

Is ‘access to adequate and equitable sanitation’ for all by 2030 achievable? Perspectives from sector experts on what needs to change to realise the Sustainable Development Goal

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ABSTRACT

The global community has set the goal of universal access to sanitation by 2030. In the face of limited progress, business as usual is not an option for sanitation sector actors. Through an expert consultation, this paper aims to shed light on the changes needed. Experts believe that in the past, sanitation was regarded as a taboo and a private issue, and given low political prioritisation. This resulted in inadequate financing, capacity and institutions. Programmes were implemented in an uncoordinated manner outside government systems. They focused on infrastructure, neglecting behaviour change or addressing it with blanket approaches. The poor remained unreached, especially in urban areas. Poor collaboration and insufficient learning hindered progress in the sector. However, experts also highlight that prioritisation has nowadays reached unprecedented levels, opening up opportunities for progress. A consensus is starting to emerge on how to address past blockages and on the key knowledge gaps and sector priorities, including focusing on how to deliver urban sanitation, ensuring government leadership and sector harmonisation, and getting better at changing behaviour. However, it will be even more crucial that the key institutions in the sanitation sector display leadership and move towards more collaborative, adaptive and learning-oriented ways of working.

Key words | post-2015, sanitation, Sustainable Development Goals, universal access

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INTRODUCTION

The last period of the Millennium Development Goals (MDGs) and the preparation for the post-2015 era witnessed a very intense consultation and discussion process in the water sanitation and hygiene (WASH) sector, and especially within the sanitation community. The fact that the sanitation target was one of the most off-track among the MDG targets, and that universal access has become the ambition in the Sustainable Development Goals (SDGs), justifies this amount of discussion and reflection (UN 2015). Although there has been significant progress in household sanitation coverage, it has been concentrated on the wealthiest quintiles and has hardly kept up with population growth; the total number of those unserved has decreased

very slowly and nowadays 2.36 billion people still lack improved sanitation (WHO & UNICEF 2015). Moreover, there are rising concerns about sustainability (Jenkins & Sugden 2006; WaterAid 2009), sanitation in institutional settings (Velleman *et al.* 2014) and the lack of evidence to address the challenges of urbanisation (Kennedy-Walker *et al.* 2014). Business as usual is therefore not an option; the sanitation sector needs a step change if universal access is to be achieved by 2030. But what does this ‘sector step change’ look like?

The question requires looking back and reflecting on what have been the key blockages, successes and lessons learned during the MDG era, as well as understanding the

opportunities and challenges that the new global scenario presents. It is then possible to look forward and set the priorities towards universal access by 2030.

There have been several publications looking at the lessons from past sanitation experiences and trying to discern the way forward, and some common themes seem to emerge. Lack of political priority in the international scenario appears as a common key challenge (Black & Fawcett 2008; Hueso 2013). Approaches in sanitation programmes, despite innovations and improvements, suffer from inertia and do not seem to have been effective or scalable enough (WHO 2003; Kennedy-Walker *et al.* 2014; Wijesekera & Thomas 2015). On the one hand, there has been a narrow focus on sanitation as technology only or on technology and behaviour, neglecting the service dimension of sanitation and the fundamental political and administrative realities involved (Feachem 1980), as well as missing out the need for multi-disciplinary capacities (Templeton 2015). On the other hand, there is a lack of cyclical and adaptation in the sector's way of operating, failing 'to break away from the known shortcomings of past practice, to build on experiences and lessons learned' (Carter 2013). This is in turn linked to the fact that the sector has tended to be very technical, and has not made enough efforts to understand how the interests of institutions and stakeholders shape the performance and problems of the sanitation sector (WSP 2011).

On the institutional side, there has been insufficient collaboration among the different actors involved (Jenkins & Sugden 2006), failing to contribute to the necessary cross-sector effort that could position sanitation as a national mission (Northover *et al.* 2014).

This research picks up on these issues and contributes to the reflection process through a consultation with sanitation experts from various sector institutions, analysing their views on these themes in the transition from the MDG to the SDG, as well as on what the priorities for the sector are. This allows us to visualise the changes the sanitation sector must undergo to respond to the 2030 challenge.

METHODS

The research methodology consisted of a rapid review of relevant literature from key sector agencies and from WASH-

related academic journals, used to frame the research and identify the key issues to explore. This was followed by an expert consultation using individual semi-structured in-depth interviews. Around 30 sanitation experts were contacted and 18 interviewed, including seven from international development agencies and organisations (UNICEF, Gates Foundation, Plan International, the World Bank's Water and Sanitation Program, IRC), six from academia (WEDC, University of North Carolina, EAWAG, London School of Hygiene and Tropical Medicine, Stockholm Environmental Institute) and five independent consultants.

The initial sampling of respondents was purposeful, identifying a diverse array of sanitation experts from key sector institutions. This was then complemented by snow-ball sampling, whereby the interviewees suggest other people to talk to. The interviews took place in late 2014 and early 2015. Two factors determined the total number of interviewees, namely, time constraints and reaching saturation in key areas of interest. Notes were taken during the interviews and later analysed. This involved categorising the answers by theme, using descriptive codes to cluster them, colour-coding according to the type of informant (consultant/agency/academia), and then summarising the key points in highlights.

Interviews opened with questions on the lessons learned from the MDG era, starting with general blockages and then diving into the way sanitation was approached and how sector actors worked together. This was building on the issues identified in the literature review, as summarised in the introduction. Then, questions looked at the opportunities and challenges ahead, focusing on knowledge gaps as well as the sector priorities in the 2030 agenda. Due to time limitations, it was not possible to ask all the questions to each interviewee, and some prioritisation was done depending on expertise. The interviews were conducted face to face whenever possible, but most were carried out over the phone or via the internet. Quotes from the interviews were shared with interviewees for consent, and are anonymous wherever they preferred that option. The main limitation of this research is a bias towards perspectives from global (Northern) development experts, which is related to ease of access and time constraints. Information may have been lost in note-taking too.

The next section presents the findings from the consultation, structured according to thematic logic, touching

upon the key issues identified from the MDG era and teasing out the future priorities.

RESULTS AND DISCUSSION

Low priority as the key blockage

There was a high degree of consensus on the reasons for poor progress toward the sanitation goal during the MDG era. The key problem identified was the low priority given to sanitation, both at the community and political levels, with a mutually reinforcing effect. In the words of a specialist from an international agency: 'Short answer: lack of demand or interest by communities and households and/or lack of high level political will to address this. I could argue either way about which comes first' (Eduardo Pérez).

In an attempt to explain why sanitation is such a low priority, interviewees mentioned the taboo around sanitation and the fact that it is not politically 'sellable', unlike water. For these two reasons, government and development partners were less willing to engage in sanitation.

Moreover, there has been a perception of sanitation (and WASH in general) as a low performing sector in which it is risky to invest, and one that does not offer enough reliable and fundable initiatives at scale. Closely related to this, sanitation is seen as a low-impact domain in terms of development outcomes, probably because impacts are diffuse, whereas other intervention areas under the MDGs, such as bed nets for malaria and immunisation for child survival offer more tangible and attributable gains. However, the existing knowledge gaps in the sector – presented in detail later – have also played a role in this perception. A further reason behind the lack of government prioritisation of sanitation has been its framing as a private or community issue instead of as a public good. This is also linked to the approaches and perspectives of sanitation programmes, discussed in a later subsection.

Nonetheless, it must be noted that there has been significant improvement in the political prioritisation of sanitation over the past decade at the global level, exemplified by the inclusion of access to sanitation as an MDG target (WHO 2003), the declaration of the International Year of Sanitation (UN-Water 2008) and its recognition as a Human Right (UN

Committee on Economic Social and Cultural Rights 2010). This has been reinforced by the emergence of new donors willing to fund sanitation and a general rise in the profile of the sector. Despite this improvement, the level of prioritisation does not yet reflect the scale of the global sanitation challenge. As one international agency employee put it: 'Is the glass half full or half empty? There has been a massive increase in interest, but the starting point was so low that there is still a long way to go' (Tom Slaymaker).

The consequences of this lack of priority were manifold, but two aspects stand out across most interviews: financing and institutions.

The amount of finance available was considered to have been insufficient to address the scale of the sanitation crisis, but the quality of finance was also a concern. On the one hand, aid spending was poorly coordinated and inadequately aligned with government budgets; on the other hand, public finance mechanisms were also inefficient. In addition, spending was biased towards capital expenditure and infrastructure projects, neglecting operation, management and service provision. These points resonate with the results from regular sector reviews (WHO; UN-Water 2014).

With regard to institutional issues, a substantial problem was fragmentation; in many countries the mandate over sanitation was split between different government ministries and departments, resulting in lack of leadership and poor coordination. Especially worrying was the fact that sanitation has fallen into a silo and, in most cases, was detached from the roles and responsibilities of health institutions and health workers, despite public health being an important goal of national sanitation efforts. An additional institutional obstacle was the decentralisation of the responsibility for sanitation provision not being accompanied by increased finance and capacity for planning and implementation at the local government level.

Recent improvements to both financing and institutional issues have been modest, compared to the rise in political prioritisation of sanitation. This is also partly caused by poor collaboration, as discussed in the coming subsection.

Collaboration and accountability in the sector

Very diverse responses were prompted by the question addressing the level of collaboration in the sector, that is,

how well the key stakeholders work together. Members of international organisations and agencies recognised that there are some challenges and that levels of collaboration vary from country to country. But they also highlighted that there has been substantial progress, especially through the WASH sector consultation process around the SDGs, which has helped build consensus and bring people together. Academics, and especially some of the consultants, were more critical – ‘We are not a particularly collaborative sector’ (Clarissa Brocklehurst) – and thought that projects are often implemented by different organisations in an uncoordinated manner in the same region, and with little engagement with government. They pointed to various non-collaborative behaviours of organisations, such as competing for funding or failing to disseminate and share information and lessons learned.

Two interviewees highlighted that some actors, such as academia, are not sufficiently involved in the sector and that there is a lack of dialogue between different communities within the sector. One example of this is the disagreement and poor communication between those focused on on-site sanitation and those looking at wastewater management. Other interviewees questioned the depth of the existing discussions in the sector: ‘Is there meaningful discussion? Many times it stops in a fairly empty statement nobody will disagree with’ (academic 1).

In any case, there was consensus about aid sector financing structures being the main cause of these behaviours – ‘Decision making is money-driven’ (Barbara Evans) – as they foster competition instead of collaboration, tend to focus on single solutions, and require reporting on isolated impacts of the intervention funded.

This also affects accountability between governments and development partners, that is, how they share responsibilities, respond to expectations and are held to account for their work. Development partners many times end up being more responsive to donor requirements than to local priorities and needs. This contributes to the institutional and financing challenges mentioned earlier. Several interviewees also pointed out that the Regional Sanitation Conferences and the Sanitation and Water for All partnership, although useful in creating political capital and coordination platforms, have not managed to deliver clear improvements in terms of accountability.

Approaches to sanitation

In relation to the way in which sanitation has been understood, and the approaches used in most programmes, a key problem identified by the interviewees was the narrow understanding of sanitation as ‘infrastructure’. This was the case during the MDG era, especially the first half, in which behavioural dimensions, environmental issues and wider aspects of sanitation as a service were neglected. There was an ‘obsession with capital investment instead of OPEX and management’ (international development organisation 1), focusing on supplying toilets instead of promoting behaviour change, and little attention was paid to maintenance and service delivery mechanisms, resulting in low sustainability rates. The indicator for measuring success against the sanitation target under the MDG – household access – is considered to have reinforced this narrow focus, but incentives related to corruption and to loans from development banks have also contributed to the bias towards capital expenditure and infrastructure.

In rural sanitation, the rise of the Community-Led Total Sanitation (CLTS) approach during the 2000s is seen as a welcome sector shift towards a broader perspective, with a clear emphasis on collective behaviour and demand creation, mainstreaming open-defecation free status as the aspiration of sanitation programmes. There were critical voices too, questioning the idealised notion of ‘community’ in which CLTS is rooted, the myth that households will move up the sanitation ladder on their own, and the fact that it is diverting the focus from public service provision: ‘Community-led approaches emerged in the absence of effective local governments (...) That is fine as an interim solution (...) [The sector] has lost view on community-led approaches, which are seen as an ideal instead of as a sub-optimum’ (Tom Slaymaker).

The predominant view seemed to be that CLTS played a key role in the evolution of the sector, but needs to be complemented with other approaches to ensure sustainability. In that respect, the recent rise of sanitation marketing was seen as promising. Getting the private sector involved in sanitation could bring increased efficiency and sustainability, but bearing in mind that ‘it is not a panacea and should not be seen as end in itself’ (Pete Kolsky). Most interviewees thought that ideological debates should be avoided and that

approaches should be adapted and combined according to each context and situation. For instance, sanitation marketing can complement CLTS to encourage movements up the sanitation ladder, perhaps with a third micro-financing component.

The common element of these approaches is the rejection of subsidising household sanitation hardware, which appears to be almost a sector-wide consensus currently. However, two interviewees from international organisations expressed their concern about the implications in terms of inequalities; approaches like CLTS or sanitation marketing have failed to consistently reach the poorest. They also reinforce the view of sanitation as a household and community problem, shifting the responsibility away from governments and neglecting institutional strengthening.

The story for urban sanitation is somewhat parallel, with a predominant focus on large infrastructure for wastewater and on household toilets. The move towards behaviour change has not been as strong in the subsector, with not much beyond slum level pilots of CLTS adaptations and sanitation marketing innovations. Collective public health issues such as faecal sludge management have been left to the informal market and infused with the myth of full cost-recovery through tariffs. In the words of one academic: 'People don't realise that moving and managing shit is expensive and cannot be recovered from tariffs' (Barbara Evans). Systematic engagement in planning processes and efforts to involve city authorities have been rare, with few exceptions in recent years.

Several experts pointed out that some of these challenges are related to the inherent complexity and context dependence of sanitation. The fact that this complexity is insufficiently acknowledged is a key problem; the sanitation sector suffers from programming inertia – 'There is too much programming where we continue to do things without seeing if it makes a difference' (Jan-Willem Rosenboom) – and gets stuck in dogmatic debates as if a single approach could solve the whole equation: 'Sometimes there are religions in sanitation and hygiene, [people] believe in one approach and exclude other approaches' (Alana Potter). Instead, 'we need a conversation to decide where each solution fits and how to bring them all together in the right place and moment' (Clarissa Brocklehurst). This is related to insufficient reflexivity, and poor collection, use and

dissemination of evidence within the sector, on which the next subsection elaborates.

Learning and knowledge gaps

As mentioned earlier, knowledge gaps in the sanitation sector have hindered progress and reduced the willingness of different actors to engage and invest. There has been significant progress both through increased sophistication of global monitoring mechanisms and the amount and quality of research, which is also communicated in international learning and exchange events. However, there are still many unanswered questions.

Changing mindsets could be more important and urgent than filling knowledge gaps, looking at some of the issues raised by different interviewees. They felt that certain groups within the sanitation sector are not open to feedback or criticism and sometimes do not recognise failures and challenges. As noted by consultant 1: 'About what works, it is an honesty gap, really ... we are too busy trying to deliver results-based solutions'. Related to that, the dissemination and use of existing knowledge and lessons from the past is weak: 'We know a lot but people don't use it! There is a lack of dissemination and proactive learning, too. We don't know about some things (...) but most things are out there, people are reinventing things' (consultant 1). In an expanding sector with new actors emerging, this is an area of concern, as they may end up repeating past mistakes.

Interviewees discussed many knowledge gaps, which are organised below into thematic clusters, listed in descending order of the number of interviewees that mentioned them.

The most frequently mentioned thematic cluster was urban sanitation. Highlighted gaps relate to challenges such as doing urban sanitation planning, how to deal with the entire sanitation chain, how to implement effectively and how to find the best technological options, all with a special focus on small towns and informal settlements or slums.

The other prominent cluster was linked to how to change behaviour, primarily in connection with rural sanitation. Although the sector has improved the quality of evidence in this area, it is still unknown how best to change defecation practices in complex socio-cultural environments, how to increase the rate of success of CLTS

or how to ensure behaviour change is ingrained into social norms.

Other knowledge gaps related to working at scale: having a clear picture of how to best prioritise and use increased financial resources, how to ensure an enabling environment (including both institutions and legislation) and how to decrease production costs to supply at the scale required.

A smaller cluster related to working cross-sector, from getting the health sector involved and paying attention to sanitation in health centres, to finding cost effective ways to ensure WASH in schools.

The last cluster related to equity, namely how to reach the poorest and ensure that they are served. Other gaps mentioned were menstrual hygiene management, understanding the contents and risks of faeces, listening to customers, and the links between antibiotic resistance and sanitation.

Finally, two interviewees also expressed some concern about the sector research agenda and rigour. They felt it is time to move on from proving that sanitation is important to focusing on 'how' to do it. Operational research will be important in the coming era, and calls for rigorous work that goes beyond using evidence to draw general conclusions or to make simplistic recommendations for scaling-up that overlook contextual differences.

Priorities towards 2030

Most interviewees shared an optimistic outlook for the 2015–2030 period. Although there are obstacles ahead, they feel there is an unprecedented level of political prioritisation which has the potential to tackle existing challenges. The responses to what the three top priorities for the sanitation sector in the post-2015 era ought to be, showed a certain degree of convergence.

In line with its prominence among the knowledge gaps, urban sanitation was the most frequently mentioned priority – featuring in eight interviews. In a context of increasing rates of urbanisation, the sanitation sector needs to solve challenges along the sanitation value chain, such as transportation of sludge, or ensuring that faecal sludge management is not neglected at the expense of wastewater. There were diverse opinions on whether prioritisation of urban sanitation may pose a risk of neglect or provide an opportunity for rural sanitation.

The second priority cluster, mentioned seven times, was about ensuring government leadership and sector harmonisation. This included ensuring that governments (national, city, local) prioritise and actively coordinate the provision of sanitation services, making sure there is adequate collaboration and alignment of development partners' activities and funding with government priorities, thus improving accountability mechanisms.

Six interviewees mentioned the SDG as a key priority, ensuring both that the sanitation aim was accepted – as it has been – and that it comes with the appropriate indicators. Views on what these would look like were diverse though. However, one academic cautioned of the risk that the 2030 ambition remains only tenuously linked to those doing the actual job on the ground. Without sufficient local planning and engagement to figure out how these targets can be achieved, local implementers will be 'faced with the same problems as before' (Pete Kolsky).

Three different priorities came next, featuring in five interviews each.

One focused on developing institutional mechanisms and building the required capacities. In the views of those interviewees, the scale and nature of the sanitation crisis requires a huge leap forward in terms of numbers of staff that need to be trained, ensuring a sanitation workforce with cross-disciplinary skills, and working within an adequate institutional framework (regulation, planning, monitoring, incentives and retention mechanisms).

Another priority deals broadly with working cross-sector, primarily engaging with the health sector. This is meant at all levels, whether at the strategic level – ensuring public health considerations are central to sanitation, and that health sector actors do not neglect preventive interventions – or the operational level – linking sanitation habit formation to health promotion and ensuring adequate sanitation in health care facilities. Some of the interviewees extend this last aspect to education; ensuring adequate sanitation services in schools, as well as to other institutional settings.

The third of these priorities raised by five interviewees highlights the need for more learning and debating. On the one hand, the sector needs to be more aware of the lessons from the past, and then better coordinate research to fill existing knowledge gaps. On the other hand, it is important that evidence is well communicated, shared and used, especially

at the national level. To do this, it will be necessary to open up the discussion, instead of being too diplomatic or consensual.

Three different clusters of priorities featured in four interviews each.

One cluster centred on reaching the poorest in order to reduce inequalities, which is seen as one of the most challenging areas. As mentioned earlier, how to do this is still a knowledge gap, and interviewees did not provide any specific focus moving forward. Moreover, one academic disagreed with this view, questioning whether focusing on the poorest is a wise and cost-effective path towards universal access.

Another priority cluster concerned ensuring adequate financing, mainly ensuring funding streams and mechanisms contribute to addressing the key bottlenecks of the sector, instead of leading to piecemeal interventions, duplication and competition. There were more nuanced views in terms of quantity; while globally more funding will be critical, in some countries 'money is hardly an issue' (international development organisation 2).

The last of these three clusters referred to the need for more flexibility in terms of approaches used on the ground, acknowledging that different strategies and approaches are needed for different settings. The need to challenge the 'no hardware subsidy' consensus, in order to ensure sustainable sanitation for the poorest, was specifically highlighted by a member of staff from an international agency.

Finally, priorities mentioned twice include moving from pilot projects to working at scale, broadening the perspective through which issues of sanitation are conceptualised, and addressing socio-cultural and psychological dimensions of behaviour change.

CONCLUSIONS

After slow progress during the MDG era, the sanitation sector is at a crossroads. The business as usual path will make the 2030 universal access goal a wishful aspiration and a lost opportunity. This research contributes to the discussion on the substantive changes required in the sector in order to get on the path of accelerated progress.

Seeing the relatively high degree of consensus in the responses of the interviewees (although consultants and academics had more critical views), it can be said that key

sector experts have similar perspectives on lessons from the past and on what needs to be done.

The research confirmed the key issues or themes that surfaced in the literature review, but also added some nuance and new perspectives. Political priority, for instance, was confirmed as a key past bottleneck in which substantial progress has been made (Black & Fawcett 2008; Hueso 2013), recognising though that it is yet to be fully translated into adequate finance and the right institutional arrangements that break the sector silo and make sanitation a public health priority and a multi-sectoral issue. Collaboration is still lagging behind (Jenkins & Sugden 2006), especially at the local level, partly due to the financing structures and accountability mechanisms sector donors put forward. Concerns about existing approaches (Feachem 1980; WHO 2003; Wijesekera & Thomas 2015) were echoed in the interviews, but at least at the discourse level, there might be nascent consensus on the need for more flexible ways of working, combining various approaches and adapting to context and feedback from the ground and engaging more with wider institutional issues. While making this happen for rural sanitation is difficult but possible, urban sanitation is recognised as a less sizeable issue, due to the wider range of technical, institutional and political aspects involved, which extend well beyond the sector's comfort zone.

A set of priorities emerge from this consultation, with urban sanitation at the top of the ranking, followed by ensuring government leadership and sector harmonisation, getting the right Global Goals monitoring mechanisms, developing institutions and capacities, working cross-sector and improving learning and debate. Some of these will require filling knowledge gaps, especially on urban sanitation, behaviour change, scale, working cross-sector and reaching the poorest. However, there is an acknowledgment that the attitudinal gap might be bigger than the knowledge one; the sector needs to operate in a more open and learning-oriented way.

An agenda for the sector emerges from this consultation, revealing what those trying to contribute to universal 'access to adequate and equitable sanitation' by 2030 need to do, but even more importantly, how they need to work. It is indeed the 'how' that will be critical and most difficult to change, as it involves deeper internal shifts among sector actors – mindsets, attitudes and ways of working with

others. Recent sector developments like the SWA collaborative behaviours point to a similar direction (SWA 2015). As happens with any deviation from the status quo, these shifts will inevitably face inertia and resistance. The question remains whether sector actors will display the leadership required to undertake these changes successfully. It will be a substantive task, but unless it is completed, decisive progress towards access to 'adequate and equitable sanitation' for all by 2030 will be unlikely.

REFERENCES

- Black, M. & Fawcett, B. 2008 *The Last Taboo. Opening the Door on the Global Sanitation Crisis*. Earthscan, London.
- Carter, R. C. 2013 Editorial: business as usual will not do ... but there are alternatives. *Waterlines* 32 (2), 97–99.
- Feachem, R. G. 1980 Community participation in appropriate water supply and sanitation technologies: the mythology for the decade. *Proc. R. Soc. Lond. B* 209 (1174), 15–29.
- Hueso, A. 2013 *Pathways to Sustainability in Community-Led Total Sanitation. Experiences From Madhya Pradesh and Himachal Pradesh*. Universitat Politècnica de València, València.
- Jenkins, M. W. & Sugden, S. 2006 *Rethinking Sanitation: Lessons and Innovation for Sustainability and Success in the New Millennium*. Human Development Report Office Occasional Paper, UNDP, New York, USA.
- Kennedy-Walker, R., Evans, B., Amezaga, J. & Paterson, C. 2014 Challenges for the future of urban sanitation planning: critical analysis of John Kalbermatten's influence. *J. Water Sanit. Hyg. Dev.* 4 (1), 1.
- Northover, H., Ryu, S. K. & Brewer, T. 2014 *Achieving Total Sanitation and Hygiene Coverage Within A Generation – Lessons From East Asia*. WaterAid, London, UK, pp. 1–9.
- SWA 2015 *The Collaborative Behaviours* [online]. Available from: <http://sanitationandwaterforall.org/about/the-four-swa-collaborative-behaviours/> (accessed 19 August 2016).
- Templeton, M. R. 2015 Pitfalls and progress: a perspective on achieving sustainable sanitation for all. *Environ. Sci. Water Res. Technol.* 1 (1), 17–21.
- UN 2015 *Sustainable Development* [online]. Available from: www.un.org/sustainabledevelopment/water-and-sanitation/ (accessed 19 August 2016).
- UN Committee on Economic Social and Cultural Rights 2010 *Statement on the Right to Sanitation*. UN Doc E/C.12/2010/1, UN, Geneva, Switzerland.
- UN-Water 2008 *Tackling A Global Crisis: International Year of Sanitation 2008*. UN-Water, New York, USA.
- Velleman, Y., Mason, E., Graham, W., Benova, L., Chopra, M., Campbell, O. M. R., Gordon, B., Wijesekera, S., Hounton, S., Esteves Mills, J., Curtis, V., Afsana, K., Boisson, S., Magoma, M., Cairncross, S. & Cumming, O. 2014 From joint thinking to joint action: a call to action on improving water, sanitation, and hygiene for maternal and newborn health. *PLoS Med.* 11 (12), e1001771.
- WaterAid 2009 *Sustainability and Equity Aspects of Total Sanitation Programmes. A Study of Recent WaterAid-supported Programmes in Three Countries. Global synthesis report*. WaterAid, London, UK.
- WHO 2003 *Looking Back: Looking Ahead. Five Decades of Challenges and Achievements in Environmental Sanitation and Health*. World Health Organization, Geneva, Switzerland.
- WHO & UNICEF 2015 *Progress on Sanitation and Drinking Water – 2015 update and MDG assessment*. Update. WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, Geneva, Switzerland.
- WHO; UN-Water 2014 *UN-water Global Analysis and Assessment of Sanitation and Drinking-water (GLAAS) 2014 Report: Investing in Water and Sanitation: Increasing Access, Reducing Inequalities*. World Health Organization, Geneva, Switzerland.
- Wijesekera, S. & Thomas, A. 2015 Taking stock: reaching the bottom billion – beyond open defecation. *Waterlines* 34 (3), 206–209.
- WSP 2011 *The Political Economy of Sanitation: How Can We Increase Investment and Improve Service for the Poor?* World Bank, Washington, DC, USA.

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