The governance of waste: formal and informal rules in the central region of Mexico

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ABSTRACT
Integrated solid waste management (ISWM) is the strategy for waste policy in Mexico. It entails a complex reorganization of waste services that disrupts preceding action systems and ignores previous local practices, such as scavenging, an informal activity whose goal is the recovery of materials from waste. The objective of this paper is to understand the governance of waste in a context of formal and informal rules in the central region of Mexico.

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INTRODUCTION
In Mexico, as in many other countries from the Global South, scavenging has developed as an informal activity. According to UN-HABITAT (2010), waste pickers perform between 50% and 100% of waste collection in most cities in developing countries.

The pепена в Mexico is carried out by people who belong to marginalized social groups, and who make their living from collecting, sorting and reclaiming recyclables from waste. It represents an important activity as it provides self-employment and enables waste system efficiency. However, despite its contributions, scavenging is banned, since the waste problem is tackled by a global strategy named integrated solid waste management (ISWM), a technologically oriented solution that ignores the crucial role that pепенadores play in waste management, and does not provide a strategy to incorporate them.

In this sense, the ISWM, as a public policy approach, at its implementation stage poses a paradox for local officials in charge of waste management in Mexico who, in order to comply with national policy goals, must choose between banning the pепена or continuing to integrate it covertly.

The point being made here is that in the Mexican context, formal laws, regulations, structures and organizations are not sufficient for governing the waste management sector and, because of...
that, these hybridize with other informal norms, structures and organizations that are already in place, in this particular case: the pepena.

Certainly, this case can be analyzed from different perspectives, one of which is that of governance. Governance refers to interaction between public authorities and other societal actors in the delivery of public service. In the case of waste management, the public service is delivered by agents from both different government levels and the private sector. Thus, waste management, as a governance system, encompasses at least two decision-makers operating within different structures and driven by different objectives, norms and interests, but who nonetheless establish mechanisms for cooperation and coordination to achieve the implementation of the ISWM.

The goal of this paper is to understand the governance of waste in a context of formal and informal rules, to shed a light on the inclusion of both formal and informal practices, and to understand the factors that facilitate waste management implementation in the central region of Mexico.

URBAN INFORMALITY AND GOVERNANCE

There are two ways of thinking about urban informality. The first is to define it as ‘a world of economic activities outside the organised labour force’ performed by ‘urban sub-proletariat’ (Hart, 1973, pp. 61, 68). The term emphasizes informality as a category as opposed to formality, to describe a deviation, a policy problem, an uncontrolled and unregulated phenomenon that is restricted to a territory, to a particular social group and to a specific type of activity (Porter et al., 2011; Roy, 2005). In this way, a dual vision of formality and informality has been consolidated.

Contrary to this conception, this paper builds on the concept of governance, emphasizing that waste management is a product of a hybrid interaction between formal and informal rules, where formality and informality constitute an interconnected system, a dynamic framework constructed in everyday social interactions, a series of transactions that connect different economies, spaces and relations (Roy, 2005; Dovey, 2012).

While the pepena has been studied in Mexico, especially in the central region, it has been analyzed from a dualistic perspective, as a survival activity of a marginal group within the context of urban growth in the region during the 1960s (Castillo, 1984; Medina, 2007). One of this paper’s contributions is to advance our understanding of the role of urban informality, and expressly recognize the pepena as a fundamental element of waste management in the implementation of the ISWM.

Since the ISWM has been implemented, waste services have been modernized and mechanized through technological devices with the objective of optimizing the collection and final disposal of waste. In this context, ‘informal workers in solid waste management are often ignored or seen as hindrances to an efficient waste management process’ (Gunsilius, Chaturvedi, & Scheingberg, 2011, p. 4). This indicates that a dualistic vision prevails in the waste sector, which conceives informal activities – waste picking, collection or informal recycling – as pre-modern, irrational and incompatible with the ISWM.

Against this background, waste, in its transition process, becomes an object of dispute. On one hand, local officials want to implement the sustainable paradigm that underlies ISWM and, on the other, the pepenadores have already played an important role in waste management before the policy’s implementation. This could be understood as an ‘action arena’, where the ‘action situation’ refers to the social space in which individuals and organizations ‘interact, exchange goods and services, solve problems, dominate one another and fight’, and therefore are used to ‘describe, analyse, predict, and explain behaviour within institutional arrangements’ (Ostrom, 2011, p. 11). In the Mexican case, the action arena was assumed to shape the efforts carried out towards the implementation of the ISWM.
We recognize that the Institutional analysis and development framework (IADF) approach proposed by Ostrom is rich and broad; this paper focuses only on the analysis of formal and informal rules, because it is an applicable frame for scrutinizing the interrelationship in waste management, and for highlighting the importance of institutions, understood as ‘codes of behaviour that potentially reduce uncertainty, mediate self-interest and facilitate collective action’ (Ostrom & Cox, 2010, p. 5).

Institutions are formal and informal rules in the game that builds a governance system, which reveals ‘who can do what to whom and whose authority’ (McGinnis, 2011, p. 171).

The IADF is composed as follows (Figure 1): this paper seeks to contribute to our understanding of the governance of waste in a context of formal and informal rules. It is based on the premise that the interactions between formal and informal agents will be more intense in areas where waste management is more complex. Therefore, the hybridization of formal and informal rules becomes an interconnected hybrid system which results in effective urban governance, that is, it builds collective action.

**METHODOLOGY AND CASE STUDY OVERVIEW**

The central region of Mexico has a high population and economic concentration. The states of Mexico, Hidalgo, Tlaxcala, Puebla, Morelos and Mexico City compose this region, decreed as a conurbation zone as of 1976. Moreover, because of its size and complexity, urban management in the central region is a challenge.4 Waste management is just an example of this.

For the analysis of actors who interact in the ‘action situation’, the social space in which individuals interact, exchange goods and services, participate in appropriation and provision activities and solve problems, among others (Pacheco-Vega & Basurto, 2008, p. 91), it was necessary to identify the agents involved in waste management at the local level. On the one hand, we identified local officials under pressure to make ISWM succeed in a scarcity scenario and, on the other, the waste pickers, who have played an important role in waste recovery and service delivery since before this policy was implemented. The objective was to categorize the formal and informal rules in the governance of waste, that is, to recognize the rules that govern interactions at an operational level between local officials and the *pepenadores*. This is essential in order to explain the operational performance of the governance of waste (Figure 2).

The data presented stem from a qualitative analysis of 17 in-depth interviews conducted between 2013 and 2014 with actors from Mexico City, the state of Morelos and the state of Mexico, ranging from public and private affiliations, local and regional authorities, and
scavengers and entrepreneurs in the waste sector. The collected data were transcribed and coded using MAXQDA software before the analysis presented in this paper.

INFORMAL RULES IN THE WASTE SECTOR IN MEXICO

Analyzing waste management as an action arena allows one to observe a process in which multiple actors converge. Formal rules are the laws and regulations that govern the waste sector as a specific area of public policy. These rules derive from legal structures and confer authority and specific roles; however, they do not entail a distribution of capacities and resources to exercise authority in the waste sector.

Informal rules, precedent to the application of formal rules, reveal that waste management is a vulnerable arena, where responsibilities are diffuse and the distribution of resources and knowledge is uneven.

The interactions between formal and informal elements within the action arena explain the operational performance of waste management. These reveal the local officials’ incentives to collaborate with pepenadores in order implement the ISWM model in a context of resource scarcity and also clarify why waste pickers interact with local officials on a regular basis to gain recyclable material.

These interactions draw an overview of the interconnected hybrid system upon which waste management in Mexico is built. Three expressions of informality in this system emerged from empirical material (Figure 3).

Informality is thus:

- A continuum process expressed in a variety of practices, at different spheres of society and diverse contexts, and which involves a diversity of people, practices, strategies and modalities.
- A form of relationship. Informality shapes the ways agents are interconnected and how these agents are related to the state. It is a mechanism that reveals who and what counts for building urban governance.
- An implementation resource. Informality is transformed into matter, into extra-labour, into resources, which are gained upon achievement of waste management goals at the local level.
Next, we examined the hybrid interaction that governs waste management in the central region of Mexico.

First, the interconnected hybrid system of waste is expressed in informality as a *continuum*, which contests the idea of informality as a practice of a circumscribed social group, as the dualistic vision proposes. Instead, it entails a practice exercised by all: waste pickers, society and authorities.

For example, in the state of Mexico, municipal waste collection workers are allowed to recover recyclables during their labour day to earn extra money, and often to keep the collection service running, for example, by using the money obtained from the sale of recyclables to fix collection trucks when they break down. A local official describes this situation:

> collection workers scavenge during the route and keep what they find. I cannot take the material found away from them because many of them have low salaries, and sometimes give maintenance to collection trucks, for example, in the case of a flat tire.

It is estimated that Mexico City has around 10,000 volunteers (*pepenadores*) working in waste service, who subsist from the waste reclaimed throughout the working day, both in official and informal trucks. Between 80% and 90% of waste collectors have no contract or salary (Ayala, 2017).

Second, informality as a form of relationship in an interconnected system creates space for the development of discretionary actions. This brings one to an impact of the institutional arrangements that shape the governance of waste in the central region of Mexico: informality creates opacity, of which local authorities take advantage to determine who and what is politically important, and to enhance their power through prohibition or inclusion strategies.
In this sense, informality allows the local government to measure its strength in relation to other actors and legitimize its action by co-opting clientele groups. One scavenger at a dumpsite in the state of Morelos explains:

they do not help us, instead they require us to clean up municipal green areas, to clean the way to the dumpsite, or to participate in the campaign ‘Let’s Clean Mexico’. They tell us – we need trucks, scavengers and collectors – and we do this without any payment because they allow us to work here.

This statement reveals how the discretionary power of street-level bureaucrats – that derives from informality seen as a practice of accumulation – favours the emergence of clientele relationships and corrupt practices.

Third, urban informality as an implementation resource is an *in vivo* code deduced by local authorities. In this case, informality exposes the emergence of a new policy implementation platform that responds to the application of formal rules in local realities.

Even though informality was conceived as a transitional mechanism or a temporary agreement, local authorities use and allow informal practices because they esteem that under local conditions of scarcity it is impossible to implement a waste policy. Nonetheless, they recognize their immediate benefits and contributions to formal waste management systems. A local official of the state of Mexico clarifies:

In the transfer station there is a family of female scavengers who separate recyclables and give us money for them, and then sell what they find. In order to fully carry out the implementation, I would need to provide fuel and maintenance to collection units. After that, I could request pickers not to extract recyclables during collection routes. Secondly, I would have to hire staff for the selection of recyclables in the transfer facility, and right now I do not have optimal conditions to do either, at this moment of time informality is a resource.

This dimension of the interconnected hybrid system highlights the ambivalence experienced by local officials due to the uncertainty caused by the implementation of policies without having the necessary resources and capacities to do so. In this way, local conditions impel street level bureaucrats to allow informality.

**DISCUSSION**

Mexico has heterogeneous actors involved in waste management. Thus, the hybrid interactions between them are a functional phenomenon and a structuring social process. Informality in the waste sector is therefore a ubiquitous process, not an exclusive phenomenon for specific people, places and practices.

This paper has characterized a series of formal and informal rules in waste governance in some states from the central region of Mexico. Although waste management is formally structured as a municipal responsibility, data suggest that there is a general tendency to hybridize formal and informal rules to build the urban governance of waste management.

In this sense, the governance of waste does not require fixed arrangements between actors; instead, it is a social process whose basic units are the interactions between formal and informal rules that take shape in an action situation framework.

**CONCLUSIONS**

By examining formal and informal rules and their interactions, this paper invites one to think differently about informality. It suggests that informality in the waste sector is a necessary
operational dimension of the implementation of solid waste management in the central region of Mexico. In this sense, its findings support the relevance of the governance approach as an analytical lens.

For academics and policy-makers, the relevance of the findings is that hybridization of formal and informal rules in the waste sector could be understood as an urban governance mechanism, which is deployed to implement, under local conditions, the national environmental strategy for waste management; that is, it represents an alternative order for top-down planning generated by the lack of infrastructure and resources among the Mexican municipalities.

In this sense, the findings offer insights that could be used in policy formulation and planning processes in the waste sector by involving informal activities in waste management and recognizing their contribution or, in other words, to make the already ongoing interconnected hybrid system visible.

This review of the governance of waste in the context of formal and informal rules poses more research questions. Further research could explore the possible emergence of a new bottom-up hybrid institution for waste management. It could also investigate how structural elements affect institutional arrangements at the local level. Finally, how coordination and collaboration between actors is built to reach waste management goals in a context of power struggles.

NOTES

1 The term ‘scavenger’ was replaced by ‘waste picker’ at the 1st International Conference of Waste Pickers in Bogota, Colombia, in 2008, to refer to those who carry out the primary collection and sorting of waste.

2 The federal district’s Solid Waste Law defines the pepena as the action of collecting solid waste that has some value at any stage of the management system (Article 3). The term pepenador in Mexico is equivalent to waste picker.

3 The federal district’s Solid Waste Law establishes that it is strictly forbidden to scavenge solid waste from containers installed on public roads and within final disposal sites and their surroundings (Article 25).

4 Despite the fact that the Environmental Commission of the Megalopolis (CAMe) was created in 2013 as a coordination instrument for the planning and execution of regional environmental actions, waste management is still a municipal task.

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