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**WATER, SANITATION AND HYGIENE SERVICES BEYOND 2015:
IMPROVING ACCESS AND SUSTAINABILITY**

**Is the sanitation sector ready for the post 2015 goals?
lessons learnt from Zambia**

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The new post 2015 targets and indicators for sanitation pose a new challenge for the sector. Developing countries will have to achieve sanitation service provision which goes beyond access to a toilet and ensures the adequate management of excreta beyond the containment facility. To establish whether the sector is ready for such a challenge, this paper looks to draw upon research findings from informal settlements in Lusaka, Zambia. The presentation will define factors which should be addressed that may directly impact on the achievement of the post 2015 indicators and how successfully they can be monitored.

Introduction

In the early 2000s, many world leaders pledged their agreement to targets that vowed to free people from extreme poverty and uphold the principles of human dignity, equality and equity (United Nations, 2014). From here, eight Millennium Development Goals (MDGs) were created that set measurable time bound targets to tackle key development issues across the globe (ibid). The 7th MDG, target c, focused on water supply and sanitation access and called on countries to “*halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation*” (WHO/UNICEF JMP, 2012).

JMP indicators

To monitor progress the World Health Organisation and UNICEF’s Joint Monitoring Programme for Water Supply and Sanitation (JMP) reports every two years on progress towards achieving this target (WHO/UNICEF JMP, 2012). Since 2008, the JMP has defined sanitation access using a sanitation ladder which moves from open defecation to improved facilities via unimproved and shared facilities (WHO/UNICEF JMP, 2014a). An improved sanitation facility is defined as one that “*hygienically separates human excreta from human contact*” (WHO/UNICEF JMP, 2014a). The definition is based on two main indicators; access to an improved technology type and the number of households sharing the facility (WHO & UNICEF, 2008).

Although progress has been made globally since the creation of the MDGs to improve the sanitation situation for the world’s poorest, there is still an estimated 2.5 billion people who lack access to improved sanitation (WHO/UNICEF JMP, 2014b). A number of scholars have argued that the JMP indicators are poor gauges of progress due to their sole focus on technology and ‘counting toilets’. This does not divulge other critical factors, such as how excreta is managed (along the Sanitation Value Chain), user habits or the sustainability of the facility (Jenkins and Sugden, 2006; Sutton, 2008; Kvarnström et al., 2011; Reed, 2011). Despite such views, the JMP have been increasingly successful in engaging and collaborating with countries to ensure that meaningful data is collected nationally and collated globally, and to ensure fair comparability between countries.

Post 2015 targets

Since 2011, the JMP has facilitated a large-scale consultative process and established four working groups including leading organisations in the sector, to propose appropriate new targets and indicators for drinking water, sanitation and hygiene (WASH) post 2015 (WSSCC, 2014):

- To eliminate open defecation
- To achieved universal access to basic drinking water, sanitation and hygiene for household, schools and health facilities

- To halve the proportion of the population without access at home to safely managed drinking water and sanitation services
- To progressively eliminate inequalities in access

Specifically in relation to sanitation the proposed indicators go beyond a sole focus on the containment facility and prescribes that the safe transportation of faecal sludge to a designated disposal/treatment site or treatment in situ will be required for households to be deemed to have access to a 'safely managed' sanitation service (WSSCC, 2014). This is in line with the sanitation value chain framework and the principals of Faecal Sludge Management (FSM) which have become key concepts/ideas within the sanitation sector (Kennedy-Walker *et al.*, 2014).

Sanitation value chain and faecal sludge management

The idea of sanitation as a resource has been widely acknowledged within the sector. To be successful, it has to link management of wastes (at the household level) via collection, transport and treatment to ultimate reuse or disposal of by-product, known as the Sanitation Value Chain. Supporting the idea that human waste has a value that should be exploited. In conventional sanitation systems this is through the use of sewerage networks which transport wastewater from the household to conventional treatment systems. From here the by-products of treatment can then be reused (or disposed of).

FSM is a sanitation system which involves the manual or mechanical emptying of Faecal Sludge (FS) from onsite sanitation systems, and transportation of waste to treatment facilities using road-based equipment (O'Riordan 2009). Various combinations of fixed infrastructure and transportation technologies can be used within FSM service delivery and are discussed in detail by Tilley, Lüthi *et al.* (2008). The role of FSM as a viable, affordable and sustainable technical solution for the safe management of FS has achieved traction in recent years with many scholars emphasising its potential for meeting the global sanitation challenge (AECOM, SANDEC *et al.* 2010, Chowdry and Kone 2012, Peal, Evans *et al.* 2014, Strande 2014).

Focus of this paper

Whilst the proposed post 2015 targets and indicators for sanitation will resolve some of the issues outlined with the previous JMP indicators they bring with them a new challenge. The paper will highlight some of the challenges for the sanitation sector in attempting to achieve and monitor success (and failure) in the post 2015 sanitation targets, by drawing upon observations from field work conducted in Lusaka, The Republic of Zambia.

Lusaka case study

Lusaka is the capital city of The Republic of Zambia and like many cities in developing countries the majority of the population uses onsite sanitation facilities (Government of The Republic of Zambia, 2011; TetraTech, 2011). The JMP estimates indicate that sanitation coverage in urban Zambia is relatively low with only 56% of the urban population being reported to have access to an improved facility in 2012 (24% shared, 18% other unimproved and 2% open defecation) (WHO/UNICEF JMP, 2014c). For middle and high income residents who live in planned areas of the city, sanitation service provision exists through access to a conventional sewerage system or onsite septic tanks with formalised FSM services. For those living in low income informal settlements (where 60% of the population reside), privately owned pit latrines which are commonly shared among several households are estimated to be used by approximately 90% of households (UN Habitat, 2007). These facilities are commonly poorly designed and constructed without formalised design standards and are shown to pose a high risk to the surrounding environment and public health through the contamination of groundwater resources (Von Münch and Mayumbelo, 2007). Once full, limited sanitation service provision exists and so the common emptying practice comprises of manually emptying the facilities and dumping the faecal waste indiscriminately, causes further risk to the environment and public health (Peal, 2012).

In 2013 and 2014 respectively, the commercial utility Lusaka Water and Sewerage Company supported a pilot Faecal Sludge Management (FSM) service in two informal settlements, Kanyama and Chazanga. The pilots consisted of providing a service to manually empty and transport faecal sludge from onsite facilities at the households, treat the sludge at a community level decentralised anaerobic treatment facility, and to dry and sell the resulted biosolids (WSUP, 2014).

Research was conducted in Lusaka, Zambia in 2013/2014 as part of a UK Engineering and Physical Science Research Council project. The research aimed to develop methodologies to better understand the existing sanitation situation and to help identify socio-technical factors which currently provide barriers to sustainable sanitation service delivery (in particular FSM) in informal settlements in Zambia. The findings presented in this paper are based on primary data which was collected from household level questionnaires (N=169) from three informal settlements in Lusaka and a series of key informant interviews (N=35 at city level, N=14 at community level) with

key stakeholders from Lusaka's sanitation sector as well as observations made by the principal researcher during time spent in Lusaka. Information from secondary data sources allowed triangulation of the primary research findings and provided further information which fed into the research findings presented.

This paper presents some of the research findings that relate particularly to the post-2015 sanitation agenda.

Research findings

The findings of this research are divided into two areas of discussion, challenges for the achievement of the post 2015 sanitation targets, and challenges in monitoring them.

Challenges for achievement of post 2015 targets

Whilst the importance of the sanitation value chain and the safe management of FS through FSM has been an emergent theme within the sanitation sector in recent years, there are limited examples of successful schemes that achieve full resource recovery from waste or that utilise FSM that are replicable for varying contexts and that support these framework in reality (Opel and Bashar, 2013, (Kennedy-Walker *et al.*, 2014). This creates a gap in the sector so more practical examples are required to support progress. Whilst some steps have been taken in Lusaka to provide practical examples through pilot projects, the critical step moving forward is to ensure lessons are learnt and fed back into further improving and scaling up interventions.

Political will

A lack of resources, and cultural and political willingness to support sanitation was observed in Lusaka, with very little recognition being given to the importance of the 'value chain'. In particular, service delivery and support for those in the population that rely on onsite sanitation systems was particularly weak. From discussions with stakeholders there was shown to be a clear issue in terms of convincing policy makers that sanitation has a value and requires increased funding and support (especially for onsite sanitation systems and related to FSM). There was shown to be a primacy towards the implementation of conventional sewerage systems away from the management of FS from onsite systems that the majority of the population of Lusaka use. For the post 2015 goals to be achievable, high level buy in and support needs to be achieved especially where FSM is concerned.

Donor agency funding

The remit of donor agencies, on which the majority of sanitation interventions in Zambia rely, was also shown to be a factor impacting on this sector. Prior to 2013, plans (supported by donors) focused on achieving improvements in sanitation through the construction of containment facilities (i.e. Ecosan) or the upgrading or extension of the existing conventional treatment system (MASTERPLAN). To support the post 2015 agenda, especially in relation to onsite sanitation systems, a change in the approach of funding allocation and the types of plans supported by donors would have to be made to ensure that interventions that focus on the safe management of faecal waste through the value chain are prioritised and supported.

Legality of informal settlements

In Lusaka the majority of the population live in informal settlements which have varying status of legal tenure. Inconsistencies in Zambian laws mean that the legality of informal settlements and the tenure status of residents can affect sanitation access. In particular, it affects how responsibility for sanitation is defined and causes service provision to have ambiguous associated responsibility. For the safe management of faecal sludge to be attainable, the legality of such settlements, tenure status of households, and roles and responsibilities of stakeholders, needs to be clearly defined so that appropriate service delivery can be achieved.

Informal service providers

Currently in Lusaka the FSM service delivery in informal settlements is illegal in practice. Whilst existing practices (illegally dumping FS) are adversely affecting public health, it should be recognised that these individuals and informal organisations play a vital role in sanitation service delivery. In particular, they are providing a service where one does not currently exist and so whilst there is no formal emptying service being provided their activities should be supported rather than be stopped or made punishable. In the case of Lusaka, the pilot FSM projects have employed previously informal emptiers within the formal system. Lessons can be learnt from this approach by ensuring that existing informal stakeholders are incorporated into proposed service delivery. It is also vital to ensure that whilst we strive to achieve the post 2015 indicators, we are constantly aware of what is achievable in terms of new or improved service delivery and that the activities of those deemed informal or illegal are not stopped without an improved replacement service being provided.

Inherent complex dynamics

Kvarnström *et al.* (2011) highlighted that, as the ambition of sanitation interventions grow, and FSM becomes more inclusive of the whole value chain, the more complexity that is involved, i.e. higher associated costs and greater management and logistical requirements. Whilst working in informal settlements in Lusaka, it was clear that the informal nature of these areas and the poor status of the existing sanitation situation would further increase the challenge ahead to achieve these indicators. There is a high level of difficulty associated with working, engaging and providing services in such contexts. These were not just observed as technical difficulties in terms of providing toilets, access for emptying, or treatment facilities, but also related to social factors. In Lusaka the dominant institutions and actors that control the development and running of informal settlements were shown to directly impact on the success of activities and programmes implemented. The power of such stakeholders was clearly linked to politics. It was observed that precedence appeared to be given to any activity (both legal and illegal) that would improve individuals' and parties' political advantage in informal settlements. Therefore achieving improved service provision and delivery in such environments will require a good understanding and ability to work successfully within the complex political context that exists.

Dominant institutions

The health sector was shown to be the dominant institution providing services and support related to sanitation in informal settlements. Whilst sanitation closely relates to and affects public health, the curative nature of the health sector's approach caused their interventions to commonly have limited focus on long-term sustainable solutions to the sanitation problem being faced. To overcome this problem, the institutions and stakeholders that should drive sustainable sanitation service delivery need to become more dominant in these environments, or further engagement with the health sector is required to convince them of the benefits of providing more preventative and long-term approaches to sanitation.

Challenges for monitoring post 2015 targets***Limitations of JMP monitoring***

Whilst originally the JMP indicators were not designed for local practitioners and instead as a rudimentary global measure, Lusaka like many countries has embraced the approach and has used such indicators within internal statistics to define sanitation access. The focus has been on defining progress through containment technology type and not on the safe management of excreta. The monitoring tools devised and used within Zambia (and the world over) will therefore have to be updated to adapt to the changes defined by the post 2015 indicators. The current monitoring system is relatively simple to administer due to the indicators required, whereas the proposed 2015 indicators are far more complex and will require a much more labour and resource intensive monitoring process.

Function ladder approach

The Kvarnström *et al.* (2011) 'function approach' ladder moves away from monitoring progress by assessing the type of technologies in use and alternatively focuses on assessing how excreta is managed throughout the whole sanitation value chain rather than just at the collection point. At the containment level the methodology provides an observational checklist that provides information about the status of: the household's sanitation facility; management of FS; user habits and behaviour; and the surrounding environment (Kvarnström *et al.*, 2011). This approach provides a useful starting point for monitoring how effectively sludge is managed at the household level (focus of the post 2015 indicators) and was used in the Lusaka case study to assess the current FSM practices. Whilst using the approach it became clear that monitoring FSM in a meaningful way is challenging; in particular, how to establish whether faecal sludge is being adequately contained (so not to cause adverse public health risk) without the need for an in-depth longitudinal analysis of the substructure and surrounding hydrogeological situation.

Monitoring informal activities

Monitoring activities beyond the containment level was found to be difficult, especially when trying to monitor the activities of stakeholders who are currently informally or illegally providing FSM services. Due to the nature of their work, these stakeholders were difficult to identify and work with. This may have an impact on the practicalities of being able to monitor accurately the informal sector's role in FSM. Overall the results from Lusaka indicate that establishing a monitoring system that will ensure progress towards the post 2015 goals and indicators can be meaningfully monitored may be a challenge.

Conclusion

This paper outlines some of the possible challenges ahead for the sanitation sector as we move into the post 2015 sanitation agenda both in achieving the required goals but also how progress is monitored. Whilst it is appreciated that these goals and their application are still at the early stages and it will take time for transition to occur, it is still important to be clear early on in the process as to some of the major challenges that may be faced and how they could be addressed. By drawing on practical experience based on field work conducted in informal settlements in Lusaka, this paper provides a range of insightful discussion points, in particular in relation to the new post 2015 sanitation agenda and how it relates/impacts on onsite sanitation service provision in informal urban settings. Whilst these reflections are site specific, the issues raised are also applicable to the wider sanitation sector. Overall the following points are the main lesson learnt:

- Both in Lusaka specifically and sector wide there needs to be more practical examples of projects that successfully achieve FSM service delivery, in particular in informal settlements, and exploit the value from human waste. Where projects are implemented (both successful and failed) findings need to be better documented so lessons can be learnt.
- In Zambia political will and the buy in of 'dominant' institutions needs to be achieved so that an environment which will support the exploited of the sanitation value chain and the use of 'alternative' approaches, such as FSM to manage waste streams from onsite sanitation systems that are currently neglected.
- Donor agencies also need to support such approaches (sanitation value chain and FSM services) through their funding mechanisms and development role within Zambia's sanitation sector.
- More attention also needs to be made to how the post 2015 goals can be realistically achieved and monitored in complex informal urban settlements such as those studied in this paper. In particular, attention needs to be given to support countries in the transition to the new set of 'goalposts' and the development of simplistic tools to allow them to monitor progress in a meaningful way.

It is hoped that during the presentation of this paper there would be opportunity to discuss these lessons with the wider audience and in particular discuss ideas of how some of the difficulties discussed may be practically overcome.

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