



RESEARCH REPORT

Innovative communal sanitation models for the urban poor

Lessons from Uganda

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Contents

- Executive summary 4
- Introduction 5
- Context..... 6
 - Shack/Slum Dwellers International (SDI) 6
 - The National Slum Dwellers’ Federation Uganda and ACTogether Uganda..... 7
 - Sanitation conditions in Uganda..... 7
 - The NSDFU’s approach to sanitation provision..... 9
 - The sanitation challenge 10
 - Starting point (communal facility) - Rubaga, Jinja, Uganda. May – August 2012..... 11
 - Original business model 11
 - Lessons learned..... 14
 - Construction savings through design (communal facility) - Kinawataka, Nakawa Division, Kampala, Uganda. May – August 2012..... 14
 - Lessons learned..... 17
 - The Indian approach to sanitation - Bangalore and Mumbai, India - July – August 2012..... 19
 - Lessons learned..... 21
 - Trialling new ideas in Uganda - August 2012 – February 2013 21
 - Reflections on toilet scale 24
- Conclusion 26

Executive summary

This paper describes the construction and management processes related to two toilet blocks in Uganda, one in Jinja and one in Kampala. Designs, financial models and insights into the process and challenges faced are presented and reflected on. Discussions about scaling up sanitation provision through these models are also tabled. To strengthen their planning processes, the Ugandan federation sought to draw on other community driven processes in India and Malawi. With divergent contexts, especially in terms of density, lessons were adapted to local conditions.

Through unpacking these experiences the paper draws attention to a number of key points. Firstly it argues that organised communities have the potential to develop functional and sustainable systems for the planning, construction and management of communal toilet blocks. Secondly, how shared learning, practical experience and exchanges driven by communities assisted in refining the sanitation systems and technologies piloted and thirdly the value, especially in terms of scale and leverage of including City Authorities in the provision of communal sanitation. A fourth key point, interwoven across discussions, relates to the financial planning, costing and affordability of the sanitation options piloted. Understanding the seed capital investments needed and various options for cost recovery is vital in assessing the affordability and scalability of pilots¹.

The paper mixes one of the co-author's reflections (written in first person) with descriptions and analysis of the sanitation projects supported. This narrative method is deployed to emphasise the collegiate manner in which learning takes place across a country-spanning network of urban poor communities.

¹ It should be noted that the object of the paper is not to advocate a total cost recovery model but rather to look at ways in which a large degree of financial sustainability can be built into toilet construction and management systems driven by communities. Within this paradigm, a local government (or donor, bank) can invest in communal sanitation options that not only manage their own running costs and repairs but also revolve a percentage of capital into new facilities, increasing scale. In time, and with political buy-in, this could lead to the setting up of a citywide 'sanitation fund' in which stakeholders can invest and through which capital can be revolved and redistributed.

Introduction

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This paper looks at the ongoing learning process in developing sustainable solutions to basic sanitation needs in developing countries. It chronicles a handful of projects that I supported whilst also providing some analysis of their successes, failures, potential and room for improvement.

Solutions to sanitation challenges cannot be addressed in the confines of an office. Instead they will be solved through an ongoing evolution, involving trial and error coupled with constant monitoring and data collection for analysis. By sharing these experiences and findings, I hope to contribute to a process of learning.

Vital to the discussion is investigating ways that sanitation facilities can eventually be rolled out at a scale, commensurate with need. In many African cases government investment in sanitation has been limited with private vendors filling some of this niche and many poor urban residents resorting to open defecation. Investigating and piloting economically viable 'pay per use' solutions are vital as these types of options can attract government investment and hence have the potential to reach scale.

The paper draws on the work that I completed during several visits that I made to Uganda between July 2012 and March 2013. I had been asked by the SDI (Shack Dwellers International) Secretariat to provide architectural advice to the SDI affiliate, the National Slum Dwellers' Federation of Uganda (NSDFU) and their support NGO, ACTogether Uganda. The local team and I discussed how I could best contribute to their work and we agreed that I could help them assess the potential of this market-driven approach to sanitation.

² I grew up in Sydney Australia, trained as an Architect (Masters of Architecture, USyd) and Masters of Property Development (UNSW). After working in residential architecture in Australia, SDI provided an opportunity to learn and eventually work with the various affiliates across East and South Africa. The work evolved from being a sole architectural consultant to investigating opportunities and building models for slum development that can be done sustainably and profitably, with an inclusive approach.

Context

Shack/Slum Dwellers International (SDI)

Shack/Slum Dwellers International (SDI) is a network of community-based organisations of the urban poor in 33 countries in Africa, Asia, and Latin America. It was launched in 1996 when 'federations' of the urban poor in countries such as India and South Africa agreed that a global platform could help their local initiatives develop alternatives to evictions while also impacting on the global agenda for urban development. In 1999, SDI became a formally registered entity.

In each country where SDI has a presence, affiliate organisations come together at the community, city, and national level rooted in specific methodologies. SDI's mission is to link urban poor communities from cities across the South that have developed successful mobilisation, advocacy, and problem solving strategies. Since SDI is focused on the localised needs of slum dwellers, it has developed the traction to advance the common agenda of creating 'pro-poor' cities that address the pervasive exclusion of the poor from the economies and political structures of 21st century cities. Further, SDI uses its global reach to build a platform for slum dwellers to engage directly with governments and international organisations to try new strategies, change policies, and build understanding about the challenges of urban development.

SDI believes that the only way to manage urban growth and to create inclusive cities is for *the urban poor to be at the centre of strategies for urban development*. Concurrently, there is no government that can hope to stop or ignore the challenges of urbanisation. Forward-looking cities prepare for urban population growth, and work with their citizens to harness the social, technological, and economic benefits of urbanisation.

SDI understands sanitation as a governance issue. That is for a poor woman in an informal settlement the provision of a safe place to defecate constitutes a symbol of inclusive city governance. Many municipalities have failed to provide sanitation facilities for the poor and SDI understands its role as assisting communities to build such facilities. Drawing in government resources opens the possibility of achieving scale with the caveat that provision needs to remain affordable for, and inclusive of, the urban poor. In addition SDI argues that sanitation is a system and the collection and processing of waste is a responsibility that must be undertaken by municipalities³. Practical experience has demonstrated that addressing sanitation in slums opens up space for discussion around numerous vital issues (e.g. housing and tenure security).

Ultimately SDI believes that the health of the city is directly related to health and hygiene within slums. Sanitation is hence a deeply political, and not technical, issue.

³ Communities can be involved in this process but ultimate responsibility for waste collection lies with the municipality. For example informal residents have re-organised the spatial layout of settlements to open narrow lanes allowing waste collection trucks to service toilets. In other cases, community members have used small pumps to collect waste from inaccessible latrines that is then transported to municipal processing plants. A fee is charged and this service is run as a small business.

The National Slum Dwellers' Federation Uganda and ACTogether Uganda

The National Slum Dwellers' Federation of Uganda (NSDFU) is a member of the Shack/Slum Dwellers International (SDI) network of slum federations. The NSDFU consists of approximately 500 community groups that save daily and meet at least once per week to discuss community issues and coordinate programmes and projects to build upon their strengths and address their concerns. The federation is spread across all five divisions of Kampala, as well as Jinja, Arua, Kabale, Mbarara, Mbale, and Wakiso.

ACTogether Uganda is the national support-NGO charged with providing professional assistance to the NSDFU. ACTogether, established in 2006, facilitates processes that develop organisational capacity at the local level and promote pro-poor policy and practice in Uganda's urban development arena. The organisation strives to create inclusive cities with united and empowered communities of the urban poor who have the capacity to voice, promote, and negotiate for their collective interests.

Sanitation conditions in Uganda

The UN has recently declared access to water and sanitation to be a basic human right. There are currently 46 nations in which less than 70% of the population has access to sanitation⁴. In Uganda only 34% of the population currently have access to improved sanitation and this percentage is the same in both urban and rural areas (WHO-UNICEF 2013) with government investment in the sector extremely limited.

The informal settlements in many Ugandan towns and cities have complex and contested land tenure systems making slum upgrading in general, and more specifically acquiring land for communal investment in sanitation facilities, very difficult. The small percentage of facilities that slum dwellers can access are normally dilapidated and poorly maintained. Additionally a large percentage of residents are tenants with landowners not living in the settlements where they rent property. The onus of responsibility for sanitation provision is hence a contested issue.

NSDFU and ACTogether Uganda used profiles and enumerations⁵ to collect relevant data about sanitation. In 2010, as part of the Government of Uganda's Transforming Settlements of the Urban Poor in Uganda (TSUPU) project, the federation completed city-wide slum profiling and enumerations in Jinja, Mbale, Mbarara, Arua, and Kabale. In 2011, it conducted city-wide slum profiling in Kampala. In Jinja, for example, only 18% of residents have access to a toilet on the compound. Some residents share latrines or public toilets, while many dig

⁴ www.nationmaster.com/graph/hea_acc_to_san-health-access-to-sanitation
www.wssinfo.org/fileadmin/user_upload/resources/JMP-report-2012-en.pdf

⁵ Profiles and enumerations are surveys at the household and community level to develop a detailed socio-economic profile of the settlement. When communities own their own information they become active partners in planning their own development. Federations work with local governments to verify and legitimise their findings, in order to mainstream community-collected information for planning purposes. The Kampala data was collected through settlement profiling (focus groups) and Jinja information collected through detailed household enumerations.

holes, use Lake Victoria or plastic bags (flying toilets). The table below breaks down water and sanitation access in a number of informal settlements in Jinja. The National Slum Dwellers' Federation of Uganda (NSDFU) collected the data.

Table 1

Settlement	Residences	Access to toilets ⁶	Access to water points
Babu Patel	181	1%	1%
Budhumbuli	4,164	16%	5%
Kamuli Road	632	3%	1%
Kimaka	780	4%	2%
Loco	231	9%	4%
Masese	1,631	8%	0.50%
Wanyama	2,641	37%	10%
Settlement total	10,260	18%	5%

In 2011 the NSDFU and ACTogether Uganda conducted a profiling exercise in all Kampala slum settlements (parishes/zones). The profiling data is gathered through focus group discussions with communities, local leaders, and municipal officials. The data gathered indicates that the ratio of slum dwellers to water points in Kampala is 154:1 and slum dwellers to toilets 97:1.

The challenges members report with toilets are that:

- 1) Many slum toilets are managed by landlords and are not accessible to the majority of residents who are tenants.
- 2) Many slum toilets have fallen into disrepair and cannot be used.

⁶ Toilet on the compound (either pit or waterborne).

- 3) Many slum toilets release sewerage directly into drainage channels.
- 4) Many slum toilets do not have separate male and female stances and women do not feel comfortable using them.
- 5) Many slum toilets are not accessible for people with disabilities.

The profiling⁷ data for Kampala further indicates that 88% of slum dwellers lack access to a waterborne toilet in their settlement while 83% of slum dwellers in Kampala used shared toilet facilities (usually pit latrines with multiple stances to which the tenants of a particular landlord have access or with a caretaker who collects user fees from the public). 52% of slum dwellers in Kampala report that they already pay 200 Ugandan shillings per use for a shared facility while 78% of slum dwellers express a willingness to pay to use a waterborne facility.

The NSDFU's approach to sanitation provision

The NSDFU and ACTogether are committed to addressing the issue of sanitation and believe a strategy that places communities of the urban poor at the centre is the only way to ensure facilities are affordable, maintained, and accessible to the poorest. This belief has been tested and supported by the federation's sanitation work to date.

The Ugandan federation recognises that many households aspire to a private household toilet but land tenure security challenges, limited space, and high unit costs make this option unfeasible in many cases, and difficult without formal land titles. Even public facilities can be difficult to institute when it comes to securing planning permissions in settlements considered illegal by many.

ACTogether and the NSDFU are negotiating with a number of different actors, particularly the government, to see how tenure security can be established through the issuance of Certificates of Occupancy. As Kampala seeks to invest heavily in sanitation for the urban poor, now is the opportunity to push this approach.

It remains clear that communal facilities are likely to be the most relevant for the majority of those living in the informal settlements in Uganda. The challenge is to determine the most appropriate, affordable, and sustainable approach to the provision of such units.

ACTogether Uganda and the NSDFU have recently constructed sanitation units in Kisenyi III, Kinawataka, and Kalimali in Kampala, and six in municipalities outside of Kampala. These units are beginning to demonstrate the capacity of communities to manage the construction and maintenance of waterborne public sanitation facilities (with flush toilets, showers, clean water access, and sometimes a community hall on the top floor and occasionally water harvesting capabilities). While most facilities are fairly new, a unit in Kisenyi has been in operation for approximately 10 years and remains clean, fully operational and in use seven days a week.

⁷ NSDFU/ACTogether, Kampala baseline study.

The sanitation challenge

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Tackling affordable sanitation at scale is a massive challenge that calls for urban poor alliances to have a firm understanding of a number of key areas. These include toilet design, costing, materials procurement, construction, management and fee systems. In addition data collection (profiles & enumerations) allows alliances to roughly predict who will use the toilet and what an affordable price to charge for the service is. These systems evolve with time and practical experience, adapting to local context and new ideas. A collegiate atmosphere in which learning is shared between communities and sanitation pilots carefully monitored and evaluated builds a firm understanding of which systems have scalable potential. This approach tackles both social and technical challenges and has an in-built flexibility that promotes a repertoire of contextual options.

As noted in SDI's approach to sanitation (p. 3) including city and/or government planners in this process can significantly amplify scale. In some cases existing relationships with government can be leveraged while in others the construction and management of the sanitation pilot itself can be used to attract political attention.

ACTogether agreed that I would work on both the physical designs of sanitation facilities and reflect on the management systems developed. When work began we investigated a mixed enterprise model in which either the federation or individuals (private enterprises) would manage the blocks and ACTogether would source the finance for construction. We examined existing and proposed units and collectively identified the following challenges with regards to scaling up.

Box 1: Challenges initially identified

1. Sourcing capital (state, private sector, community savings)
2. Minimising start-up costs
3. Managing the procurement and construction to budget
4. Finding best practice in facility management
5. Oversight and macro-management from Project Management Committees and NGO
6. Revolving the funds (if borrowed)
7. Minimising charge costs (affordable to the lowest-income households)
8. Maximising access for all households
9. Appropriate designs to respond to various urban conditions
10. Engaging the government to make meaningful contributions
11. Managing a network of facilities to a high standard

Our expectation was that if we could demonstrate that communal sanitation blocks could generate an income sufficient to cover their construction, maintenance and running costs, then the model could be expanded. It was hoped that the federation would be able to negotiate with the council and/or national government to secure land at no or very low cost, an option employed with existing facilities. However, many issues remained and it was rapidly apparent that the initial list in Box 1 was just the beginning. Many questions remained and answers would only begin to emerge as the federation expanded their experience of

sanitation provision. For example, what should the ratio of dwellings to blocks be? It was agreed that this would be considered as the federation collected more data about residents and living conditions in informal settlements. Initial assessments of a number of sites also showed that connectivity to sewers, water supply and electricity varied. Some potential locations had a sewer line close by, while others required septic tanks.

Starting point (communal facility) - Rubaga, Jinja, Uganda. May – August 2012

In May 2012, NSDFU and ACTogether wished to build several two-storey sanitation facilities, which included a water kiosk, flush toilets, showers and a community centre upstairs. The federation was inspired to try this model after visiting peers in the Indian federation. Subsequent negotiations with government were productive and the federation managed to secure land in one of the areas the profiling revealed to be ill-served by sanitation facilities. Jinja Municipal Council contributed land worth ~UGX 12,000,000 (~USD 4,588) in Rubaga Market. This busy informal market (in which many structures are commercial-cum-residential) was prone to flooding and the decrepit toilet in the market had long ago been abandoned resulting in people using abandoned shacks as toilets and throwing flying toilets into the surrounding drainages.

The facility to be built in Rubaga Market, Jinja, followed the original prototype (see Box 2). It was built on a budget of UGX 48,000,000 (~USD 18,352)⁸ excluding the cost of professional management provided by the NGO.

Original business model

The financing of the construction was as follows:

- 25% (UGX 12,000,000 / ~USD 4,588) – Contributed by the community through a combination of savings and labour.
- 50% (UGX 24,000,000 / ~USD 9,176) – A subsidised loan from the UPFI provided at significantly below the prime rate in Uganda at that time (20% per annum) at a rate of 8% per annum. This is repaid into a local revolving fund to build similar facilities. The initial proposal was that these funds would be repaid in 10 years; thereafter the funds would be available for others.
- 25% (UGX 12,000,000 / ~USD 4,588) – The council contributed in the form of land and technical assistance.

⁸ In Uganda, and many other African countries, exchange rates fluctuate drastically. All figures quoted in this paper are not current but from the period when work was undertaken.

Box 2: Jinja sanitation facility



Residents paying to use the facilities - at a price agreed upon by the community - would repay the subsidised loan. Community members could also rent out the community hall on the second story at a set rate thereby generating additional income (see Box 2). The cost per individual use of the facility was set at UGX 200 (USD 0.08). This was judged to be sufficient to cover the running costs, management and maintenance based on the anticipated number of users. Various factors were considered in the design of management systems including the merits of monthly subscriptions as opposed to payments for single use, differential charges for long or short calls, free access to children, privacy and safety.

Following the community-led enumeration in Jinja, it was found that there are over 1,500 families in the neighbourhood of Rubaga Market (about an acre) without access to sanitation. From this, it was estimated that the facility would attract approximately 500 users a day (comprised of both residents and market visitors). At this point, the expectation was that each user would pay UGX 200 per use. Management would be paid a flat fee of UGX 100,000 (USD 38) per month and the balance would go towards maintenance and loan repayments. In order for this loan to be fully repaid on time, ACTogether estimated they would be able to collect USD 5,000 a year. Estimating 25% of uses will be showers; this would require at least 132 toilet uses and 16 showers a day.

As of March 2014, Rubaga sanitation unit had repaid a total of UGX 1,600,000 (approximately USD 640), compared to the anticipated income of USD 7,500 after 18 months of operation). These are the proceeds from both the water and toilet components of the facility. The unit is beginning to attract more traders as the market expands and the federation attributes the market expansion to the sanitation facilities now available. Electricity was installed in the facility during the course of the year and this allows the facility to operate throughout the night.

The federation tested the subscription method, but most residents and vendors prefer to continue to prefer to pay per use. The community hall atop the unit is rented out to a group of worshippers every Sunday morning. They pay a total of UGX 50,000 per month (UGX 600,000 a year).

These figures suggest the Uganda federation will take much longer to repay the loan than originally expected. Since the facility has been opened, it is evident that the federation has a growing capacity to manage such projects and the users have increased steadily since the facility opened.

Critically, the project served to leverage significant support from other partners for the federation's sanitation agenda. The Jinja Municipal Council handed over other public toilet facilities to the federation in recognition of its effective management systems. In addition, the unit was a major factor in the City Council and World Bank's decision that promoted community contracting for community upgrading projects. The practical evidence that community contractors could build high quality facilities much more cheaply than municipal contractors largely motivated this decision. The community hall atop the facilities serves as a critical meeting place for the federation and its partners and housed negotiations that later led to the upgrading of the drainage network around Rubaga Market.

Lessons learned

On reflection it was noted the estimates made by the Ugandan alliance in their initial plans and proposals were overly optimistic. Some of the reasons for failed expectations are listed below.

1. The price point of the services offered may be too high, as residents continue to use free solutions despite their unsanitary nature.
2. The user numbers projected were overly ambitious and a 'best case' scenario. A variety of more realistic projections should have been considered.
3. The sanitation facility offered should have been extensively marketed to the broader community with explanations of the services available and how they will function.
4. Those responsible for managing the facility should be monitored by the federation to ensure that full income is being reported.
5. Alternative places (e.g. vacant stalls, drainage areas) where people can urinate and defecate need to be accounted for in planning and sensitisation.
6. Alternative sources of income generation through cross subsidisation (e.g. advertising on the side of toilet blocks, clothes washing facilities) need to be more thoroughly investigated and included in planning, design and management practices.

The planning, construction and management of the sanitation facility in Rubaga, Jinja needs to be examined within a 'learning by doing' framework. Cost recovery alone does not define the success of the project, which was aimed at demonstrating a community-driven alternative solution and generating partnerships and leveraging resources for upgrading of informal settlements. Lessons from the project in Rubaga are assimilated within the federation processes and applied to the development of new facilities (as well as the identified challenges in Jinja). The project cycle is hence not only about delivery but the development of a critically engaged social process that, over time, augments and refines the delivery of sanitation facilities to the urban poor.

Construction savings through design (communal facility) - Kinawataka, Nakawa Division, Kampala, Uganda. May – August 2012

Concurrent to the construction of the Jinja facility another communal sanitation block was being built in Kampala. A prototype design had previously been completed by a local architect for a toilet block in Kinawataka⁹ in Kampala. The author was asked to review the design, suggest improvements and look for ways to reduce costs.¹⁰

An enumeration revealed that the suburb of Kinawataka has over 1,500 families with only 40% of these having access to sanitation. Federation leaders decided that a public sanitation facility needed to be built to service these needs. An ablution facility benefiting 600

⁹ Kinawataka is a settlement in the Nakawa region of Kampala situated roughly 6.3 km northeast of the CBD. The area is a mix of residential, commercial and industrial buildings and the site for the facility is located just off Kinawataka Road.

¹⁰The detail of this redesign process is covered in an SDI report: *Kinawataka Market Facility*. (www.sdinet.org/media/upload/documents/kinawa.report.120815_1.pdf)

households was planned and built in Kinawataka market.¹¹ Kinawataka Market is full of female slum dwellers, trading vegetables, fruits, and dried fish. The market is crowded, prone to flooding, and completely unserved. The federation and the municipal council prioritised the market – which had no sanitation facilities for 30 years – in order to target these vulnerable women. The second storey was to be used as an office by the federation, but funds for construction of the hall were not sufficient.

Photo 1: Kinawataka sanitation facility



Box 3 illustrates the design of this block. Items that added unnecessary costs to initial designs for the facility included the cast in-situ concrete staircase, window frames and metal balustrades. All of these were replaced with alternatives made from cheaper sourced materials and labour. An in-house engineer, with extensive experience in local building and costing, facilitated these discussions. The redesign was expected to save 20% of costs, amounting to UGX 13,000,000 (~USD 5,030). A summary of the design changes are listed below:

- Window frames were replaced with brick/screen blocks and polycarbonate sheeting.
- The pitched roof was replaced with a raked roof.
- Brick walls replaced steel balustrades.
- A cast in-situ staircase was replaced by a precast concrete system developed and used extensively in East Africa.

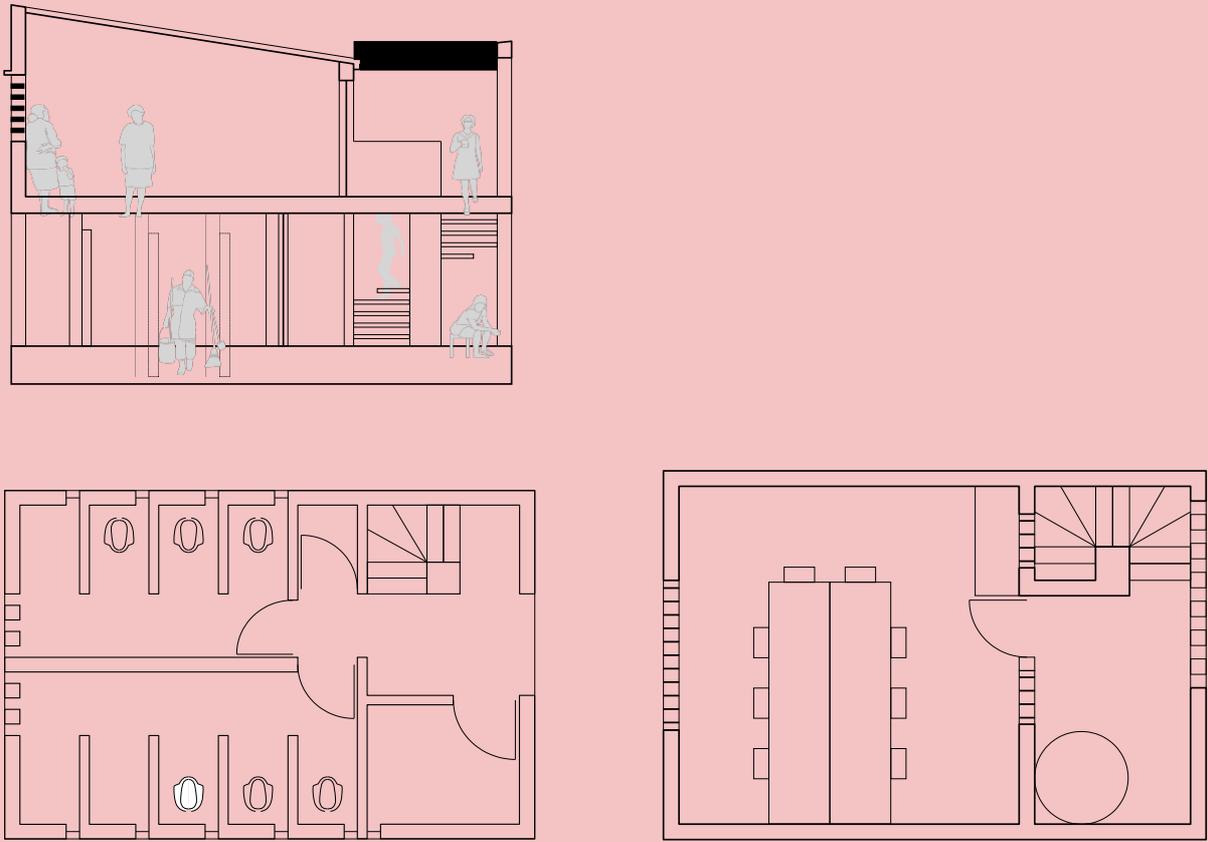
After negotiations, a contract was signed between the Nakawa Division Council, the federation and SDI. It was agreed that SDI would provide 60% of the funding in the form of a loan (channelled through the Uganda federation's urban poor fund, SUUBI), repaid at an interest rate of 8%. The council would provide 20% of project costs (land and technical assistance) and the community would provide 20% (cash and labour). The 60% loan would be used to create a revolving fund as user fees repaid the capital and enabled the funding of similar facilities in other areas of Kampala. The community, however, was unable to raise the

¹¹ The federation leaders have plans to eventually upgrade the whole marketplace in partnership with the municipal council. The land has been surveyed and preliminary designs drafted in partnership with international architecture students, the NSDFU, the Ministry of Lands, Housing and Urban Development, and ACTogether Uganda.

20%, yet the federation wished to capitalise on the opportunity. This was the reason the community hall could not be completed. The Ugandan federation agreed to finance the first phase as the community works to raise the balance for the hall – a process that is ongoing.

Box 3: Design alterations

The windows on the top floor are made from locally manufactured breezeblocks with a fly screen backing and a small eave to prevent water penetration. This improves ventilation and provides shade without compromising security. The raked roof maximises the amount of water the building can harvest. Storing the water tank on the first floor balcony places it close to the gutter and allows gravity to apply the pressure and the rainwater to be reused for flushing the toilets.



The federation and ACTogether learned much through this construction process. Due to cash flow problems, project management was unable to conduct regular site visits and subcontractors who provided cheap rates were not able to follow clear instructions. *Laddies* (building tiles used to make suspended concrete floors) had to be re-laid, the wrong aggregate was used in the slab, and the precast stairs were mislaid.

Despite these challenges, the construction progressed until the project manager/foreman participated in a four-day exchange to India for a workshop. In those four days, the builders were instructed by a federation leader to make design changes, ordering extra rendering to be done. In addition, overly expensive tiles were purchased during the foreman’s absence which put construction over budget.

Lessons learned

These two complications highlighted the need for constant and professional site management. Without this oversight, quality and cost control suffers, which can easily undermine the best planning and waste precious community funds. Using local informal contractors can lead to big savings, but this in turn requires extra expenditure on oversight. These costs need to be factored into the total project cost. Federation Project Management Committees (PMCs) are integral to the construction and management of sanitation facilities. Box 4 provides a basic breakdown of their composition and responsibilities.

The facilities built in Rubaga and Kinawataka were among the first rolled out by the Ugandan federation and ACTogether. The broader ambition remained to construct similar facilities at scale, so as to have a meaningful citywide impact. To do this without relying heavily on donations a robust business model that also identifies alternative finance was discussed. For ACTogether, this could mean using commercial finance at a cost of over 24% per annum when capitalising future facilities. Commercial capital is extremely tricky due to high and volatile interest rates. Figures of 18-30% in Uganda make borrowing commercial capital extremely expensive and the fluctuations introduce considerable risks into the scaling up of sanitation lending. Either the market needs to become more stable or new forms of commercial loans need to be brokered, either nationally or internationally, with lower and more predictable interest rates. Without state subsidies options are limited and donor finance becomes an attractive option. If donor finance takes the form of loans, as opposed to one-off grants, it will be more effective to increase the scale of sanitation production in the long term.

The aforementioned experiences in Rubaga and Jinja demonstrate the disparity between cost projections and reality. Loan repayments are progressing slower than projected, even with a subsidised interest rate. The facilities also remain a relatively costly service and the Uganda alliance continues to innovate in order to bring the price down. Nonetheless, both projects were integral to the federation being given more land in Kampala and Jinja for sanitation projects, for promoting community contracting, and for increasing the exposure of the federation to other sanitation actors, from which new partnerships have emerged.

Box 4: Project Management Committee structure

The Project Management Committees (PMCs) are different in the construction and the operations phase of the project. The form differs slightly from unit to unit, but in general follow the structure shown below, which was developed by the federation and has evolved with experience.

PROJECT MANAGEMENT COMMITTEE – CONSTRUCTION PHASE		
Chairperson		
Project treasurer		
SUB-COMMITTEE	COMPOSITION	ROLES
Procurement committee	Community, regional leaders	Material sourcing Buying materials Maintaining records of all purchases
Finance committee	Regional chairperson, treasurer, support staff, group treasurer	Manage the project account Review the budgets, and also releases funds as agreed
Construction committee	Community members, municipal engineers, support staff	Identify building materials/equipment Monitor the construction on a daily basis
Security and store committee	Community and local authorities	Take a record of all materials on site/store and ensure security of the materials

Project operation and maintenance phase

Once the construction period finishes, a new PMC is formed. This will be responsible for maintenance, effective service delivery and financial management of the facility. The federation determined that the sanitation projects would have a PMC consisting of the following members:

Two caretakers – these two individuals will be active federation members as determined by regional leaderships. They will be responsible for day-to-day cleaning of the facilities and purchasing the necessary supplies to ensure efficient and hygienic operations. The caretakers will split the days of the week between themselves and come up with a roster that will be posted publicly.

Two collectors – these two individuals will be active federation members as determined by regional leaderships. They will be responsible for day-to-day collection of user fees and banking of daily takings. The collectors will split the days of the week between themselves and come up with a roster that will be posted publicly.

Network health and hygiene (H&H) representatives – the H&H committee at the network level will provide basic monitoring and evaluation services. They will be represented on the PMC in order to monitor and reports to the region, which will submit reports to the NEC.

Project treasurer – this individual will be an active federation member as determined by the region and will be responsible for reconciling project finances and reporting to the PMC.

Project chairperson – this individual will be an active federation member as determined by the region and will be responsible for coordinating the PMC, convening meeting where necessary, and compiling the information from the treasurer and H&H reps to give to the regions.

The PMC will open a project account, managed by representatives from the local community, regional and national federation leadership. It will also open a repayment account to manage repayments. This Sanitation Project Repayment Account will be a national account with city sub-accounts.

The Ugandan alliance believed that they needed to increase their understanding of the ways in which other community-driven processes had identified and addressed their sanitation challenges. They hence sought out other actors within the SDI network who had negotiated similar challenges at scale.

The Indian alliance has over a decade's experience in communal sanitation provision and management. Their ability to structure the facilities as both business opportunities for locals whilst also providing an affordable service to even the lowest-income households has driven the construction of toilet facilities across Mumbai and other Indian cities. These facilities provide access to all income levels within slum settlements. Even though the Indian government has funds to cover the capital investment costs (a subsidy not available in Uganda), the Ugandan federation agreed that it would be interesting to witness and analyse how key challenges have been tackled¹².

The Indian approach to sanitation - Bangalore and Mumbai, India - July – August 2012

Through years of ongoing community based work and partnerships with the local authorities, the Indian federation has negotiated with government to cover construction costs of sanitation facilities. The government agreed to give a part of their sanitation budget to the federation to oversee the construction of communal blocks in designated "slums". The Indian construction and management system is broken down as follows:

Funds: The funds are secured directly from the government who allocate a percentage of the sanitation budget to construction of slum-based sanitation facilities. This significantly reduces the financial challenge as no capital repayment is required and hence there is no loan deadline or interest accrued. Like all government funds for contracting the development of such facilities there are requirements and conditions attached.

Sub-contracting & procurement: Funds are allocated nationally and then separated into smaller lots at a city level for which civil society agencies can bid¹³. Women in the federation organise themselves into building enterprises and are encouraged to put in an expression of interest for these contracts. The contract will require that the facility is built for less than X amount. If the contractor can build it for Y, the difference is theirs to keep. If the contractor goes over budget, they get black listed for a year meaning no more contracting work for them. Naturally people's drive to maximise their income gives them incentive to minimise the real cost of the construction. On the other hand, toilet facilities are big structures and oversight is required to make sure that poor quality materials are not used and the build is

¹² Every country has different environmental, economic, political and cultural challenges. A simple cut and paste of the Indian strategy cannot work. However the lessons learned provided a big step forward for the Ugandan process.

¹³ Money is allocated nationally then passed on to the state. In line with national procurement laws the city then issues a contract with the Indian alliance. Historically SPARC has influenced these norms and regulations at the city level. A key amendment allows civil society agencies (including community managed construction companies) to bid for contracts and have their previous experience and knowledge of slum upgrading recognised.

done to the specification. The support NGO to the SDI-affiliated federation, SPARC, provides and requires that an engineer be on site for every significant part of the construction (e.g. pouring of cement to proper specification)¹⁴.

Management: The money required to run the facility is relatively small as water and electricity is subsidised in India, provided there are service connections (which is possible in large cities). The federation requires that families pay USD 0.36 per month, per family as a subscription fee. This makes the money collection relatively large, regular and predictable making it harder for people to “pocket” money along the way. This will be used to cover service bills and maintenance costs. The management is *not* paid any wage by the federation but they are provided a room above the facility to live in, rent-free. They are also permitted to charge non-subscribers (i.e. those not paying the monthly subscription) a fee to use the toilet that they can keep. There is hence an incentive to keep the toilets clean, as the caretaker/manager lives in the facility and unsanitary conditions will directly affect her/his life. In addition if the facility is poorly maintained, the subscribers know exactly where to go to complain. A further motivation is that the amount of money that the manager makes depends on how long they keep the facility open and how well it compares to other facilities in the area. The busiest times are in the early morning and late at night. If a manager is lazy, they will be failing those subscribers who have paid but will also miss out on others who haven't subscribed and may need to use the bathroom.

The Indian federation and SPARC suggest that this system works for several reasons: Prior to the federations' involvement local government would send unspent money for sanitation back to state and national treasuries as no coherent system existed for city scale sanitation provision. Now the local government can allocate these funds towards slum-based sanitation solutions. Local government also receives credit for helping improve the living conditions in slums without having to actually do much legwork. Government releases the money and ensures it is spent appropriately. The federation and SPARC oversee the procurement, realisation and management of the facility. They are comfortable releasing the money to federation enterprises as the federation and SPARC have proved their abilities in this area over an extended period of time.

The incentive for the contractor to maximise profit, will keep the project under budget. Empowering female contractors is beneficial in terms of financial independence and includes women in the change process as meaningful actors.

The subscription system provides a consistent stream of money so the federation and SPARC know the exact amount generated. The sizes and consistency of payments deepen the financial accountability of management. It also provides a low-income family with the opportunity for a decent place to live and the facilities to start up a business.

The context in Mumbai is also quite different to Uganda. Mumbai is one of the densest cities in the world. How much does this higher density and different context drive the success? Would the toilet blocks be as successful with half the number of people surrounding each facility? Another important difference is the subsidy provided by government in India to cover

¹⁴ The supervision costs are included in the contracts. In the beginning SPARC subsidised this cost while the local companies built up their skills and experience. This is no longer necessary with high standards being maintained.

initial capital costs, an amount that is not available in Uganda. Despite these differences, the Ugandan affiliate was interested in testing these ideas and taking such lessons back to Africa.

Lessons learned

Upon reflection, it was noted that the Indian system works far more effectively than the system trialled in Uganda. This could be because the Indian system of toilet construction and management has succeeded in aligning personal interests (e.g. caretaker, fee payers) with the provision of a service for the common good. In addition the system has evolved over a substantial period of time allowing the federation to learn from their errors and refine their systems. This process is at a much earlier stage in Uganda. A further key difference is that Uganda currently cannot access government subsidies. However if successful management systems are demonstrated, it may be possible to leverage additional government (or donor) resources, preferably as loans and not grants.

Box 5: Country exchanges

The NSDFU has engaged in many exchanges to support its sanitation agenda. The three exchanges with the biggest impact on the sanitation work in Uganda were India, Tanzania, and Ghana. The Indian exchange showed the federation the value of having community halls on the top of sanitation units and also how community caretakers can manage the facilities. The federation is now a destination for many other affiliate exchanges eager to see this innovation in toilet building. In Tanzania the federation learned to make soil-interlocking bricks, which will support it to reduce the costs of sanitation units in the next phase of construction. The high cost of cement in East Africa led to innovations in this respect. The technology is also providing jobs and skills for the youth in the federation who are trained to make the bricks themselves. In Ghana, the Ugandan federation learned about a septic-alternative technology, which is also being tested and has the potential to cut the cost of Uganda's sanitation units by half. While Uganda still sees the benefit to building some of the larger units with community halls on top (as these serve as federation regional offices and a source of revenue when rented) it realises that to go to scale smaller and more affordable units will be necessary.

Trialling new ideas in Uganda - August 2012 – February 2013

Subsequent to the Ugandan visits to India and the lessons learned, a number of key issues emerged and were collectively reflected upon by the alliance.

Understanding operating income and its implications on restructuring the payment system: A monthly or weekly subscription system should be trialled in Uganda. This will help create a guaranteed income for the facility and pre-commitments for subscriptions can help determine the viability of a project. As noted earlier this option was not what the community in Jinja wanted however it could make sense in other contexts. The federation has also experienced resistance from communities in Kampala and other municipalities regarding the subscriptions. Informal settlement residents claim their incomes are too unstable and they would rather pay per use though they know they could save with a subscription. This is a reality in slums where people prefer to buy small denominations of airtime, single-use

packets of washing powder and spices etc. It is also the reason daily savings has proven much more effective than weekly or monthly saving.

Photo 2: Sanitation unit in Mbarara (Kizungu settlement)



If the Jinja facility had applied a subscription system the mathematics would have looked as follows¹⁵. If the construction cost is UGX 50,000,000 (USD 19,280) and the loan is to be repaid in 6 years with 100 subscribers, then (given interest rates) the monthly subscription required would be at least UGX 15,250 (USD 5.88), before any of the running costs are covered. An alternative way of looking at these figures is that the facility needs over 200 people per month to have sufficient subscription income to repay the cost of the loan let alone cover all the running costs. At this time the federation and ACTogether have agreed to extend the loan repayment period and are more concerned that repayments are steady, the facility is being used and well managed, than it is about the repayment period itself.

¹⁵ Playing with these figures on a spreadsheet using a set formula can allow community members and support professionals to predict possible financial permutations. Enumeration data that ascertains sanitation demand, affordability and willingness to pay can strengthen such calculations. As noted estimates should be cautious rather than overly optimistic, or at least plan for both high and low usage scenarios.

Capital contribution: The target for community-raised funds is usually between 10-20%. This not only shows commitment, creating vested interest but also incurs no further cost as this is seen as a contribution and neither interest nor dividends are paid. The federation now insists that the 20% contribution is secured before the project commences to ensure situations like Kinawataka do not happen again. As the federation works to develop much cheaper prototypes (with innovations that do away with the need for a septic tank) the 20% contribution will also become more affordable.

Finance: The Ugandan process discussed permutations around how much money should be borrowed, and what would constitute an affordable rate of repayment. Clearly comprehending these figures allows planning for a predictable and regular cost over a significant period of a facility's life.

Electricity: This is a relatively predictable cost that remains constant regardless of the number of users. Costs could be reduced through using solar voltaic LED systems (an option for facilities that are not connected to the national electricity grid), although this adds to the start-up cost. This system has been piloted in a unit in Kalimali, Kampala. Solar lights are used for the toilets, the community hall, and the security lighting.

Water: This is an unpredictable cost as it fluctuates according to the number of users. The larger the subscriber base, the more users, the more flushes and the greater the amount of water used. For facilities that do not have piped water access an added challenge is arranging and paying for water delivery. Traditional flush toilets are water intensive using up to seven litres for a single flush. Federations recognise the impact of this cost and finding ways to make the toilets more water efficient. Recalibrating the cistern (technical talk for putting a brick in the cistern) and/or giving people buckets of water for the flushing of toilets are two valid ways of dealing with such a challenge¹⁶.

Management: Trial and error will determine how much traffic and density is required for the optimum management options to be identified. Management costs are regular and contingent upon the systems implemented.

Maintenance: Costs can be unpredictable and depend on the build quality and externalities that cannot easily be planned for (e.g. bad weather, vandalism or accidents). A fixed amount from incoming monthly revenue could be set aside to deal with problems as they arise. Time and experience will inform the amount needed.

Waste collection: This varies from unit-to-unit depending on the size of the septic tank, usage, the location, and the accessibility. Private companies are the principle source of septic emptying.

Determining the subscription: The above costs can be aggregated into an estimated annual cost and a 10% contingency added for unexpected expenditures¹⁷. The annual figure can be broken down to determine a required monthly income. This figure can be divided by the

¹⁶ In countries like Zimbabwe and Malawi, SDI affiliates have adopted waterless technologies such as EcoSan. This significantly reduces the operating costs, as no water is required for flushing.

¹⁷ This percentage is an estimate and will be adjusted as the system is implemented and further lessons emerge.

number of existing (or potential) subscribers to estimate the required rate per person (or family). This calculation can also be applied 'backwards' starting with community demand and a subscription rate that is affordable to the poorest members of a settlement.

Even though more subscribers imply greater operating costs, the total subscription for everyone is still reduced. This will provide an incentive for community members to encourage others to join (up to a point where there is a heavy demand).

Reflections on toilet scale

Greg Bachmayer

Whilst the larger facilities developed in the first two Ugandan blocks make sense in a market place they are limited to areas of high residential density and/or many visitors such as a market. If one considers how unpredictable our bodies can be in wanting to use the toilet, the distance to the nearest toilet becomes important. Ugandan federation leaders estimated that the average person isn't going to walk further than 100m in order to use a pay-toilet¹⁸. If toilets are to be made accessible, both financially and geographically, facilities need to be smaller in scale and cost. After discussions with the federation a new prototype was designed. By reducing the scale of the facility, four smaller facilities can be constructed for the same cost covering a far larger spatial area. Since each facility is smaller and cheaper it has a much lower recovery cost implying a smaller number of subscribers are needed to make it economically viable.

Distance is not the only factor to consider. The population density within a given radius will also determine the feasibility of different block sizes and their proximity to each other. In this way, it would seem that travelling distance and distance would be coefficients that work together in determining the success of a facility. The scale will need to be responsive to these contextual factors.

As the information above is based on assumptions, it needs to be tested and the findings analysed. Comparing information already gained from a market in Jinja and a market in Kampala it is evident that they are significantly different contexts. Comparing a large market place facility with a smaller residential scale facility are also different typologies based on divergent assumptions. The more toilets of a similar typology we have in a single region, the more sources we have for collecting meaningful data about the usage and costs related to that. From these, formulas will begin to evolve for calculating management costs.

¹⁸ Discussions in Kampala suggested between 50-100m. It is important to recognise that this distance is likely to be affected by issues of visibility and safety when walking at night. Construction needs to respond to these challenges.

Box 6: Prototype design for communal toilet block in residential areas



Unit cost: USD 6,000
Specs:
2 male toilets
2 female toilets
1 disabled toilet
4 showers
3 water points
1 store

Photo 3: Mbale sanitation unit, mission cell

Photo 4: Sanitation unit in Masese, Jinja



Conclusion

Over time, and with practical experience, PMCs have become more sophisticated, units have become more cost effective, and the Ugandan federation has refined its negotiation skills when it comes to securing land and support. Drawing on their experiences to date, the federation and ACTogether agree that to have a city-wide impact on sanitation in Kampala requires an integrated approach working from the settlement to the city scale.

Achieving city-wide scale is not tenable unless mutually beneficial partnerships with local government institutions can be crafted. In Uganda, and many other developing African countries, the state remains the repository of the majority of resources and the premier actor in shaping (or not shaping) city change. When urban poor communities can negotiate sanitation options that access state budget lines or be streamlined into city development strategies, the possibilities for city-wide scale increase significantly. Facilities that can leverage some sort of financial sustainability through the market become even more attractive options to local government due to reduced fiscal responsibility.

Photo 5: Sanitation unit in Kampala-Kalimali settlement



While scaling up is vital to redressing the stark lack of sanitation services for the urban poor this should not be at the cost of retaining affordability. The lowest-income single mother in a slum must be able to access the facility. Discussions in Uganda and other African countries

within the SDI network indicate that the poorest 40% living in informal settlements can afford approximately USD 3-4 for sanitation per month. This is consistent with a picture that says significant numbers of households earn between USD 40-50 a month and spend USD 10-15 a month on rent. However these figures have not been consistently corroborated by hard data as very little is known about what informal residents actually spend on sanitation each month. Hence the growing importance of community led enumerations that collect this and other relevant sanitation data.



Sanitation and Hygiene Applied Research for Equity (SHARE) is a consortium of five organisations that have come together to generate rigorous and relevant research for use in the field of sanitation and hygiene. SHARE is a five-year initiative (2010-2015) funded by the UK Department for International Development.

The SHARE consortium is led by the London School of Hygiene and Tropical Medicine and includes the following partners: the International Centre for Diarrhoeal Disease Control, Bangladesh; the International Institute for Environment and Development; Slum/Shack Dwellers International; and WaterAid.

The purpose of SHARE is to join together the energy and resources of the five partners in order to make a real difference to the lives of people all over the world who struggle with the realities of poor sanitation and hygiene. SHARE seeks to empower the individuals, agencies and organisations that are tasked with transforming the living conditions of these people.

