

GILBERT & KING

40th WEDC International Conference, Loughborough, UK, 2017**LOCAL ACTION WITH INTERNATIONAL COOPERATION TO IMPROVE AND SUSTAIN WATER, SANITATION AND HYGIENE SERVICES****Improving sanitation in the Niger Delta***N. Gilbert & L. King (Canada)***PAPER 2626**

Little WASH progress has been made in the Niger Delta. Using the exploratory case study method, including quantitative and qualitative data collection, the authors examined current sanitation practices, efforts made to improve sanitation, the extent to which those efforts have succeeded and what else is needed to improve sanitation sustainably. The results show the immediate need for development of low-cost, durable, and appropriate sanitation technology options, as none currently exist that address consumer needs, high water table and rainfall, shortage of land, and access issues, followed by supply chain development. The only formal behaviour change framework tried in the region is CLTS with limited results, possibly due to the proximity to water. Other frameworks such as the RANAS model (with adaptations of the questionnaires), IBM-WASH and Nudge Theory should be tested. Other recommendations include improved government services, access to capacity building and education about technology options, and opportunities to encourage knowledge-into-practice.

Introduction

In Nigeria, leading up to 2015, the sanitation Millennium Development Goal (Goal 7 (c)) fell further out of reach. Rather than improving, the sanitation conditions in Nigeria got worse. An estimated 100 million of the 180 million people in Nigeria lack access to improved sanitation, and 50 million people practice open defecation, that is, they defecate outside (“50 Million Nigerians”, 2016). “In fact, Nigeria has seen the largest increase in numbers of open defecators since 1990...” (WHO/UNICEF, 2014, p. 22). The World Bank states that poor sanitation costs Nigeria 455 Billion Naira - \$3 Billion USD – every year. (World Sanitation Program, 2012).

The Niger Delta lies in the southern part of Nigeria where the River Niger divides into numerous tributaries. The area consists of rivers, creeks and estuaries, and cuts across nine states, with a population 35 million people. It is estimated that between 50 and 65% live below the poverty level (Statistics, 2012).

‘Riverine communities’ refers to the many villages and settlements located in this region of the Niger River delta along the Atlantic Ocean. It is an area of mangroves forests, and, being near sea level, high water table. Annual rainfall varies from approximately 2400 mm. to 4000 mm., the heaviest rainfall within West Africa (Okoro, Chen, Chineke, & Nwofor, 2014, p. 635).

The people of the delta have lived through a history of conflict, terror, human rights abuses and where tribal conflict erupted with violent killing again over recent months (Arubi, E., 2013). The oil companies arrived in the 1950s and economic life changed completely (Omeje, 2004). Now environmental degradation, described by Taft and Haken, (2015) as “extreme environmental degradation” (p.9), is impacting health, fish stocks, and water quality (Crosdel, 2015; Ibeanu, 2000). These conditions have resulted in a complex social environment.

A practitioner working in the WASH sector in this geographic area, the researcher wanted to better understand the situation, and seek recommendations for improvement by learning from the experiences of government, communities, individuals, and practitioners, so as to make recommendations as to improve sanitation in the region.

Methods

As so little WASH research has been done in riverine communities of the Niger Delta, the method selected for this research was exploratory case study to establish a baseline understanding and way forward using quantitative and qualitative data collection methods. Quantitative research was used to gather survey data to establish the context for the case. To answer how and why questions, the researcher sought thick description of human interactions (Geertz 1973) by including qualitative evidence (Agee, 2009) through semi-structured interviews.

Data types, collection and sampling

Three types of data collection were used in this research.

1. A quantitative study of habits in two riverine communities, Azama, and Kokodiabene, Delta State, Nigeria were gathered using a structured interviewer-administered questionnaire. These communities have an estimated total population of slightly over 2000 people. The survey questions were downloaded onto 9 Android phones. Enumerators were trained in how to ask questions, and how to record answers on the Android phones. The data from each phone were uploaded, and compiled for analysis. Two hundred and fifty-seven (257) households (approximately 10% of the population) were surveyed. A staggered random sampling selection method was used to determine households and respondents to be interviewed during the data gathering in the field. Eligible respondents aged 18 and over were selected in each selected household, ensuring that each gender was well represented.
2. Qualitative Data through semi-structured in-depth interviews (Agee, 2009; Cachia & Millward, 2011; Creswell, 2007). The author followed the advice of Flick (2014) on how to select interviewees who have “the necessary knowledge and experience of the issue or object at their disposal... They should also have the capability to reflect and articulate” (p. 176). The sampling was purposive (Flick, 2014, p. 175). Participants were drawn from larger and smaller NGOs, from community based organizations working on community development projects, from state level RUWASSA (Rural water and sanitation teams responsible for state interventions in WASH), from local government area (LGA) WASH departments and community WASH committees. Some participants were known to the researcher from her own work, others were suggested by interviewees, using *snowball* or *chain sampling* (Coyne, 1997, p. 627). This allowed for a cross section of practitioners with differing perspectives and the realities of practice in the field, providing a diversity of experience to the project, and helped to avoid interviewer bias (Pyett, 2003).
A total of twenty-one participants were interviewed. All participants, with one exception, were local Nigerians. The one exception was an expatriate employed by a large NGO working in Nigeria. Twenty interviews were recorded and transcribed. In one case, the interview was done by phone and the network was not good enough to record the interview, so notes were taken instead. All interviews were in English. Of the twenty-one participants, six were female, fifteen were male. Three were community members, eleven worked with NGOs or CBOs (community-based organizations), and seven worked in government or consulted to government (for example UNICEF consultants assigned to work with LGA WASH units and/or community WASH committees).
3. Documents, case studies, field notes, and interview notes were kept. Journals and logs were kept to track observations and thoughts during data collection (Zucker, 2009, p. 6). The researcher recorded the date, location, and notes about the in-depth interviews, and used field notes and observations gathered over the nearly 6 years of the researcher’s work experience in the region.

In approaching this research, the author reviewed the in-depth interviews seeking patterns of information. In addition, the author used other sources of data, including her own experiences and observations, to provide additional context and understanding, and add to the validity of the findings through use of triangulation. “It is clear that if similar results are found using different methods the case for stability is also strengthened” (Carruthers, 1990, p. 65).

This research required preparation of an ethical proposal and approval for both the quantitative research and the qualitative research by the Royal Roads University Ethics Review Board.

Results

Current practices, what has been tried, has it worked?

The respondents to the quantitative survey quite evenly split between men (43.5%) and women (56.6%), 40% were under 30, and 40% between 30 and 59, leaving only 20% over aged 60. Education levels were low with 65% having achieved at most primary education, and income levels correspondingly low. Only

20% earned over 20,000 Naira (then equal to approximately \$123) per month, 17% earned between 15,000 and 20,000 Naira per month, and the balance were quite evenly split between 5,000 – 10,000 Naira, and under 5,000 Naira (\$31.25) per month.

Water: Most people source their drinking water from shallow dug wells (63%), and the rest from the river (7%), or harvest rainwater (21%) with only 5% sourcing drinking water from a borehole or protected well. Many people (74%) do purchase sachet water or bottled water. Many people do not believe the water they drink is safe, yet they do not consistently treat water, and when they do, it is often with methods that do not fully de-contaminate it (such as alum), but rather reduce iron, and colour in the water. There is also very limited evidence of safe water storage or other actions to ensure safe drinking water.

Sanitation: Open defecation rates are very high. Where toilets exist they are often hanging toilets, that empty directly into the river or other water body, or where there is no body of water, into a valley or depression. People who can afford it install septic tanks or soak-aways connected to flush toilets. But these are not very safe given the high water table, rainfall, and frequent flooding (Esrey et al., 1998, p. 3). For those who defecate in valleys (communities not near water), the research indicated that people are content that rain will wash away the feces and believe this eliminates any problems.

Those who have soak-aways still need to have their tanks emptied from time to time. If truck access is possible, pits can be *sucked*. Otherwise they must be manually emptied. The contents are sometimes disposed of in unlined pits dug for the purpose, otherwise, they are disposed of into the river or bush. The situation described by Sample et al. in their study of two communities in Bayelsa state is consistent with the findings in this study. Essentially, there are few, if any, examples of safe disposal of feces in riverine communities (Sample, Evans, Camargo-Valero, Wright, & Leton, 2016).

Hygiene: Although the quantitative data suggest high levels of hand washing at appropriate times, given the lack of hand washing stations in communities and schools, this may be misleading and requires further research. There appears to be little education about the benefits of good hygiene practices. In addition, water and sanitation practices do not reflect either awareness or understanding of the importance of hygiene.

The quantitative research revealed significant levels of serious diarrhea and other diseases that are related to poor WASH practices.

What needs to be improved?

Individual WASH projects have been undertaken in the delta, but few of these function properly today. The only formal behaviour change tool reported to be used in riverine communities to achieve sustainable improved sanitation is Community Led Total Sanitation (CLTS). CLTS is part of the Nigerian National sanitation strategy and is viewed by the participants as the most effective tool to date, despite the fact that it is human resource intensive as engagement takes time and lots of follow-up. Participants also emphasized that we must recognize what the objective of CLTS is, and is not. CLTS is used to trigger a community. CLTS is not designed to assist with subsequent issues such as technology choices, and financing, yet communities need help in those areas. One participant suggested that what is needed is a combination of CLTS and sanitation marketing. Others suggested that what is really done in communities starts with CLTS, but then moves beyond CLTS into more comprehensive WASH coaching and support. CLTS builds demand but does not address supply issues. Additional issues raised which can affect success include quality of facilitation, and knowledge and training of facilitators, as well as the level of community cohesion, as CLTS tends to be less successful in heterogeneous, and/or higher conflict communities. Also, there have been studies indicating that a riverine type environment does not lend itself to CLTS as an effective intervention (Godfrey, 2010; Mukherjee, 2011; Sample et al., 2016). It should be noted that CLTS+ has been developed in a number of countries with promising results and lessons from other locations could be applied and tested in the Niger Delta. The research provided no evidence of use or testing of other behaviour change frameworks such as the RANAS model, IBM-WASH and Nudge Theory in the Niger Delta. These should be explored as possible tools.

In terms of supply, users have not been offered options that are safe, affordable, durable, and attractive to them. The technology options currently available in riverine communities, based on this research, are flush toilets (for the wealthy), hanging or pier toilets, pour flush (with variations), limited VIP latrines, a few composting toilets, dig and bury as well as cellophane bags (shot puts). Community users appear to feel they have basically two choices. Either they stick with the status quo, primarily hanging toilets and open defecation, familiar and comfortable, or they invest huge sums in flush toilets and soakaway systems, which they view as modern. The concept of conventional flush toilets and soakaways being modern ignores the

reality of dangers associated with high water table environment, and of unsafe pit emptying. No evidence of safe disposal of pit contents emerged from this research.

Given the physical environment, options such as composting toilets or biodigesters would be recommended provided feces are kept separate until benign. This could avoid the problem of pit emptying, which this research showed was currently a very unsafe practice. Riverine community members are generally washers not wipers, therefore diversion of liquid and/or addition of ash, leaves etc. allow for decomposition as opposed to dehydration (Winblad & Simpson-Hebert, 2004, p.29). Current versions of composting toilets are expensive due mainly to transport costs and the cost of concrete for the tanks. For viable, safe options to exist, innovations need to be sought, adapted with community/user input and tested.

Although there was evidence of taboos around handling feces (and memories of the British bucket system, such that composting was viewed as going backwards not forwards), the research showed some limited degree of acceptance of use of composted human waste, based on traditional practices that recognized benefits. Other concerns included the possibility of witchcraft through use of an individual's urine.

Currently, generally, there is limited capacity and knowledge on the part of government as well as many NGO and CBO staff, resulting in poor support available to communities. In the delta, there is no transparent tracking of progress that includes the activities of all stakeholders, yet, as shown in this research use of mobile phones to monitor progress had significant impact on facility functionality. Nor are there regular opportunities within the region to share experiences and turn knowledge-into-practice. Individual projects (some by government), although well-meaning, do not reflect a well thought out regional strategy, and therefore do not help move things forward in a coordinated direction. All too often, the same mistakes are repeated and funds wasted.

As confirmed by this research, stakeholders must be engaged and involved, and feel ownership of a project; key influencers play a significant role as gatekeepers, models of change and social norms, and trusted resources for information; conflict, both internal to the community and external, must be assessed and taken into account. Failure to do these things jeopardizes the success of a program.

Conclusions

The conclusions of this research are that appropriate, affordable, locally produced and sustainable technical solutions to the sanitation problems in the Niger Delta are absent. There is also a lack of knowledge sharing and coordination around potential solutions and therefore little ongoing capacity building in organizations and communities in the region. In addition, greater action is needed in terms of behavioural change, private sector, market driven sanitation strategies and government legislation, policy, and programs. These conclusions lead to my recommendations for improving sanitation in the Niger Delta. It is suggested that these recommendations be implemented in the order in which they are offered. Implementation will require leadership. Ideally the Federal government could provide this leadership. If that is not feasible, leading international and national NGOs could come together to explore and address these issues.

Limitations of methods

Limitations include the difficulty in corroborating quantitative research given the very limited data available from other sources. Efforts were made to record observations in order to validate self-reported data. The qualitative data reflects the opinions and perspectives of participants. As this is inductive research it is intended to provide useful direction for future focused research.

Recommendation one – Develop a small number of appropriate, affordable, and durable safe sanitation options

The technical problem needs to be solved – until a menu of safe sanitation solutions are available, that are durable and affordable, that can be built and serviced by local workers and address the physical realities of riverine communities, including land restrictions, there will be no significant progress. Generally, incomes are very low in riverine communities. People simply cannot afford flush toilets, and soak-aways, and despite their acceptance, their efficacy is debatable given the high water table, high rainfall environment including how quickly they fill up, frequent challenges in installation quality, resulting in cracks or breaks, and the difficulty in pit/tank emptying and lack of treatment. In developing a menu of options, lessons from sanitation marketing are useful: involve end-users in the process to ensure their needs and wants are reflected; examine the supply chain, how provision of toilets fits into other business lines, opportunity costs, and who is best positioned to provide and promote products. It is recommended that a team of stakeholders

come together to fund and lead a process to solve this problem, which could be led by an INGO, local NGO, or government body.

Recommendation two: Improve coordination and knowledge sharing in the sector

Improved coordination of activities and knowledge sharing in the sector is required in order to make significant progress. Currently, actors in the region work in silos and there is little sharing of knowledge and/or lessons learned, which results in mistakes being repeated and a failure to build on knowledge and experience gained. In addition, collaborative planning would ensure all stakeholders participate, understand needs, and coordinate activities to address problems.

A major step forward would be a regional community of practice, that includes government, NGO, and private sector actors, if possible international advisors, that holds regular sector wide meetings to share model practices, activities, update results and planning, and share experiences in order to put *knowledge-into-practice*. Build a regional plan with input from all stakeholders that can provide a road map. This could also be attractive to funders. Planning could be led by an INGO, local NGO, or government body.

Recommendation three: Build capacity and address the knowledge gap

Currently, there is no facility in the Niger Delta where someone interested in WASH can go to learn about options, see technologies, build knowledge, ask questions, or share experiences, although the ATED Demonstration Centre (PIND Foundation), in Warri, is moving in this direction. A more formal relationship between this facility and state governments and international actors could help its development. Having a place to go to see appropriate technologies, get information about cost, bills of quantity, operation and maintenance issues, obtain capacity building and technical training, and seek technical support and advice, would assist in filling a current gap. We would also recommend development of curricula and certification for various types of users – government WASH staff, NGOs, and community WASH Comm. members. This would establish standards and capacity requirements, and could also facilitate the development of operations and maintenance services to communities such as circuit rider (operation and maintenance) programs.

Recommendation four: Develop private sector, market driven approaches and enabling environment

Support for development of supply chains, and market driven approaches – the most likely way to get to scale, is needed to develop robust solutions for people wanting to adopt improved sanitation. Once Recommendation One is addressed, and a menu of safe and appropriate technologies is available, it will be necessary to offer training and capacity building to local providers of services. Government can aid by providing an enabling environment including support for financing options.

This environment would provide another opportunity for collaboration across the sector in that once the technology issues have been addressed, along with training and capacity building so that the supply is robust, a coordinated, collaborative sanitation marketing program would help to build demand.

Recommendation five: Behaviour change approaches

Behaviour change approaches need to be extended. There is abundant literature on behavior change frameworks in addition to CLTS (including CLTS+) that need to be tested and evaluated in riverine communities. Tools such as the questionnaires from the RANAS model (Mosler, 2012) can be adapted, shortened if necessary, and tested. The IBM-WASH framework is very useful (Dreibelbis et al., 2013). The results will inform behavior change interventions that should themselves be tested. Lastly, Nudge Theory provides very useful recommendations for affordably augmenting the impact of other activities, and should be piloted and evaluated in the Niger Delta (Neal, Vujcic, Burns, Wood, & Devine, 2016).

Recommendation six: Encourage significant improvements at the government level

Government has a critically important role to play in facilitating improvements and supporting sustainability. Areas that need to be addressed include facilitating development of regional plans together with milestones that are tracked, increased provision of government support services and budgets, such as WASH units at the LGA level staffed with trained, knowledgeable and accountable staff, RUWASSA's with budgets from the State government to guide and monitor, and increased capacity building through the system. Budgets need to be allocated, and impacts tracked in a transparent and accountable manner. Providing consistent, high quality support to communities and modeling best practices would improve the situation immensely. Government can benefit from learning how to be a good partner and developing

partnerships amongst stakeholders. One aspect of providing better support, information and training could be through a partnership with a centre(s) such as PIND's ATED Centre.

In addition, government could play a very significant role by implementing effective, technology based real time monitoring systems that could report progress in a transparent and timely basis, available to all.

Corruption and politically motivated gifts need to be discouraged.

Government also has an important role to play in putting into place laws and regulations that encourage improvements in the sanitation situation. This includes providing alternatives (i.e. public toilets or support for private toilets) if open defecation is to be outlawed, and creating an enabling environment that will foster private sector supply chain growth and individual adoption of safe technologies, assisting with the development of financing schemes, or providing subsidies.

References

- 50 Million Nigerians Openly Defecate. (2016, May 15). Retrieved from <http://www.vanguardngr.com/2016/05/50-million-nigerians-openly-defecate/>
- Agee, J. (2009). Developing qualitative research questions: a reflective process. *International Journal of Qualitative Studies in Education*, 22(4), 431–447. <http://doi.org/10.1080/09518390902736512>
- Cachia, M., & Millward, L. (2011). The telephone medium and semi-structured interviews: a complementary fit. *Qualitative Research in Organizations and Management: An International Journal*, 6(3), 265–277. <http://doi.org/10.1108/17465641111188420>
- Carruthers, J. (1990). A Rationale for the Use of Semi-structured Interviews. *Journal of Educational Administration*, 28(1), 63–68. <http://doi.org/10.1108/09578239010006046>
- Coyne, I. T. (1997). Sampling in qualitative research. Purposeful and theoretical sampling; merging or clear boundaries? *Journal of Advanced Nursing*, 26(3), 623–630. <http://doi.org/http://dx.doi.org/10.1046/j.1365-2648.1997.t01-25-00999.x>
- Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches* ((2nd ed.)). Thousand Oaks, CA: Sage.
- Crosdel, G. O. E. (2015). Oil multinationals and conflicts construction in oil-host communities in the Niger Delta. *African Journal of Political Science and International Relations*, 9(5), 170–180. <http://doi.org/10.5897/AJPSIR2014.0736>
- Dreibelbis, R., Winch, P. J., Leontini, E., Hulland, K. R., Ram, P. K., Unicomb, L., & Luby, S. P. (2013). The integrated behavioural model for water, sanitation, and hygiene: a systematic review of behavioural models and a framework for designing and evaluating behaviour change interventions in infrastructure-restricted settings. *BMC Public Health*, 13(1), 1015. <http://doi.org/10.1186/1471-2458-13-1015>
- Esrey, S. A., Gough, J., Rapaport, D., Sawyer, R., Simpson-Hebert, M., Varga, J., & Winblad, U. (1998). *ECOLOGICAL SANITATION*. (U. Winblad, Ed.). Stockholm: Swedish International Development Cooperation Agency.
- Godfrey, A. (2010). Documentation of CLTS Experiences with ASNANI in Nampula Province, (February).
- Ibeanu, O. (2000). Oiling the Friction : Environmental Conflict Management, 6.
- Ikelegbe, A. (2006). The Economy of Conflict in the Oil Rich Niger Delta Region of Nigeria. *African and Asian Studies*, 5(1).
- Mosler, H.-J. (2012). A systematic approach to behavior change interventions for the water and sanitation sector in developing countries: a conceptual model, a review, and a guideline. *International Journal of Environmental Health Research*, 22(5), 431–49. <http://doi.org/10.1080/09603123.2011.650156>
- Mukherjee, N. (2011). Factors Associated with Achieving and Sustaining Open Defecation Free Communities: Learning from East Java, 1–8.
- Neal, D., Vujcic, J., Burns, R., Wood, W., & Devine, J. (2016). Nudging and habit change for open defecation: new tactics from behavioral science, (March), 26 p. Retrieved from <http://documents.worldbank.org/curated/en/905011467990970572/Nudging-and-habit-change-for-open-defecation-new-tactics-from-behavioral-science>
- Okoro, U. K., Chen, W., Chineke, T. C., & Nwofor, O. K. (2014). Recent Monsoon Rainfall Characteristics Over the Niger Delta Region of Nigeria : a Casual Link. *International Journal of Science, Environment, and Technology*, 3(2), 634–651.

- Omeje, K. (2004). The state, conflict & evolving politics in the Niger Delta, Nigeria. *Review of African Political Economy*, 31(101), 425–440. <http://doi.org/10.1080/0305624042000295521>
- Pyett, P. M. (2003). Validation of qualitative research in the “real world”. *Qualitative Health Research*, 13(8), 1170–1179. <http://doi.org/10.1177/1049732303255686>
- Sample, E. D., Evans, B. E., Camargo-Valero, M. A., Wright, N. G., & Leton, T. G. (2016). zengine.pdf. *Journal of Water, Sanitation and Hygiene for Development*.
- Statistics (National Bureau of Statistics). (2012). The Nigeria Poverty Profile 2010 Report Press Briefing By The Statistician-General Of The Federation.
- Winblad, U., & Simpson-Hebert, M. (Eds.). (2004). *Ecological sanitation*. EcoSanRes Programme. World Sanitation Program. Economic Impacts of Poor Sanitation in Africa. (2012, March). Retrieved from <https://www.wsp.org/sites/wsp.org/files/.../WSP-ESI-Nigeria-brochure.pdf>
- Zucker, D. M. (2009). Teaching research methods in the humanities and social sciences: how to do case study research. In *School of Nursing Faculty Publication Series* (pp. 1–17).
-

Contact details

Nancy Gilbert is currently the Executive Director of Transform International, a network of in-country centres supporting “knowledge-into-practice” to improve development outcomes. Prior to this, Gilbert worked for 6 years developing an appropriate technology program for Foundation for Partnership Initiatives in the Niger Delta (PIND), focused on WASH, energy, and agricultural development support. Dr. King is Professor and Director of the Canadian Centre for Environmental Education and the Chair of the Undergraduate Committee, School of Environment and Sustainability, Royal Roads University.

Nancy Gilbert
#106-1035 Sutelj St., Victoria, BC Canada V8V 2V9
Tel: +1 250 415 7993
Email: nancy.gilbert@transforminternational.org
www.transforminternational.org

Dr. Leslie King, Royal Roads University
2005 Sooke Road, Victoria, BC Canada V9B 5Y2
Tel: +1 250 391 2600 ext. 4104
Email: leslie.king@royalroads.ca
