Thematic Discussion:

Private sector engagement in sanitation and hygiene: Exploring roles across the sanitation chain

Discussion Synthesis[1]

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Introducing the Thematic Discussion

The **Water Supply and Sanitation Collaborative Council Community of Practice on Sanitation and Hygiene in Developing Countries** (WSSCC CoP) and the global **Sustainable Sanitation Alliance** (SuSanA) jointly convened a month-long thematic discussion on engaging the local private sector in sanitation and hygiene. With each network having over 5,000 members working in WASH and related sectors, this thematic discussion provided an opportunity for sharing of learning and cross-fertilisation of ideas. The thematic discussion took place concurrently on both platforms with a coordinator ensuring that content was shared across both communities.

Split into three inter-linked and sequenced sub-themes that explore links between research and practice, the discussion focused on how and under what circumstances local private sector engagement can ensure sustained health and WASH outcomes.

In a paper published in 2010, Schaub-Jones aptly summarises the multiple roles of the private sector and the various sanitation "transactions" as follows:

> Within the overall sanitation market, different sub-markets exist and the linkages between them vary from place to place. Consequently, the diversity of relationships (and sanitation 'transactions' that take place) is impressive. Providers of services range from the masons that build household latrines to the entrepreneurs that build and run toilet blocks, from manual pit-emptiers to privately-run vacuum trucks. Customers for these services are perhaps even more diverse, from pay- and-go users of toilet blocks to landlords letting out accommodation, from homemakers making home improvements to

[1] Please note that as this is a summary of contributions to online discussions, the views expressed may not necessarily reflect those of WSSCC or SuSanA.

tenants emptying a shared latrine. Most sanitation transactions taking place in this context have little direct involvement of public authorities.[2]

With this diverse context in mind and with a view to expanding sanitation markets, reducing negative consequences and harnessing positive externalities, the sub-themes of the online discussion focused in turn on:

- Working with the private sector to **raise demand** through sanitation marketing and financing options including access to household credit, financing for local entrepreneurs or via other means;
- Encouraging, enabling and supporting the private sector to **meet demand** at the household level (product delivery, toilet construction, emptying services, etc.); and
- Fostering the role of the local private sector further along the sanitation chain in transport, disposal and reuse to **responsibly manage waste**.

For each area, key questions revolved around the business models and financing options that hold promise, the role of government and external agencies in enabling and supporting enterprise development, and the design of appropriate regulation for small and medium enterprises.

The summary below blends the discussions online with a sampling of the numerous resources available on the topic. Indeed the focus on sanitation as a business and sanitation entrepreneurs has mushroomed in recent years with numerous organisations (donors, research institutes and think tanks, NGOs, and impact investor / philanthropist foundations, amongst others) exploring the topic. SuSanA Forum and WSSCC Community of Practice readers are very much encouraged to help expand the resource base on the topic using this link.

Raising and Meeting Demand at the Household Level

There is an increasing emphasis in the sanitation sector on determining ways in which different stakeholder groups can work together more effectively to increase uptake of improved sanitation by poor households. Towards this end, a growing body of work recognises the contribution of the private sector to meeting general goals and objectives for sanitation coverage (and thereby contributing to public health and environmental goals). Working together more systematically and systemically helps different stakeholders groups to achieve their goals. Governments and development organizations benefit from making their investments and interventions in sanitation go further by leveraging the strengths of the private sector to reach more people more sustainably. In many ways, business owners acting in the sanitation market have goals and interests that align with those working to end open defecation or to move households up the sanitation ladder. Sanitation entrepreneurs seek to increase their customer base and sell more products or services. To make their businesses work, such entrepreneurs may potentially benefit

[2]Schaub-Jones, D. "Sanitation—Just Another Business? The crucial role of sanitation entrepreneurship and the need for outside engagement." Building Partnerships for Development: Aug 2010. (link)

from financing opportunities, marketing and sales support, and direct or indirect capacity building opportunities.

However, there are also misalignments in the goals of private sector actors and governments or development organizations. For example, some entrepreneurs may meet their profit goals by reaching fewer people with a higher profit margin product. This business model, however, does not necessarily help governments or development organizations to reach the greatest number of people with sanitation products and services, including poor and vulnerable populations. Furthermore, populations that live in remote areas may be target populations for governments and development organizations, but would not be target customers for businesses. The cost of delivering products and services to hard-to-reach areas would outweigh the potential revenue small businesses might earn from in those communities.

Whilst various agencies are trying to determine how best to support the sector, some development approaches (like subsidy schemes) may directly interfere with the longer-term viability of private businesses or at least skew the market. In addition, informal sanitation entrepreneurs may be hesitant to collaborate with governments because of prohibitive registration requirements or because of perceived regulatory or other threats to the way that they do or intend to do business.

These issues, amongst others, point to some of the challenges in working with the private sector to achieve development goals around raising and meeting demand at the household level. That said, significant experimentation is going on that emphasises the private sector's potential contribution along various segments of the sanitation chain and across a wide range of demographic contexts. Efforts to support and consolidate this learning is much needed.

Sanitation Marketing

Sanitation and hygiene interventions have the objective of ending open defecation and enabling access to and ensuring ongoing safe sanitation practices by households with the ultimate goal of improving health as well as dignity and other social goals. Reflected in the SDGs, Target 6.2 aims to "achieve access to adequate and equitable sanitation and hygiene for all by 2030." To encourage the adoption of improved and hygienic latrines, a range of slightly varying approaches (Community Approaches to Total Sanitation (CATS), Sanitation Marketing, Community Led Total Sanitation, amongst others) have emerged that seek to foster demand and encourage appropriate responses from providers in terms of supplying households with options. Applicable largely to both rural and urban settings, these all introduce a behaviour change communication component.

With regard to the topic at hand, Sanitation Marketing in particular introduces an explicit commercial component aimed at businesses. Such interventions seek to encourage businesses to develop the right products and services that are easily accessible to households at affordable price points. Sanitation marketing therefore requires strong partnerships and coordination of various government departments and development partners to enable or catalyse a response from entrepreneurs and financiers with (a more aggregated) demand from households/consumers at the

centre.[3] Such partnerships also have a function in protecting consumers through awareness raising not just on the need for investments in sanitation but what investments make sense. As Laurence Hamal noted in the forum discussions, users should "be aware of what to look for and how to verify the quality of a product" within the conditions of access to water, local materials, technical guidance on groundwater levels, etc.

As Lillian Mbeki stated, in rural areas, getting to Open Defecation Free (ODF) status involves "creating a community movement to get everyone to adopt a new social norm [through CLTS]... Sanitation marketing is therefore an important element in building on gains made through CLTS… to provide households with the products, services and knowledge that they need to build improved latrines and sustain the behaviour." That said, Nicholas Morand noted that when settlements are dispersed, households do not place much of a priority on a proper sanitation facility. In response, Amaka Godfrey concluded that if sanitation marketing is to facilitate the sustainable toilet use amongst households, it may require a complete rethink on the type of toilet that they will then be attracted to pay for. For this, supportive and consistent technical and financial assistance from development partners or national initiatives is required.

Behaviour Change

Looking at viable means of promoting and achieving behaviour change, Elisabeth von Muench suggested that we need to understand the nature of demand or the household aspiration more clearly. This would lead to more targeted product or service delivery offers that take into account, for example, whether households are keen to invest in a toilet in the home or whether a pit latrine away from the house is acceptable. Referring to a forum held by the London School of Hygiene and Tropical Medicine (LSHTM) on "creativity in behaviour change",[4] Von Muench goes further to suggest that the sanitation sector needs to be reaching out more effectively to other sectors that have a behaviour change aspect or requirement. A wealth of material is available that the sanitation sector needs to be mining in order to determine appropriate designs of interventions aimed at behaviour change.

A quick scan of the materials available and presentations made during the LSHTM sessions suggest that success comes from: 1) a clear understanding of the likely "tipping points" for uptake, 2) nuanced and targeted messaging that recognises that poor households may know more than practitioners think, and thereby 3) a shift is needed from a predominant emphasis on the problem to small or easy steps that can be taken to encourage uptake of sanitation products and services.

The private sector can play a useful (and creative) role in innovating around the delivery of messages. Such innovations could include the use of a variety of non-traditional marketing mechanisms, like subliminal messaging in television programs to foster demand, as noted by Krischan Makowka.

[3] Please refer to the http://www.sanitationmarketing.com website for a range of useful resources on sanitation marketing from theory to practice. UNICEF's Sanitation Marketing Learning Series are particularly helpful.

[4] http://ehg.lshtm.ac.uk/2015/09/25/creativity-in-behaviour-change/

At the end of the day, as noted in WSP's *Tapping the Market*[5]:

> "The drivers of household decisions to stop open defecation are likely to be different from the drivers of household decisions to move up the sanitation ladder. Therefore the strategies used to motivate each decision may have to be different."

Thus the implications for the design of strategies to achieve behaviour change align with experience in other sectors regarding differentiation of message for specific target groups.

The Role of (Local) Government

Clearly there are moral, economic, environmental, public health and other reasons to expand sanitation services in poor communities. As it is recognised that it cannot deliver on these objectives on its own, the role of government in enabling the potential contribution of the private sector filtered directly and indirectly throughout all of the online discussions. Going back to basics, Marijn Zandee reminded us that the private sector cannot be expected "to create a market out of nothing" – governments (presumably including the health ministries and the education sector) [and (I)NGOs] need to "create an atmosphere where people feel that their life is not 'complete' without a decent toilet in their house." He further notes that the private sector can then promote different toilet options and technologies that respond to different aspiration levels.

If we expect the private sector to respond, as noted by Higu Kefale, then government should take the lead in ensuring that the environment is conducive and regulatory functions appropriate. It should also clearly identify the barriers that need to be overcome for the private sector to get involved. The challenge is getting the balance right among product, provider licensing, price and regulation for both public health and environmental considerations. A paper from Schaub-Jones et al note a similar balancing act to meet the needs of public, private and provider goods.[6]

Due to limited technical and staffing capacity, designing and enforcing **government regulation** was acknowledged as difficult in poor communities at the household level but also with regard to small providers. Albeit difficult, government does have an obligation to regulate given the public good [and merit good[7]] functions of water and sanitation services (Morand and Emily Endres).

Given the public health aspects and potential for ground water contamination, Patwary states that public authorities need to ensure that building codes are enforced (particularly for containment). Regulatory authorities might also need to recognize and legalize (or license) new types of vehicles for emptying and transport, and health and safety standards should be clarified to support certification. Zandee suggests that "rules should not only be enforced, but they should also be

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[5] Sy, J., R. Warner and J. Jamieson. *Tapping the Markets: Opportunities for Domestic Investments in Water and Sanitation for the Poor.* The World Bank: 2014. (link)

[6] Schaub-Jones, D., Eales, K. and Tyers, L. (2009) Sanitation Partnerships – Harnessing their potential for urban on-site sanitation. BPD. (Available at www.bpdws.org)

[7] A merit good is one that society thinks that everyone should have access to, like basic education and health care.

transparent, consistent and not change every few years." This means effectively doubling the planning horizons of support agencies (from 3 to 6 years) and continuing the move away from projectised funding to more programmatic funding.

Government could support enterprises that contribute to poverty eradication with potential tax exemptions or funding support for rural coverage, guidance on distribution mechanisms, and marketing support to enhance uptake. (See sections below specifically on finance.)

Blending the Profit Motive with Development Goals

Having discussed issues around *raising* demand, Nicola Greene kicked off the discussions on *meeting* household demand by asking how to reach development targets when entrepreneurs may seek to "reach their profit goals by reaching fewer people with a higher margin product". For construction products and services, entrepreneurs are likely to go for the easier to reach customers that can more easily access finance. There are exceptions, as Greene cites, like an emptier in Malawi she knows who claims to cross subsidize poorer customers with profits from wealthier customers. Social goals are not always front and centre for the average business owner however.

As the International Finance Corporation (IFC) notes in Transforming Markets, Increasing Access[8], the private sector is increasingly recognising base of the pyramid (BOP) consumers as a "major untapped market segment". "Beyond the reach of urban sewerage networks, most BOP families require self-funded, household-level sanitation solutions." The IFC's work with the Water and Sanitation Program has sought to clarify the size and characteristics of this market in different contexts. According to recent market research, in Kenya, the "market for latrine slabs alone [was] projected to achieve 1.6 billion Kenyan Shillings (US$19 million) in sales in 2014 [to] reach over 600,000 households." (See IFC's dedicated web page for more information on the topic.)

Thus, as noted by Valentin Post from WASTE, a growing acceptance of sanitation as a viable business should attract more talented people to work in the sector, and thereby bring innovations that foster the achievement of both social and business goals. Indeed beyond quantifying market demand, work is still needed to help businesses segment and target their business, understand and mitigate possible risks, and link up with other parts of the sanitation chain and the supply chains. Although mindful of the risks of putting off some entrepreneurs through proper regulation and licensing, solid evidence of government interest and support to the sector also reassures private sector initiatives.

Product Development

In terms of product development and meeting customer demand, Denis Alioni notes that this is a crucial stage, related to appropriateness and need. There is no one size fits all and "different areas have various issues such as collapsing soils, water logging

[8] Pedi, D. and W. Davies. "*Transforming Markets, Increasing Access: Early Lessons on Base-of-the-Pyramid Market Development in Sanitation*." International Finance Corporation (IFC): October 2013 (link).

etc … [Thus where a product fits the context,] word of mouth will start the marketing organically" and thus drive demand. As noted by a number of contributors, consistency in product quality through the use of less expensive local materials and efforts to enforce policies and standards have to be adopted. Hamal further notes that a range of designs fitting local conditions is needed. These should consider the level of access to water, availability of local materials, other technical issues and also potential rent increases with the introduction of a household toilet for renters.

Amaka Godfrey reminds us that both products (various types of latrine and slabs) and tools for installation need to be easily transported to both rural and peri-urban households. Otherwise the business models (including for sanitation infrastructure in house construction more generally) will not work due to insufficient demand or without sufficiently concentrated demand (as noted by Solomon Makanga).

Ultimately, particularly for rural areas and in the absence of an active private sector, the key considerations, according to Morand, are around ensuring long term use and maintenance of sanitation facilities, e.g. that households rebuild after the rainy season, and ensuring the quality of the infrastructure whilst allowing for the "do-it-yourself" spirit. Of some concern, Mbeki points to a recent ODF sustainability study carried out by UNICEF in Kenya this year that showed slippage of close to 20% in some areas. Some of the key reasons for reverting to open defecation included latrine collapse, and general dissatisfaction with the latrine, deemed as too smelly, shaky floor, lack of privacy, etc.[9] In such situations, Morand further notes that the supporting financial mechanisms must be designed with great care lest they create overly dependent (and presumably indebted) communities.

Aaron Ndaa notes that "consistency in quality of sanitation products is likely maintained or sustained where product development systems and processes are monitored through [standard setting and] robust policy enforcement and where violation of product development specifications are encountered, there has to be deterrent provisions in the policy. Sanctions have to be clearly outlined such that accountability is complied with. Governments need to craft policies that support enterprises contributing to poverty eradication." A key challenge as noted by Mbeki is how to support enterprises to go to scale. Another consideration as noted by Emily Endres is around government's dual roles of 1) strengthening informal enterprises, (who may see government regulation (through standard setting, permits, penalties on inadequate services / construction, etc.) as challenging and a disincentive to invest in (formalizing) their business), and 2) protecting the public good and the health of the entire community. Along with discussions with users and communities, this may lead to government roles in influencing or supporting product development.

Business Skills

To make private sector approaches work in the sanitation sector, Post from WASTE notes that small businesses can cut costs by improving technical skills to reduce unnecessary expenses. This includes recognizing the value in using local building

[9] See also Tyndale-Biscoe, P., M. Bond and R. Kidd. PLAN Inernational ODF Sustainability Study. PLAN & FH Designs: December 2013.

materials, like bamboo in many contexts. Standardizing and aggregating demand to allow for bulk purchases also helps the business (presumably if they have the cash flow to support this). He cites WASTE projects that, for example, have been able to reduce costs in this way by "at least 38% for standard double leach pit systems".

Marijn Zandee (GIZ Technical Advisor in Nepal) notes that, in his experience, "many entrepreneurs are simply good sales people," but that they would benefit from better accounting, data management and other business skills that include reading the market. Like community motivation events, single training events without follow up support to entrepreneurs will ultimately not have that much influence on the market. Endres then picked up on the softer business skills whereby entrepreneurs must have the knack to recognize and seize business opportunities, critical for the long-term success and sustainability of sanitation entrepreneurs. She emphasizes the need to encourage entrepreneurs to focus on customer satisfaction and expanding their customer base (rather than focusing on high margins with a few wealthier customers). With little competition in nascent markets and infrequent service requirements, **small business owners** may not make the connection between poor customer service and unhelpful business outcomes (through a lack of customer retention). Managing the business also requires attracting and retaining skilled workers. She asks what experience has there been in training these softer business skills to entrepreneurs in the sanitation sector.

Reza Patwary of Bangladesh notes that part of this business acumen is being able to offer choices to clients that meet their design and materials requirements depending on budgets available. It also means having a view of the whole market, i.e. understanding the horizontal and vertical integration needs of the sector. The market would benefit from a closer relationship between suppliers (sanitation product sellers) and construction service providers, but also the marketing of sanitation products and the marketing and delivery of sludge emptying and/or transportation services. Numerous organisations have contributed to thinking around joining up the sector in this way.

Whilst a number of contributors focused on business skills, several also highlighted that users / customers should ideally be aware of what to look for and how to verify product quality within the conditions of access to water, local materials, technical guidance, etc. This may obviously require a fair bit of support.

Household Finance for Sanitation[10]

Reverting back to an earlier discussion, a key starting point for sanitation marketing is in understanding poor households' willingness and ability to pay. Ability to pay and affordability obviously revolve around household income and household priorities combined with the options available. Martin Muchangi from AmRef Kenya helpfully noted that where willingness to pay is high but ability is low, then the focus should be on the product, i.e. ensuring that the product is designed in such a way as to meet the hygiene needs, convenience and affordability of the consumer. Where

[10] For further reading on this topic and microfinance for water and sanitation in particular, the reader is referred to a recent compilation of resources put together by Improve International and available here.

willingness to pay is low but the ability is high, then the focus should be on the promotion.

Higu Kefale reminds us that willingness to pay requires careful study and relates to a range of contextual factors. These include aspects of access and privacy (i.e. whether we are referring to household, shared or public latrines), understanding of the linkages between sanitation and health, satisfaction with current arrangements, and concerns about safety and security (particularly around girls and women's access).[11] Interestingly, the Kabarole, Uganda study (see footnote) found that family size can have a significant influence whereby families with numerous children were more likely to invest in sanitation at the household level to avoid the continuous cycle of children passing illness around to each other. Willingness to pay notwithstanding, affordability becomes a key factor for selecting different options for products and services. Thus, the poorest quintiles may undoubtedly seek the lowest cost solution that may, for example, involve mechanical emptying where insufficient income patterns leave poor households with little option but to pay for a partial emptying of full latrines by the bucket.

Experience and formative marketing research has shown that households do not prioritise sanitation financing. A key question was thus around how we structure micro-credit financing to make it attractive for households to take small loans for sanitation. In response, Alioni notes that, "many [households] prefer to pay with cash and not supplier credit or loans. However, rural communities in Uganda specifically accept their local Village Saving Schemes soft loans of 1% interest per month." He goes on to suggest that "provision and marketing of improved sanitation products needs to include a do-it-yourself component because most rural folks build and repair their facilities and will not pay for a mason or entrepreneur to do it for them. We should not forget that the primary role is accelerating achievement of improved sanitation in communities."

Thus, financing policies should be such that interest on loans is predicated on concessionary terms as opposed to the current regime where the prime motive is profiteering. Where interest regimes are high, product developers become apprehensive of taking loans to finance their operations. At household level, savings and loan initiatives should be effectively promoted and linked with financial institutions created to support sanitation funding.

Godfrey reiterates that from previous research and experience also in rural Kenya, there is little willingness by households to take up micro-credit for sanitation products, bearing in mind that credit is fairly expensive up to 24% p.a from some MFIs. Thus accessing credit as a registered community-based organisation (CBO) seems to be a good option, where groups can then purchase products in bulk and distribute to members. This works better when the loan is taken as a 'top-up' to an already existing loan or when the sanitation product is bundled together with other home improvement products, such as water tanks or solar lamps. As Utami said, "taking a purely sanitation loan still remains a very low priority for most consumers."

[11] Francis, A. "Willingness-To-Pay For Improved Sanitation Among Rural Communities in Kabarole District (Uganda)". Undated but presumed to have been drafted in 2015. Accessed at http://www.statistics.gov.hk/wsc/CPS202-P20-S.pdf on 2 December 2015.

Although the jury is still out on the uptake and success of these financial products, there is a need for thorough training of borrowers to reduce high rates of default. To elevate buy-in and extensive information dissemination, there is need to embark on wide marketing initiatives using different but responsive media to deliver the messages. Recent efforts by WASTE and AmRef in Busia and Kilifi (Kenya) in partnership with national banks (K-Rep and Family Bank) are attempting to crack this market through a multi-pronged approach of working with households and "natural leaders" in rural communities, building material entrepreneurs, and public health officials who are keen on promoting ODF in their counties.

Godfrey notes that "…the challenges are very different in poor urban settlements. The complexity of pit emptying, the increasing urban population and the limited availability of space for continuous construction of pit latrines is shifting the technology of choice to sewer network.[12] The combination of sanitation marketing and micro credit could go a long way in increasing demand and uptake. The major issue is that micro credit for sanitation in urban areas can be potentially high. House owners not only need to build a water-borne toilet, but they also have to pay for connection to the network. Some utilities are beginning to pre-finance both the connection to the sewer network and also the installation of [water-bourne] toilets. This cost is then spread over several months and collected through the water bills. The main challenge that is common is that the majority of the utilities do not have the capital for this level of pre-financing. Some have started raising the required capital by imposing a sanitation tax, in the form of a percentage on the monthly water bill. Sanitation marketing combined with micro credit or pre-financing can help increase uptake of safe sanitation in urban poor settlements."

Requiring further study as they are contested in terms of their effectiveness, some argue that the widespread use of sanitation subsidies to support poor households in investing in sanitation may in fact distort the market. Subsidies tend to be inappropriately targeted (or easily accessed by the wrong target group), encourage costly designs that may be difficult to rebuild or empty or challenging to source sufficient water to run, or may create false demand leading to hardware that is not used.[13] Complicated to design and often cumbersome to administer, a clear analysis of their potential impacts against their intended objectives is needed to make subsidies effective at the household level.

Finance for Small and Medium Sized Enterprises

Leading on from the discussion at the household level, questions were then raised by Lillian Mbeki about the role of financiers and banks for product developers and installation entrepreneurs. Providing funding to private providers to reach rural households may be where there is greatest need. As noted by Utami Dwipayanti,

[12] See also Satterthwaite, D, D. Mitlin & S. Bartlett. Editorial: Is it possible to reach low-income urban dwellers with good-quality sanitation? In Environment and Urbanization. (IIED: Vol 27- No 1) April 2015. Volumes 1 and 2 both focus on sanitation and drainage in cities and provide a wealth of articles on related topics that will be of interest.

[13] Evans, B., Voorden, C. van der and Peal, A., 2009. *Public funding for sanitation - the many faces of sanitation subsidies: a primer*. Geneva, Switzerland: Water Supply and Sanitation Collaborative Council, WSSCC. (Available at http://www.ircwash.org/sites/default/files/Evans-2009-Public.pdf)

finance may be needed to cover the high cost of transport particularly to rural areas. Otherwise small businesses are likely to pass these costs on to households. Subsidies, on the other hand can, may be provided in the form of guarantees and subsidised loans to purchase start up equipment for small operators, which may then have the effect of reducing the costs of services to the end user. (Evans et al., pg 18)

Some contributors suggested that tax exemptions should be considered for companies or micro enterprises that promote products and services that expand coverage to poor communities. Capacity building initiatives need to be explored and investments structured such that materials can be widely distributed. Thus products will become more available at cheaper prices to users. If the market can be aggregated effectively, the product manufacturers and distributors will still realise significant income flows as huge volumes will be churned out to users. Supporting small entrepreneurs is a difficult balancing act, however. A key consideration around formalising small businesses is whether they will then gravitate towards larger public and commercial sector contracts (again higher margin, fewer customers) and thus reduce their potential contribution to poorer households.

To highlight the financing challenges, Greene provided an example of supporting sanitation businesses in Malawi whilst with Water for People. She notes that access to capital in Malawi is very restrictive with loans even from micro-finance institutions at an interest rate of 40 percent. To overcome this, "Water for People tried to support Gulper businesses by establishing 'lease to buy' schemes where the business owner would get an interest-free loan for the equipment. The business owner would make a deposit on the equipment and was also required to prove there would be sufficient safety gear for staff before being considered as eligible. End of month payments were then collected via mobile money to save time and money (though some expressed distrust of the system!) until the cost of the equipment had been repaid."

In the scheme, equipment costs were subsidized. Ordinarily, a Gulper costs around US$300 and the required 20 liter barrels were another US$150, but Water for People required a payback of only the Gulper costs. This system worked well, but Water for People questioned whether financing like this was getting them too involved in the chain. In terms of monthly management, busy NGO staff might forget to collect these monthly payments or may feel reluctant to chase the entrepreneurs for the repayment over the 18-month period. Sanitation Solutions in Uganda do something similar, but they also include a vehicle. They GPS track the vehicle to make sure it is being used for pit emptying. They also require a minimum number of receipts from the treatment plant to show the business is actually emptying latrines and bringing waste to the treatment plant. These receipts are necessary for the terms of the loan to apply.

At the end of the day, Water for People found that transport costs were too high, margins too small and the prospects too risky to attract most investors. Even significant potential market value of removing sludge per week proved too challenging for the mid-sized businesses that Water for People was originally seeking to entice into the sanitation sector. Ultimately fairly unsophisticated but robust and easy to repair technologies, like the Gulper, have proved to be the most viable and

attractive investment, purchasing only the technology and 6 plastic barrels. Water for People found that resilient business owners could cope with fluctuation in demand but they lacked entrepreneurial spirit and any ambition to take risks. Efforts have been underway to overcome some business model challenges that create low profit margins, create "entrepreneurs" out of service providers who are not keen to stay in the sanitation business for long (due largely to public stigma), and support financing efforts to reduce the cost of doing business particularly around transport (seen as one of the biggest challenges by the SPLASH research consortia lead by WEDC). [14,15]

Although the Water for People experiences provide much food for thought, several contributors noted that national and local authorities can play a role in making entrepreneurs aware of emerging opportunities across the whole chain. Ultimately to meet the needs of low income households, incentives for businesses may need to be put in place with reduced rates of interest or (partial) subsidy schemes for the un- and underserved (as identified and targeted presumably by local government) or businesses should be encouraged to cross subsidize across different client bases. Microfinance and other financial support from financial services institutions could help with the purchase of equipment and mechanical devices as long as the projected cash flow (based on demand and projected expenditures) looks sound for the business. Coming back to the appropriateness of subsidies, Daoporto warns though about the potential distortion of the market, whereby subsidizing sanitation "entrepreneurs' selection, incubation and acceleration" should always follow some form of competitive process.

Daoporto also reminds us that we should not be considering all low-income families as homogenous but rather that market segmentation is essential to determining "enabling conditions to stimulate growth". This also means doing away with NGO and local government mechanisms that provide toilets for free in areas where families can afford to invest in sanitation under market mechanisms. He further states that "the overuse of 'blind subsidies' in the on-site sanitation sector is the primary cause that harms private sector's interests in this area." Patwary reminds us, however, that sanitation finance may need to be below average market interest rates to encourage investment particularly where public health risks are high. Related to this and with regard specifically to subsidies, Zandee notes that creating a market with subsidies with the intention of weaning entrepreneurs off these later proves very difficult and ultimately unhelpful. Thus there is ample food for thought but perhaps conflicting experience and recommendations on the issue of subsidies.

Particular Aspects Further Down the Sanitation Chain…

Although less pressing perhaps in rural settings, in many cities across Africa and Asia, onsite sanitation technologies cover the vast majority of populations with the

[14] The reader should refer to the enlightening explanations in the YouTube video provided by Water for People on their ambitions and experience in trying to entice and support entrepreneurs in the sanitation sector. https://www.youtube.com/watch?v=4K0MCgGjPyM&feature=youtu.be

[15] For a somewhat different view on local private entrepreneurs, the reader should see Mougoué, B. et al. Analysis of faecal sludge management in the cities of Douala and Yaoundé in Cameroon. In *Sustainable Sanitation Practice: Faecal Sludge Management*. (EcoSan Club, Issue 13: Oct 2012)

management of sludge then posing a huge challenge.[16] That said, the primary emphasis in the sanitation sector has been on achieving universal coverage rather than addressing the public health and environmental issues further down the sanitation chain of emptying, transport and disposal/reuse. Much of the discussion in the online forums regarding challenges further down the sanitation chain focused on similar issues as those raised above of government licensing and regulation particularly with a view towards ensuring health and safety (both occupational and for the general public). It was noted that public campaigns could be jointly organised by public, private and civil society groups to raise much needed awareness about different aspects of this end of the sanitation chain including the need for both significant investment and solid and enforceable regulation. It was noted that the financial and capacity constraints of managing or regulating these types of services particularly for smaller towns should not be underestimated. That said, the planning requirements to join up the services (across geographies, providers, and relevant authorities) would be more cumbersome for larger cities.

Transporting Sludge

One of the most challenging aspects of the supply chain is transportation. Reza Patwary notes that in most cases, collection and transportation are very much linked together as a service. However, in case of an unregulated environment, faecal sludge collection is closely linked to convenient disposal where the household is more likely to cover the costs. In a regulated environment, transportation may be linked more to designated discharge sites and thus perhaps more likely administered with the municipality as the contracting agent. The trick is to link up these different elements more closely.

In Bolivia, Monica Ayala notes that a regulatory resolution requires that water utilities register their service providers for faecal sludge transport in their localities. Whilst 28 sludge collecting and transport companies have been officially registered in Santa Cruz, for example, many more operate throughout the country without registering as there are no economic incentives or social pressures to do so.

Patwary goes on to note that faecal sludge management (FSM) may have much to learn from solid waste management, although there are clear differences depending on whether solid waste is collected directly from the house (with households more likely to agree to pay for this direct service) or from a community collection site. Again as noted above, payment for businesses involved in community collection sites may more likely come from recycling onselling or from municipal contracts. Municipal contracts allows for greater attention to health and safety and other regulations.

Thus transportation to designated sites remains a key issue whereby a small quantity of sludge translates into high fuel costs. Static or mobile secondary transfer stations can reduce the transportation cost drastically. However, like vacutugs, mobile transfer vehicles also need to be registered and recognized legally to make the transportation business formal and encourage investors. Bäuerl draws attention to a

[16] See www.sandec.ch/seek for an example of practical research in this area (Sludge to Energy Enterprises in Kampala)

WSUP initiative in Maputo that is supporting a local entrepreneur through loans for equipment and training as well as the construction of a transfer station.[17]

Disposal, Treatment and Reuse

According to a paper by Kone et al, an estimated 2.4 billion users of on-site sanitation systems generate faecal sludge that goes untreated, resulting in pervasive environmental contamination.[18] Public health risks combined with inadequate disposal options (due to insufficient landfill investments, transportation challenges mentioned above, etc.) are driving research on the potential uses of FS for agriculture and as fuel.

A key aspect of promoting thriving businesses to innovate in this space relates to technical aspects like pre-drying sludge to reduce transport costs and enhance its uses[19,20] but also a municipality's ability to regulate against illegal dumping in drains and rivers. Patwary suggests that FSM businesses can be a commercially viable business overnight if access to drains is restricted, i.e. that businesses and households cannot dump their waste in local waterways. This would immediately raise the demand for emptying and sludge transportation.

Financial viability remains a question as to who would actually pay for treatment and who will build the system. There is an emerging consensus that sludge treatment plants should be built by the authorities or development partners. This could leave the operation profitably run by the private sector, who would be regulated to ensure environmental safety of the operation and also commercially operate the recovered resources, e.g. renewable energy or organic agricultural input.

Treated faecal sludge as an agricultural input calls for promotion and marketing among farmers – as experience from Thailand reveals that a municipality gradually revised pricing of such compost from free to market-driven prices. (Patwary contribution) Thus in many countries, government would also need to revisit its position on fertiliser subsidies to allow for reuse products to have a fairer shot at agricultural markets. For reuse, Hung Anh Ta notes that the government or local authority needs to establish a clear rule of law and legal framework registering reuse and by-products from faecal sludge. Only then will customers begin to have confidence in using the products.

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[17] Cowling, R. "Achieving sustainability: guiding entrepreneurs to independence." WSUP Practice Note: September 2013. (available at link)

[18] Koné, D. Cofie, O. O. & Nelson, K. 2010 Low-cost options for pathogen reduction and nutrient recovery from Faecal Sludge. In *Wastewater Irrigation and Health. Assessing and Mitigating Risk in Low-Income Countries* (P. Drechsel, C.A. Scott, L. Raschid-Sally, M. Redwood & A. Bahri, eds). Earthscan, London, pp. 171-188.

[19] See Murray Muspratt, A., et al. Fuel potential of faecal sludge: calorific value results from Uganda, Ghana and Senegal. In Journal of Water, Sanitation and Hygiene for Development (IWA Publishing: 2014) pps 223-230.

[20] See also Harrison, J. and D. Wilson. Towards sustainable pit latrine management through LaDePa. In *Sustainable Sanitation Practice: Faecal Sludge Management*. (EcoSan Club, Issue 13: Oct 2012)

Ta goes on to note that the most important shift that would influence the sector would involve a business model that is focused on reuse and by-product markets. "Once we can have resource recovery, FS by-products can be utilized and the whole value chain changes from cost-based to value-based." With more money in the system, this may allow for differentiated charging based on ability to pay. Research programmes like those of Sandec on resource-recovery for energy production help to tackle several issues with one joined up solution.

Magdalena Bäuerl suggests that thriving businesses at this end may help us to reduce costs further down the chain to the household level. This may require government intervention initially to ensure sufficient quantities to make a business worthwhile, contracting transport companies to provide sufficient quantities of sludge combined with pressure on illegal dumping. She further asks whether market competition would help create efficiencies while driving down costs.

Further thoughts

Numerous institutions are working on how to expand coverage for sanitation services and the potential roles of the private sector to meet the Sustainable Development Goals. Less contentious than for water, the private sector increasingly features in the sanitation sector as delivering services, developing products and playing a role in marketing. Donors and funders are seeking ways to provide development assistance in this area, though many are mindful of not distorting the market, or may be cautious of funding potentially risky businesses. In many instances what is perhaps needed most is equity investments or more targeted lending for small(ish) businesses seeking to expand a sanitation-related business.

Whilst the focus in these online discussions has been mainly on the local private sector, there is also an emerging discussion about the role that large companies can play in supporting the sanitation sector. Usually through Corporate Social Responsibility related initiatives, this may have a more immediate objective of supporting preventative health programs for employees, their families and their communities. A healthy labour force with growing purchasing power is in everyone's interest. Along with recognising the impact of the effluent coming from their own manufacturing processes, companies are also increasingly recognising the detrimental effects that poor sanitation infrastructure may have on their access to high-quality water resources.[21]

There does not seem to be consensus on the role of finance and subsidies in sanitation. Some contributors suggest that the public good nature of sanitation with its impacts on health and the environment require public funding. This makes good sense although designing citywide contracts and / or shifting financial contributions for smaller service delivery arrangements after programs are up and running might

[21] Please see Schulte, P. and M. Fenwick, Exploring the Business Case for Corporate Action on Sanitation. CEO Water Mandate – White Paper: Sept 2014. (available at http://ceowatermandate.org/files/Sanitation.pdf)

prove challenging.[22] The related roles of external agencies need to be thought through carefully so as not to distort the longer term sustainability of the sanitation sector. Again there is much experimentation going on in this regard.

A further aspect is the multi-dimensional role of the public sector given sanitation's relation to public health, environmental aspects, small business development, land use planning and other aspects. A joined up approach at the municipal level (particularly where the utility only has responsibility for sewered connections) often proves particularly challenging for a host of reasons. The private sector, though perhaps unlikely to get involved in supporting such overarching coordination processes, needs reassurance that its efforts and investments will be safeguarded, hopefully in a predictable regulated environment.

Ultimately the conversation logically flows back to the comment by Hung Anh Ta that sorting out the end of the value chain with reuse as the goal should prove a real game changer. This would impact on each segment of provision further up the chain. Although there is much research and experimentation still needed regarding how reuse practices best ensure public health but also create the conditions for financial viability, this must surely be a prime contributor to resolving the sanitation sector's growing public health and environmental risks.

Guiding Contributors

On Raising Demand at the Household Level (Sub-theme 1):

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- Lillian Mbeki, Consultant

On Meeting Demand at the Household Level (Sub-theme 2):

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On Private Sector Engagement further down the sanitation chain:

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Overarching Moderator (and drafter of this overview document)

- Ken Caplan, Director, Partnerships in Practice (Discussion Co-ordinator)

To view the complete discussion on the SuSanA Forum, click **here**.

[22] For information from Durban's experience on the contracting and procurement angle, please see Harrison, J. and D. Wilson. Towards sustainable pit latrine management through LaDePa. In *Sustainable Sanitation Practice: Faecal Sludge Management*. (EcoSan Club, Issue 13: Oct 2012)