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Ifill, Shervon, and Sam Kayaga. 2019. “Faecal Sludge Emptying Services in Trinidad”. figshare. https://hdl.handle.net/2134/31483.

40th WEDC International Conference, Loughborough, UK, 2017

LOCAL ACTION WITH INTERNATIONAL COOPERATION TO IMPROVE AND SUSTAIN WATER, SANITATION AND HYGIENE SERVICES

Faecal sludge emptying services in Trinidad

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PAPER 2813

Onsite sanitation facilities meet the sanitation needs of 2.7 billion people worldwide. In Trinidad and Tobago (T&T) 70% of the population needs are met by on-site sanitation facilities which are predominantly toilets draining to septic tanks. Using a case study methodology, a study was conducted in 2016 to explore how faecal sludge emptying services are conducted in T&T. Main findings included (i) both public and private emptying providers' had an equal chance of being hired in Trinidad; (ii) lack of safe/adequate faecal sludge disposal facilities and frequent truck downtime were the main challenges for public FS emptying providers; and (iii) the two main factors for customer satisfaction are clean-up after the emptying operation, and ability to completely empty the tank. A vital recommendation is the need to identify and commission a sector leading organisation which will champion sanitation policies and strategies; and provide an enabling environment for other stakeholders.

Background

Trinidad and Tobago (T&T) is a twin island state located at the south-eastern end of the Caribbean chain of islands. T&T, an English speaking republic covering an area of 5,130 sq km with a population density (as of July 2016) of 265.8 people per square kilometre (Water Resources Agency (WRA) and The Ministry of the Environment (MIN. Env.), 2001). The cosmopolitan population to date is 1.3 million with a 0.4% growth rate (Food and Agriculture Organisation (FAO) of the United Nations (UN), 2016). Sanitation in Trinidad and Tobago involves both network (approximately 428km of sewer) and non-network systems. Onsite sanitation management has been significantly neglected for decades and little investments have been attributed towards its development in T&T. A 2011 Environmental Assessment reported that 30% of Trinidad and Tobago is serviced by centralized networked wastewater treatment systems, while 70% are serviced by septic tank, soak-aways and pit latrines (Sammy, 2011). Faecal sludge emptying services are performed by Local Government Regional Corporations (RCs) and private operators, both of whom are unregulated but highly visible in T&T. After the Beetham Wastewater Treatment Plant (WWTP) (largest in the Caribbean) was constructed (2001-2004). The Water and Sewerage authority (WASA) has since functionally removed itself as being the primary state-owned agency responsible for faecal sludge (FS) management, especially where on-site sanitation facilities are prevalent and areas where the water table is highest. The Solid Waste Management Company Limited (SWMCOL) provides the facilities for public and private operators to dispose of septage, but the enabling environment and current facilities provided by SWMCOL for septage disposal and treatment are significantly inadequate.

What is the problem? Apart from the public and private providers' unregulated FS emptying services being highly visible in T&T, the continual neglect by the relevant entities to provide safe and improved disposal facilities is increasing the adverse risks to human health and contributing to extensive degradation of fragile environments and water pollution across T&T.

Main research question

How do faecal sludge emptying providers in Trinidad operate and what factors of their services householders' are satisfied with?

Research aim and objectives

To explore how faecal sludge emptying services are conducted in Trinidad, together with determining householders' factors of satisfaction with the services and identify current gaps in those stages of the FSM service chain.

1. To identify what challenges faecal sludge emptying providers' in Trinidad encounter and understand how those challenges influence their services.
2. To identify what factors determine Trinidad householders' satisfaction with faecal sludge emptying service providers'.
3. To propose recommendations that could help bridge current gaps in faecal sludge containment and emptying services in Trinidad.

Literature review

The Millennium Development Goals (MDGs) expired in 2015 and was soon replaced by seventeen (17) Sustainable Development Goals (SDGs): a universal set of goals, targets, and indicators UN members are expected to align their political policies to in achieving sustainability by the year 2030 (Ford, 2015). The SDG goals were introduced to combat global challenges, for example, Goal 6 which deals with water and sanitation. Sewerage systems used by developing countries are considered as the most optimal solution to domestic waste management, but onsite technologies, introduced as a temporary solution, is becoming the most sustainable solution to meeting their SDGs sanitation targets (Strande, Ronteltap and Brdjanovic, 2014).

Technical considerations for FS emptying services such as modelling the containment filling rate, or selecting the best emptying technology do contribute to safe excreta management, but according to Halcrow and others (2014), research that focuses on understanding the social practices of on-site sanitation users would better target the desired capacity building for FS management among developing countries (Halcrow et al, 2014). Additionally, social considerations for FS emptying services relates to understanding the culture of both the providers and the users of sanitation facilities since local customs and cultural practices determine the appropriateness of the technology used (Webster, 2007). Subsequently, in order to sustain FS emptying providers' ability to provide their services, the low priority of financing for sanitation service provisions must be discontinued and the issue of monopolization addressed because monopolization (larger companies with multiple trucks) continuously offset the demand-supply ratios thereby limiting the profitability among small companies (one or two trucks) operating in developing countries (Mbéguéré et al, 2010; Kone and Chowdry, 2004). In conclusion it was observed that FS emptying services require an understanding of three main factors: the type of containment used along with the compatible emptying technology (manual, or mechanical), the socio-cultural nature of the users and their behavioral practices and finally the emptying providers' and their economic viability in providing FS emptying services.

Data collection methods

This investigation being the first of its kind in T&T, focused on the exploratory qualitative case study research method whereby one Constituency (41 in total in T&T) served as the case area and two embedded units of analyses (Households and emptying providers) were examined. A quota sample of 100 drop-off household surveys were printed and administered to the case area (St Joseph Constituency) in Trinidad to explore Households (HH) perceptions on FS emptying services. The questions were coded into the six (6) broad themes: Technical, Economic, Satisfaction, Social, Institutional and Environmental, adapted from the Social, Health, Economic, Financial, Technological, Institutional and Economic (SHEFTIE) factors framework. Additionally, semi-structured interviews were conducted so as to identify the challenges encountered by FS emptying service providers' and determine how those challenges influenced FSM. Both telephone and online (Skype) were the tools used to conduct the interviews. Photographic observations of containments, emptying providers' equipment (technology used) and service, as well as the disposal site were obtained. Relevant documentation relevant to the research was also sourced. Ethical clearance was obtained on the 8th July, 2016 from the Loughborough University, Ethics Approval (Human Participants) Sub-Committee.

Results

Of the 100 surveys printed and distributed, 44 HHs voluntarily participated giving a total 44 completely filled out and returned surveys. Figure 1 shows the percentage of each type of containment system used by

Households (HHs) in T&T. Among the participants who emptied their septic tanks, 34% hired either public or private operators; one provider was not selected over the other, thus emptying providers were highly visible in Trinidad.

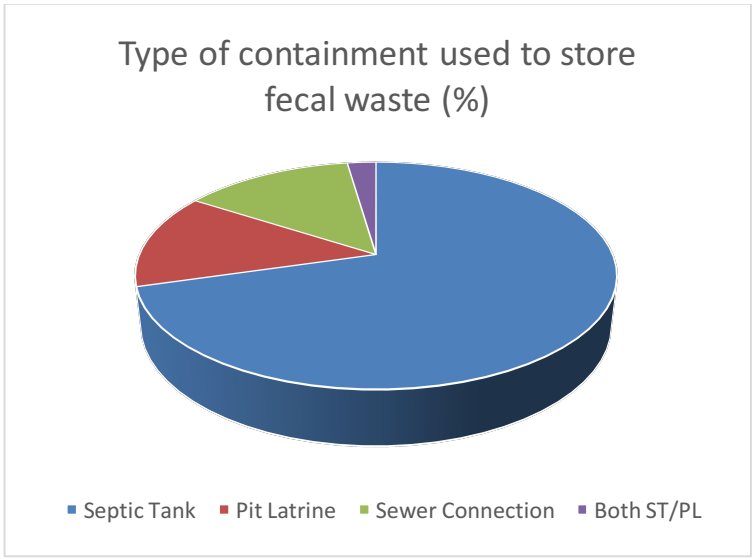


Figure 1. Type of containment used in Trinidad

Source: Ifill, 2016

Figure 2 shows the satisfaction factors assessed and their percentages. The highest scored HHs satisfaction factors were: little to no clean-up by the client after emptying, equipment used (the provider did not use any tools or materials of the client), no mess/leaks or spills (confirming the provider when they said they provide a clean service), time taken to empty the tank (once no clogs 15 to 20 minutes), ease of accessing the tank and the truck capacity to remove all the waste. The price charged (53%) and response time after appointments were made (39%) were scored lowest among the satisfaction factors.

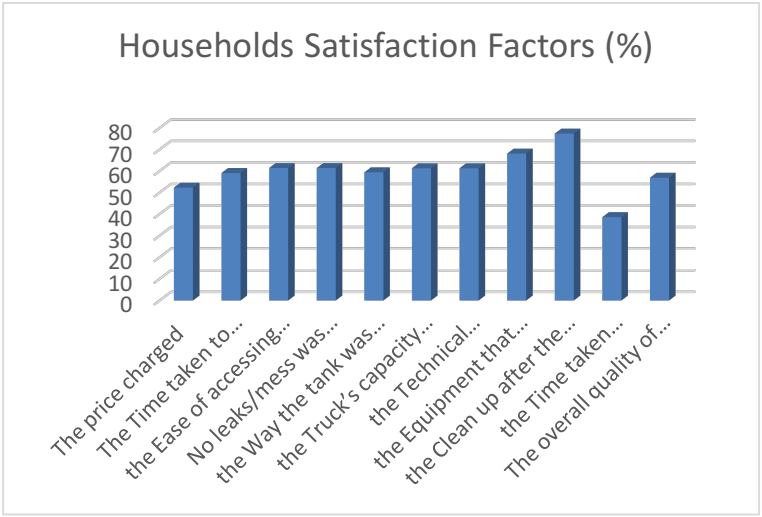


Figure 2. Households satisfaction factors

Source: Ifill, 2016

There was a low percentage of emptying among the HHs with 36% of respondents admitting that they emptied their tanks once in the last 10 years (self-built tanks had maximum storage, reducing emptying frequency). Majority of the HHs (34%) did not know where the collected FS was disposed of, while 23% and 27% indicated that SWMCOL and WASA, respectively, were responsible for treating FS. Photograph 1 shows a mechanical vacuum truck used by a public provider. The service providers who were interviewed stated that a major challenge concerning FS emptying services was frequent breakdown of the emptying trucks, leading to long periods of down time. Another key challenge is the poor state of treatment and disposal plants, as can be seen in a typical example of Beetham disposal/treatment facility (see Photograph 2). Public emptiers hope to see improvements with disposal sites and the facilities ability to effectively and safely treat the septage.



Photograph 1. Mechanical vacuum truck used by a public provider

SOURCE: Ifill, 2016



Photograph 2. The Beetham disposal/ treatment facility in Trinidad

SOURCE: Ifill, 2016

Discussion and conclusion

Trinidad FS emptying services are plagued with similar shortcoming as other developing countries; however, the economic potential of T&T provides an opportunity for them to develop and sustain the FSM service chain. The problems at the containment level involve compliance to building safe technological designs, builder's preference, socio-economic individual considerations, rather than a lack of quantity. Although emptying providers are highly visible, they are unregulated and in the absence of a national onsite sanitation policy, their operations are also not monitored. Overall what is lacking in Trinidad is the commitment of a local organization that is willing to champion sanitation by establishing an institution for sanitation where 'the rules of the game can be set' and the enabling environment supports all the stakeholders involved. Finally, the study proposition was accepted since the results findings supported its claim that despite of FS providers being unregulated in Trinidad, HHs was satisfied with their services even at the expense of severe environmental degradation and public health risks. A national policy for Faecal Sludge Management (FSM) is absent in T&T and no government or state owned entity has neither taken full ownership nor responsibility for the management, monitoring, setting of guidelines and regulation for any part of or the entire service chain; it appears to be managing itself (Ifill, 2016). In T&T where the national human resource capacity for FSM is limited, poor FSM municipal financing is rampant and the one public sector actively involved in FS collection and transportation (Regional Corporations) being disjointed; mapping the FS flow could be a step in the right direction, thereby opening round table discussions among the planners, households and other stakeholders in T&T so as to improve FSM.

Recommendations

- Trinidad and Tobago need to refocus their sanitation efforts towards incorporating budgetary allocation to developing FSM.
- The establishment of a National Sanitation Committee through which FSM policy, guidelines, regulation and monitoring can be set in place to support FS emptying providers and their clients.
- Implementation of a sector-wide education campaign to sensitize the public and the National Planning Committees about FSM. In the absence of an effective onsite sanitation management system, environmental degradation and human health implications would overshadow the country's economic potential, thereby all stakeholders participation towards safe excreta management approaches is vital.

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Acknowledgements

The author would like to thank the employees of the San Juan Laventille Regional Corporation for their participation and assistance assessing public emptying providers' challenges in Trinidad, particularly the San Juan/Laventille region. Also the author expresses many thanks to all the enumeration for their assistance. Finally, the author expresses gratitude to Almighty God for completing the task at hand.

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