoal, which is otherwise used. Due to the digestion process, liquid effluent is reduced and is 90% free of pathogens. This can be filtered and re-used in flushing, and remaining solids can be composted. Water can be purchased from standposts outside the BioCentres and

usually one or two storeys are built over the latrines, similar to the SPARC/ National Slum Dwellers Federation/ Mahila Milan toilet block concept in Mumbai (Patel & Mitlin, 2001). The upper levels usually contain a meeting room that is used by the CBO or affiliated groups for their activities and can be let out as offices, community halls, movie theatres or restaurants. Rental of the upper level spaces generates income, which in theory enable CBOs to subsidise the running costs of the latrines.

More than just latrines

GOAL saw in Umande Trust's Biocentre concept the potential to create centers within urban settlements, which in addition to providing water and sanitation services, would link residents to GOAL's community health, HIV/AIDS and child protection initiatives. This could be achieved by creating a room above the toilets for a Community Health Worker¹, who would be available to offer advice, disseminate information and make referrals to appropriate services. This is particularly appropriate for women who come to collect water each morning. Even some of the income generated from the BioCentre could be allocated to pay the Community Health Worker.



Digester under construction
(source Umande Trust)



BioCentre under construction
(source Umande Trust)

Reducing the cost to access sanitation services

In partnership, GOAL and Umande Trust have been considering approaches to drive down the cost of accessing decent sanitation. The construction of five community-run BioCentres is underway and the partnership plans to build an additional seven in the first phase of the project; they will provide water and sanitation to 7200 users daily. Discussions have been initiated with the partner CBOs on how to make toilet access affordable, particularly to vulnerable residents. Most fee-charging toilets run by SSSPs, which in some cases are the only option if landlords have provided insufficient or inadequate latrines, charge between 2 to 3Ksh per use. The average family size is 5 and household income is around 100 Ksh per day. If all family members require using a toilet twice per day then 20% of household income could be spent using the toilet, should children be afforded this dignity. Table 1 shows how operating a BioCentre with 12 toilets can still run at a profit at half of this fee. However, undercutting SSSPs is very sensitive issue. Their toilets are usually in units of 3-5 cubicles and Table 2 shows that halving the fee in this type of set-up would reduce profits to an unsustainable level. As the purpose of the project is to increase the number of toilets available in the community, undercutting SSSPs would go against this objective and would almost certainly result in sabotage.

¹ **COMMUNITY HEALTH WORKERS:** CHWs are local residents working on a voluntary basis, who have been trained by GOAL to act as contact people in the community for health related issues. They provide awareness and sensitisation on HIV and health issues, provide health education, guidance and referrals. They network with organisations assisting in the health sector and provide community mobilisation eg in the instance of a immunisation campaign.

AUBREY

	Component	number of units	daily use/ sale	monthly use/ sale	cost per use (Ksh)	monthly income/ expenditure (Ksh)
Income	toilets	8	60	1800	1	14400
	bathrooms	4	25	750	5	15000
	children's toilets	0				
	sale of water (20l jerry can)		100	3000	2	6000
	hire of upper hall and offices					10500
Total Income						45900
Expenditure	water: cubic metres		4	120	12	1440
	maintenance fund (lump sum)					7500
	staff (people days)		3	90	120	10800
Total Expenditure						19740
Profit						26160

		number of units	daily use/ sale	monthly use/ sale	cost per use (Ksh)	monthly income/ expenditure (Ksh)
Income	Toilets	3	60	1800	1	5400
Income	Toilets	3	60	1800	2	10800
Expenditure	Maintenance fund (lump sum)					1000
	Staff (people days)		2	60	120	7200
Profit at 1 Ksh per use						-2800
Profit at 2 Ksh per use						2600

Part of the access cost issue was addressed prior to starting partnerships with CBOs. GOAL was insistent that partner CBOs should agree to provide free access to children. If available plot sizes were sufficient to build large blocks (12 or more cubicles) then at least 4 cubicles should be designated for children, and this would be clearly defined in the architecture. As well as benefiting children who otherwise would defecate in open spaces, this would reduce the theoretical family costs from 20% of household income to 8%. Table 3 shows that the profit margin when providing free access to children and charging the normal rate of 2Ksh per adult is equal to when a blanket rate of 1Ksh is applied. Allowing free access to children therefore reduces household costs without undercutting SSSPs, and still generates income.

Table 3. BioCentre operating 15 hours per day: free access to children and charging adults normal rates						
		number of units	daily use/ sale	monthly use/ sale	cost per use (Ksh)	monthly income/ expenditure (Ksh)
income	toilets	4	60	1800	2	14400
	bathrooms	4	25	750	5	15000
	children's toilets	4	90	2700	0	0
	sale of water (20l jerry can)		100	3000	2	6000
	hire of upper hall and offices					10500
Total Income						45900
expenditure	water: cubic metres		4	120	12	1440
	maintenance fund (lump sum)					7500
	staff (people days)		3	90	120	10800
Total Expenditure						19740
Profit						26160

Partner CBOs have also proposed other strategies to assist access to the most vulnerable. A popular approach is to network with local welfare and HIV/AIDS support groups to identify vulnerable residents locally who will be given free access. Another approach would be to offer two payment options: pay-as-you-go charging the same rates as the SSSPs, and low-cost monthly family membership at say 50Ksh/month. The pay-as-you-go option would apply to people passing by, eg. commuters on their way to work, who would also be likely customers of SSSPs. The low-cost family membership would apply to those living within a catchment area of say 50 meters of the BioCentre and are less likely to be regular customers of SSSPs, as BioCentres tend to be located in areas where other facilities are scarce.

Replicability

It is important that CBOs can profit from this enterprise, as income generation is essential to the sustainability of the intervention. However, as CBOs have benefited from having capital costs funded, they are encouraged to consider ways of 'giving-back' financially to the community. Already they are doing this through developing methods of subsidizing services to the most vulnerable. However, it is also important to consider how resources invested into these environmental health enterprises can be partially recovered and reinvested to benefit future interventions. An idea put forward in consultation with the CBO partners is for a proportion of profits to be allocated to a ring-fenced Community Sanitation and Development Fund (CSDF). Umande Trust has established this practice through a recent project implemented with Athi Water Services Board. The allocation may be as small as 5-10% of profits, however collective action of 12 groups could raise 4-5000 US Dollars per year. This could be used to support SSSPs in building at least 15 ventilation improved, plot-based latrine cubicles with lined pits per year, and in so doing build much needed bridges between CBOs and SSSPs. The CSDF can also be used to leverage government decentralized funding such as Constituency Development Funds to implement larger scale community projects, which when established can also contribute a proportion of profits back into the CSDF.

Conclusion

While the project is in a formulative stage, this paper has documented some of the ideas under discussion with partner CBOs during the planning and construction stages of the project, in order to fully realize the potential afforded within a community-based enterprising approach to urban sanitation provision. Enterprising in this context does not necessarily mean privatization. The best provider of environmental health services in low-income communities is an interesting debate with no definite answers. Hardoy et al (2001) suggests that private companies such as SSSPs are limited in holistic service provision since they are orientated towards services that will generate profits, such as water supply, sanitation services and waste management, but perhaps not drains and sewers. The BioCentre model has many income generating opportunities that would potentially suit SSSPs, however capital costs are high for private investors who tend to take a short-term view on capital expenditure in informal settlements. The BioCentre is better suited to local NGO/CBO partnership with donor funding for capital costs. In return, CBOs, who have an obligation to support their communities, are able mix profit and non-profit making services. In Mukuru and Korogocho, CBOs will provide free access to children and vulnerable community members, support a community health worker and contribute to further sanitation initiatives, while remaining enterprising and sustainable. Through collectively contributing a proportion of profits towards a Community Sanitation Development Fund, CBOs have a further opportunity to build bridges with SSSPs and support them in their delivery of improved urban sanitation services.

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