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Reflections on 20 Years of Solid Waste Management Reforms in Tanzania: The Case Study of the Sustainable Dar es Salaam Project

Thomas Edward Jones* and Rahel Nasoni Mkoma**

*Graduate School of Governance Studies, Meiji University, Japan**

*Center for Graduate Studies, Tanzania Public Service College, Tanzania***

*tjones@meiji.ac.jp**

Abstract

Dar es Salaam is the industrial and commercial centre of Tanzania. Its population is over 4 million and increasing at 4.4% annually due to unplanned urbanization, placing increasing strain on public services such as solid waste management (SWM). 1992 witnessed government reform and the shift to a market-based economy within Tanzania, and the Earth summit in Rio, after which Dar was named among the UN's first sustainable city model projects. This paper first reviewed the legacy of the Sustainable Dar es Salaam Program (SDP) then investigated the actual SWM situation before outlining current challenges from management and governance perspectives. Results show that the rate of waste collection increased after SWM reforms and the commencement of the SDP to around 40% in 2007. Household and business sentiment agrees that the situation has improved, but perennial management problems persist, such as the lack of an intermediate network of transfer points, and inadequate community support. These are underpinned by ambiguous governance, which results in unclear bylaws related to refuse collection charges (RCCs) and the issuing of only short-term contracts. Thus a set of transparent guidelines related to RCCs are urgently needed along with the legal framework to empower fee collection at grassroots level. Having thus shifted policies toward implementation of a polluter-pays paradigm, waste collection systems must now be effectively monetized to match this policy with practise in DSM.

Keywords: *Solid Waste Management Reforms in Tanzania*

1. Introduction

Although the legislative capital of Tanzania is now Dodoma, the coastal city of Dar es Salaam (DSM) remains the industrial and commercial centre. Its area of 1800 square kilometres hosts a population of that is estimated to be over 4 million and increasing at 4.4% annually, making it the third fastest growing city in Africa (City Mayors Foundation, 2013). Much of this growth is linked to unplanned urbanization, which has continued apace despite a long-standing policy of improving living standards in rural regions.

After the Tanzanian nation was formed in 1964 it followed a socialist vision which promoted regional over urban development and agriculture over industry. This was most clearly articulated by President Julius Nyerere in the Arusha Declaration of 1967, which also stressed that “[f]oreign aid was not the answer to Tanzania’s problems” (Calderisi, 2006). Yet faced with the twin realities of rapid population growth on the one hand, and the unplanned nature of development on the other, government institutions and aid agencies alike have had to rethink their priorities in recent decades, redirecting financial and human resources towards unplanned urban areas. The policy shift has been shaped by the increasing strain placed on public services such as solid waste management (SWM). The lack of an effective SWM system has had severe consequences for sanitation and health, perpetuating a range of vector-borne diseases such as malaria and worms, as well as diarrhea, tuberculosis and cholera.

The extent of the challenge facing urban planners and environmental policy-makers has been duly recognized, most notably at the Earth Summit held in Rio de Janeiro in 1992, one of the upshots of which was the set-up of a Sustainable Cities program. This in turn paved the way for the launch of the Sustainable Dar es Salaam Program (SDP) whereupon DSM’s waste became a test case for rapidly developing urban areas across Africa. Yet there has been a lack of objective evaluation of the program’s legacy, hence this paper aims to conduct a retrospective assessment divided into two parts. First is a review of SDP that examines the governmental reform which preceded it, and then examines the establishment and evolution of the program itself, summarizing some of the key successes and failures 20 years on. The second section addresses the actual situation in DSM using macro data to comment on SWM efficiency before current challenges are outlined from the perspective of management and governance. By examining the case study of SWM in DSM, broader implications for tackling unplanned urbanization using market-based reforms are surmised.

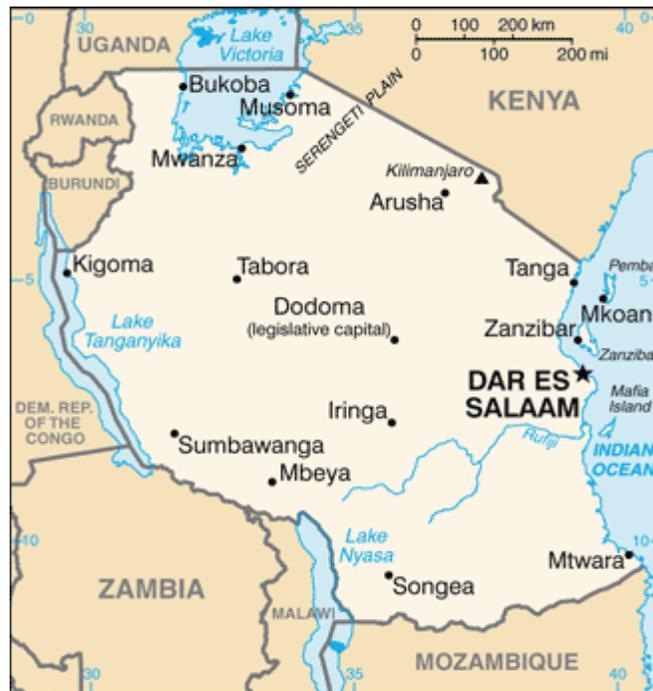


Figure 1. Map of Tanzania showing position of DSM (CIA, 2013)

2. Reflections on the Sustainable Dar es Salaam Project (SDP)

2.1 Reforms to government and markets that paved the way for the SDP

Since the 1980s, Tanzania has seen an increased outflow of labour away from the countryside toward the urban areas, and especially into DSM. Despite efforts to regulate or channel the flow into the cities, unplanned urbanization has had severe consequences for living conditions, causing international donors such as the World Bank to periodically withdraw their support due to poor performance. Thus “[t]he decade of 1980-90 was characterized by the expansion, consolidation and emergence of new unplanned settlements at the same time as the infrastructure installed under the early projects began to deteriorate due to lack of maintenance” (World Bank, 2002). Notwithstanding the heightened rhetoric of sustainable development which surrounded the Rio Conference, the underlying dynamics remained virtually unchanged. The influx from rural regions continued to place undue strain on public services, resulting in increases in the volume of waste generated in the rapidly expanding shantytowns with few basic amenities which continued to suffer from intermittent cholera outbreaks, as well as problems such as diarrhoea, dysentery and worms.

Yet changes were afoot closer to home in 1992, as the government adopted multiparty democracy and began making the legal and constitutional changes necessary for the registration of 11 political parties. Along with intensive political reform, the era was also characterized by widespread privatization. This reversed the commitment to public enterprises, known as “parastatals,” and Pan-African socialism encapsulated by the Arusha Declaration, after which many banks and large industries had been nationalised (Waigama, 2008). The moves were also part of an on-going shift from a “command and control” style of governance to a market-oriented economy, which chimed with the global mantra of *laissez-faire*, which has been described as “an economy in which markets are deregulated and put beyond the possibility of political or social control” (Gray, 2009). Tanzania thus embarked on a liberalization of state run corporations in the early nineties 1990s, with some “success stories which feature foreign investment and are listed on the Dar es Salaam Stock Exchange” and others “for which privatization efforts were unsuccessful” (USCS, 2010).

Table 1. Examples of privatized Tanzanian companies (USCS, 2010)

Successful	Unsuccessful
Tanzania Breweries Limited (TBL)	Tanzania Electric Supply Company (<i>TANESCO</i>)
Tanzania Cigarette Company (<i>TCC</i>)	Tanzania Telecommunications Company Limited (<i>TTCL</i>)
Tanga Cement Limited (<i>SIMBA</i>)	Air Tanzania Corporation Limited (<i>ATCL</i>)
Tanzania Tea Packers Limited (<i>TATEPA</i>)	Tanzanian Railways Limited (<i>TRL</i>)
Swissport Tanzania Limited Public enterprises	Tanzania Zambia Railway Authority (<i>TAZARA</i>) business units under Tanzania Port Authority (<i>TPA</i>)

Underpinning both government reform and the shift to a market-based economy were a number of highly visible environmental issues caused by the breakdown in public services due to demographic pressure. Among these, a renewed commitment to tackling waste was one of the top priority issues for the new government; hence one of the immediately visible consequences of the reform was intensified efforts to deal with waste via an emergency city clean-up campaign. In a symbolic gesture of the new hands-on approach, the Prime Minister's office raised funds to create a new municipal dump at Vingunguti, repairing refuse trucks and establishing a network of collection points to link hand-cart operators with the trucks (Halla and Majani, 1999). The SDP was thus perfectly positioned to capitalize on the major structural reforms reworking the landscape of the Tanzanian government and market policy.

2.2 SDP's establishment and evolution

Given the scale and speed of change shaking-up both government and the markets, private sector involvement with SWM in DSM was already an imminent possibility. In fact, for newly-elected policy-makers seeking to tackle the shantytowns' severe waste problem, simultaneous reform of SWM was one of few viable counterstrategies. Market-based SWM could also create employment and extra income streams via waste collection, disposal and recycling. In theory, it would also change the residents' consciousness along the lines of the polluter-pays principle, which "seeks to rectify market failure by making polluters internalize the cost of use or degradation of environmental resources" (Turner et al, 1994).

"Prior to 1994, SWM in DSM was a statutory responsibility of the DCC" (REPOA, 2002). Thereafter, the council's perceived inability to tackle growing volumes of waste, particularly in the unplanned areas, resulted in reform introduced in stages. First, a pilot test began in 11 city centre wards in Ilala municipality with a five-year contract granted to Multinet Africa Ltd. to carry out SWM on a commercial basis. To achieve this, refuse collection charges (RCCs) were introduced. Overheads were minimized by utilizing existing rolling stock from the City Council fleet, while the old depot was used for maintenance. By 1996, five companies had been contracted by the council to provide SWM services to 23 wards, and the reforms were gradually extended city-wide. After an initial pilot project, SWM collection services were outsourced to private contractors in all urban wards of Dar es Salaam by 1999 (Dar es Salaam City Profile, 2004; Kasseva and Mbuligwe, 2005; Simon, 2008).

It was not only the new multiparty government and liberalized domestic markets that were driving SWM reform. 1992 had also been a landmark year for environmental policy in the global arena. The Earth Summit was a major United Nations conference held in Rio de Janeiro that paved the way for the establishment of a series of legally binding international agreements.¹ Although not entirely without precedent – for example, the Montreal Protocol of 1987 had effectively targeted ozone emissions² – Rio seemed to mark a turning point in global environmental policy, gaining widespread support for a sustainable development ethic which had been defined earlier in the Brundtland Report as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations,

¹ Including the Convention on Biological Diversity and the Framework Convention on Climate Change (UNFCCC), which paved the way for the Kyoto Protocol.

² The Montreal Protocol on Substances that Deplete the Ozone Layer is an international treaty designed to protect the ozone layer by phasing out the production of numerous substances believed to be responsible for ozone depletion.

1987). There was also widespread agreement that henceforth environmental issues needed to be tackled with cross-cutting, innovative solutions as characterized by Agenda 21, a non-binding, voluntarily implemented action plan created by the United Nations. Sustainable development projects were proliferating on a global scale, and the Sustainable Cities Program (SCP), jointly run by the UN-HABITAT and UNEP, subsequently named DSM among the first model city projects.

“A key element of Agenda 21 is promoting the participation of civil society in environmental decision-making” (Schreurs, 2005). Hence the SDP was launched in August 1992 with a City Consultation on environmental issues which brought together an unprecedented cross-section of stakeholders. After stock-taking an environmental profile, a list of core issues was highlighted, headed by SWM. In order to tackle waste, Environmental Planning and Management (EPM) techniques were instigated via emergency clean-up campaigns and creation of a final disposal site at Vingunguti³ in order to facilitate day-to-day refuse collection services (UN-HABITAT and UNEP, 2005). The EPM ethos also provided a framework for coordination of private, public sector and community partnerships. The SDP was launched with a pioneering attempt at a city consultation bringing together high-ranking officials from the public and private sectors, demonstrating the underlying importance of an open, transparent approach. From the outset, one of the key motivations for domestic and international policy-makers alike was creation of a partnership, defined as “a redistribution of power through negotiation between citizens and power holders where planning and decision-making responsibilities are shared (Straus, 2002). The SDP was thus founded on a participatory decision-making process, and the multi-sector approach it advocated was to be implemented by a series of working groups set up to involve government, NGOs, CBOs and other stakeholder. The working groups sought to find pragmatic solutions to outstanding environmental issues such as waste, but they were also conducted as trust-building exercises deemed invaluable to gaining the active involvement of lay people. The thrust of the reform process was thus a tacit adoption of the “polluter-pays approach,” with grassroots involvement seen as an integral part. In short, citizens were to receive improved SWM services and a more hygienic living environment for which they would now be required to pay more, or at least more directly.

2.3 Reflections on the SDP

SDP was by no means the first attempt by foreign aid to improve the efficiency of DSM’s urban infrastructure; in fact since 1979, there have been numerous equivalent studies by international aid donors including the Japan International Cooperation Agency (JICA) and Canada Aid (CIDA). Yet the SDP was the biggest and most sustained of these and it was a pioneer project for the UN in the aftermath of Rio. Over 20 years have now elapsed since the commencement of this model area project born from the push forces created by domestic government reform linked to multiparty democracy, and the pull forces of global environmental policy typified by the Rio conference. This next section will thus reflect on the legacy of the SDP in terms of finance and governance.

³ This dumpsite has since been closed, and a new one opened in Pugu Kinywamwezi.

Table 2. Overview of changes to SDP budget 1991-1996 (UN-HABITAT and UNEP, 2005)⁴

<i>April 1991</i>	Project Document approved with budget total of \$696,000 for two-year period (01 Jan 1992 – 31 Dec 1993)
<i>April/May 1992</i>	Re-phasing of funds and increase of \$46,902 (in support of Human Settlements Sector Review), bringing total for two-year period to \$742,902.
<i>February 1993</i>	Budget increased by \$147,500 to cover greater-than-planned expenditures on in service training, strategy development, and operations and maintenance; new total \$890,402.
<i>July 1993</i>	Budget increased by \$99,330 to support rehabilitation of the Old Boma building; total raised to \$989,732 for the two-year period.
<i>January 1994</i>	Additional funds of \$244,600 provided to extend the Project to end-March 1994; total \$1,248,832.
<i>April 1994</i>	Re-phasing of existing funds to extend the Project to end-June 1994; total budget remains at \$1,248,832.
<i>October 1994</i>	Re-phasing and reallocation of unspent funds, to extend the Project to end- December 1994; total budget remains \$1,248,832.
<i>January 1995</i>	Budget increased by \$505,561 to extend the Project to end-March 1995 and to finance the Evaluation Mission; new total reaches \$1,754,393.
<i>May/June 1995</i>	Re-phasing and reallocation of unspent fund, to extend the Project to end-June 1995; total remains \$754,393.
<i>July 1995</i>	Proposed budget for Phase II of SDP (July 01, 1995–31 December 1996) of \$816,500.

As demonstrated in Table 1, the injection of foreign aid packages rarely adhered to the original budget allocations. For example, SDP's original Phase I budget of US\$696,000 was set to last for two years, from January 1992 to December 1993. But in reality, the budget was supplemented and extended on numerous occasions, reaching a total of US\$ 2,660,000 for the period 1992-1996. Nearly all of this almost fourfold increase came from the UNDP. Subsequently, Phase II was then implemented and by the end of it in 2000 the project had accounted for a total of US\$5,615,000, making it easily the biggest Sustainable Cities Project ever implemented. Moreover, SDP funding became a self-perpetuating objective, particularly as one of the indirect impacts of the SDP was to create a platform for multilateral foreign aid. Thus although the bulk of the direct project expenses were undertaken by UNDP, numerous international donors also signed up including the Japanese Government through JICA, the Irish Government through the Irish Aid, and the Danish Government through DANIDA. The World Bank also contributed US\$ 6.3 million for a Community Infrastructure (CIP) under the Urban Sector Rehabilitation Programme (USRP). Yet simplifying and harmonizing the foreign aid procedures of OECD countries in order to ease the administrative burden on developing countries remains a tricky and politically fraught task (Calderisi, 2006).

⁴ All figures are shown in US dollars.

Based on the sheer size and number of the budget extensions, it would be easy to castigate the project funding scheme as a profligate “white elephant” of epic proportions. Yet the SDP’s contribution to DSM’s waste problem cannot only be appraised in terms of the total outgoing expenditure, since the project had wider ramifications for Tanzanian governance. Above all, the SDP sought to unite disparate stakeholders split along a number of entrenched fault lines, including inter and intra institutional. The main tool used in order to achieve this goal was a series of working groups, which sought to harness local experience and know-how by actively involving stakeholders in a participatory process which produced specific outputs, among them the conclusion that a bigger role for the private sector was inevitable. As a means of implementation, a concession system was then proposed, but in reality the mechanisms used to delegate or outsource services to the private sector has remained something of an administrative quagmire as will be discussed later. However, in hindsight the efforts of the SDP working groups were transitory and ultimately undone by some familiar failings, such as “lack of continuity and leadership” so that by 1999, less than three years after the end of the project, there were “no working groups functioning at the city or municipal level” (UN-HABITAT and UNEP, 2005).

Another problematic issue was the SDP’s selection of priority partners. Although the ostensible aim was to build capacity through a heightened role for lower-rungs of the administrative ladder such as CBOs and NGOs, in reality, SDP was seen to be implemented first and foremost by local authorities. This was in keeping with the post-Rio ethos of Agenda 21 but inadvertently resulted in institutional confrontation, despite also aiming to provide regular feedback to national-level policy-makers. For example, “[s]ince the SCP process entailed a non-traditional planning approach that would not result in a Master Plan, there was disenchantment in the Urban Development Division, which was unsure of the nature of the process and its outputs.” (ibid). This led to an institutional clash as SDP was not located in that division but under the Minister responsible for local government in the Prime Minister’s office, resulting in rivalry between branches of central and local government. In short, it is difficult to assuage the chequered fiscal legacy of the SDP – or justify its US\$5,615,000 price tag – with evidence of immediate improvements in Tanzanian governance.

3. Overview of actual situation and challenges

3.1 Actual situation

This section draws on a range of data to assess the evolution of SWM in DSM and investigate the actual situation. Researchers have estimated that prior to 1994, the city was generating around 1400 tons of waste daily of which only 5% was being collected (REPOA, 2002). However, in 2005, generation stood at 2500 tons while the collection rate had increased to 48% (Kassim and Ali, 2006). This would appear to be an immediate vindication of market-based reform, but thereafter progress has stagnated – in 2008, only 39% of the daily 3100 tons were being collected (Mbuya, 2008). Meanwhile a separate source shows an increase from less than 2000 tons of waste generated daily in 1998 to 4252 tons in 2012-2013 (DCC, 2012-2013). 20 years after the implementation of the SDP, results suggest that, despite the initial successes of the reforms, the population growth and a lack of other basic services has continued to undermine the effectiveness of market-based SWM.

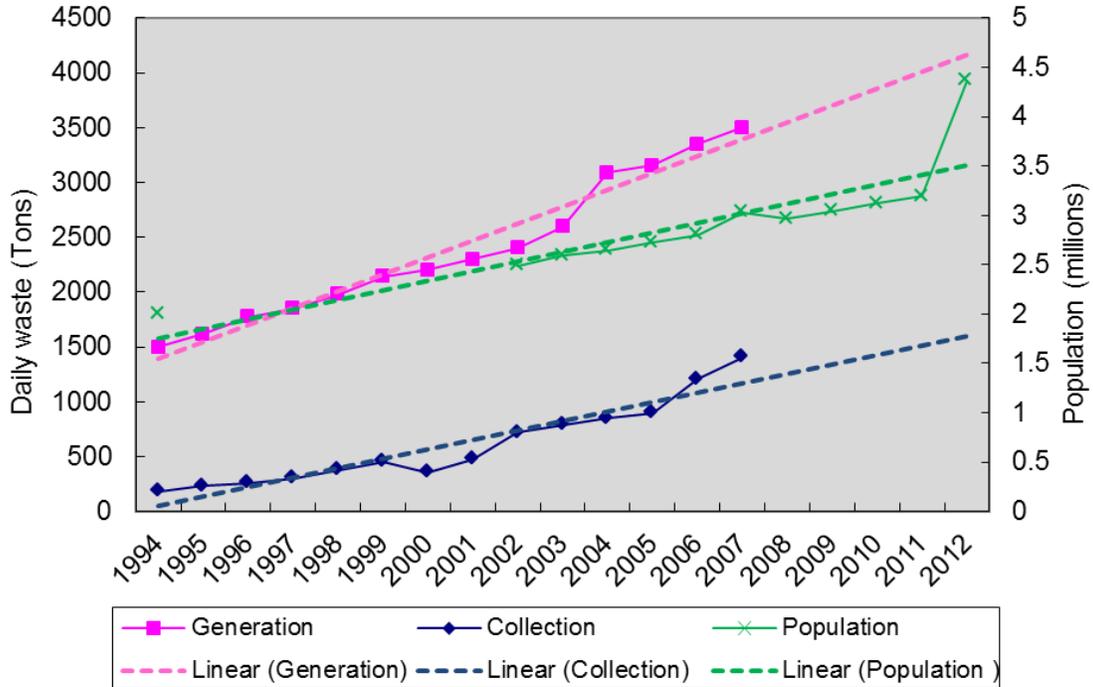


Figure 2. Trends in population with volumes of waste generated and collected 1994-2012

As the partial picture painted by Figure 2 suggests, even with the benefit of hindsight, objective evaluation of the reforms’ success is hampered by a number of related variables which have shown great change over the same period, notably the continued growth in population.⁵ It is further undermined by the lack of accurate data; this graph was generated using data from a variety of sources, including the DCC department of waste management, but the official statistics seem certain to be underestimates. For example, fieldwork conducted by Kaseva and Mbuligwe (2005) suggested that the actual amount of waste generated is considerably higher than any available estimates.

Nonetheless, progress since the reforms has been steady if unspectacular. In opinion polls carried out by Halla and Majani (1999), 67% of households and 89% of businesses felt that the situation had improved after SWM reforms were introduced. Moreover, the proportion of waste collected has risen from a minimal amount prior to reform, to 21% in 2001 and 40% in 2007. Much of this is due to improved efficiency in primary collection from households to transfer stations. However, in unplanned areas, where SWM services are still most rudimentary, the lack of a forwarding network ensures that even waste which has been initially collected is finally dumped in riverbanks, drainage canals and open spaces. Meanwhile, in 2001 and 2004 there was also a year-on-year decline in the percentage of waste collected (from 21% to 16% and from 30% to 27%, respectively). Crucially, the intended decoupling of economic growth from environmental degradation has not been achieved and, even taking the official figures at face value, this implies that a mere 40% of the total waste generated is being transported to Pugu, the final disposal site. Nor is the transported waste separated or treated, so there is thus considerable scope for

⁵ 2012 was the year when a national census was conducted, whereas data for 2003 to 2011 relied on official projections of population which tended to be significantly lower.

additional gains in efficiency by tackling certain management and governance challenges which will be discussed next.

3.2 Management challenges

Forecasts suggest that the rate of population growth and unplanned urbanization in DSM are unlikely to stabilize any time in the near future, so it is vital that a hands-on approach is taken to combat the on-going waste crisis. Whereas planned areas have door-to-door collection, the inaccessibility of the unplanned shanty-towns necessitates pushcarts to carry waste to transfer points. At street level, the actual situation is underpinned by five everyday management problems which have been identified by Ilala Municipal Council as follows (Bubegwa, 2012).

First and foremost is a lack of final disposal sites, with only one dump site currently operational in Pugu Kinyamwezi. Moreover, despite attempts to implement EPM techniques such as fumigation, spreading waste and covering it with soil, current conditions do not meet any kind of international guidelines. Second, the long distance to the current disposal site at Pugu (about 30 km from city centre) causes excessively high operational costs and reduced collection capacity, particularly when traffic conditions and opportunity costs are accounted for. The third problem of transportation exacerbates the previous two; transport of collected waste is often delayed or stopped altogether due to an inadequate fleet of vehicles and trucks supported by insufficient equipment and tools. Underpinning such issues forwarding collected waste is the fourth problem, inadequate intermediate storage for communal areas. A network of neighbourhood collection and transfer stations is vitally needed, but currently unavailable due to the lack of physical space in congested urban areas. This ramps up pressure on transportation capacity, with large amounts of waste needing rapid onward transfer to Pugu. Finally, the fifth problem is insufficient involvement of communities and informal actors, despite all the attempts of the SDP to reach out and involve grassroots stakeholders.

The fourth and fifth problems in particular reveal the Achilles heel of current attempts to reform SWM services, which is characterized by a broad disconnect with the urban poor (REPOA, 2002). The failure to effectively motivate and utilize existing networks, such as Ten House Leaders, further cements the low community awareness and public apathy for environmental issues including waste (Mkoma, 2013). Consequently, the single biggest cause of ineffective SWM was found to be non-payment of RCCs, “especially in low-income areas where collection of RCCs ranges only between 25% and 28%, while in high-income areas it is between 50% and 62%” (Kaseva and Mbuligwe, 2005). This discrepancy is crucial as over 70% of Dar es Salaam residents are estimated to live in unplanned areas. Even this may be an underestimate, since more recent appraisals have suggested the figure “is likely to be higher than 80%” (Kironde, 2006). The physical inaccessibility of these shanty-towns renders door-to-door collection services unfeasible, instead necessitating waste collection in pushcarts before it is carried to the transfer points. Closer partnership at the grass-roots is therefore needed to stimulate waste collection and separation, providing tangible incentives such as employment and cash for recycled materials to low-income families while at the same time educating them to raise awareness and increase their willingness to pay RCCs. All of these reasons underline the need for a bigger role among CBOs, which will be discussed later.

3.3 Governance challenges

Underpinning many of the current management shortcomings listed above lies a breakdown in good governance, defined as “the process of decision-making and the process by which decisions are implemented (or not implemented)” (UNESCAP, 2013).

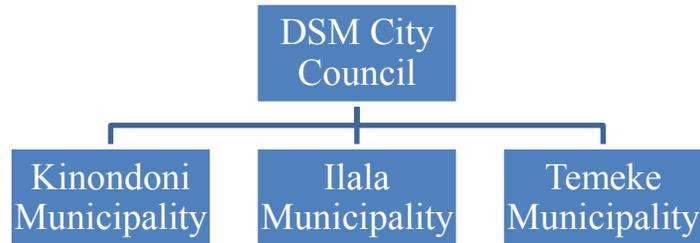


Figure 3. Overview of the organizational structure of Dar es Salaam

From 1996-2000, the DSM City Council was supplanted with a City Commission appointed directly by the Prime Minister’s Office. Ironically, the promise of multi-party democracy thus led to the replacement of elected councillors with a Commission appointed directly by the state. This drastic step was deemed necessary in order to implement city administration via three autonomous municipalities. The evolution of SWM is thus closely connected with the decentralized approach adopted by the DSM municipal government which currently consists of the DSM City Council, along with three municipal councils of Kinondoni, Ilala and Temeke. These municipalities are responsible for road and drainage infrastructure and SWM under the coordination of the City Commission, a situation which differs from that of water and sewerage which fall under the jurisdiction of the state (World Bank, 2002).

However, although waste management today remains the legal responsibility of local authorities, municipalities lack the administrative capacity to provide a framework to encourage transparent and accountable bidding, and effective award of concessions due to lack of competition and lack of monitoring. This is particularly prevalent as DSM is such an eclectic mix of 26 planned wards, 64 unplanned wards, and several hundred sub-wards; these have been assigned responsibility of waste and RCCs. These wards are now empowered to authorize the formation of CBOs to establish and operate waste collection systems. In theory the new reforms also established a legal basis for RCCs, which emphasized the fundamental importance of a paradigm shift in approaches to SWM. In accordance with the mood of multi-partyism sweeping the country, the SDP played an important role in convincing policy-makers that reform of SWM services was in the interests of all, paving the way for market-based SWM that could create employment and income streams via waste collection, disposal and recycling. It would also change the residents’ consciousness along the lines of the polluter-pays principle, which “seeks to rectify market failure by making polluters internalize the cost of use or degradation of environmental resources” (Turner et al, 1993). However, although an enhanced role of companies and businesses was called for by the workshops – and to some extent achieved in reality – it is unclear who has official jurisdiction over the private sector. This ambiguity over delegation of administrative duties underpins a host of management problems, such as the issuing of only short-term contracts, and the “lack of

delegation of direct rights and legal obligations to the purchaser who is the service recipient” (REPOA, 2002).

In short, governance reforms and decentralization were inextricably linked with reform of SWM services in the 1990s and 2000s. After the DSM City Council was replaced with a City Commission appointed directly by the Prime Minister’s Office, responsibility for city administration was shifted to three autonomous municipalities. Thereafter, SWM reforms continued in line with new governance theories, which place less emphasis on hierarchical and the state, and more on hybrid practices, multi-jurisdictional patterns of governance and plural stakeholders coming together to form partnerships that can deliver services efficiently. However, in order to provide a platform that can overcome the management challenges listed above, a set of transparent guidelines related to RCCs are urgently needed along with the legal framework to empower fee collection at grassroots level. Having thus shifted policy-making toward implementation of a polluter-pays paradigm, waste collection systems must now be effectively monetized to match this policy with practise in DSM.

4. Discussion and Implications

Increasing the effectiveness of SWM services remains of the utmost importance in sub-Saharan Africa. For example, Sow et al (2011) reported that in 2006 there were 234,349 cholera cases and 6,303 deaths in Angola, Democratic Republic of Congo, Ethiopia, Sudan and Tanzania. Current problems in unplanned areas such as severe congestion and poor sanitation are perpetuated by the lack of effective SWM. Yet the lessons learned from DSM’s reform of SWM services offer a note of caution to those seeking to implement market-based reforms without a reciprocal guarantee on the behalf of relevant authorities to provide basic services and infrastructure. Rapid and disorganized application of the “polluter pays” principle is unlikely to be vindicated without giving due consideration to regulatory and pricing mechanisms.

Nonetheless, the evidence from DSM suggests that overall rates of waste collection did increase after the process of governmental reform and the commencement of the SDP, which both began around 1992. The proportion of waste collected has improved from a minimal amount prior to reform to 21% in 2001 and 40% in 2007. The sentiment among households and businesses also supports this conclusion that the situation has improved after SWM reforms were introduced. However, the rate of progress has been broadly uneven, with rapid initial gains stagnating or declining as collection rates tailed off. Moreover, spatial distribution has been distinctly skewed; some areas such as those around the Central Business District have seen rapid improvements, while significant challenges are still faced by private contractors operating in unplanned areas where waste collection is difficult people are unwilling or unable to pay RCCs (Emig, 2010). In order to tackle the unplanned areas, CBOs are a vital link in the chain, but they require close mentoring, particularly in the areas of management skills, waste collection equipment and RCC collection system. CBOs’ local positioning gives them a unique opportunity to act as a link between the community and other SWM stakeholders, and with better funding, environmental CBOs could thus play a broader role helping to organize anti-littering campaigns and raising awareness of health issues related to illegal dumping, thereby encouraging the urban poor to start paying for SWM services, or even separate the waste themselves (Kironde and Yhdego, 1997). In this way, the key to achieving the kind of economies of scale necessary to make the reforms a real success lies in increasing the rate of separation, ultimately within households themselves.

Although some aspects of privatization have been implemented, SWM reforms require a more consistent and transparent approach to RCCs to help prevent regulatory capture and reduce corruption in the field. One possible solution is for central government to take on the responsibility for RCCs to improve the collection rates so as to provide a separate revenue stream to help fund SWM. Yet the cross-cutting nature of SWM means that government alone cannot resolve the problem; hence partnerships are an essential part of any attempt at a holistic counterstrategy as demonstrated by the KIKUTA case study examined in recent research by Jones and Mkoma (2013). This pilot project to improve recycling of municipal waste in Buguruni Ward, Dar es Salaam is a partnership which brings together four core stakeholders; the Kisiwani Environmental Group (KEG); the Ilala Municipal Council (IMC); the Sustainable Cities International Network African Program (SCINAP); and the Bremen Overseas Research and Development (BORDA). This potential model site aims to pioneer ways of improving SWM, extend the waste separation process to household level and increase the number of households paying for SWM services. In order to do so, KIKUTA has successfully set up an intermediate transfer station which is being run at a slight operational profit, supported by the extensive role of KEG, a local CBO, which helps bridge the gap between the community and other SWM stakeholders. Hence KIKUTA's main strength can be said to be the cross-cutting collaboration of international NGOs with a domestic CBO, as well as local government. More long-term monitoring of the project is needed, but with better funding, environmental CBOs such as KEG could go on to play a broader role helping to organize anti-littering campaigns and raising awareness of health issues related to illegal dumping, thereby encouraging the urban poor to start paying for SWM services, or even separate the waste themselves.

The potential implications of success for such CBOs and the private sector are significant. For example, samples from DSM suggest that around 40-50% of collected waste is biodegradable material from kitchens, implying abundant potential for producing compost (SCINAP, 2012). Tackling waste at source thus has the twin advantages of supporting urban agriculture while reducing total waste generated by up to half of the total. Yet a long track record of underperforming or failed start-up ventures reflects the difficulty of conducting business profitably, particularly in the unplanned areas where the lack of certain basic services is most pressing. Hence, although the supply and demand chains are in theory mutually beneficial, they are offset by high levels of risk borne out by empirical evidence. For example, composting sites were extensively promoted by the Clinton Climate Initiative, but ultimately the project running costs were deemed too expensive and the operation did not extend past the model stage. More groundwork is needed in terms of marketing compost to commercial buyers and educating citizens on the benefits of using monitored compost instead of unregulated animal or chicken manure; this would in turn encourage business success.

From a management perspective, the need for a network of intermediate waste transfer stations is paramount to effectively achieving market-based SWM. Some 50-60 such facilities do already exist across DSM, although they are an eclectic mix of ownership and administration. Nonetheless, some have become operationally profitable like the KIKUTA example mentioned above. Meanwhile, investment in material recovery facilities (MRFs) is another strategy that could greatly increase the recycling capacity, building on early work done by DANIDA. The presence of large numbers of scavengers at the Pugu dumpsite confirms that with better organization this could become a viable business. Finally, Waste-to-energy (WtE) facilities could use the incineration of waste to generate energy as electricity and/or heat, but despite numerous

feasibility studies, none currently exist in DSM.

Given that the significant impact of unplanned areas has been consistently addressed in this paper, on-going financial and technical support for grassroots ventures is recommended. But inter-institutional rivalry results in aid agencies such as the World Bank and IMF “constantly quarrelling” while the UNDP focuses on supporting institutional or “capacity-building” initiatives that appear sound, but are often tame and at the margin of a country’s problems” (Calderisi, 2006). Thus the most pragmatic solutions may be found closer to home. CBOs are one pertinent example, but in order to realize their potential, they should be empowered to collect RCCs together with waste, using municipal receipts which would create a more transparent collection system, open for monitoring and evaluation. In this way, a database could be created to monitor trends and identify certain households generating waste frequently or on a large-scale. The next step would be to consult with those residents in order to find viable counter-strategies (Contreras et al, 2008). Coupled with better enforcement and fiscal regulation, SWM costs should be linked to services used, so that households producing the most waste – or using the service most frequently –pay more. “Making all waste dischargers pay the same price for an extra unit of effluent discharged will achieve a cost-effective allocation of effluent control costs” (Turner et al, 1994). But managers should be aware that overly high charges for collection could conversely encourage illegal dumping (Anrtzen and Fidazni, 2000).

5. Conclusions

Despite President Julius Nyerere’s clearly outlined vision for rural development and agricultural self-sufficiency in 1962, it is now sustainable urban development that is of the utmost importance to Tanzania’s future. “Paradoxically, because of its insistence on becoming self-reliant, Tanzania received very high levels of aid. The government promoted rural projects rather than “prestige” investments to such an extent that the capital, DSM, deteriorated into one large slum” (Calderisi, 2006). Its population of over 4 million is increasing at 4.4% annually due to unplanned urbanization, placing increasing strain on public services and leading to a number of highly visible environmental issues such as hazardous levels of waste. As the nation’s industrial and commercial centre, DSM is the ultimate testing ground for the shift to a market-based economy and government reform which took place in Tanzania from 1992 onwards. Reforming SWM was therefore a vital part of the larger reforms sweeping the country in the 1990s, driven not only by the domestic fiscal and political situation but also by global environmental policy symbolized by the Earth summit in Rio in 1992, after which DSM was named among the UN’s first sustainable city model projects.

This paper first reviewed the SDP’s legacy and then investigated the actual situation before lastly outlining current challenges from management and governance perspectives. Results show that the rate of waste collection increased after SWM reforms and the commencement of the SDP to around 40% in 2007. Household and business sentiment concurs that the situation has improved, but perennial management problems persist, such as the lack of an intermediate network of transfer points, and inadequate community support. These are underpinned by ambiguous governance, which results in unclear bylaws related to RCCs and the issuing of only short-term contracts. Thus a set of transparent guidelines related to RCCs are urgently needed along with the legal framework to empower fee collection at grassroots level. An enhanced role is required for CBOs, in partnership with government, residents and the private sector. The shift to market-based

waste management in Tanzania mirrored Anglo-Saxon economies where “deregulation of financial markets”, “privatisation of state-owned markets” and “reductions in welfare programmes” were the legacy left by Ronald Reagan and Margaret Thatcher (Ormerod, 1994). Yet such “neo-liberal reforms,” once implemented, are “politically irreversible” (Gray, 1998). Having thus shifted policy-making toward implementation of a polluter-pays paradigm, waste collection systems must now be effectively monetized to match this policy with practise in DSM.

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