"Flooding our eyes with rubbish": urban waste management in Maputo, Mozambique

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1. UN-Habitat (2014), *The State of African Cities: Re-Imagining Sustainable Urban Transitions*, Nairobi; also Grest, Jeremy, Alex Baudouin and Camilla Bjerkli (2013), "The politics of solid-waste management in Accra, Addis Ababa, Maputo and Ouagadougou: different cities, similar issues", in Simon Bekker and Laurent Fourchard (editors), *Governing Cities in*

ABSTRACT   Critical voices on urban management tend to portray conflicting governmentalities, with Western "top-down" municipal development models on the one hand, and the everyday practices and diffuse forms of power of the poor majority on the other. This paper takes solid waste (*lixo*) management in Mozambique's capital city, Maputo, and its informal settlements as an entry point for assessing the relationship between these two urban development perspectives. It shows that while the municipality considers itself to be working actively through public–private partnerships to handle the complex issue of waste management in the informal areas, people in these informal settlements, despite paying a regular fee for waste removal, continue to experience *lixo* as a serious problem and see its persistent presence as a symbol of spatial and social inequalities and injustice. The paper is formulated as a conversation between city planning and management and the community side of the equation – leading to a joint set of proposals for how best to manage such a contentious part of African urban life.

KEYWORDS   citizen–state relations / divided city / informal settlements / Maputo / urban poverty / urban sanitation / waste management

I. INTRODUCTION

Solid waste management has long been a central concern of urban management and the urban management literature on Africa, as well as being regarded as a major obstacle to the development of modern and habitable cities. The 2014 *State of African Cities* report[1] argues that poor solid waste management poses extreme hazards to the environment and health, but also that there is a high potential for waste separation and management. At the same time, however, waste management interventions have been criticized for being top-down and unable to relate effectively to poor informal settlement areas.[2] In the urban anthropology literature, which traditionally has concerned itself with understanding local spatial trajectories and social formations from the "bottom up", waste and waste management have had a much less prominent place, despite the strong material, social and symbolic connotations.[3]

   In Mozambique's capital city, Maputo, the prominence of the issue of urban waste is immediately evident. Rubbish is seen and sensed everywhere – making the Mozambican poet Calane da Silva exclaim that the city is *"flooding our eyes with rubbish"*.[4] In the city's formal *bairros*, or

settlement areas, large containers are visible all over, many waiting for more rubbish or *lixo* and some flowing over – with people both inside and outside these containers trying to locate contents that can be eaten, sold or used in other ways. In the informal *bairros*, containers are much more scarce, and public throughways and open spaces are littered with plastic bags, bottles, foodstuffs, and other waste. Private dwellings, yards and alleyways, on the other hand, are well taken care of by residents and are impeccable. The epicentre of the city's waste problem is found in Maputo's only rubbish dump, located between two heavily populated informal *bairros*, where more than five hundred people live and/or make a living.[5]

The immediate impression of ubiquitous waste in Maputo's cityscape is supported by political statements, citizen opinions, and statistics. The city's mayor has stated that waste management is one of the most serious challenges the city faces, from both infrastructure and human development perspectives. For respondents in the municipality's annual *Report Card* survey on satisfaction with municipal services, the issue of *lixo* consistently comes out as the top concern.[6] Officially, the city produces 1,100 metric tonnes of garbage every day, but the municipal official (*vereador*) responsible for the sector acknowledges that this probably only accounts for around 50 per cent of the waste actually produced.

Although the municipality, like people in the informal settlements, sees solid waste as a considerable problem, it has been unable to develop a coherent system that takes the *lixo* from the settlements to its final destination in municipal garbage dumps or recycling entities. This paper argues that the problem largely rests on the inability to develop constructive communication and cooperation between the municipality and people in informal communities. The municipality takes a Western/neo-liberal perspective, and sees waste management as a technical issue. It expects citizens to behave in accordance with this perspective, while only partially delivering on its own assumptions. People in the informal communities, by contrast, have come to perceive the piles of *lixo* in public space as an integral part of being poor and marginalized, and they only keep their immediate private space clean and sanitary.[7]

After a brief introduction to the city of Maputo in Section II, Section III assesses Maputo's urban waste problem from an urban planning perspective, drawing on a combination of relevant official laws and regulations, 10 interviews with public and private sector stakeholders, and the experiences of one of the authors as an advisor in the Municipality of Maputo's Department of Urban Planning. In Section IV, the issue of waste and waste management is described from the point of view of community leaders and residents in the two informal *bairros* Inhagoia and 25 de Junho, using a qualitative approach. The *bairros* have a total population of 60,000 and were chosen for their different socioeconomic conditions. Data are drawn from more than 30 interviews on issues of waste with community leaders and male and female residents, and supplemented by the authors' long experience in working with local government and the communities in question on issues of urban development, poverty and inequality. Section V discusses possible short-term and long-term solutions to Maputo's urban waste problem, and there is a concluding discussion of Western "top-down" and community-based waste management perspectives in Section VI.

Africa: Politics and Policies, HSRC Press, Cape Town.

2. Mbiba, Beacon (2014), "Urban solid waste characteristics and household appetite for separation at source in Eastern and Southern Africa", *Habitat International* Vol 43, pages 152–162.

3. Douglas, Mary (1966), *Purity and Danger: An Analysis of the Concepts of Pollution and Taboo*, Routledge, London; also Jaffe, Rivke and Eveline Dürr (editors) (2010), *Urban Pollution: Cultural Meanings, Social Practices*, Berghan, Oxford; Reno, Joshua (2015), "Waste and waste management", *Annual Review of Anthropology* Vol 44, pages 557–572; and Eriksen, Thomas Hylland and Elisabeth Schober (2017), "Waste and the superfluous: an introduction", *Social Anthropology* Vol 25, No 3, pages 282–287.

4. ANIMA (2015), *The Ethnography of a Divided City*, Film produced by ANIMA Estúdio Criativo, Maputo, available at https://www.cmi.no/news/1921-maputo-ethnography-of-a-divided-city-film. A short segment from the film, relating to the themes of this paper, is available online alongside the paper.

5. Allen, Charlotte and Elísio Jossias (2012), "Mapping of the policy context and catadores organizations in Maputo", WIEGO Organizing Brief No 6, Women in Informal Employment: Globalizing and Organizing, Cambridge, MA.

6. CMM (2014a), *Report Card Sobre a Satisfacão dos Municipes, 2013*, Final report, Conselho Municipal de Maputo, Maputo.

7. The municipality's perspective is in line with Foucault's notion of "governmentality" [Burchell, Graham, Colon Gordon and Peter Miller (editors) (1991), *The Foucault Effect: Studies in Governmentality*, Chicago University Press, Chicago], while the informal settlers' perspective aligns with Bourdieu's notion of "habitus" [Bourdieu, Pierre (1990), *The Logic of Practice*, Stanford University Press, Stanford].
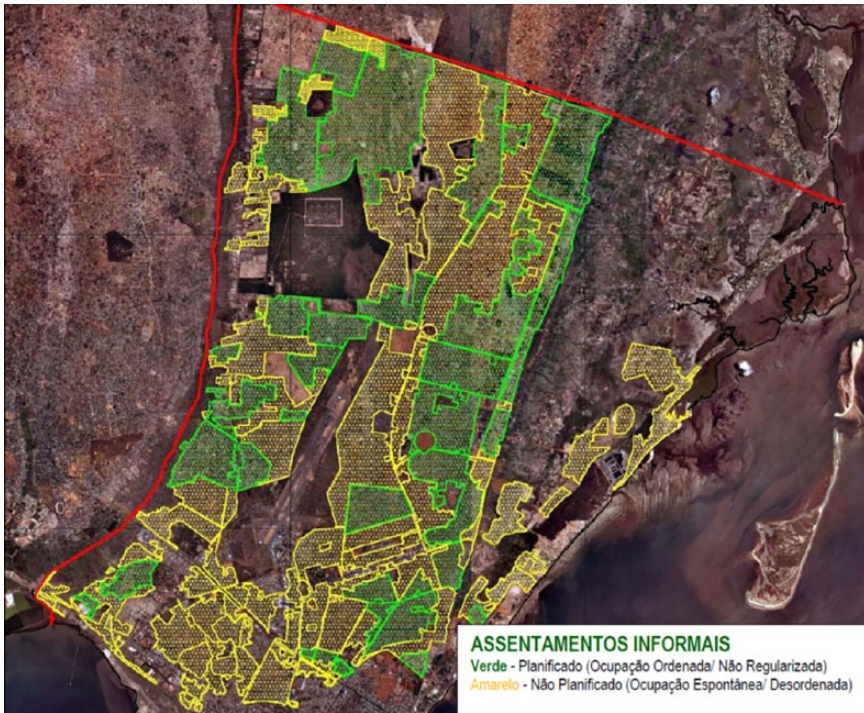
MAP 1
Informal settlements in Maputo Municipality (partially planned areas in green, spontaneous areas in yellow)

NOTE: The red line indicates the boundary of Maputo Municipality.

SOURCE: Maputo Municipal Council (2010), *Municipal Strategy of Intervention in Informal Settlements*.

II. MAPUTO BACKGROUND

Known as Lourenço Marques until independence from Portugal in 1975, Maputo is Mozambique's largest urban agglomeration. It contributes more than 40 per cent of the national gross domestic product (GDP). The metropolitan area formed by Maputo and the adjoining city of Matola is one of the fastest-growing in Africa. It has 2.1 million inhabitants, forecast to rise to more than three million by 2025.[8]

About 70 per cent of Maputo's residents live in informal or unplanned settlements (Map 1) and 50 per cent of households live on less than US$ 125 a month.[9] Maputo's informal settlements are among the poorest in Africa, with severe problems in terms of employment, income, education, health and security. They are located in areas prone to flooding or erosion, along highways and railway lines or beside polluting industries. Their residents lack access to adequate clean water, have no sewerage, few roads, no drainage, scarce access to electricity and transport facilities, poor garbage removal services, few schools, and no organized space for

cultural and leisure activities. The socioeconomic and health implications of these conditions are detrimental.

The geographical distribution of poverty in Maputo has largely been unchanged over decades. The residents of the central municipal district of KaMpfumo, who make up only 9 per cent of Maputo's inhabitants, retain more than 75 per cent of the wealth and inhabit the most expensive real estate. The municipal districts with the highest populations in terms of both overall numbers and density are located to the north of the city. KaMavota and KaMubukwana, with 335,544 and 345,574 inhabitants respectively, are characterized by the lowest average household incomes and lowest real estate values. They are also characterized by a high concentration of informal settlements – including Inhagoia and 25 de Junho, which are the main focus of this study.[10]

The 1.2 million inhabitants of the city of Maputo produce about 1,100 metric tonnes of solid waste per day. On average, people in the formal city produce 1 kilogram of solid waste per person/day, while people in the informal settlements produce 0.49 kilograms per person.[11] Waste management is a major challenge. Inadequate public funds for waste management are reflected in technical, infrastructural and organizational difficulties with waste collection and disposal. And the disposal of municipal solid waste is a major source of greenhouse gas emissions, mainly through the production of methane ($CH4$) from uncontrolled landfills.[12]

III. URBAN MANAGEMENT PERSPECTIVES

Maputo has a long tradition of urban planning dating back to the early 1900s, which defined the urban form of the city for decades and is still visible today in its dualistic structure, not only physically, but also socially and economically.[13] On independence in 1975, the Portuguese colonial power left a city where practically all urban management took place in the formal *bairros*, with the informal settlements largely left to fend for themselves. This was also the case with solid waste management.[14] At independence, the new Frelimo Party government had to manage Maputo without adequately qualified staff or sufficient resources – it struggled to maintain basic infrastructure and provide basic services, including waste collection, in both the formal and informal parts of the city.[15]

The city of Maputo is currently governed through a formal urban structure that includes a mayor, a municipal assembly, a municipal council with aldermen (*vereadores*), five urban and two rural districts, and 52 neighbourhoods or *bairros* – under a hierarchical political order in the hands of the governing party Frelimo. In each informal *bairro*, there are also networks of power and influence that include leaders of quarters (*quarteirões*), 10 houses (*dez casas*),[16] churches and community-based organizations.[17]

Inefficiencies and resource constraints have limited the ability of the Maputo Municipal Council (CMM) to provide quality services to its citizens. Also, the city has a very limited municipal tax base, with property registers either outdated or non-existent, and generally no culture of tax payment. A structural mismatch persists between the municipal government capabilities and the complex governance and

Mozambique", Urban Food Security Series No 20, African Centre for Cities, University of Cape Town, Cape Town.

10. See reference 9, INE (2015); also World Bank (2010), *Maputo Municipal Development Program II*, Maputo.

11. Mertanen, Sari Teresa, José Maria Langa and Katia Ferrari (2013), *Catadores de Lixo de Maputo: Quem são e como trabalhar?*, União Europeia, Maputo. In the formal part of the city, by weight the waste collected contains 68 per cent organic matter, 12 per cent paper and cardboard, and 10 per cent plastics. In the informal parts of the city, more than half the waste consists of soil and dust. If this is excluded, 69 per cent is organic waste, 5 per cent paper and cardboard, 9 per cent plastics and 9 per cent "other", including rubble. (See reference 5.)

12. Tas, Adrian and Antoine Belon (2014), *A Comprehensive Review of the Municipal Solid Waste Sector in Mozambique*, Carbon Africa Limited, Nairobi.

13. Correia, J, J M Fernandes and L Lage (2012), *Maputo, Mozambique: Historical Background and Urbanism*, Unpublished paper, University of Eduardo Mondlane.

14. Penvenne, Jeanne Marie (1996), *African Workers and Colonial Racism: Mozambican Strategies and Struggles in Lourenco Marques, 1877–1962*, James Currey, London.

15. Kamete, Amin Y and Ilda Lindell (2010), "The politics of 'non-planning' interventions in African cities: unravelling the international and local dimensions in Harare and Maputo", *Journal of Southern African Studies* Vol 36, No 4, pages 889–912.

16. This is the smallest organizational unit in the communities, originally established as (Frelimo) party cells.

17. Bertelsen, Bjørn Enge, Inge Tvedten and Sandra Roque (2014), "Engaging, transcending and subverting dichotomies: discursive dynamics of Maputo's urban space", *Urban Studies* Vol 5, No 13, pages 2752–2769.

18. World Bank (2007), *Project Information Document (PID): Appraisal stage for Maputo Municipal Development Program I (MMPDII)*, Washington, DC.

multi-sectoral service delivery demands by citizens at the municipal level. Weak operational supervision and information systems also limit the management's ability to achieve improvements in service delivery.

The World Bank is one of the few development partners that has consistently and actively supported municipalities in the area of urban development in Mozambique. A large number of development partners have been supporting the government of Mozambique, but have only recently realized that more emphasis on sub-national authorities is needed in order to build long-term and sustainable service delivery capacity in the country. Municipalities are the only decentralized political entities in Mozambique and their success is crucial for the development of the country as a whole.[18]

In Maputo, the World Bank's ProMaputo programme was implemented from 2003 to 2016 and has supported a comprehensive restructuring of CMM, strengthening its institutional and financial capacities, and improving the delivery and sustainability of municipal services to the citizens. This has been done through a broad range of investments from "soft" long-term institutional improvements (e.g. governance, capacity building) to large infrastructure investments (e.g. landfills, sewage systems, major road rehabilitation).

ProMaputo introduced significant changes in how CMM manages services, operations and maintenance of municipal facilities, supported by the development of institutional and financial reforms. It improved standards for urban roads and drainage, and introduced strategic planning and operational budgeting, as well as information technology-based systems for financial management, land use planning, and personnel administration. ProMaputo also helped to leverage additional financing, not only from other development partners, but from the private sector as well. The solid waste sector was a major part of ProMaputo's focus. It contributed to the formulation and implementation of Maputo's solid waste management (SWM) strategy for improved service provision and long-term financial sustainability.

a. Solid waste management

The most important sources of legislation for waste management in Mozambique are the Environment Act (Law 20/97), the Solid Waste Management Regulations (Decree 13/2006), and the Finance and Municipal Heritage Act (Law 11/97). In addition, the Strategy for Integrated Municipal Solid Waste Management in Mozambique and the National Strategy for Climate Change Adaptation and Mitigation 2013–2025 provide important policy guidance for sustainable waste management. Since 1997, solid waste management in Maputo has been the sole responsibility of the municipality. The Directorate of Salubrity is responsible for the execution of collection services, contracting, supervision and disposal site management.

Until the beginning of the new millennium, waste collection in Maputo was provided on an ad hoc/emergency basis with very limited coverage. In an attempt to create revenues to support the increasing costs of service delivery and thus improve service coverage and consistency, Maputo introduced a waste fee in 2002. Poor service performance and inadequate public information about the fee caused a storm of protest in the local communities. Nevertheless, people were compelled to pay,

being charged through the electricity bill.[19] In 2004, municipal officials started to look for solutions to the solid waste problem with support of the German development agency (GIZ). The World Bank support to SWM began in 2007, through ProMaputo, to improve CMM's SWM system.

The Maputo SWM Strategy was developed with the objective of improving the quality and expanding the coverage of service provision, to fully cover the formal city as well as the informal settlements and to guarantee long-term financial sustainability. To achieve these objectives, the strategy identified the following set of activities:

- Improvements in CMM's planning, operations and monitoring of solid waste management
- Financing of solid waste management contracts on a declining basis, until the municipality could collect enough fees to cover the operation of the service with its own resources
- Education campaigns, events and associated communication services in support of improved municipal sanitation and solid waste management
- The development of studies, plans and projects to ensure the environmental sustainability of solid waste management in the Maputo metropolitan area

To support the elaboration of the Maputo SWM Strategy, the benefits and estimated costs for three different implementation models were compared:

- Public sector operations, assumed to imply easier access to investment funding but less efficient operations
- Private sector operations, assumed to have higher investment costs but increased efficiency
- A mixed model, where the public sector would facilitate investment for the private sector through access to funds (contract-in model).[20]

CMM came to adopt two main modalities for the provision of residential waste collection services – with the first targeting the formal city and the second the informal peri-urban areas. The first modality relies mainly on the use of private contractors, ranging from large firms to microenterprises, for the collection and disposal of SWM in the inner/high-density formal city. These enterprises have been progressively integrated with municipal employees and community actors into a single system for refuse collection, removal and disposal. The private companies were contracted on a performance (i.e. productivity) basis. While the use of private or corporatized municipal service contractors has been challenging due to misunderstandings between the public and private sectors about roles and responsibilities, it has functioned relatively well in the formal areas where it has been implemented.[21]

The second modality is a two-step collection system to extend SWM services to the informal peri-urban areas. Households gather and keep their waste in their dwelling/yard without disposing of it in public places, and small-scale community-based enterprises are responsible for collecting the waste twice a week (door to door) and transporting it to larger containers placed in locations closer to the main roads. The waste

19. GIZ (2012), *Economic Instruments in Solid Waste Management – Case Study Maputo, Mozambique*, Deutsche Gesellshaft für Internationale Zuzammenarbeit, Berlin.

20. See reference 19.

21. See reference 19.

is then collected by the large private firms, which have the responsibility for secondary collection, and transported to the municipal disposal site. According to the municipal authority/*vereador*, the missing link to an effective solid waste management in the informal settlements is not the municipal system as such but the need to *"educate the people and make them produce less waste"*.

CMM has also entered into partnership with existing waste collection and recycling organizations. Recicla (Plastic Waste Recovery Centre), for instance, processes around 15 metric tonnes of processed polyethylene (PELD and PEHD) and polypropylene (PP) each month. It buys plastic waste from the general public, mainly from waste pickers, in a simple commercial deal. The plastic waste is processed manually, separated by type, washed, cut up, crushed, and resold to companies in Maputo that are interested in purchasing semi-processed material.

The Fertiliza Cooperative (Organic Waste Recovery Centre) mainly seeks to dispose of vegetable waste from markets, converting it into fertilizer through composting. Since August 2008, part of this waste has been collected from strategic points and transported in hand-pulled carts and wagons to a nearby piece of land provided by the Municipality of Maputo, where Fertiliza operates. Fertiliza became an officially established cooperative in June 2011.

Founded in 2009, AMOR (Mozambique Recycling Association) is a not-for-profit organization dedicated to promoting recycling and integrated solid waste management in Maputo. First, AMOR installed three collection points for recyclable waste, known as eco points, or voluntary delivery points. These had increased to six collection points by mid-2012. The president of AMOR estimates that the association supports more than 350 informal workers (90 percent of whom are women), who assist in collecting and processing the 400 metric tonnes of material sent to international markets for recycled materials.

Common to all these associations is that they primarily work in the formal *bairros* of the city – albeit with waste pickers from the informal settlements. According to local government officials, this is because people in the formal city are aware of the importance of recycling, and collection/recycling points are easy to organize. The informal *bairros* are too disorganized for the companies to work there effectively, and people are reportedly *"not aware of the value of recycling"* from either the environmental or economic perspective.

Through this diversified SWM working strategy, then, CMM has progressively increased the coverage and quality of solid waste collection and disposal. However, most of the informal *bairros* in Maputo are still overflowing with solid waste in the form of valleys of trash (Photo 1), overfilled containers, and public spaces and roads littered with plastic and other "renewables" – thus at least partly confirming Mbiba's statement that *"[t]he continued waste crisis persists at a time when international donors, central and local government, have made noticeable interventions to improve management through decentralisation, neo-liberal cost-recovery/cost sharing, privatisation and public-private partnership reforms"*.[22]

As noted above, however, the Maputo municipality does not see the crisis of waste management primarily as a result of the quality of the services it provides, but rather as a function of shortcomings in informal resident behaviour.

22. See reference 2, page 152.

PHOTO 1
Rubbish piles in the *bairro* **of Malanga**

© ANIMA Estúdio Criativo (2016).

IV. COMMUNITY PERSPECTIVES

A community-based perspective takes the view that the informal settlements in Maputo are the outcome of complex historical processes and structural constraints, with a population susceptible to intersecting discourses, values and practices. These are associated with notions of modernity and tradition, as well as their own shanty-based practices of complex social relationships and cultural constructions.[23] In line with this, people's perceptions of, and relations to, waste are the combined outcome of structural conditions of poverty and marginalization and the way people think about their worlds and act in them. Particularly for the poorest, these worlds are largely confined to the informal *bairro* itself.[24]

Since the publication of Mary Douglas's *Purity and Danger: An Analysis of Concepts of Pollution and Taboo*,[25] anthropology has been preoccupied with the way "dirt" as "matter out of place" is culturally constructed; it also understands that the response to it varies among different social formations, such as affluent formal and low-income informal *bairros*. Among people in the informal *bairros* of Inhagaoia and 25 de Junho in Maputo,[26] the local terms for solid waste or *lixo* (*nsila, tchaka, nzambwa*) invariably signify something that is *suja* (dirty), *inutil* (of no use), and *faz mal* (does harm). However, the significance of *lixo* in people's lives has varied over time and space.

According to elders in Inhagoia and 25 de Julho, there was a clear, two-tier system during the colonial era: waste collection functioned well in the formal Portuguese part of the city, but did not exist at all in the informal "African" part. However, as 67-year-old Mr Vasco, a resident of Inhagoia, put it, there was no need for formal waste collection then,

23. Moore, Henrietta and Todd Sanders (2014), "Anthropology and epistemology", in Henrietta Moore and Todd Sanders (editors), *Anthropology in Theory: Issues in Epistomology*, Wiley Blackwell, Oxford; also Tvedten, Inge (2011), *'As Long as They Don't Bury Me Here': Social Relations of Poverty in a Namibian Shantytown*, Basel Africa Bibliographies, Basel.

24. See reference 17.

25. See reference 3, Douglas (1966).

26. Fieldwork for this study was carried out in February 2015, mainly in the informal *bairros* of Inhagoia and 25 de Junho; individual interviews were also carried out with residents of the formal *bairros* of Sommershield and Triunfo.

because people did not produce much *lixo*; most of it was fed to domestic animals or burnt; and people had ample space to bury it in holes (*covas*) in their yards.

The issue became more pressing after independence in 1975, when living space in the informal settlements became more constrained as more people moved in. People also complain that the groundwater levels rose, with the *lixo* "reappearing" in the rainy/flooding season. Still, while *"[w]e could no longer bury our* lixo *in our yards as there was no space, and it made us sick"*, as Senhora Verónica from Inhagoia put it, others insist that the *bairros* were clean, as *"we had brigades [*brigadas*] who cleaned the communities during the time of Samora [Machel – the first president of independent Mozambique]"* (Mr Pateca, Bairro Triunfo).

Lixo has become an increasingly dominant and visible aspect of life in the informal *bairros* over the past two decades, as the settlements have become increasingly overcrowded, making it impossible to get rid of waste in customary/community ways. At the same time, community leaders and the population at large came to expect and demand that the municipality take action.[27] Still, people maintain that they only throw away what is "of no use". *"We are poor, and have to make use of everything we have"*, as a *chefe de quarteirão* put it. According to Mr Emanuel from Inhagoia, *"[i]n my language rubbish is* tchaka, *which means dirt, something which is not of any use to the family and which may do harm"*.

As emphasized by the residents in the two *bairros*, food is only thrown away when it is rotten; sand, branches and leaves are considered *lixo* because there is no place to put them, and burning is considered too dangerous in the context of crowded living. The few people who have electrical devices tend to mend and continue to use them until there is no hope for continued use; bottles are discarded because they have no value; and plastic has become such an integral part of urban life that it cannot be avoided. The real problem in the informal *bairros* is thus poverty and overcrowding, rather than a "culture of disposal".

The municipality did increase its efforts to deal with the waste by entering into public–private partnerships for collection and disposal, and by entering into contracts with microenterprises to collect *lixo* in the informal communities. People in Inhagoia and 25 de Junho are well aware of these efforts, but refer to those involved as "foreign", or "from outside the community" with no local base: South African EnviroServ carries out the "secondary collection" from the city's *bairros* and transports it to the waste dump in Hulene, and Lalita e Servicos carries out "primary collection" in the community and is referred to as *"an Indian lady in the city"*. In both cases, people call for local community-based alternatives and employment.[28]

The decision that most affected people's perception of the municipality's solid waste management system was the introduction of the monthly fee of 20 meticais or US$ 0.6 per household (later increased to 45 meticais or US$ 1.4) for waste collection – as part of the pre-pay electricity bill. *"The population complains a lot. They claim they pay taxes for rubbish that is not taken away"* (Head of Quarter, woman, 40 years old). With this new fee, *lixo* became a contested issue in the informal settlements and a bone of contention between the municipality and the communities. The municipal authority insists that the system functions well, and that if it does not, *"it is people's own fault as they can complain to the municipality"* (*vereador*). The residents on their part say it is impossible

27. See reference 6.

28. Here there is apparently poor communication between the municipality and the *bairros*: while the relevant laws and regulations state that the micro-companies can be owned by anyone, but managed by people from the community, community leaders and people in the *bairros* argue that the municipality had given the impression that owners, managers and workers would be from the community in question.

to get in touch with the municipality, and argue that they are treated differently to those in the formal city, where *"lixo is collected every day"*.

The "privatization" of the responsibility for keeping the *bairro* clean through household-based fees for services has affected people's willingness to take part in community-based cleaning *campanhas*. One *chefe de quarteirão* (who, in cooperation with the *secretário do bairro*, is usually responsible for such initiatives) lamented that people no longer want to help clean public roads and open spaces. The only time she is able to recruit people is during cleaning campaigns around the community hospital, *"as people know that* lixo *is not good for their children's health"*. People also realize that the *lixo* piling up inside and outside the community markets is unhealthy, but play the "blame game" by arguing that the municipality charges daily licence fees of the vendors or *comerciantes* and should do it itself.

The municipal waste containers that people are expected to use are located at the outskirts of the *bairros* in places trucks can reach, rather than in the central areas where most people live but where the trucks cannot pass. In addition, because collection is irregular, it is difficult to know if the containers will be full or still have space (according to the local population they should be picked up every other day). Many residents conclude that it is not worth the effort to carry their waste long distances to containers that may not have space or may not be there at all – and instead they dump it in public spaces closer to their dwellings.

Another concern is that the system for collecting *lixo* from people's houses is inefficient and corrupt: it is carried out by *lixo* collectors who are employed by the external micro-companies; the collectors are usually recruited from other *bairros*, and they tend to charge for a service that has already been paid for through regular fees, and which should be free. Nearly all the waste collectors are men – even though women's social role generally includes the primary responsibility for cleaning within their households.[29] A number of local community-based organizations (CBOs) have handed in tenders for the job to the municipality, but have been rejected.

In sum, people in the *bairros* argue that the municipality has failed them by giving them a different type of service than that in the formal city (*cidade*). As a result, they demonstrate their displeasure by throwing away their *lixo* in public spaces, such as main roads, marketplaces, and around the waste containers that have become symbols of their poverty and marginalization. *"We use it to fill the holes in the roads that the municipality does not come to remedy"*, as one Inhagaoia resident stated with a smile. The situation is particularly severe during periods of rain and floods. In some parts of the *bairros*, there are mountains of solid waste, prompting one resident to state: *"Imagine the type of life-view [*percepções da vida*] that this gives to the children who grow up among these piles of rubbish. They think this is normal!"*

People perceive the problems with *lixo* piling up in their *bairro*, uncollected, as a great challenge – not only for their health and well-being but also for their dignity as modern, urban citizens. They have resorted to keeping clean and sanitary what they consider to be their "private space" – mainly their own dwellings and small yards, but also the narrow alleyways or *becos* where they spend time with neighbours and friends and children play, since their home space is usually small and overcrowded.[30] There are also social pressures to keep waste away from

29. Paulo, Margarida, Carmeliza Rosário and Inge Tvedten (2011), "'Xiculungo' revisited: assessing the implications of PARPA II in Maputo, 2007–2010", CMI Report R 2011:1, Chr. Michelsen Institute, Bergen.

30. Costa, Ana Bénard da and Adriano Biza (2013), "Maputo home spaces: Working for a home, working at home", in Ulf Engel and Manuel João Ramos (editors), *African Dynamics in a Multipolar World*, Brill, Leiden.

31. The word *catador* stems from the verb *catar*, which means to search for, pick up, clean.

private and common space. During a *quarteirão* meeting, one family was scolded by other neighbours for throwing waste around in the *becos* and threatening the "health and reputation" of the neighbourhood.

What allows the system to tick along without a complete inundation by waste in poor *bairros* like Inhagoia and 25 de Junho is the continued practice of burying *lixo* in the yard, with all the health hazards this entails, as well as the parallel system of community-based *catadores*, or individual waste pickers and recyclers, who collect *lixo* for a small fee.[31] *"If it was not for these people, we would drown in rubbish"*, according to one young resident in 25 de Junho. The formal recycling companies are largely unknown and unseen, and these *catadores* operate on an individual basis and get rid of the waste in the communities wherever they consider it most convenient. Only rarely do they use the containers.

While recognizing the important work done by the *catadores*, people in the informal communities still regard this type of work as associated with "dirt" and thus as degrading *("when we use the word* insila *about somebody, it is a great offense"*, as an elder in Inhagoia put it). This is one reason that people do not usually separate their *lixo* for sale themselves, even though they realize the value of some of the waste. The *catadores* working (and in some cases living) in the huge waste dump in the *bairro* of Hulene have a particularly negative reputation. *"We consider them to be crazy [*malucos*]"*, according to 44-year-old Mr Marcos, a resident of 25 de Junho.[32] The *catadores* in Inhagoia and 25 de Junho also sense the stigma: *"There are people who do not consider me a good neighbour. They call me names like 'that drunkard who carries* lixo*'. Others don't greet me when I pass them"* (Mr Gota, unemployed builder, 25 de Junho).

32. In fact, Allen and Jossias (see reference 5) show that people working at the dump represent a broad range of ages and backgrounds: around 8 per cent are educated to university level.

Currently, then, the issue of waste and waste collection is a symbol for people in the informal *bairros* of a divided city, which has tangible implications for people's self-esteem, well-being and health. While the municipality is in the process of improving the system in the formal parts of the city, including systems for the separation and reuse of different types of *lixo*, people in Inhagoia and 25 de Junho do not get the services they pay for and regard the waste piling up as a reflection of their marginalization and oppression. They have resorted to relating to the garbage as a "thing out of place" only in the immediate vicinity of their homes, and have come to accept the garbage piling up in public spaces as an inevitable part of being poor in Maputo's crowded informal settlements.

V. DISCUSSION

All African urban governments have to work in the context of two – sometimes overlapping – realities: a formal city with an organized physical infrastructure including roads, water, electricity, land demarcation and housing, combined with such control mechanisms as licences, taxation and fees; and an informal city lacking most such infrastructure, only partially under political control and organization and reflecting community-based spatial trajectories, everyday practices and social relations of inclusion and exclusion.[33]

33. See reference 17; also Kamete, Amin Y (2013), "On handling urban informality in Southern Africa", *Geografiska Annaler, Series B: Human*

A common strategy for urban development and management has been the attempt to formalize the informal, including the development of formal systems of waste management through public–private

partnerships.[34] In Maputo, this strategy has been combined with an innovative, but inadequately functioning, system of community-based microenterprises for rubbish collection at the level of individual households/dwellings. As Mário, a 47-year-old resident in *bairro* Triunfo, put it: *"The issue of rubbish is complicated because both the government and the population are to blame: The government because it does not do what it has promised, and the population because it does not do what it is told [*por não obedecer*]".*

As African cities grow to become large urban conglomerates, informal and poor cities will still house the large majority of African urban dwellers for years to come.[35] For the management of solid waste, this means that it will be necessary to establish large and complex systems of waste collection for the city as a whole, with attention directed to the experiences and perspectives of people in the specific political and social realities of informal settlements: *"The problem with the rubbish can only be solved by the municipality and the community together, because it involves both [*visto que envolve os dois*]"* (female resident, 44 years old, 25 de Junho).

The policy framework for solid waste management in Maputo is largely in place. The limited success of the SWM strategy in reaching the informal settlements – despite its innovative public–private partnership approach and attempt to involve community-based small-scale enterprises – seems to be the combined outcome of inadequate human, technical and economic resources within the responsible institutions, and inadequate communication and coordination among the public, private and community realms of waste management. These problems generate dissatisfaction, criticism and mutual accusations.

This dysfunction can be interpreted as a reflection of Maputo's divided city – here framed by different perspectives and practices around SWM. The municipal perspective is mainly linked to the macro-level perceptions of a "modern and clean" city, to be accomplished through public–private investments and economic sustainability.[36] The residents in the informal *bairros*, on their part, are mainly concerned with their own immediate community and micro-level issues of disease, smell, smoke and dirt affecting their well-being and dignity.

To improve the situation, the following policies and interventions could be considered:

The system of communication concerning waste management between the municipality and the private partners on the one hand, and between the community leaders and communities on the other, must be improved. There are currently too many misunderstandings as to the responsibilities of the municipality/private companies and the community/community leaders, which has created a situation of mutual distrust.

The municipality must focus its communication directly on each *bairro* rather than indirectly through private companies. The points of contact should be the *bairro* secretary, the *chefes de quarteirões* and community leaders/heads of CBOs. These people know the community well, and have the capacity and trust to organize community-based *lixo* collection.

Basic framework conditions and SWM modalities must be in place, with a sufficient number of containers and of trucks to collect them and off-load them at an appropriate site (i.e., outside the main population areas) at frequent/regular intervals. Also, the containers must be brought

Geography Vol 95, No 1, pages 17–31; and Myers, Garth (2011), *African Cities: Alternative Visions of Urban Theory and Practice*, Zed Books, London.

34. See reference 17; also Diouf, Mamadou and Rosalind Fredericks (editors) (2014), *The Arts of Citizenship in African Cities: Infrastructures and Spaces of Belonging*, Palgrave Macmillan, New York; and Bekker, Simon and Laurent Fourchard (editors) (2013), *Politics and Policies: Governing Cities in Africa*, HSRC Press, Cape Town.

35. Pieterse, Edgar (2008), *City Futures: Confronting the Crisis of Urban Development*, Zed Books and UCT Press, Cape Town; also UN-Habitat (2016), *World Cities Report 2016: Urbanization and Development – Emerging Futures,* Nairobi.

36. See reference 19.

back to the communities quickly to avoid or minimize periods with no access, which undermines confidence in the system.

The current practice of collecting solid waste fees through the electricity bill, accompanied by a system that does not work properly, is detrimental for people's perceptions of the municipality and its commitment to working for the citizens. Until the system is improved, the fees should be transferred to the *bairro* secretary and paid out per container collected.

Primary waste collection by micro-companies should be done by community-based CBOs/enterprises employing community residents. This would enhance interest and ensure better social control over the delivery of the services. For the secondary collection from the *bairros* to the rubbish dump, several suppliers based on tenders per urban district – rather than one – might improve competition and efficiency.

For employment, women should be given priority. They already do most of the daily cleaning in and around the dwellings and in the *becos*, and getting paid for collecting *lixo* would enhance their status.

Heads of quarters (*chefes de quarteirões*) should work to reinvigorate the tradition of collective cleaning of public places such as markets, roads, schools, and health posts – since a *quarteirão* is the unit that best coincides with people's sense of "community". The cleanest *quarteirão* should be rewarded.

The municipality needs to strengthen the partnership with recycling organizations, and to encourage these organizations to include informal *bairros* in their work areas. People in the communities see the potential value of separating out the different types of waste. However, they need both clearly demarcated sites for disposal and tangible reasons to recycle – which for poor people effectively means economic motivation.

Designated sites for organic waste, including sand and branches, which currently constitute 50 per cent of the waste from the informal *bairros*, should be identified and combined with initiatives for composting and gardening. (Several *bairros*, including Inhagoia, already have areas for small-scale agricultural fields in low-lying areas that are unfit for dwellings.)

The absence of recycling industries in the informal communities makes it difficult for community-based waste pickers to work and to make profitable deals. For selective waste collection to be successful, it is important to combat the stigma surrounding *catadores* and to recognize that waste pickers are the central actors in this activity. They should be licensed by the municipality, which will also ensure that some of the taxation goes back to the community.

VI. CONCLUSIONS

Post-colonial urban planning in sub-Saharan Africa has included "formal" redevelopment of the "informal" in the 1960s; slum/informal settlement upgrading in the 1970s and 1980s; "enabling markets" in the 1990s; and an acceptance of the limits to state capacity and roles, emphasizing public/private partnerships, in the 2000s.[37] Post-independence Maputo has largely gone through the same phases, although the process was negatively affected by the breakdown of municipal management structures in 1975, by war and massive migration from rural areas until

1992, and by a dearth of institutional, financial and human resources since then. Concerted efforts to manage the city's solid waste were only initiated in 2007 with the ProMaputo programme.

The challenges experienced in solid waste management in Maputo rest on inadequate understanding and communication between two very different waste management perspectives: a Western/neo-liberal and formal system of collection on the one hand and the experiences, needs and perspectives of people in the informal settlements on the other. While the municipality sees waste management in the informal areas as a matter of developing practical and effective systems of collection, people in the city's informal settlements focus on the disparities implicit in these practical solutions, and see the continued problem of rubbish in their communities as a symbol of spatial and social inequalities and injustice.

For poor people in the informal settlements, only "matters out of place" are defined as waste and thrown away, and their poverty compels them to focus on activities that yield vital income. Given this context, it is rational for community institutions and households to focus their waste management strategy on their immediate social/private space (the dwelling, the yard and the *beco*) – and to get rid of their waste in public throughways, markets and open places, on the assumption that cleaning up public spaces is the responsibility of the municipality.

What we have suggested in this paper is a two-pronged approach to solid waste management in cities like Maputo. One is an overall strategy for the city as a whole, built on efficient and flexible public–private partnerships, and including waste removal from the "gates" of informal settlements for transport to the final destination in municipal dumps and/or recycling facilities. The second is a waste management strategy for the informal settlements that builds on their own political and economic context and local sociocultural praxis.

A new approach is needed to guarantee a SWM system that is viable not only from a political, technical and financial perspective, but that also relates constructively to local conditions. This means that the current "public/private partnership" paradigm must go beyond the "stakeholder consultation" mode of working with informal settlements as was done in the ProMaputo project: It must engage directly with the communities, their institutions and enterprises, and make sure that employment and the economic and social benefits of waste management remain in these areas.

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