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IMPROVING ACCESS AND SUSTAINABILITY

Faecal Sludge Management in peri-urban Malawi: investigating the policy gaps

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REFEREED PAPER 2257

Faecal Sludge Management (FSM) in peri-urban settlements of most developing countries has gained recent attention. This is due to rapid urbanisation resulting in the mushrooming of informal settlements and onsite household sanitation facilities where there is a lack of sewer systems. A number of initiatives aimed at improving FSM have been reported in South Africa, Uganda, Senegal, Mali, Ivory Coast and Burkina Faso. Yet, the main focus in these countries has been emptying and disposal/treatment of faecal sludge. Little has been done on policy formulation to guide stakeholders on what should be done at each stage of the sanitation chain. This paper identifies the complementarities and antagonisms of existing pieces of legislation pulling lessons learned from other countries and how it applies to Malawi. The work also proposes Faecal Sludge Management Policy criteria for Mzuzu City Council in Northern Malawi and other similar situations worldwide.

Introduction

This generation is facing a great challenge in providing adequate sanitation to rapidly growing urban populations. It is argued that although sanitation coverage is higher in urban areas, but the huge projected increase in urban populations in developing countries makes the provision of affordable urban sanitation a significant challenge (UN HABITAT, 2010). In Africa, the dramatic effects of rapid urbanization are very clear in the cities and peri-urban areas. Its implication can be predicted in terms of the demand for food and raw materials and generation of waste and pollution (Nsiah-Gyabaah, 2004).

The work of Florian et al. (2002) reveals in urban centres of industrialised countries, the majority of houses are served by on-site sanitation systems (OSS) such as septic tanks, pit/bucket latrines, and unsewered public toilets. The faecal sludge (FS) collected from these systems is usually discharged untreated into the environment thereby posing great risk to water resources and public health. Malawi is one of the countries in the Sub-Saharan region with a relatively higher coverage of basic sanitation. The JMP report puts the coverage of improved sanitation at 22% and 8% for urban areas and rural areas respectively (UNICEF & WHO, 2014). Coverage is higher in urban areas although the type of facilities and sanitation services are poor in many cases. Mzuzu City in Northern Malawi has no sewer system and its townships have high population densities. This presents the problem of lack of space for pit latrines and no, or improper, methods of de-sludging. This situation is aggravated by the lack of an enabling environment. The National Sanitation Policy (2008) echoes this and states municipalities across Malawi are failing to manage waste.

Peter, Isabel and Chris (2013) report that the need to establish an enabling environment for progress in urban sanitation is widely recognized, but there is little consensus on what this means in specific contexts. At a global level, conceptual frameworks and approaches for the planning and design of poor-inclusive urban sanitation improvements include the Strategic Sanitation Approach, IWA's Sanitation 21, and SANDEC's Community-Led Urban Environmental Sanitation. However, translating such frameworks and tools into major service improvements is a significant challenge. In many developing countries, enabling environments are weak, characterised by a lack of effective policy and regulation at the city level.

Materials and methods

Study area

Mzuzu is the third largest city of Malawi, situated some 376km north of the capital city Lilongwe. It plays an important role as a regional centre in the settlement hierarchy of the country. The city has a size of 143.81 sq.km and according to the 1998 Population and Housing Census, it had a population of 87,030 with a growth rate of 6.2%. This has grown to 133,968 with a growth rate of 4.4% per annum as of the 2008 Census. Challenges emanating from indiscriminate disposal of both solid and liquid wastes are experienced. This is more prominent in market places, streets, open space, industries and traditional residential areas. Faecal sludge and waste water management in the city is largely on site use of pit latrines and septic tanks. This presents a challenge of seepage because most of settlements are on high water table areas. However, some institutions have localised sewerage systems with oxidation ponds. The rest of the city utilises only one public sludge pond managed by the city council which has the capacity to receive both industrial and domestic effluents for a long period of time (Mzuzu City Urban Profile, 2013).

Mzuzu City is similar to other cities in developing countries which do not have a Faecal Sludge Management Policy. Consequently, there are no proper guidelines to ensure components of the sanitation chain are handled properly so there is reduced morbidity and environmental pollution.

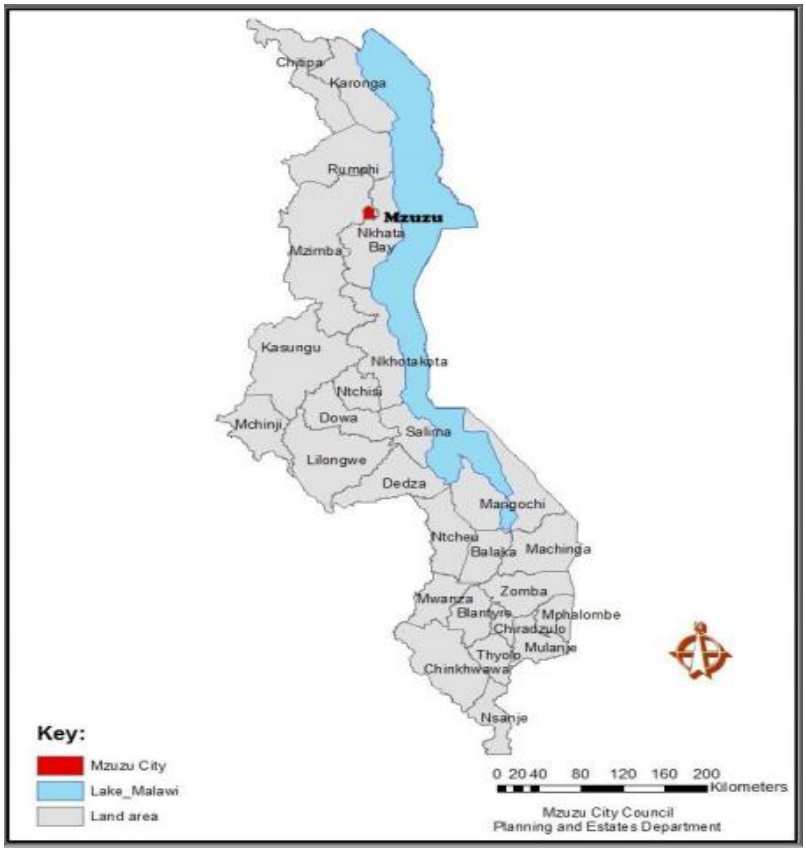

Figure 1. Location of Mzuzu City in Malawi

Source: Mzuzu City Council Urban Profile (2013)

Assessment method

Key policy documents used in Malawi were reviewed with a purpose of identifying gaps with respect to FSM. In addition, the review set to outline the complementarities and antagonisms of these pieces of legislation. In order to understand the current practice of FSM in the city, stakeholder consultative meetings were held. These meetings attracted members from the Health and Social Services Directorate of the City Council, Counsellors, Northern Region Water Board, Environmental Health Office, Vacuum Tanker Operators, Local Leaders and Sanitation Project implementers (Malawi Red Cross Society and Plan Malawi). In a bid to dig deeper, structured and semi-structured interviews and focus group discussions were conducted with these stakeholders.

Complementarities and antagonisms of legislation

The Environmental Management Act (EMA) Part 1, clause 37 section 1 and 2 outlines the broad oversight mandate of waste management to councils as the appropriate authority to regulate "collection, transportation and safe disposal of waste". Thereafter under the same clause as stated above, section 3 subsection a, b and c sets the need for councils to formulate standards and control the waste management chain. In line with sections cited for the EMA, the Public Health Act (PHA) recognizes councils as the appropriate authority to manage wastes (clause 61) and sets out to provide pertinent details as to why it is necessary to properly manage waste. The Local Government Act does not contradict the EMA and PHA as it mandates the Councils to make policy and decisions on local governance and development for the local government area; promote infrastructural and economic development through the formulation, approval and execution of District Development Plans; mobilize resources within the local government area for governance and development; make by-laws for the good governance of the local government area and to co-operate with other Councils in order to learn from their experiences and exchange ideas. Although these Acts talk about "waste", the issue of FS does not come out clearly. However, there is a Sanitation Bill which talks about the management of human waste which will provide a strong backbone for the development of a FSM Policy. Part 1V clauses 25 to 35 of this Bill upholds councils as the responsible authority to manage waste hence gives the reference guide that ought to guide operations of those engaged in waste management and remedial action for non compliance.

The EMA Part 1, clause 37 states that "The Minister, on the recommendation of the council, may by regulations published in Gazette, control the management, transportation, treatment and recycling, and safe disposal of waste and for prohibiting littering of public places". This sets a clear precedence councils should have control on issues of waste management however in contradiction with the Public Health Act, Clause 61 states that as regards oversight of health hazards arising in a factory and or trade premises "no action shall be undertaken by any local authority without consent of the Chief Inspector of Factories". Again, the Waterworks Act further strips some powers from the City Councils by mandating the Water Boards to handle waste water management.

Linking SWM by-laws to FSM

Mzuzu City Council has by-laws formulated in 1992, and since very little has been done to update them. Yet, a lot of things are outdated and do not apply to the current environment and demand of services. On a positive note, the Refuse and Rubble by-laws were updated in 2002 and they try to address issues of SWM. The management of faecal sludge has many similarities to solid waste that is why the author linked SWM by-laws to FSM as outlined in Table 1. This is supported by the work of Boot and Scott (2008) who acknowledge the similarities and recommended further studies into links between SWM and FSM are imperative as they may enhance operations working towards improving the urban environment.

Table 1. Linking SWM to FSM

By-Law provisions (Mzuzu City By-Laws, 2002)	SWM	FSM
Owner to provide receptacle	It is responsibility of the owner of the house or tenant to provide receptacle	In this case a toilet or latrine shall represent a receptacle and should still remain the responsibility of the owner
Approved type of receptacle	The by-laws stipulate the type of material to be used for the receptacle and its capacity	Likewise for latrines there should be an approved type of latrine for city that will be well defined.
Deposition of refuse	People should ensure that all refuse is deposited into the receptacle and the refuse should be as defined by the by-laws	Similarly, people should insure that all faecal matter is placed in latrines and the pits should only contain human excreta and wiping material
Covering of refuse receptacles	A close fitting cover for the receptacle is recommended	Drop holes of pit latrines should also have close fitting covers unless they are ecological sanitation latrines
Refuse to remain that of occupier	Occupants are responsible for the refuse until it is collected by the council	In the same way faecal sludge should be the occupants responsibility until it is emptied
Refuse receptacle to be clean	The occupier should ensure that the receptacle is clean	Here too the occupier should ensure that the latrine is clean
Position of receptacle for collection	The receptacle should be placed at a convenient place i.e. accessible	Pit latrines should be located at such places where any type of emptying technology can easily get there.
Refuse not to be deposited in stream etc.	No pollution	No pollution
Non collection of refuse	No refuse should be collected unless it is in an approved type of receptacle	Similarly, if a household does not have an approved type of latrine then the council or anyone assigned by the council shall not empty the latrine
Offences and penalties	Anyone who contravenes the above is guilty of a crime and liable to a fine or imprisonment	Here fines should also be given to people who contravene provisions as guided above.

The use of untreated faecal sludge

There were 4 visits made to the sludge ponds during the course of the study and at no point did the researcher find sludge in the ponds. 22 households surrounding the vicinity of facility were interviewed to find out what actually happens with the sludge. 20 households revealed they scramble for the sludge whenever the tanker comes to dispose of the sludge. Some households pay the drivers of the tankers to dispose of the untreated sludge directly in their gardens as shown in Photograph 1. Yet, some tanker operators are advised by “unknown people” to dump the sludge at undesignated places so it dries and is collected at a later date for use as manure (Photograph 2 shows workers of a privately owned tanker loading the dry sludge into the tanker to take it to the gardens for farming.

The effects of untreated sludge are a great public health concern. Strande (2014) explains in the absence of FSM structures, untreated faecal sludge ends up in the environment when the containment structures fill up. This results in invasive contamination of the environment by pathogens. Schönning and Stenström (2004) classify these pathogens into 4 groups: (i) bacteria like Aeromanas spp., Campylobacta jejuni/ coli, Escherichia coli, Salmonella typhi/ paratyphi, Salmonella spp., Shigella spp. and Vibrio cholera. These cause enteritis, typhoid/ paratyphoid fever, salmonellosis, shigellosis and cholera; (ii) viruses including

adenovirus, enteric adenovirus types 40 and 41, enterovirus types 68-71, hepatitis A and E, poliovirus and rotavirus. These cause enteritis, meningitis, encephalitis, paralysis, hepatitis and poliomyelitis. (iii) parasitic protozoa namely Cryptosporidium parvum, Cyclospora histolytica, Entamoeba histolytica and Giardia intestinalis which cause cryptosporidiosis, amoebiosis and giardiasis. (iv) helminths like Ascaris lumbricoides, Taenia solium/ saginata, Trichuris trichura, hookworm and Schistosoma spp. which cause enteritis, taeniasis, trichuriasis, anaemia and schistosomiasis. The effects of these ailments cant not overemphasised as some can even be fatal if left untreated.

Photograph 1. Use of untreated Faecal Sludge in gardens

Photograph 2. A privately operated vacuum tanker collecting dry sludge they had previously damped indiscriminately

Recommendations

The research in Mzuzu City revealed several pertinent issues and makes recommendations as follows:

- That major laws of the country and other policy documents should be reviewed and amended to make sure that they do not contradict each other In addition, legislation for sanitation is disjointed – appearing under the Ministries of Health, Local Government and Water, as well as under city assembly by-laws. Each institution expects the others to handle the matter.
- The by-laws on refuse and rubish or SWM should be used to link with FSM and draft a FSM policy for each urban..
- The city council should invest in treating and making sludge available to people in a form that is harmless to their health and harmless to the environment because of the evidence that people are informally already using untreated sludge in the gardens.

Conclusions

This research brings to light key practices relating to FSM in Mzuzu City that can be used to develop a FSM Policy which can be replicated by other cities in Malawi and elsewhere. It also uses the current by-laws of the city on Solid Waste Management (SWM) to define critical areas of concern on FSM. In addition, basing on the practices of residents around the sludge ponds, this research proposes that the city should be more proactive with the faecal sludge to treat it like a resource and not waste.

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Notes

[1] Fecal sludge (FS) comes from onsite sanitation technologies, and has not been transported through a sewer. It is raw or partially digested, a slurry or semisolid, and results from the collection, storage or treatment of combinations of excreta and blackwater, with or without greywater

[2] Faecal Sludge Management (FSM) includes the storage, collection, transport, treatment and safe end-use or disposal of FS

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