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Urban waste: between decentralised management and commons

BOTTOM-UP WASTE MANAGEMENT

Non-centralised waste management procedures are developing in the Southern countries: community pre-collection, recycling and the micro-local circular economy.

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For decades, international literature on development in Southern countries promoted access to networked urban services. It encouraged the extension of centrally governed networks for access to water, electricity, and waste and wastewater collection. This ideal is now being challenged (Coutard & Rutherford, 2016) to target outcomes (quality of the environment, health, etc.) rather than just resources (kilometres of infrastructure). Governments have gradually taken on board alternative management methods (Ranzato & Moretto, 2018; Debout et al., 2018).

This article analyses the contributions of decentralised and community waste management methods based on the findings of the ORVA2D* research programme. Waste management here forms a resource (service) partially provided by an infra-urban community (neighbourhood) and governed by governance rules (often informal). As stated by the theory developed by Elinor Ostrom, the three components of the commons are resource, user community and management rules.

WHEN THE NEIGHBOURHOOD STEPS IN TO HANDLE WASTE GOVERNANCE

Councils in many Southern cities are unable to collect all household waste despite their legal responsibility for household waste management. For example, among the cities studied by the ORVA2D research project, the collection coverage rate is barely 55% in Antananarivo (Madagascar). Palliative mechanisms have therefore been set up groups of residents or waste pickers. These initiatives all have in common to be embedded in their neighbourhood, which encourages a relationship of trust between players.

* “Organisation de la valorisation des déchets dans les villes en développement” (Organisation for Waste Recycling in Developing Cities) programme headed by AFD, Le Mans University, NGO Gevalor, Urbanalyse and ALBWaste.
http://eso-lemans.cnrs.fr/fr/recherche/programmes-en-cours/projet-afd.html

Pre-collection by neighbourhood communities

Some African and Asian councils do not have the means to provide a door-to-door service. Waste is pre-collected (from households to transfer stations) directly by inhabitants or informal micro-service providers paid individually by each household or collectively by the neighbourhood organisation.

In 2016, over 88% of waste in Surabaya (Indonesia) was collected by pre-collection. Just 12% of the waste produced by the city escapes this management method (illegal dumping, informal recycling and open burning) as opposed to 35% and 42% respectively in Lomé (Togo) and Antananarivo. In addition to the health and environmental benefits, this high rate of community pre-collection is behind significant recycling and composting rates. Surabaya's success story is rooted in the tradition of community management at *Kampung* (traditional neighbourhood) level. This level already handles a range of services such as collecting on water and electricity bills, managing green spaces and road cleaning. Resident engagement is encouraged by a competition – Surabaya Green and Clean – organised by the council and businesses, which awards the most active neighbourhoods. The competition has met with considerable success, resulting in the greening of the *Kampungs* and the spread of innovations such as the Waste Banks. These community banks of recyclable waste function as commons in that they deploy a resource (recyclable waste), a user community (neighbourhood housewives, including a small group of volunteers) and management rules (bank deposit times and place, payment once a year, regular resale to an informal trader, etc.).

Variable council participation in waste collection

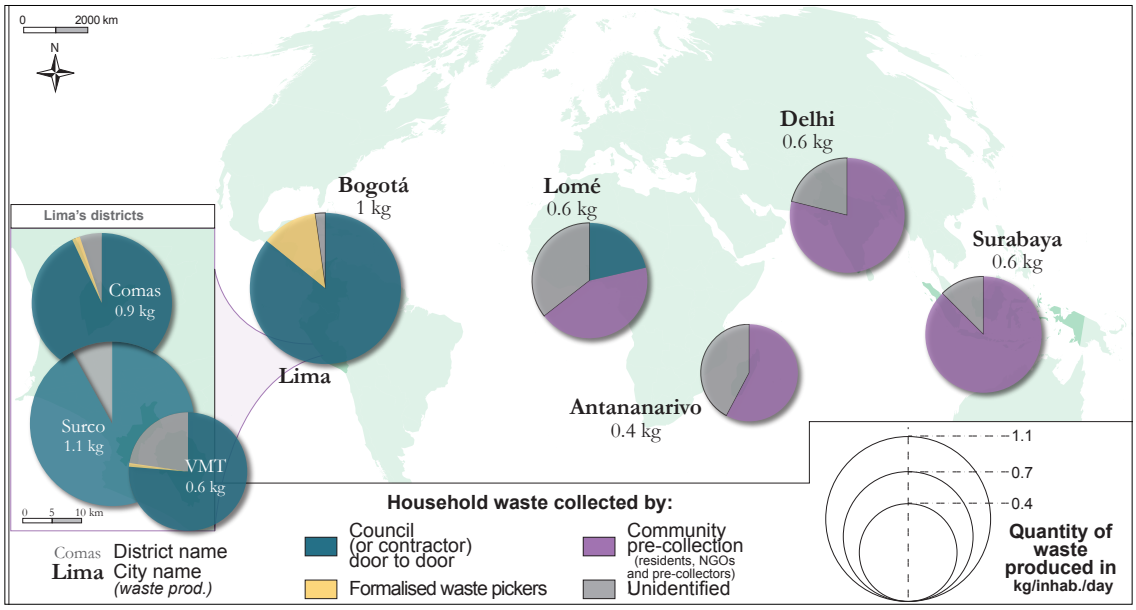
Figure 1 shows the national variations in the relative share of councils involved in the collection of waste output locations (households) to treatment sites. In Latin America, the council – or its contractor under council oversight – collects door to door and then transports the waste to the treatment site that it runs. In Africa and Asia, the majority of neighbourhood collection is handled by community pre-collection, i.e. by other players. The councils simply take care of transporting the waste from the transfer stations on the main roads and handling its end treatment. However, the recycling chains largely escape them.

Councils in Africa have stepped in to coordinate pre-collection (Antananarivo since 2005 and Lomé since 2015). In Antananarivo, the basic administrative units (*Fonkontany*) at district level are officially tasked with waste pre-collection, in addition to other public service assignments. In Lomé in 2015, the council decided to sign public service delegation contracts with the pre-collection players in each district to improve the coverage rate. The pre-collection players themselves continue to be paid directly by the population. The councils' lack of financial resources and difficulties collecting local taxes are therefore offset by the direct trust-based financial relationship between inhabitants and pre-collectors they know.

Recycling imposed by informal neighbourhood players

The approach developed by the Latin American cities is to recognise the de facto role played by informal players in the recovery and recycling of scrap with a market value (metal, plastic and paper-cardboard). After

FIGURE 1: WASTE MANAGEMENT PLAYERS



Source: © M.Durand, Le Mans University, ORVA2D

long hounding them, public authorities are now seeking to make use of their skills and improve their working conditions (in Brazil since 2002 and Peru and Colombia since the 2010s). Waste pickers, originally seen as the cause of urban squalor, have hence become leading players in the conservation of the local environment.

Bogotá (Colombia) is particularly dynamic, with 12% of household waste captured by formalised waste pickers in 2015. This is the achievement of a long legal process (2002-2015) whereby the Bogotá Association of Waste Pickers (ARB) obtained from the municipal authorities acceptance of the presence of the informal players on a par with any other service provider. Since then, the councils pay waste pickers €27 per tonne; income they receive in addition to earnings from the resale of the materials. This payment for council cost savings (collection and treatment) is a major innovation. It represents 5% of the city's annual waste management budget.
In Peru, a special legal status was created in 2009 to improve health and safety constraints and enable informal players to work with the councils. Brazil boasts a range of models. Some cities have set up huge sorting cooperatives to facilitate the waste pickers' work. However, these have made street collection marginal and illegal, raising other problems and evidencing the importance of grassroots contacts with residents and governance rules decided on together at neighbourhood level.

TECHNICAL DECENTRALISATION: POTENTIAL ASSOCIATED WITH LIFESTYLES AND FINANCIAL CAPACITIES

The organisational decentralisation observed above offsets the traditional public players' lack of resources. It often goes hand in hand with technical decentralisation for the sorting and recovery operations to reduce the need for a centralised treatment unit, which is always very expensive to run.

Transfer stations: innovative waste recovery infrastructures

The transition from pre-collection to collection calls for a waste storage and removal site. Where there is no purpose-built site, rubbish accumulates in open dumps along main avenues and waterways or on wastelands. The challenge is therefore to formalise the transfer stations: Lomé has set up 'transit sites', Delhi has *Dhalaos* and Surabaya has 'Temporary Shelter Facilities'. They are managed by pre-collection contractors (Lomé), the council (Delhi) or the community of inhabitants (Antananarivo and Surabaya).

In addition to transferring the waste to the controlled dumps, these infrastructures select recyclables for resale. Sorting may be done illegally on the roadside near the *Dhalaos* (Delhi) or legally on purpose-built premises (Surabaya and certain sites in Lomé). In the Latin American cities, the formalised waste pickers' 'storage premises' play this role of a platform for the neighbourhood. They are equipped (by the council or NGOs) to comply with environmental and health standards. The challenge lies in structuring the entire waste recovery chain from pre-collection through to sale for waste flow traceability and improved working conditions at each stage.

Organic waste: the urgent need to recover most biodegradable waste at local level

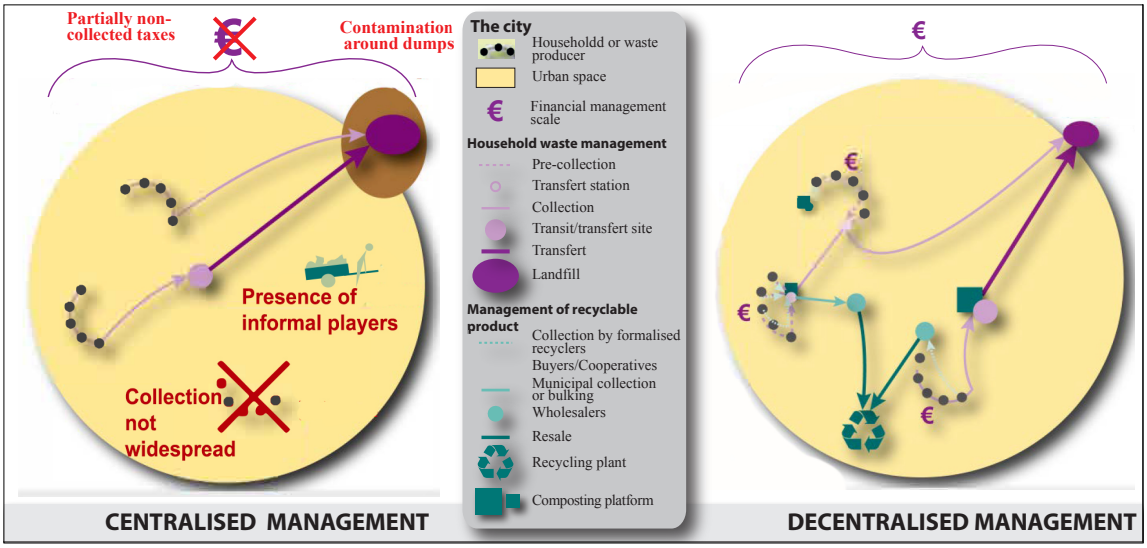
Household waste in Southern cities comprises mainly organic matter: from 52% in Lima to 79% in Antananarivo in 2015. Yet very little is done to recover this waste, which encumbers the already saturated controlled dumps. Some cities are starting to set up composting platforms on a city scale. This technique involves collecting biowaste at source (often market waste) or composting untreated mixed waste (see the Africompost project – http://www.africompost.org/). Given the difficulty of producing high-quality compost on such a scale (and selling it to farmers), some cities choose to have decentralised composting platforms. Although individual composting is a feasible option, the neighbourhood scale is often preferred. For example, collective composting is developing in certain Fonkontany in Antananarivo. The compost can then be directly reused in the neighbourhood (subsistence gardening) without having to rely on agricultural markets.

The city of Surabaya is the most innovative in this area. City hall has set up 23 composting platforms around the city to recover its green waste. In addition, 19,000 individual composters have been distributed in five years. This ambitious policy to decentralise part of the collection and treatment of household waste has enabled 5% of the city's waste to be composted for a financial investment of just 2% of the service's management budget, not to mention the substantial savings made in terms of the quantity of waste not transported or buried in landfills.

CONCLUSION

The findings of the ORVA2D project's research in developing cities shows that waste management is becoming increasingly complex in terms of players and overlapping

DIAGRAM 1. SPATIAL DIAGRAM OF DECENTRALISED WASTE MANAGEMENT



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scales. Yet this social and geographic complexity appears to be more effective at improving the service quality and coverage rate than technologically upgrading the treatment methods used. The neighbourhood level is suitable for the development of new waste management practices, since it imparts more of a sense of community to the supply of a basic service and turns these practices more into 'commons-based' approaches whereby inhabitants' initiatives give rise to the definition of collective management rules. We are seeing a popular and (micro) local reappropriation of waste, reducing the burden to be managed by public authorities and their private operators. The centralised public waste management service perimeter is shrinking. It is increasingly supplemented by collection-at-source and local recovery initiatives that see part of the waste produced as 'common-pool resources', as Elinor Ostrom put it, that communities can reuse and share in the profits (Cavé, 2018).

The challenge to the 'universality of the service' (Jaglin, 2012) is not always an ambition: it is sometimes driven by poor public management. Moreover, it calls for careful municipal coordination to prevent any risk of urban segregation.

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