40th WEDC International Conference, Loughborough, UK, 2017

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

Locally responsive intervention to improve municipal solid waste collection coverage in Accra, Ghana

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PAPER 2713

The paper reports on a process that engaged stakeholders to assess the strengths and weaknesses of the city of Accra's approach to raising solid waste collection coverage. Stakeholders, working with researchers, have made the evaluation using a combination of benchmark indicators, analysis of franchise agreements, process flow diagramming of collection trends, and statistical analysis of user answers to a survey. Informal services are growing while formal services are shrinking. A logistic regression model suggests that regular collection and affordable user charges significantly increases the levels of user satisfaction. The use of a participatory approach has led to an unusual alliance: formal service providers have agreed to work with informal providers as subcontractors and support them to formalize and increase collection coverage. The positive experience of participation leads the authors to advocate institutionalizing the use of a participatory approach through stakeholder platforms to evaluate interventions and develop plans for service improvement.

Introduction

While scholars see gradual improvement in collection coverage in middle-income countries (Wilson et al., 2013), in sub-Saharan Africa, the average coverage remains below 88%, especially in lower middle-income cities (Wilson et al., 2012). The tendency of local authorities to choose for private sector participation has more to do with the political difficulties involved in improving public sector operations, than in a genuine interest in what the private sector has to offer. Moreover, the authorities' focus on formal sector privatisation appears to be misplaced, when informal micro-enterprise service providers can do a better job at a lower cost (Coffey and Coad, 2010, Kirama and Mayo, 2016, Ishengoma, 2005).

What would it take large cities in lower middle-income countries to improve municipal solid waste (MSW) collection coverage and quality? What role can stakeholders take in planning, and how do systems users evaluate their collection service providers? When the formal sector is losing ground, while the informal sector contributes to improved collection coverage, how can stakeholders work together to recognise and institutionalise the informal sectors' role in improvement? These were leading questions in the investigation of strategies for improving the performance of the MSW system in Accra, the capital city of Ghana.

The city began with initiatives to improve collection coverage in 2011 through a fee- and performance-based strategy. The strategy had two key aspects: first, to offer the private sector an opportunity to bid competitively to participate in a 5-year franchise agreement (Oduro-Appiah et al., 2013), and secondly, to shift the responsibility for payment collection for services to these same franchise-holders. The municipality has retained for itself certain control functions, such as responsibility to: set the user charges; improve legislation; regulation and enforcement; and support the providers to deliver an efficient service, through monitoring and evaluation (Oteng-Ababio, 2010, Oduro-Kwarteng and van Dijk, 2013).

This initiative, while promising, has over the past 20 years failed to raise coverage through formal channels. In the meantime, the informal micro-enterprise collection sector, is collecting more than a third of all MSW collected in the city, and their activity is responsible for the 25% increase in coverage recorded in the same five-year period since 2011. The literature also supports and documents the potential of informal

service provision to sustainably improve MSW collection services (Andrianisa and Brou, 2016), through processes that *integrate* the informal sector into formal frameworks for waste collection and recycling (Velis et al., 2012, Masood and Barlow, 2013, Scheinberg et al., 2016, Ishengoma, 2005). Positive aspects of working with *micro-privatisation* of informal and community enterprises, especially in African cities, include:

- affordable user charges set by informal service providers to ensure that they have enough clients;
- "lean" operations based on simple technologies, affordable equipment, and lower profit demands
- personalised services and anchoring in the community; and
- Preference to invest in personnel than in technology.

There are also disadvantages of relying on the informal service sector, including the fact that they may not (always) pay taxes, nor (normally) use permitted disposal facilities, nor operate in the formal financial sector. These disadvantages are important at system level, but they have not prevented users from working with informal providers, and in the process, the informal sector is meeting public sector goals to increase collection coverage in a case where the formal sector is making no progress.

Despite mounting evidence of the advantages of this form of inclusive private sector participation, waste managers and local government officials are reluctant to believe that this will improve their system. Nor do the traditional approaches to planning produce a blueprint for co-operation with micro-enterprises. If the situation is to improve in our cities, something has to change in this regard.

In support of improving the waste situation in Accra, this paper looks at the potential to identify affordable pathways to sustainable improvement of waste systems by shifting the approach in the direction of consultation and engagement with stakeholders, through Integrated Sustainable Waste Management (ISWM), and away from reliance on donors and international consultants (Wilson et al., 2013, IJgosse et al., 2004). The main technique used, has been to create a working group of relevant stakeholders to assess the current strategy and work on improvements to expand the eligibility for service provision to informal service providers. The focus is to encourage MSW practitioners in low- and lower middle-income countries to reconsider their dependency on misplaced technologies and formal service providers, and initiate locally responsive paths that creates ownership and empowers service beneficiaries and the informal sector to contribute to improvement in collection services.

Methodology

The authors selected Accra as an example of a city with commitment to improving collection coverage, and a problem with the strategy that was selected in 2011. The working group assessed the system within a 25-week period from March to August, 2016. The overall collection coverage and quality, in addition to the level of user and provider inclusivity, was assessed using the 'Wasteaware' benchmark indicators (Wilson et al., 2015). The operational efficiency of formal service providers and the municipality was further assessed by checking compliance with obligations in the franchise agreements, supplemented by consultations with the environmental service providers' association. The satisfaction of users, and their opinion in relation to both formal and informal service providers, was researched through administering a survey to a stratified random sample of 700 households, institutions, and commercial centres in three socio-economically stratified residential areas: high-income, middle-income and low-income. The results were validated through interviews with retired practitioners and some development partners to understand the history and current state of the solid waste system.

Data analysis

The survey data was cleaned of errors and descriptive and inference statistics were used to explore and interpret the findings. Quantitative and qualitative assessment scores were entered into the 'Wasteaware' automated excel forms to compute aggregate scores (Wilson et al., 2015). Similar scores were provided by the formal service providers, the working group and the municipality towards the obligations of the franchise agreement. The responses to the questionnaires items were coded, categorised, entered and analysed by means of the statistical package for service solution software, version 23.0. Logistic regression was used to determine the factors that significantly influence service satisfaction (Pallant, 2016, Field, 2013). The dependent categorical variable was service satisfaction and the explanatory variables were the provision of free bins, avenues for complaint and redress, public education, knowledge of users in the determination of service charges, and regularity of user payment: a function of affordability and MSW

collection reliability. A total of 302 of the 583 respondents were clients of the formal providers, and 269 respondents were clients of the informal providers.

Results and discussions

'Wasteaware' benchmark indicators

The assessment result is shown in Table 1. The "traffic light" system of coding the results as red, orange and green, indicating respectively low (L), medium (M), and high (H), with intermediate scores as well (Wilson *et al.* 2015) is a reflection of the performance of the system in the indicators. For example, the number of households with access to reliable collection service (waste collection coverage) from both formal and informal service providers stands at 75%, classified as moderate with an orange colour. The quality of collection (1C) measured by a six multi-attribute composite criteria (Wilson et al., 2015) is classified as medium at 42%. The contribution of formal service providers to collection coverage has dropped from 60% to 55.1% (Oduro-Kwarteng and van Dijk, 2013), while informal collection coverage shows robust growth.

Provider inclusivity is moderate. The informal providers' collects 38% of MSW in the city and, since 2011, have been the sole contributors to a 25% increase in collection coverage. Almost half, or 47.1%, of service users subscribe to informal services and 89.9% appreciate their contribution to the system, suggesting that recognition and integration into the formal system is occurring – but is currently limited to the point of view of the users (Alamgir et al., 2012, Lederer et al., 2015).

With the exception of provider inclusivity, Accra's performance in the benchmark indicators compares unfavourably to that of Lahore and Guadalajara, suggesting that the fee- and performance-based MSW privatisation strategy has been neither effective nor efficient. User inclusivity (access of users to participate in planning, decision-making and feedback in relation to the solid waste system) is relatively low, as shown in Table 1. Among the possible explanations to the poor system performance, the authors give the most weight to: the ad hoc development of the collection strategy; the lack of user inclusivity; an unanticipated increase in service charges; and the failure of both city authorities and contractors in meeting the obligations set out in the franchise agreement.

Table 1. 'Wasteaware' benchmark indicator results of Lahore, Pakistan; Accra, Ghana; and Guadalajara, Mexico. Results from Pakistan and Mexico, taken with permission from Wilson et.al, 2015 is solely for comparison and comprehension purposes.

No.	Category	Indicator	Results		
City			Lahore	Accra	Guadalajara
Country			Pakistan	Ghana	Mexico
B1	Income level	World Bank income category	Lower-middle	Lower-middle	Upper-middle
		GNI capita^{-1}	$1,140	$1,480	$9,640
B2	Population	City population	8,160,000	1,936,836	4,664,924
B3	Waste generation	MSW generation (tonnes year^{-1})	1,1916,000	631,506	2,000,000
1.1	Public health – waste collection	Waste collection coverage	77% (M)	75% (M)	95% (M/H)
1.2		Waste captured by the system	80% (M)	53% (L/M)	95% (M/H)
1C		Quality of waste collection	M (58%)	M (42%)	M 50%
4U	Inclusivity	User inclusivity	L/M (37%)	L/M (33%)	M (46%)
4P		Provider inclusivity	M (50%)	M (50%)	L/M (40%)

Franchise agreement

The working groups' assessment of provider compliance with the franchise agreement is shown in Table 2. The formal providers are responsible for the initial nine obligations, the rest being the responsibility of the municipality. Both parties have failed to meet their obligations, with the municipality's performance being further from the goal. In terms of the system, the decision to require franchisees to collect twice a week was ad hoc, and is not supported by either research or practice. The obligation to provide free 240 litre bins to service beneficiaries has not been financially sustainable to service providers. Both parties proved unable either to educate users or to respond effectively to complaints of service beneficiaries towards increased cooperation and coverage. Further service improvements as a result of better communication can be expected in the future, if the municipal authorities are willing to institutionalise a stakeholder platform to support solid waste activities (IJgosse et al., 2004). A stakeholder platform provides a natural path to improve governance and develop capacities of involved officials and staff in relation to communication, advocacy, project management and, monitoring and evaluation (Herat, 2015, IJgosse et al., 2004).

Table 2. Assessment scores on adherence to obligations of the agreement on the strategy.

No.	Obligation	Score	Observations
Contractor obligations			
1	Register all service beneficiaries	50%	25% of beneficiaries are with the informal providers. The rest are not covered.
2	Supply 240 litre bins to clients for free.	55%	It is financially unsustainable to 7 out of the 8 formal service providers and also found not to significantly influence beneficiary satisfaction (Table 3).
3	Collect MSW 2 times a week	0%	Once a week is the practice.
4	Educate client on strategy	32%	Education is neither planned nor organised.
5	Maintain clean sanitary sites	25%	There is high incidence of littering at MSWC sites.
6	Increase primary coverage and reduce to zero, secondary coverage.	70%	Poor roads and housing arrangements and unaffordable charges are restricting factors.
7	Collect approved fees from all waste generators.	55%	Cross-subsidised user charges of $50, $35, $20, and $6 per month for commercial, high-, middle- and low-income clients respectively are unaffordable. Service providers negotiate with clients for a 35-50% rebate.
8	Respond to complaints from service beneficiaries within 24 hours.	40%	Complaints are not properly recorded and monitored. Most providers do not have complaint desk.
9	Maintain at all times a functional office within assigned area of work.	75%	Two of the providers do not have functional offices.
Municipal obligations			
10	Inspect collection vehicles biennially.	20%	Vehicle are not monitored until a failure in service delivery
11	Promulgate and enforce byelaws to prevent unauthorised MSW collectors.	0%	No such laws have been promulgated. Informal collectors operate freely in assigned zones of formal providers.
12	Enforce byelaws to make MSW of generators available to formal service providers.	0%	Service beneficiaries choose their providers without regard to byelaws.
13	Educate public on MSWM policies and the collection strategy.	10%	Short-term education is often triggered by disasters such as cholera outbreaks and flooding of the city.
14	Assist providers to register clients and validate same.	20%	Support is occasionally provided by the public health department of the municipality.
15	Ensure service providers have access at all times to disposal sites	50%	The municipality relies on privately owned disposal sites and have limited control over the sites.

16	Undertake monitoring to ensure maximum performance.	10%	Monitoring of service is rarely done.
17	Sanction service providers who do not perform satisfactorily.	0%	Recommendations are in reports, but there are no records of sanctioning of poorly performing providers since implementation of the strategy.

Beneficiary survey

The full model with all predictors was statistically significant, χ^2 (5, N = 223) = 11.38, $p < 0.05$ and was able to distinguish between respondents who were satisfied and those who were not satisfied. The model explained between 50% and 70% of the variance in satisfaction and correctly classified 70.4% of all cases (Pallant, 2016). 41.3% of respondents were from the low income areas, with 39.5% and 19.2% from the middle- and high-income areas respectively. 45% of respondents from middle-income areas subscribe to formal service provision with 56.9% of subscribers to informal collection service residing in low-income areas. Only user payment regularity, a function of collection service reliability and user charge affordability (Kassim and Ali, 2006) made a unique statistically significant contribution to the model at an odds ratio of 3.01 as shown in Table 3. Respondents who paid regularly to the service providers were three times more satisfied with the performance of the providers than those who were not regular in their payment, controlling all other factors in the model. This suggests that the cross-subsidy to users in low-income areas has a perverse result, and that measures to increase affordability in these areas could actually work to bring down subscription and coverage rates in these areas, alongside the contribution of poor road networks to the low subscription level. Affordability and higher frequency of collection clearly contributes to contribute to the relatively high subscription levels to informal service provision in middle-income areas. We find a weak, positive, but significant correlation ($\rho = 0.287$, n =583, $p < 0.001$) between respondents' socio-economic divide and subscription to the type of service.

Table 3. Logistic regression estimates of service beneficiary satisfaction to formal service providers of the MSW collection strategy in Accra, Ghana.

	B	S.E.	Wald	df	p	Odds Ratio	95% C.I	
							Lower	Upper
Free bin provision	-.38	.30	1.57	1	.21	.69	.38	1.24
Avenue for complaint and redress	-.24	.31	.59	1	.44	.79	.43	1.44
Payment regularity	1.10	.47	5.41	1	.02	3.01	1.19	7.60
Education on strategy	.24	.45	.29	1	.59	1.27	.53	3.08
Knowledge of determinants of user charges	1.28	1.08	1.42	1	.23	3.6	.44	29.76
Constant	.04	.49	.01	1	.94	1.04		

Lessons learnt

- The participatory determination of user charges based upon an affordable, transparent, and fair cost recovery model, represent the highest single determinant to promote understanding and cooperation between the service beneficiaries and providers towards an improvement in collection coverage.
- The use of a participatory approach in the assessment of the strategy has provided the single most important platform for the relevant stakeholders of the collection process to understand each other, which has led to an unusual alliance: formal service providers have willingly agreed and are working with informal providers as subcontractors and legalised entities to increase collection coverage.
- The formal service providers have further shown commitment to improving collection coverage by providing motorised tricycles on hire purchase to their informal counterparts and subcontractors to increase their efficiency and turnover.

Conclusion

Municipal authorities and other stakeholders have been able to explore the factors that affect the performance of the existing waste collection strategy in Accra. The outcome of the research has been used to

support development of a new 5-year franchise agreement between the parties aiming towards collection coverage improvements. Recovery and recycling targets have been set over the next five years, and strategies to improve waste collection in markets and public areas appear to be achievable. The municipality seems poised to listen to the service users and work with them to monitor the activities of service providers. The process has produced a robust commitment by all stakeholders to promote informal integration and to secure recognition for the significant numbers of informal service providers through their relationship with the formal providers. As part of a broader commitment to improve the waste management system of the city, the research team has being working together with the municipality to form a stakeholder platform and develop an action plan to guide the integration of the informal sector into the formal system.

Acknowledgements

The authors would like to extend thanks to the various stakeholders and the Accra Metropolitan Assembly for supporting and granting us the permission to undertake the research in the city. The first author is also grateful to NUFFIC of the Netherlands for sponsoring his PhD studies upon which this article is based.

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