

Sanitation as a business

Trends Shaping the Market for Urban Sanitation – a Discussion Paper

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CONTEXT

In November 2011, Jefferson County, Alabama made world news by filing for the largest-ever American municipal bankruptcy. Bad housing loans? Pension liabilities too great? No, it was the huge cost of investing in new sewers that tipped them over the edge.

Around the same time, a thousand miles to the North, the municipalities on Cape Cod, Massachusetts, were holding public meetings to discuss options for dealing with their own waste burden.¹ Nitrates from the tens of thousands of septic tanks are leaking into the groundwater, posing pollution concerns - decentralised treatment seems to them to offer a robust and perhaps cheaper alternative to investing in a centralised sewerage system.²

In America, as in most OECD countries, urban sanitation is usually dealt with through centralised sewer networks. Yet, as the above examples demonstrate, this is not a cheap option – networks to collect and treat sewerage often cost more than the networks that distribute water to the households in the first place. This is one reason that sewer networks are much rarer in developing countries. For instance in Sub-Saharan Africa the majority of urban households is not connected to the sewerage network.³

A centralised network to capture, transport and treat household waste is most efficiently managed by a single body. Consequently the sewerage network is typically managed by the same organisation that is responsible for distributing water to households in the first place – sometimes a department of the municipality, sometimes a separate ‘water and sewerage company’. However these organisations rarely deal directly with the sanitation issues of households that are not connected to their network - as a consequence the ‘market’ for dealing with this aspect of sanitation is more fragmented. And a market it often is, with both formal and informal providers offering their services.⁴

Meanwhile, an increasingly urbanised world faces a growing sanitation challenge. Given the difficulty that many African cities are having even maintaining their existing sewerage networks, never mind expanding them, increased interest is being shown in the market for services that lies outside that network. Concerns about climate change and water scarcity are also driving interest into alternatives to systems that require significant quantities of water to flush and transport toilet waste (water that must then be cleaned again before returning it to the environment). The Bill &

¹ <http://www.economist.com/node/21541053> American municipal finances - The sewers of Jefferson County: The largest-ever municipal bankruptcy shows the strains on local finances

²

http://www.barnstablepatriot.com/home2/index.php?option=com_content&task=view&id=27955&Itemid=30

³ For many of these households the alternative is unsewered sanitation, which includes instances where the equivalent of the rural pit latrine is adopted for use in an urban area. Yet many lie altogether outside the sanitation system and as a result large efforts are now being put into ending ‘open defecation’. This is leading to growing demand for sanitation in urban areas and as this grows, so does the need for services to meet this demand.

⁴ In rural areas it is possible for households to deal with their own waste – those with an outside toilet moving the location once the pit below it fills up. In urban areas this is often not as feasible, due to constraints of space, investments in the top-structure of the toilet. Heavier usage (particularly when one toilet is shared by many) often means it fills much quicker too. All of which means there typically exists a vibrant market for emptying toilets and removing the waste.

Melinda Gates Foundation ‘Reinvent the Toilet’ campaign is but one manifestation of this. A further consequence is renewed interest in the potential of small, medium and large businesses working in sanitation. If the toilet is to be reinvented, new markets exist in getting this to customers (building on growing momentum that already exists around ‘sanitation marketing’). Businesses already exist to empty the waste from urban toilets and transport it to treatment and / or disposal sites. In Africa the activity of treating sanitation waste is often a government function. Nevertheless, inroads are slowly being made that are bringing private enterprises into this market too.

In light of the above, the discussion around ‘sanitation as a business’ is gaining considerable momentum. Yet whilst this concept has been featuring prominently in sector debates, it is also maddeningly imprecise. As a term it is so broad that it can be taken to mean almost anything from large multinationals investing in bleach and other household cleaning products, to small NGOs supporting CBOs that offer localised sanitation services on a ‘cost-recovery’ basis.

As a consequence it is sometimes difficult to have conversations that actually contribute to greater understanding and more learning across programmes. Our approach to dealing with this, in this paper, is to take one aspect of the “Sanitation as a Business” debate (emptying and transport) and to use this as a means to highlight some of the issues and broader trends that affect the entire ‘urban sanitation market’.

EMPTYING AND TRANSPORT

Unsewered sanitation is actually the norm in urban Africa. Rather than having flush toilets, with water being used to carry waste through a system of underground pipes to a centralised treatment station, households (where they have any sanitation) rely on a toilet with a pit or tank below it that fills up over time. Such unsewered sanitation is commonly referred to as a “system” or a “chain”. As described by sanitation professionals this chain comprises collection, storage, removal, transport, treatment and disposal or re-use. Put simply, this means building a toilet and using it, getting the waste out when it is full, taking that waste somewhere else, treating it to remove (most of) the pathogens and – maybe – reusing it as soil addition so that the nutrients do not go to waste, or disposing of it. There is a version of this process, known as ‘eco-san’ (depicted below), where the waste does get reused (typically as a resource for agriculture but also as biogas where waste is transformed to energy).

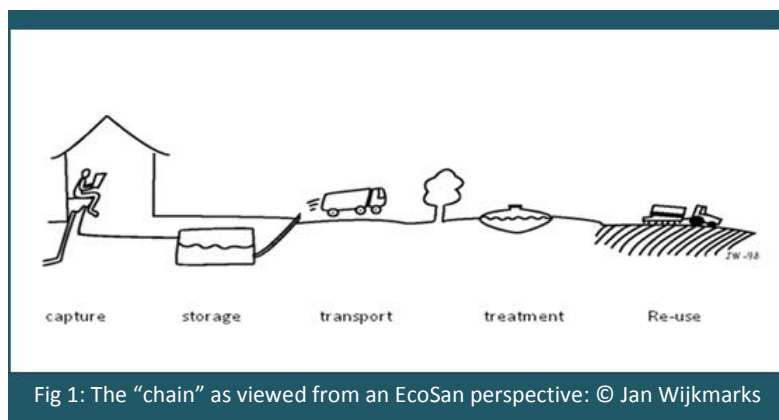


Fig 1: The “chain” as viewed from an EcoSan perspective: © Jan Wijkmarks

In order to highlight some of the broader trends affecting the sanitation market, this paper focuses on the significant market that exists in urban areas around the emptying of sanitation storage and the transport of the waste away from the household. The examples cited are mostly from Africa, but many of the broad tenets apply to developing countries in other regions of the world.

Emptying: A Rudimentary Market Structure

In Africa there are three main ways that toilets not connected to the sewer network get emptied.

There is *do-it-yourself* emptying, where the householders either empty latrines themselves or rely on flood waters, infiltration, slopes and / or some sort of rudimentary flushing. Although this may be cheap and practical, it is nevertheless noxious and dangerous.

Secondly, there is *manual emptying* by a third party that is contracted in. This rarely involves more than a bucket and spade. The people doing the emptying do not usually have any safety equipment and often get into the pit to do the work.⁵ The sludge, once emptied, is transported as little distance as needed – it is sometimes buried on-plot, or drums are carted and dumped at the first convenient place. Some efforts are being made to ‘professionalise’ this – primarily by providing equipment that makes the task easier and more hygienic, effectively allowing for the proper transport and disposal of waste). Examples include work in Durban and Pietermaritzburg in South Africa, as well as in the Eastern Cape along with the work undertaken by international NGOs such as WaterAid and WSUP in East and Southern Africa.

Lastly, there is *mechanical emptying*, mainly using vacuum suction equipment. This is usually a privately offered service but is sometimes provided by government agencies as well. Mechanical emptying is technically more appropriate for formal housing, since emptying vehicles can gain access easier, whilst storage tanks can handle suction. The equipment used for this process is not found only in developing countries but also in the developed world (where septic tanks and other systems are still used in remote locations).

Obviously the first of these methods, where the household arranges the emptying, could not be classified as ‘sanitation as a business’. The other two approaches, given that they often involve privately contracted individuals or firms, often are. Those working to improve sanitation – central and local governments, donors, NGOs, private foundations – generally aim to reduce the risks of



Fig2: Unhygienic emptying © S. Bongsi



Fig 3: A hygienic emptying team in action in Dar es Salaam © Schaub-Jones

⁵ Sometimes they dig a pit to one side of the existing one and then break a hole between the two to allow the sludge to flow through.

informal and unsanitary emptying as well as ‘professionalise’ the other two aforementioned methods to the extent possible.⁶

One of the key challenges that these efforts to ‘professionalise’ both *manual and mechanical emptying* face, is that the existing businesses are often informal. As a result, significant effort is required by outside parties to engage with them. Moreover, the more formal they become, the more they drift away from the poorer areas and gravitate towards serving richer areas or towards government and institutional contracts. This may conflict with the specific objectives of those external organisations (e.g. donors) that wish them to engage poor communities.

Creating and Monetising ‘Value’

In order to better understand how these sanitation businesses function, it is helpful to consider how they get paid and where the ‘value in the system’ comes from. Simply put, ‘value’ can be viewed as a triangle, with the three sides representing household contributions, the public budget and the value in the waste itself. There is evidently a link between the system’s “value” and the potential success or failure of attempts to professionalise it. For instance a system that has considerable ‘value’ that can be easily ‘monetised’ will be able to generate the substantial income needed in order to fund ‘businesslike’ approaches.

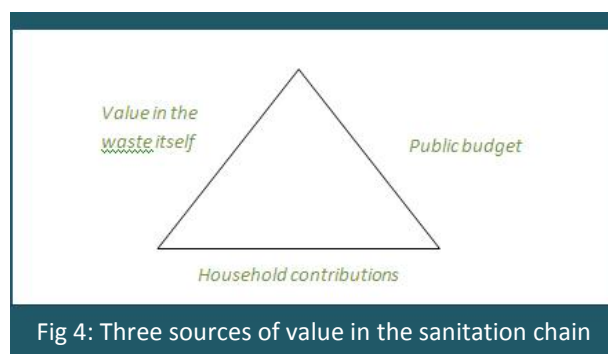


Fig 4: Three sources of value in the sanitation chain

Based on this assumption, there are currently ongoing efforts to increase the ‘value’ associated with all three sides of the triangle.⁷

The first source of value in the system, usually the most important one, is through contributions from households themselves. Sanitation is typically seen as a household responsibility; particularly where sewage connections are not being offered and the cost of dealing with it is usually borne by the householders themselves despite the public health and environmental arguments for public investment into the safe removal, handling and transportation of waste. In poor communities the affordability of the emptying service becomes a challenge, which in turn explains the continued prevalence of *do it yourself* emptying. Even those that do contract out the service may be concerned about the cost of more professional emptying (versus informal manual emptying). Building upon

⁶ However, it is important to note that some organisations, especially those involved in the promotion of ‘eco-san’ greatly favour the first - *do it yourself* - approach. Essentially they promote systems that, by separating urine from faeces, purport to produce a waste that is dry, odourless and easy to handle. The latter could in turn be used by farmers and other and reused for compost.

⁷ Although some of these do end up counteracting each other. For instance, Community-Led Total Sanitation (CLTS) is a rural approach which is now being expanded to urban areas. This emphasises the need to avoid handling waste through activities to heighten disgust over faecal matter. This arguably counteracts efforts that seek to reassure households that treated waste is safe to use as a fertiliser.

these concerns NGOs, such as WaterAid in Tanzania, often work with households in order to highlight the benefits of a more advanced, 'professional service'. This practice consequently enhances demand for this particular service, hence contributing to the establishment of a market where people are incentivised to pay more for services of improved quality.

A second source of value is derived from public budgets. In Senegal the government itself is helping emptying services. It enters into contracts with emptying operators to assist the government during specific events (particularly around religious holidays). It also provides contracts for private companies to help the emergency services during flooding. These contracts encourage operators to become licensed and, in a fashion, to 'professionalise'. In Mozambique a different means has been found to develop public contracts for waste services. There a surcharge is applied to the electricity bill of households, which is passed on to the local government. This money is then used to contract out solid waste services, via contracts with local suppliers. The potential of extending this to include liquid waste removal (sanitation) is being considered.

Governments' momentum to engage more actively with sanitation is being bolstered by the lobbying efforts of a variety of independent organisations. Here the work of the international NGO WASTE is interesting – whereby it is making great efforts to encourage local government to act as a 'contracting party' to private entrepreneurs. The idea is that local government supplements the income that entrepreneurs receive from households by paying them for the public service of emptying waste and delivering it to waste treatment plants. The underlying rationale is that the entrepreneurs' activities contribute to health and environmental benefits, public goods that the public sector should be willing to contribute money towards.

The third source of value is that found in the waste itself. A number of organisations are looking at what this value is and how to unlock it – through eco-san and other approaches. These organisations often work with governments to promote a better understanding of the environment and – when it comes to sanitation – are interested in promoting the safe re-use of human waste. For instance, the Stockholm Environment Institute (SEI) funds work into the health risks of resource re-use whilst assisting governments with classifying waste appropriately and finding appropriate ways to re-use it whilst safeguarding health. The potential for the hygienic treatment of waste to unlock this value has important consequences for the supply chain

What about Costs?

More work could certainly be done to understand the costs that emptying businesses face and how the cost structure varies in different circumstances. We do however have some idea of the primary cost drivers, for which a short overview follows.

For *mechanical emptying* two of the most important operating costs are fuel costs and the fees associated with waste dumping at wastewater treatment plants. The former vary according to the load, the state of the machinery, traffic conditions as well as the distance from pickup to dumping. Those operating the business are acutely sensitive to these costs – although their ability to influence them is often limited. As costs of transport to the dumping site or the fees at the site rise, the incentive for illegal dumping also rises.⁸

⁸ Although one of the reasons for illegal dumping is to save on fuel costs as well as time spent in transit – enabling quicker turnarounds and more jobs (as well as avoidance of dumping fees).

With this in mind, outside agencies (NGOs, donors and foundations who are funding various research activities) are getting involved and looking at how, on a more systemic basis, some of these costs can be reduced. Research has been focusing for instance on ways to reduce the water content of the waste from latrines, subsequently reducing the load. In a similar fashion The Bill & Melinda Gates Foundation is working with various partners to look at ways to bring about better fleet management and smarter responses to traffic challenges by vacuum tankers. In addition, a few organisations are lobbying governments and donors to think more about the location of treatment plants (and in particular the promise of decentralised plants in reducing transport distances).

When it comes to dumping fees, most treatment plants are run by government, which is therefore responsible for setting tariffs. One argument is that the treatment plants need to be on a more sustainable footing financially and should therefore charge reasonable fees to those using their 'services'. A counter argument is that charging fees only encourages illegal dumping, which has a negative environmental and health impact. These externalities are so onerous that the government should waive dumping fees, or even pay for the waste delivered.⁹

Another major cost, which is not however immediately apparent, is the cost of capital (or rather, the cost of capital lying unused). Emptying is often a seasonal business, with higher demand during and shortly after the rainy season¹⁰. Demand for emptying is also quite fragmented – both in time (with some days and months bringing many orders and others just a few) and in space (with 'jobs' rarely adjacent to each other – as they are for other removal operations, such as solid waste). As a result, capital often sits idle, thus driving up costs. This is particularly problematic especially for the smaller operators.

Approaches that separate the waste at source (typically meaning urine from faeces, as 80% of the volume is urine) do help address some of these challenges. Urine can be used as a complete fertilizer with only one month of treatment. If the waste is still to be removed and transported (rather than reused on site) separating the waste streams does help bring down the weight of the waste (and thus the fuel costs). Dumping costs can also be reduced or even eliminated as the waste can sometimes be sold.¹¹

This is one of the reasons that urine-diverting systems have been adopted at some scale by eThekweni Municipality in South Africa. The re-use of the waste is one attraction, but perhaps not the main one. Here, unlike most other settings, the municipality has taken on the responsibility of removing and treating household waste – and since 2000 its borders have expanded to include many dispersed rural households. From a logistical point of view it makes sense to the municipality to promote source separation of waste (urine diversion). Again, unlike in other settings, in South Africa the government also takes responsibility for providing household facilities in poorer households, so in Durban, as elsewhere, the municipality pays to install toilets at each household. This means that Durban is able to choose the technology being used (in this case urine diverting toilets), if not how

⁹ The activities of Waste Enterprises in Ghana are notable here. There a private organisation has arranged to 'take over' a government treatment facility, paying a license fee for its use. It has introduced a system to turn the waste into valuable agricultural inputs as well as to conduct fish farming in the treatment plant. This, alongside similar efforts in Durban, is one way to increase the value in the system as a whole.

¹⁰ In part as water infiltration fills pits and makes them unusable.

¹¹ Sorted homogeneous waste has a higher market value.

households use it.¹² Whilst not all municipalities are able to choose the technology that households are offered (and some advise against such decisions being made by anyone but the household), the Durban example does show the benefits of being able to scale a particular approach and use this scale to support local entrepreneurs who are already engaged or wish to become engaged with this activity.

A FEW KEY TRENDS

If sanitation provision is to improve and go to scale, a crucial need is to find ways to make sanitation businesses more robust and more profitable. Two sector trends are noticeable in this respect: linking into other sectors and standardisation.

Linking to Other Sectors

A promising option, but one which few seem to have entirely mastered as yet, is to make sanitation businesses more robust by integrating them with other sectors.¹³ An obvious choice here is the solid waste sector – the business model has clear parallels, the clients are often the same and the nature of the negotiations with local government and others similar. Furthermore, a principal challenge of emptying pit toilets is that a significant amount of solid waste is often found in pits – making mechanical emptying in particular significantly harder.

For some time Dar es Salaam (Tanzania) looked an appealing prospect for this – the government had had some success with bidding out service contracts for solid waste collection. It had split the city into different zones, where firms bid for contracts to manage not only solid waste but also street sweeping. The zones were designed in such a way that the customer base was mixed – each zone having some retail and some industrial customers mixed in with both richer and poorer neighbourhoods. Manual collection, via the street sweepers was spliced on to mechanised collection – meaning that the providers could (in theory) operate both in informal and formally planned areas. Yet hopes that the liquid waste sector could somehow piggyback onto this model did not materialise. Worse still, the solid waste contracts themselves started to face significant challenges (partly due to the moving of the main dumpsite some 30 kilometres out of town).¹⁴

Yet there are also some key differences between solid waste and liquid waste removal.¹⁵ For instance the value inherent in solid waste is more obvious and more easily extracted – hence the

¹² There is also a climate adaptation angle to these activities. The municipality is conscious of water scarcity and has made a priority of wastewater reuse in parks etc. It is also interested in recycling the nutrients in the waste to reduce its purchase of fertilizers. See http://www.siwi.org/documents/Resources/Water_Front/WF_4_2011_low_res.pdf for more.

¹³ Although this is more common in Latin America where it is known as “integrated sanitation” and has solid waste connected with sanitation.

¹⁴ Water for People is apparently getting some interest from solid waste businesses into the sanitation entrepreneur support programme it is offering in Kampala.

¹⁵ Whilst there is some preliminary evidence that businesses are in fact more sustainable when they diversify (i.e. link solid waste / pit emptying) it is interesting to note that the levels of complexity in both are completely different. For solid waste that value in the waste is much clearer. So too is the ability to shift the revenue “source”, i.e. the payment route, to be from the authority to the provider (which, if done well, can bring huge advantages and simplifications for the provider). The equipment needs for primary collection are also simpler and less for solid waste.

high recycling rates seen in most developing countries. Regulations are less onerous and the domestic solid waste is less hazardous. There tends to be more of a public budget to deal with solid waste issues and, when it comes down to it, more political will to deal with the problem (just recall the global headlines when strikes in Naples led to mountains of rubbish rotting, visible and malodorous, in Italian streets). The notion of a 'clean town' or 'clean city' is one that can gather political support (and hence budget allocations) in a way that typically eludes the sanitation sector.

Another sector that some links have been made to is transportation. The need to transport waste once it has been emptied (or, when building toilets, to transport materials to site) suggests the need for some type of mechanised transport. Yet the seasonal demand for both emptying and building toilets means that expensive equipment can sit idle for long periods. WaterAid, in their Tanzania programme, adapted the three wheeled transport they had helped small entrepreneurs buy – by making the tank to collect sludge detachable. In this way the *piki-piki* (as the motorbike is known) can serve a different function when demand for emptying is low. This could in turn boost both the revenue of the providers and allow the staff to have more regular and predictable incomes. The same applies to the rural operations they support – where the motorised transport is used, particularly in harvest season, to support agriculture rather than sanitation.¹⁶

Lowering Costs through Standardisation

A second trend is seemingly towards increasing standardisation of sanitation products and services. This can be technical or focussed on processes. Technical standardisation has seen Durban develop a 'toilet in a container' – which is used to provide ablution blocks in informal unplanned settlements. The idea is to reduce costs by using other types of hardware, in this case shipping containers. This method not only allows the movement of these containers to new locations in accordance with their demand; it also brings more predictability to the construction, operations and maintenance of the blocks (much in the same ways that prompted the development of shipping containers in the first place).

In Ghana the development of the Uniloo (by WSUP and Unilever) suggests something similar. Standardised small, portable toilets are being developed that can be collected on a regular basis.¹⁷ Production costs are reduced by standardising the production process and making all the units the essentially same, beyond some limited 'styling' customisation to suit consumer tastes. The IFC are supporting similar market research in Kenya which is currently focused on engaging regional plastics manufacturers.

Even when it comes to emptying this trend is apparent. The *piki-piki* being used in Tanzania was designed to carry standard plastic jerry cans that can be bought all over Dar es Salaam. Technical issues led to a move away from carrying these cans themselves (waste is now transferred into a container) – but the move towards using standardised equipment, that can be bought and repaired locally, is noticeable.

Process standardisation is harder perhaps and more context specific than technical standardisation. A South African initiative, Impilo Yabantu, attempted to standardise the process by which it repaired,

¹⁶ Nevertheless, it is important to bear in mind the obvious risk existing in this case; subsidised equipment leaving the sanitation sector all together and focusing only on other uses. On the other hand though, it has been reported that when there is sanitation demand it is sufficiently profitable to ensure the providers prioritise this over activities.

¹⁷ These are inspired by the container model used in caravans.

cleaned and emptied school toilets using a franchise model. The WatSan Centre of Excellence at Mzuzu University in Malawi develops 'course models' that look at the sanitation business and attempt to bring some rigour and predictability to it. For instance can different 'niche businesses' within sanitation be standardised and templates developed that both evaluate the business and guide its development? For their part, WASTE is making inroads into dealing with the larger private sector (in the Netherlands) and commercial banking (in Kenya and Malawi) – where it uses these templates as a way to both explain what sanitation businesses are and lower the barriers to entry for those interested in supporting them. They have found they are able to convince banks to invest in the sanitation sector by enabling and facilitating a strong role for the local private sector.

What Contribution Could We Expect from 'Big Business'?

Another way that the moniker 'Sanitation as a Business' is interpreted, is the involvement of large multinational firms in sanitation in developing countries. It is perhaps useful then to briefly reflect on how best to use their skills and energy.

One area that could perhaps benefit from their expertise is the emptying of on-site sanitation facilities. Potential questions include: what can large firms teach us about how to approach issues of market structure and market development? What do they know about streamlining and strengthening markets, about franchising and other approaches? What lessons can they share about overcoming barriers to scaling up – whether they be around regulations or the standardisation of processes and production?

Broader Contextual Shifts Shaping the Market

Most of this document has dealt with unsewered sanitation and looked at business that operate within that market. It is worth stepping back then to look at some broader contextual shifts that could have a significant influence on that market. Currently almost all sanitation in OECD countries – the source of much technical innovation globally - is sewerred. Yet seven broader factors are leading a growing number of professionals to look more closely at alternatives to sewers. If this shift continues then arguably more resources will be devoted to finding new approaches and technologies to deal with unsewered sanitation (and / or decentralised treatment) – which could in turn help the markets in developing countries in these areas flourish. Contributing factors include:

- 1) Water scarcity. As economic growth continues and human population, industry and agriculture all grow, water availability decreases. In arid countries such as South Africa this is reaching crisis point – in South Africa 98% of available water is already being used. In such contexts the wisdom of using water (and more importantly treated water piped to the home) to flush toilets is starting to be questioned. Other sources of water, including rainwater or recycled water are also being looked into.
- 2) The large costs of sewerage. Sewage networks are not cheap. Nor are waste water treatment plants. These costs have succeeded in tipping more than one developed country municipality into bankruptcy.
- 3) A more varied response to public health outbreaks than investment in sewerage networks in 1850's Britain, the cost of providing sewerage was thought to be a necessary investment in the face of worsening epidemics in its rapidly urbanising cities – epidemics that affected both rich and poor. We know more now about the spread and control of disease and we've also explored other ways of treating and re-using waste.
- 4) Climate events and resilience. As climate change becomes a reality we are becoming more aware of the need for our urban systems to be resilient in the face of stronger and more frequent climate 'events', as illustrated by the flooding of New Orleans. Sewerage networks are complex systems, with pipes and other infrastructure buried underground. They are thus especially vulnerable in the face of such events. Growing calls for resilience are pushing urban researchers in the North to rethink how they handle municipal services. As this happens more interest grows in decentralised waste treatment and 'resilient systems'.
- 5) Environmental impacts. The flushing of household waste whether, partially treated or untreated, into our river systems and into the sea is being increasingly questioned. With less water in the rivers and more waste being generated, the carrying capacity of the environment to deal with and process our waste is being further strained. Greater environmental awareness and growing concerns about global food security are bringing a wider appreciation of issues such as 'dead zones' in coastal areas (particularly where untreated waste is discharged through sea outfalls).
- 6) Rising fertiliser prices. Phosphorus is a finite resource and the concept of 'peak phosphorus' - akin to that of peak oil - is gaining adherents. A lot of phosphorus is carried in human waste; environmentalists and farmers would rather this was viewed as a valuable resource than as a noxious waste (Agriculture and Food Security in Development, November 2011).
- 7) The green economy. The notion of a green economy – where businesses and others contribute to growth and service delivery in an environmentally friendly way – is gaining ground. The idea is that businesses can “do well by doing good” and thus help to safeguard the planet for future generations.

Providing the Appropriate Support at the Appropriate Level

Although for hundreds of millions of people the current ‘alternative’ to sewerage is no service at all, the informal nature of much of the business that fills the void deters many customers and sanitation professionals from embracing anything other than formalised sewerage services. Formally trained engineers tend to have limited knowledge and experience of alternative options and, partly as a result, can be unsympathetic to the activities of small sanitation providers. Providers working on unsewered sanitation are frequently viewed as a stop-gap solution rather than something that can be grown into a viable and professionalised service. If unsewered alternatives are going to gather more momentum then better ways to scale up and ‘professionalise’ the activities of the businesses and providers involved at the different levels of the chain need to be found.

The graphic below tries to depict the current situation in the sanitation sector (for on-site sanitation). There are a few large, professional operators, with links to the solid waste sector with some operating internationally. They are represented by the top layer of the pyramid in the diagram below. Their presence in developing countries is not strong however. In contrast, in developing countries one finds many small operators – the ones referred to in the paragraph above. These are often informal. These operators tend to provide localised services and few have strong links to ‘development workers’ operating in the sanitation sector. They are represented by the bottom layer of the pyramid in the diagram below.

What is arguably missing is the middle layer – a cadre of local, professional sanitation operators. These should not only provide a good service to households, but also undertake the removal and transport of waste in an adequate fashion. This ‘missing middle’ poses a challenge for those working on unsewered sanitation.



In light of the above, there are three principal routes to filling this missing middle:

- 1) Scale up the existing operators
- 2) Encourage new entrants to provide competition to existing smaller businesses
- 3) Develop and support 'intermediate' bodies that work with the existing providers

Some examples of how organisations are looking to fill this middle ground include:

- In South Africa WRC has supported a pilot programme of 'sanitation franchising'. Here a larger organisation (Impilo Yabantu) with skills, business approaches, access to capital and technology supports smaller groups (mostly women) who go out and clean and empty school toilets operating under a contract to the South African Department of Education.
- In Ouagadougou, Burkina Faso, the municipality supports associations to play a similar mentoring and support role. The municipality has divided the city into four zones and an association exists in each effectively supporting small providers with the emptying, treatment and selling of urine and faeces from around 600 toilets. This is backed up by physical infrastructure which helps process the waste (known as a 'hygienization station'). EU and Stockholm Environment Institute have supported the municipality in these endeavours.
- The international NGO WASTE is looking into the potential of supporting 'Sanitation Utilities' or 'Sanitation Operators Associations'. Its aim is to put in place and cross-fertilise mid-size organisations that take on this intermediary role in African cities. WASTE have been looking at how to do this for a few years now, initially hoping that city governments could take on this role. Looking to government to play this role did not work as well as they had hoped, so now they are increasingly looking to the private sector. Getting such an intermediate layer in place is important to them, particularly as they have managed to engage with organisations in the Netherlands keen to support sanitation businesses, but who are put off by the transaction costs of engaging with many hundreds of small providers.
- Recently, WASTE was approached by Zoomlion in Ghana, a solid waste company in Ghana that has grown in six years from one staff member to a firm with 2,800 staff and 60,000 workers under contract. Zoomlion now works in all of the 170 districts, towns and cities in Ghana and is looking to develop a sanitation business. It is companies like this that can perhaps provide the 'missing middle' in Ghana and elsewhere.
- In Uganda the international NGO Water for People is hoping that professional BDS (Business Development Support) providers can play this role of the missing middle. Water for People have contracted a Ugandan BDS provider to go through an elaborate screening process to find 'new' entrepreneurs that are keen to enter into the sanitation sector (often building off successful business in other sectors to do so).



Figure 5: A waste transfer station in Dar – that provides a mid point before waste is moved on to the wastewater treatment plant. This is a step in the right direction – although localised treatment would be a much preferable solution © Schaub-Jones

Too Many NGOs, Not Enough Businessmen?

Perhaps one of the challenges facing the sanitation sector is that there are “too many NGOs and not enough businessmen”. A lot of the groups looking to support sanitation businesses are NGOs. They are highly professional, experienced organisations, but not many of them have much experience in supporting small and medium businesses (never mind attracting large businesses into the sector).

A consequence of their involvement is seen in the nature of the organisations that get supported on the ground. NGOs existing relationships are often with small groups that have roots in the communities that they serve. These are often community-based organisations. The groups they turn to and assist in providing sanitation service are often community-based organisations too.

An advantage of such groups is that they know their own communities well. Local knowledge both shapes and supports their work. A disadvantage is that they don’t think or act like businesses. They are less likely than ‘businessmen’ to invest in more equipment and expand their business. In speaking with such groups you quickly get the impression that a reluctance to expand their operations has as much to do with their level of comfort and ambition as it does to do with the financial constraints (or otherwise) to expanding.

If there were more businessmen in the sector, then perhaps this would change? You would hope (perhaps erroneously) that if they’re making enough money they would look to scale up their business. That if they felt they need local-level partners, they would give as much or more consideration to local entrepreneurs as they would small community-based groups. That they would consider risk-taking to be part and parcel of what they do and embrace new activities if they see sufficient opportunity.

CONCLUSION

It does seem that the term *sanitation as a business* is gaining some momentum. Perhaps sanitation is not yet sexy, but it is certainly gaining more attention than it did a few years ago.

This paper has tried, by looking more closely at one specific sanitation market, to tease out some of the broader trends affecting the sanitation sector and, in particular, unsewered sanitation. It has looked at how this market is structured, where value exists and how this is monetised and suggested how this market is evolving. It has looked too at how outsiders are looking to support the development and professionalization of the market.

As mentioned however, the term *sanitation as a business* remains for now a catch all and with widely different views on what it means, how it should be interpreted, what 'call to action' it may suggest. As such conversations in the sector on the topic remain rather fragmented.

Although it may not be realistic to hope for much more consensus, if it were possible to focus some of the existing discussions around 'sanitation as a business', what should we focus on? Perhaps just three issues would help us go a long way:

- 1) For one, how can we drive down costs in the sector and see some rationalisation of the fragmented picture we see now? What are the major cost drivers and what practical strategies are out there to address them? How can we motivate serious investment that could be about a significant shift towards economies of scale in the sector?
- 2) What should we be looking at in terms of process and not just technical innovations? There is currently a lot of discussion around the need to 'redesign the toilet' or to find new and better ways of emptying pits or to extract the value from human waste. But less attention seems to be paid to the institutional innovations that are going to be needed if any of these technical innovations are going to be applied in the field, to be picked up and go to scale. What can we learn from how other sectors have evolved, how they have built and supported markets?
- 3) Currently there is too great a gap between those that would support the sector - whether with commercial finance or technical innovation - and those that are actually providing sanitation goods and services (which are small, informal and precarious). Is it reasonable to expect the existing operations to grow or new entrants to come into the field? What do intermediary structures that would bridge the gap between the macro and micro aspects look like? Can we move beyond the few 'development organisations' (NGOs and others) that we currently see working in this space?

This paper also addressed some broader trends that shape markets in unsewered sanitation. While a dramatic change in approach in developing countries is highly unlikely, even a marginal shift towards alternatives to centralised sewer systems could have significant ramifications for developing countries. In Africa at least, few countries have succeeded in putting in place sewerage networks of any great scale. Many inherited their networks at independence and these have not always been well maintained (never mind kept pace with rapid urbanisation). Yet attention to other forms of

waste management has been minimal; mostly those 'without' have been left to fend for themselves. Research and development into alternatives has been minimal and when it comes to technical choices, engineering approaches and norms and standards, professionals in the sector have generally taken their lead from developed countries.

If developed countries, for a range of reasons, start to take alternatives to centralised sewer systems more seriously, then we could see an important paradigm shift. Suddenly unsewered sanitation and decentralised treatment could become a focus for new towns in the developed world and not just the preserve of slums in the South. This would attract not only money and capacity into innovation and design, but would also alter the status of the sector more broadly.¹⁸

If the broader WASH sector began to take unsewered sanitation more seriously - local governments become more likely to invest and support it. Standardisation should see costs come down and processes become more sophisticated and robust. Financing should become more commonplace and easier to secure, business models more apparent.

A vision of the future? Maybe. But one thing is for sure - Jefferson County - and the investors underwriting its \$4.2 USD billion debt - surely wish there had been alternatives to the sewerage investment that drove it bankrupt!

¹⁸ Sweden is one country that is making moves in this direction. There exists a growing movement to reuse as much as possible, with new laws being put in place to support recycling. Solid waste is in the vanguard of this movement, but sanitation is also included, with new technologies being tried, institutional approaches put in place and innovation taking place. For more see http://www.siani.se/images/stories/SIANI_Policy_brief_-_Nutrient_reuse_120112_2.pdf

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