

School of Public Administration

Working Papers Series

2014:24

**The travel of global ideas of
waste management**
**The case of Managua and its informal
settlements**

Patrik Zapata

María José Zapata Campos



UNIVERSITY OF GOTHENBURG
SCHOOL OF PUBLIC ADMINISTRATION

Contributions published in SPA Working Paper Series are scientific reports produced by researchers at the School of Public Administration, University of Gothenburg. Working papers as well as finished reports are included in the series. Paper could be published in Swedish or in English. A member of the Editorial board must approve the publication of each paper.

Editorial board:

Gregg Bucken-Knapp
Henry Bäck
Vicki Johansson
David Karlsson
Lena Lindgren
Stig Montin
Östen Ohlsson
Björn Rombach
Osvaldo Salas
Iwona Sobis
Rolf Solli
Patrik Zapata

Editor:

David Karlsson
E-mail: david.karlsson@spa.gu.se

School of Public Administration, University of Gothenburg
P.O. Box 712
SE 405 30 Gothenburg
Sweden

Papers from the SPA Working Paper Series can be downloaded from the Internet:
www.spa.gu.se (publications)

School of Public Administration Working Paper Series
2014:24

The travel of global ideas of waste management. The case of Managua and its informal settlements

© Patrik Zapata & María José Zapata Campos (2014)

ISSN 1651-5242

School of Public Administration Working Paper Series: Published Papers

2014:24 Patrik Zapata & María José Zapata Campos: The travel of global ideas of waste management. The case of Managua and its informal settlements

2013:23 María José Zapata Campos & Patrik Zapata: Switching Managua on! Connecting informal settlements to the formal city through household solid waste collection

2013:22 Hervé Corvellec, María José Zapata Campos & Patrik Zapata: Infrastructures, Lock-in, and Sustainable Urban Development – The Case of Waste Incineration in the Göteborg Metropolitan Areas

2012:21 David Karlsson & Ylva Norén Bretzer: Swedish Regional Reform and the Political Map: Party Interests at Stake

2012:20 Osvaldo Salas: Har kvasimarknaden fungerat som den skall i särskilt boende?

2011:19 David Karlsson: Gåtan Fagersta. Om partier som har större framgång i kommunalvalet än i riksdagsvalet

2011:18 Evio Accinelli, Edgar J. S. Carrera & Osvaldo Salas: Labor force decision to migrate

2007:17 Johan Berlin & Erik Carlström: From Artefact to Effect - The Organising Effect of Artefacts On Teams

2007:16 Tobias Johansson & Sven Siverbo: Rational, Political and Cultural Explanations to the Utilization of Relative Performance Evaluation in Swedish Local Government

2006:15 Lena Andersson-Felé: Time to Revive Luther Gulick. On Span of Control and Organisation Quality

2006:14 Björn Brorström & Viveka Nilsson: Does Organization Matter? A Study of Physicians' ideal organization

2006:13 Patrik Zapata Johansson: Legitimacy Lost and Back to Normality. Scandals in the Public Sector - The Swedish Case

2005:12 Staffan Johansson, Mikael Löfström & Östen Ohlsson: Separation or Integration. A Dilemma when Organizing Development Projects

2005:11 Tobias Johansson: Contractual Choice and Performance in Municipal Service Delivery. The Case of Swedish Elderly Care

2005:10 Sven Siverbo & Gustaf Kastberg: Activity based financing of health care. Experiences from Sweden

2005:9 Christian Jensen, Staffan Johansson & Mikael Löfström: The interactive project. A model for analyzing environmental uncertainty

2004:8 Henry Bäck: The complementarity of urban leadership and community involvement

2004:7 Henry Bäck: Communication, cohesion and coordination. Metropolitan regions in Sweden

2003:6 Henry Bäck: Partified City. Elite political culture in Sweden's biggest cities.

2003:5 Sven Siverbo: Purchaser provider split in principle and practice

2002:4 Björn Brorström & Sven Siverbo: Successful Change? Explaining the Development in Five Municipalities

2002:3 Björn Brorström, Bo Hallin & Gustaf Kastberg: Significance of Control Models. Intentional and Unintentional Effects

2002:2 Henry Bäck: Fragmentation and consolidation in the big city: Neighbourhood decentralisation in six Scandinavian cities

2002:1 Björn Rombach & Rolf Solli: Learning Leadership. The Cinema as University

The travel of global ideas of waste management. The case of Managua and its informal settlements

The paper is in a later version published in Habitat International, Volume 41, January 2014, Pages 41-49, <http://dx.doi.org/10.1016/j.habitatint.2013.07.003>

AUTHOR 1

NAME: Patrik **Zapata** (family name in bold)

AFFILIATION: School of Public Administration, University of Gothenburg, Sweden

AFFILIATION ADDRESS: School of Public Administration, University of Gothenburg, P.O. Box 712, 405 30 Göteborg, Sweden

EMAIL: patrik.zapata@spa.gu.se

AUTHOR 2, author for correspondence

NAME: María José **Zapata Campos** (family name in bold)

AFFILIATION: Gothenburg Research Institute, University of Gothenburg, Sweden

AFFILIATION ADDRESS: Gothenburg Research Institute, University of Gothenburg, P.O. Box 603, 405 30 Göteborg, Sweden

EMAIL: mj.zapata@gri.gu.se

ABSTRACT: Informal settlements (“barrios”) in the global South cities are often neglected by formal solid waste collection services. In the city of Managua, the municipality and international and local NGOs recently implemented several waste management projects to provide waste collection in informal settlements. These projects supported or created cooperatives or microenterprises of waste pickers collecting household solid waste in barrios inaccessible to modern waste trucks. The

projects also created three waste transfer stations, on barrio fringes, where the collected waste could be disposed and transported by municipal truck to the municipal landfill. New institutionalism theory and the “travel metaphor” illuminate how the “waste transfer station” idea travelled to Managua from various international organizations. New urban infrastructure and waste management models introduced by donors were decoupled from existing waste management models and practices. Despite the organizational hypocrisy of the city administration, introducing this new model via pilot projects in three city districts challenges the logic of the existing centralized waste management system, which ignores the city’s informal settlements. The introduced waste transfer stations and associated waste collection practices were translated, and sometimes contested, in some informal settlements through protests, occupations, and other defiance strategies enacted by municipal waste collectors, squatters, and residents.

KEYWORDS: Waste management; Informal settlements; New institutionalism; Translation; Waste transfer station

ACKNOWLEDGEMENTS

Thanks and great appreciation goes to the communities in the Barrios Managua’s districts 5, 6 and 7, to the members of the *Manos Unidas* and *Limpiando Fuerte* cooperatives, to Xochil Lacayo, municipal officer, Róger Pérez from the UNDP office in Managua, the UN-Habitat officers in Managua, Mauro Minelli, BasManagua project manager and to Héctor Delgado, from Habitar. The research was funded by the Jan Wallander foundation and the Gothenburg Center of Globalisation and Development.

The travel of global ideas of waste management. The case of Managua and its informal settlements

Introduction

Household solid waste collection in informal urban settlements of the global South is often ignored by public waste collection services; instead, the informal sector frequently provides this critical service (Arroyo, Rivas, & Lardinois, 1998; Coad, 2000). Waste collectors, individually or collectively, collect household solid waste with carts drawn by horses, bicycles, or trimotos (Katusiimeh, Burger, & Mol, 2013; Oteng-Ababio, Arguell, & Gabbay, 2013; Zapata Campos & Zapata, 2013a). Many development projects have supported the informal services provided by these local entrepreneurs due to their multiple contributions to the Millennium Development Goals: creating employment for low-income citizens, improving public health, and reducing the environmental footprint of cities (e.g., Anand, 1999; Furedy, 1992; Hasan, 2006; Mitlin, 2008; Wilson, Velis, & Cheeseman, 2006).

In this paper, based on a case study of the city of Managua, we explain how ideas of waste management travel – via international aid development agencies, international consultants, and other policy actors – and how these ideas are locally translated to provide a solution to the lack of household waste collection in informal settlements. In Managua, the municipality, international and local development agencies and NGOs recently implemented several waste management projects to provide waste collection in informal settlements. These projects supported or created cooperatives or microenterprises of waste collectors collecting household solid waste in barrios (i.e., neighbourhoods of informal settlements) inaccessible to modern waste trucks. The projects also created three waste transfer stations, on barrio fringes, where

the collected waste could be disposed and transported by municipal truck to the municipal landfill. The paper demonstrates that the new waste transfer stations and decentralized waste collection practices introduced in Managua via pilot projects are challenging the existing logic of a centralized waste management system, based on modern waste trucks, that ignores the absence of this critical service in the city's informal settlements.

The travel of ideas metaphor from new institutionalism theory serves as the theoretical framework to analyse the case study, which is presented in the next section. Then, the methods used to collect and analyse the data are described. Thereafter, we present the three waste management projects in Managua, funded by international development organizations, which are examined in the case study. The findings are discussed in the next section. The paper concludes by discussing how the new decentralized service and the waste transfer station will either become institutionalized or fade away, and the potential implications of this for the municipality and the informal settlements of Managua.

Theoretical framework: new institutionalism and the travel metaphor

In new institutionalism theory, imitation is conceptualized as a basic mechanism for circulating ideas that become rational myths (Meyer & Rowan, 1977), for example, decentralized waste management models or new critical infrastructure such as waste transfer stations. Organizations will respond with compliance strategies by adopting these ideas if they perceive benefits from following the rules of the institutional field (Oliver, 1991; Sharfman, Gray, & Yan, 1991). In the case of local governments in many global South cities, aid development agencies are powerful institutional constituents that bring ideas of governance and management in association with the

projects they fund. There are many examples of these isomorphic pressures (e.g., Caulfield, 2002, 2006; Zapata Campos & Zapata, 2012, 2013b); for example, New Public Management ideas have travelled the globe and been implanted in developing countries under donor pressure (Sulle, 2010). Other ideas, such as participatory processes, have become internalized habits and the normative expectations of the agents and subjects of development (Green, 2010). In other words, what ideas travel seems to depend more on who transports and supports them and how they are packaged, formulated, and timed (Czarniawska-Joerges & Joerges, 1996; Sahlin & Wedlin, 2008) than on the ideas themselves.

It is important to clarify that ideas, practices, institutions, models, or technologies cannot travel until they are simplified, abstracted, embodied, and inscribed, as only bodies or things can move in time and space (Czarniawska, 2002, p. 7). In the translation process, as elaborated by Czarniawska-Joerges and Joerges (1996, p. 46), an idea is disembedded from its institutional surroundings, packaged into an object, translated and unpacked to fit the new context, translated locally into a new practice, and is then re-embedded. What is finally re-embedded is not the idea or technology as such, but rather accounts and materializations of it (Sahlin & Wedlin, 2008) in different local versions in different local contexts.

Therefore, the travel of ideas does not imply the reproduction of exact copies of original ideas; instead, the adoption of new ideas can eventually bring about change and innovation. The travel of ideas metaphor has developed from a “diffusion” to a “translation” model, in which institutional pressure, or rather, external ideas, are translated, changed, and localized in the new organizational context (Czarniawska-Joerges & Joerges, 1996; Czarniawska-Joerges & Sevón, 1996, 2005; Sahlin-Andersson, 1996). Accordingly, the travel of models and policies cannot be

reduced to the simple compliance, assimilation, and appropriation of programmes transferred from North to South. Instead, development aid projects are also locally contested and eventually localized, overt or covertly. Local actors (e.g., city managers and community leaders) can create new spaces in which to interpret, adapt, and twist these projects to fit local needs, meanings, and interests (Zapata & Hall, 2013; Zapata Campos & Zapata, 2013b).

This explains why organizations such as local governments, although subject to the same effects of institutional forces, do not all respond in the same manner to these pressures (Scott, 1995). Organizations can respond to the travel and adoption of ideas not only with compliance and compromise strategies, but also with avoidance, defiance, and manipulation (Oliver, 1991).

Once ideas have travelled to local governments, cities, and local communities, inconsistencies with well established practices and institutions can emerge; these can be resolved by decoupling ceremonially adopted ideas from existing organizational practices (Meyer & Rowan, 1977). This has also been called “organizational hypocrisy”, i.e., the extent to which organizations decouple organizational discourse from decisions and actions (Brunsson, 1989). For example, the introduction of participatory policy making models in municipalities has eventually led to the decoupling of decision-making power still retained by municipal politicians and officers with the participation of non-governmental organizations (NGOs) launched to gain social legitimacy (Zapata Campos & Hall, 2012). Despite this, even the decoupling of adopted ideas from organizational practices may eventually have consequential effects on formal structures and day-to-day practices, resulting in organizational change (Sahlin & Wedlin, 2008), as we will demonstrate was the case with the travel of the waste transfer station model to Managua.

Methodology

The paper is based on the case study (Yin, 2009) of the city of Managua and the waste management projects implemented by the municipality and international and local NGOs to provide waste collection services in informal settlements. The data analysed here were gathered on three field visits to Managua in December 2009–February 2010, January–February 2011, and June–August 2012. The research was qualitative (Silverman, 2005), based on semi-structured interviews, meeting observations, workshop participation, and photographs.

On the first field visit to Managua, our focus was on the origin of the waste management projects. We interviewed, among others, donor and aid development managers (from UN-Habitat Nicaragua, UNDP, Spanish Aid Development Agency, Italian Cooperation, and Habitar) responsible for conceptualizing the projects, seeking to learn how the projects were formed and where and from whom the ideas and models originated. On the second and third visits, we concentrated on what had happened over the intervening year. We interviewed project managers, politicians, and municipal officers, but also waste collectors, community leaders, municipal waste operators, and informal settlement residents, to understand how the projects were being translated into Managua's waste management system during their implementation, by whom, and with what implications for the municipality, districts, informal settlements, waste collectors, and residents. In visiting the organizations' headquarters, we concentrated on the relationship between the field offices and headquarters when formulating and implementing the projects. When visiting the informal settlements, we concentrated on the provision of the waste collection

services, the co-ordination between the municipality, waste collections, aid organizations, and residents.

During our fieldwork, we conducted a total of 70 personal interviews , including community leaders, residents, waste pickers, NGO workers, development aid organization officers, city managers, public officers, politicians, ambassadors, development aid organization managers and directors, municipal waste operators, waste collection cooperative members, waste handling and recycling corporation personnel, NGO volunteers, engineers, and architects. Most interviews were semi-structured and lasted around 50 minutes. Other interviews constituted spontaneous encounters with residents, waste collectors, and municipal waste operators during our observations in the informal settlements. The latter were more open conversations about the projects, and their implementation and implications.

We also conducted non-participant observations of meetings and events during project implementation. These included meetings in development aid organizations, environmental campaigns involving cleaning brigades, social events in the studied barrios organized by the municipality to promote the project, waste collector cooperative meetings, and a workshop to evaluate the development project together with residents and community leaders. We documented these events by taking photographs and keeping a field diary of our observations.

The data analysis started with the waste management projects implemented in Managua during the studied period. Then, as McCann and Ward (2012) suggest in their study of policy mobilities, we traced the connections of the projects with some of their referent ideas and management models (e.g., decentralized waste management and waste transfer stations), following these back to other places and times. Then, following the translation process as presented by Czarniawska-Joerges and Joerges

(1996, p. 46), we focused on how the ideas were disembedded from their institutional surroundings, packaged into objects, translated and unpacked to fit the new context, and translated locally into a new practice, i.e., “re-embedded”.

The case-study: waste management in Managua and the waste management projects

Household waste collection service is provided by the Managua Waste Management Department three times a week. Up to 40% of the city consists of informal settlements with narrow alleys full of potholes and a multitude of hanging cables that hinder passage of the city’s waste compaction trucks. As a result, municipal waste trucks collect waste only in the main streets in the informal settlements. Since residents have to take their waste bags to these main streets at the exact moment when the truck passes, it is practically impossible for many residents of inner streets to use the service. Even in informal settlements that are accessible to modern compaction trucks, the waste collection service is reportedly very irregular (interviews with residents in informal settlements in districts 5, 6, and 7). In 2010, in Managua district 5 (Managua is divided into seven districts), it was estimated that 33% of households were completely unserved by official municipal waste collection, while the service provided to other households was inadequate (UNDP & Habitar, 2010).

Since the 1990s, several projects supporting the creation of waste collector cooperatives and microenterprises have been implemented. However, only one cooperative, *Limpiando Fuerte* (“Cleaning hard”), remained operative after the funding and the institutional support ended (Interview, Habitar officer). With the exception of some rare informal entrepreneurs (e.g., those in the “Joined Hands” cooperative in district 5), no organized alternative waste collection service was

provided to collect household solid waste in Managua informal settlements. From 2009 to 2012, the municipality of Managua implemented three projects, in collaboration with and co-funded by international and local NGOs, to address the lack of household waste collection in informal settlements.

These projects were (see Table 1 in appendix): Italian development aid cooperation funded BasManagua in district 7, UN-Habitat supported the construction of a waste transfer station in district 6 and the organization of a waste management system for Managua, and the local NGO Habitar, together with UNDP, supported the cart-men's cooperative Joined Hands and a waste transfer station in district 5. To a greater or lesser extent, all projects involved supporting or creating cooperatives or microenterprises of waste pickers to collect household solid waste, community participation to anchor the new services and infrastructure, public-private agreements or collaborative arrangements to guarantee the provision of the new household waste collection services, and constructing new physical infrastructure (i.e., waste transfer stations) previously nonexistent in the country.

The idea of a waste transfer station is simple: Waste collector entrepreneurs collect and transport household waste to authorized places on the fringes of the barrios, from which the waste is transported by trucks to the municipal landfill, recycling plant, or wherever the local government has decided is suitable for final handling or disposal. In this system, waste compaction trucks are not needed for primary collection and waste can be collected in more inaccessible parts of the city as well, so that the waste collecting trucks can be more efficiently used and maintenance costs lowered. In Managua, the waste transfer station was also necessary to ensure the regular activity of the waste collectors in the barrios: the waste they disposed of at the

stations had to be collected regularly by the municipality to prevent the formation of illegal dumps in the city districts.

Waste transfer stations in Managua: travel of the idea, negotiations, design, and implementation

The following section tells the story of the three waste management projects: how the idea of a waste transfer station and a decentralized waste management model travelled to Managua; how the idea was materialized in the design of three waste transfer stations in districts 5, 6, and 7; the negotiations and contestations enacted by local communities during the transfer station construction in the informal settlements; and how this new infrastructure and the waste collection services are being implemented in practice.

Arrival of the “waste transfer station” idea in Managua

The waste transfer station idea was brought to Managua simultaneously, but independently, by the two international aid agencies, UN-Habitat and UNDP, in 2009. The idea of official waste transfer stations located in residential and downtown areas as a part of the waste management infrastructure was new to Managua and had not been considered by politicians and officers of the municipality. Therefore, no waste transfer station for household waste collection in city districts existed in Nicaragua until these projects started promoting them, and it was the first time that municipal officers and politicians officially considered implementing this infrastructure.

In the case of UNDP, the Joined Hands project was the result of a larger international waste management project previously implemented in other global South

cities (Zapata Campos & Zapata, 2013a): Promoting Integrated Sustainable Waste Management through Pro- poor Public-Private Partnerships' Initiative (PPP-ISWM).

The PPP-ISWM initiative was a 4 year programme implemented by the UNDP Public-Private Partnerships for Service Delivery (PPPSD) in partnership with the Dutch NGO WASTE Advisers on Urban Environment and Development of Gouda, the Netherlands. The initiative aimed at scaling up sanitation and waste management activities through decentralised waste management and infrastructures, as controlled waste transfer points, based on public-private partnerships. The project supported the exchange and dissemination of plans, infrastructural solutions, and practices between the countries and cities involved. The UNDP Nicaraguan project manager visited WASTE in the Netherlands to learn from previous experience in other cities. Similarly, representatives of the other projects in other countries participated in a meeting in Managua to exchange ideas and experience.

In the case of the UN-Habitat project, the idea of a waste transfer station came from an international consultant who had undertaken many waste management projects for UN-Habitat and had contributed to a compilation of international good practices in municipal waste collection and transfer systems (UN-Habitat, 2010a, pp. 90–92). As the expert and associates state in their contribution to the UN-Habitat report: “A recent trend, which started in China and spread to Vietnam, Egypt, and now Nicaragua, is to use small transfer stations located close to where the wastes are generated that facilitate very low-cost primary collection systems” (UN-Habitat, 2010a, p. 95). The expert visited Managua in 2009, invited by the UN-Habitat project manager who was one of the expert’s former students. Managuan municipal officers were also invited to learn from good practices in waste management in Egyptian

municipalities, such as Faraskour, where the consultant had previously worked and successfully implemented a waste transfer station model.

The UN-Habitat project thoroughly assessed the economic costs of the city's current waste collection system. The report concluded that a decentralized model of household solid waste collection throughout Managua could lower current annual costs by up to 50% (UN-Habitat, 2010b). The report recommends constructing waste transfer stations in each of the Managua's seven districts. It also recommends replacing technologically advanced but delicate compaction waste trucks with more robust dump trucks for primary household waste collection. Waste would be disposed of at waste transfer stations in the city districts and then transported by container trucks to the municipal landfill. Such a decentralized waste management system would substantially reduce the distance driven by the primary collection vehicles. Similarly, the use of dump trucks instead of compaction trucks would reduce costs since they are cheaper to run and maintain, especially on bad roads. As a pilot project, UN-Habitat and the municipality agreed to construct a waste transfer station in district 6, funded by the project and supported by a fleet of more appropriate vehicles for household waste collection.

This is how the idea was disembedded from international good practices and brought to the Managua context by consultants, aid development officers, and municipal officers who visited waste transfer stations in other cities; the idea was packaged in the form of photographs, words, and reports (e.g., UN-Habitat, 2010a, 2010b).

Thereafter, the "waste transfer station" idea had to be re-embedded and anchored in the local government. The new idea travelled into the municipality through the Department of International Relations, in which aid development projects

(in partnership with the municipality) are negotiated and implemented. Then, the waste transfer station idea entered the Waste Management Department, since its implementation would imply restructuring and decentralizing the household solid waste collection services. Through capacity building, workshops, and work with the city's waste plan, UN-Habitat advocated the idea of waste transfer stations in the municipality. However, there was initial resistance to the idea, as we will discuss later. Despite the huge savings that would be realized by a more decentralized waste management system, the city administration was reluctant to replace waste compaction trucks with a "less modern" technology (interview with Managua Waste Management Department director).

The encounter of different waste management projects in the Managua city administration, coordinated by the Department of International Relations, resulted in the exchange of ideas, strategies, practices, and even infrastructural solutions (via the process of imitation), such as the waste transfer station, among the waste management projects funded by different aid organizations. A number of shared workshops, meetings, and study visits, were carried out by participants from the various projects. This explains why BasManagua, by learning from UN-Habitat and UNDP experience, decided to build a third waste transfer station in district 7 – an activity not initially contemplated in the BasManagua project. However, ideas such as the waste transfer stations were adapted to the new context; as described by the BasManagua representative:

The idea of the waste transfer stations came from the preparatory work of UN-Habitat. If not they had not [done the work], we would never have thought of that solution. The difference is – and here is the innovation – our station is for microenterprises and for the municipal district to use. The UN-Habitat station is for the municipal district [only]. To have three different models [i.e., Habitar, UN-Habitat, and BasManagua] of waste transfer stations is a good

way to see which one works best, or how they work, before we fully implement the model. (BasManagua representative)

The construction of waste transfer stations became a common solution, but implemented in somewhat different forms in districts 5, 6, and 7 of Managua.

Design of the waste transfer stations in districts 5, 6, and 7 in Managua

The UNDP/Habitat project planned, from its inception, to create a transfer point in district 5. Initially, the intention was to use the waste transfer station as a model for more sustainable waste handling practices, such as recycling, composting, and reuse. The transfer point was originally named “Demonstration centre for integrated solid waste management”. A publicly owned brownfield land was chosen since it was not formally being used and is centrally located in the district. However, legal issues regarding land tenancy and difficulties negotiating with the municipality hindered the planned site renovation and the new infrastructure construction. Although the waste transfer station was created, the site remained more of brownfield land than a sanitary and controlled waste transfer station. The only existing construction at the site was the remains of some abandoned buildings and a wall surrounding most of the site. Its physical form had changed over time, however, as we discuss in the next section.

The waste transfer station model designed and constructed in district 6 in 2012 by UN-Habitat had previously been implemented in, for example, Turkey, China, the Philippines, and Egypt. This waste transfer station is intended to demonstrate the efficiency of a more decentralized primary collection system for the whole city of Managua. As the UN-Habitat director put it: “unlike other waste transfer stations such as the one planned by the Italian Cooperation or Habitat, the purpose is not to support microenterprises but to improve the efficiency of the municipal waste management

system”. The waste transfer station has, as suggested by the expert in the UN-Habitat report (2010b), the capacity to store and transfer 150–200 tonnes of waste per day and is constructed around two pits into which containers are placed as waste recipients.

The project also includes the funding and purchase of the necessary equipment for running the station: 4 two-tonne waste trucks, 2 container trucks, 10 motorbikes, and 10 trimotos for household waste collection. The station interior is tiled to facilitate high-pressure water cleaning. In the words of the UN-Habitat officer: “the waste transfer station is a modern system for handling waste that accommodates both big lorries and cart-men”. However, although it can be used by both large and small vehicles, its main function is to transfer the collected waste to the municipal waste trucks. No space was designated for small cooperatives to recover recyclables, as it was expected that waste collectors would sort their collected waste outside the station.

The waste transfer station supported by the Italian development aid project BasManagua started operating in district 7 at the end of 2011. Its purpose was above all to provide a place where project-supported microenterprises could operate, and to secure the provision of a regular waste collection service for residents. In particular, the construction of the waste transfer station was intended to enhance “household solid waste collection in spontaneous settlements with difficult access by compaction waste trucks as well as [to] reduce illegal dumping in the barrios” (BasManagua, 2012, p. 1). The waste transfer station hosts five waste collection cooperatives or microenterprises and has a capacity of up to 600 tonnes of waste every month. The waste transfer station contains three containers, covered by a roof, where the waste is first deposited. The waste is then sorted and weighed for statistical and accounting purposes. Recyclables are rinsed in a cleaning area and stored in storage rooms constructed for the various microenterprises operating at the station. When the

containers are full, municipal trucks transport them to the city landfill. Usually, the container trucks make two or three trips a day, while the trimotos make an average of four trips a day.

Construction of waste transfer stations: negotiations and protests

Although the waste transfer station constructed in district 6 was supposed to be operational in 2010, its construction was not completed until April 2012. During this period, the location of the station changed twice due to the protests of nearby residents. A final location was found in a piece of undeveloped land at the edge of a district 6 barrio. Local residents finally accepted the location of the transfer station, as the project was linked to the construction of new social housing for residents affected by floods in the area surrounding the station. The station is also constructed on the site of a former illegal dump, the closing of which improved the community's health. The roads near the station have been recently paved, and other critical services, such as sewage and electricity, are being arranged with the support of the municipality as a result of the negotiations to compensate local residents for the proximity of the station.

Construction of the district 7 waste transfer station went ahead despite local protests: “At the beginning, the population voiced their disagreement with the waste transfer station. Now they all know about it. We have explained that the station will not become a second Chureca [i.e., the Managua city dump]” (District officer, interview). The efforts of community leaders and environmental brigades to raise community awareness in both districts 5 and 7, together with the opportunity to create new jobs associated with waste collection by creating additional cooperatives,

contributed to the acceptance of the infrastructure and the new household waste collection services.

The waste transfer station and new waste collection practices in operation

Since 2011, the sixteen members of the Joined Hands cooperative have collected 50 tonnes of waste per month from the households of several barrios in district 5. They charge NIO 3 (approximately USD 0.12) per service and earn an average of NIO 1000 (approximately USD 85) per month, working three days a week (Habitar officer interview). Although the initial operation of the waste transfer station in district 5 was unproblematic, one year later, in 2011, the waste transfer station suffered a crisis: the site was overflowing with waste as the central Waste Management Department was not transferring it as planned due to a lack of vehicles and resources. Residents near the waste transfer station occupied the site, protesting the mismanagement. While some residents took action to protest against the pollution caused by the lack of waste transfer, others took advantage of the crisis to squat on some of this land. However, local residents did not support the squatting movement and some community leaders lobbied to keep the site functioning as a waste transfer station (Interview with district 5 community leaders), as it supported the new household waste collection service in many streets of the district. After some months, order was re-established: the municipality began transferring waste to the municipal landfill more regularly, and construction was resumed in July 2012 to improve the wall surrounding the waste transfer station and reduce its negative impacts on the neighbourhood. The municipality has developed a project to improve the facilities but they are still looking for funding.

The waste transfer station in district 6 started operating on a preliminary basis in May 2013. A cooperative with 17 waste collectors started collecting household solid waste in the area, and charge between NIO 5 and 10 (approximately USD 0.20 and 0.40) for each service (municipal officer).

The waste transfer station in district 7 started operating in September 2012. In May 2013, three micro-enterprises were operating at the station, employing a total of 15 waste collectors, plus four employees at the waste transfer station (municipal officer). The waste collectors charge NIO 30 per month (approximately USD 1.22). The waste transfer station collects an average of 256 tonnes per week (BasManagua, 2012) and serves 2600 households (many of which do not use the station's services regularly). The new service provided by private microenterprises has generally been well accepted by the residents, who previously lacked this service. The station is working well, although at half of its capacity. It cannot increase the amount of waste collected because a new truck would be needed to transfer the waste from the station. Indeed, a new cooperative of waste collectors is ready to start collecting waste, but has to wait until the waste transfer can be guaranteed by the municipality.

Some residents, who live closer to the main streets where municipal waste trucks used to collect household waste, although irregularly, have resisted paying for the service, pointing out that they did not pay for the municipal waste collection services. This is often correct: in the municipal waste management system, most users do not pay a fee, regarding waste collection as something the city ought to provide, which leaves the waste collection service unfinanced (approximately 30% of the cost is covered; interview with the Waste Management Department director). Accordingly, when the residents have to start paying approximately USD 0.12 per service to the new private operators, they consider it unfair.

Furthermore, in both districts 5 and 7, individual Waste Management Department waste operators started collecting waste from routes not regularly served, advising the residents not to use the private services. The district administration and central Waste Management Department are ignoring these defiant actions, as discussed in the next section.

Discussion

The introduction of waste transfer stations and of the related decentralized household waste collection services in the informal neighbourhoods, is being translated at two organizational levels: in the Managua local government and in the communities of the informal settlements.

Waste transfer stations and Managua local government

Decentralized household waste collection models and the associated waste transfer station infrastructure has become a “new trend” – as the UN-Habitat report describes it (UN-Habitat, 2010a, p. 95). The waste transfer station idea was brought to Nicaragua by various carriers. The waste management project supported by Habitar-UNDP was the first one to propose the model. However, its small budget and the lack of initial municipal involvement in the project meant that the idea of a waste transfer station and an informal waste collection service in the barrios attracted little attention:

Several activities of the Habitar-UNDP project have been carried out under the shadow of UN-Habitat because it seemed as though they [i.e., UN-Habitat] had a larger mobilizing capacity within the municipality. This has been one of the strategies for making the project visible because, indeed, the [Habitar-UNDP] project is the Cinderella of waste management projects. The UN-Habitat and BasManagua [projects] are “millionaire projects”, and that makes a difference in the [municipal] engagement. (Habitar representative)

Unlike the Habitar-UNDP project, the UN-Habitat project was supported by a big budget and was moreover connected to a major project (i.e., the construction of a new landfill and a waste recycling station for the city). It was thus embedded in the municipal agenda and co-managed by UN-Habitat and the municipality from the beginning. This confirms that certain ideas, such as waste transfer stations, seem to become popular not primarily because of their inherent properties but because of how and by whom they are transported and supported (Czarniawska-Joerges & Joerges, 1996).

The success of the UN-Habitat project also stemmed from how the idea was packed and formulated (Sahlin & Wedlin, 2008). For example, UN-Habitat invited an international expert to Nicaragua to present the waste transfer station model and funded a study-visit to cities in Egypt where the model was already implemented. Municipal officers also attended a waste management course in Managua where this and other ideas were discussed. This is how the idea gained internal adopters in the municipality of Managua.

In addition, the UN-Habitat project co-hosted conferences and workshops supporting waste management programmes in Managua. The waste transfer station model gained legitimacy and was later also adopted by the Italian project, confirming that imitation is a basic mechanism for circulating ideas and experience (Meyer & Rowan, 1977).

The travel of the waste transfer station idea did not result in the exact reproduction of the original idea. Instead, the idea was translated into different forms of waste transfer stations in accordance with the specific organizational contexts in which they were embedded (Czarniawska-Joerges & Joerges, 1996; Czarniawska-Joerges & Sevón, 1996; Sahlin-Andersson, 1996). While the UN-Habitat project

focused on decentralized municipal household waste collection, the Habitar-UNDP and the BasManagua projects prioritized improving facilities where informal waste collectors could develop their activities and demonstrate new environmental practices to educate local residents.

Hence, most of the BasManagua waste transfer station is devoted to the activities of waste collector cooperatives (e.g., waste storage, sorting, and cleaning), while the UN-Habitat waste transfer station does not provide space for anything other than waste transfer. Differences in budgets also shaped the size of the waste transfer stations. Paradoxically, the largest waste transfer station constructed by UN-Habitat was originally called a “small transfer station”; precisely as it is named by the expert in the UN-Habitat publication (UN-Habitat, 2010a). In other words, one aspect that determines the translation of the waste transfer station idea is the particular organization in charge of co-implementing it. The idea of the waste transfer station was re-embedded to accommodate the interests of each project and of the policy actors involved, and adapted to the project goals and available resources.

New institutionalism research has also demonstrated that adopted ideas tend to come in packages or series (Brunsson & Sahlin-Andersson, 2000). Along these lines, the waste transfer station concept was introduced not only as an isolated project in a single city district, but in three districts simultaneously, which also helped to re-embed it in the municipality (Delmas & Toffel, 2008).

The idea of a decentralized waste management model entered the municipality through the city’s Department of International Relations, which, although powerful and well connected to the city management, is not the main domain where political decisions are made in the municipality. Once in the municipality, the waste management projects introduced a new decentralized and community-based logic, to

address the lack of household waste collection services in the informal settlements. This logic subverted the taken-for-grantedness of the existing waste management model. It collided with existing practices, infrastructure, routines, and vested interests in the municipality (especially those in the Waste Management Department).

The organizational response of the head of the city administration to these conflicting logics was to accommodate (Oliver, 1991) the new waste management model introduced by donors in the existing waste management system, despite the conflicting opinions, interests, and practices in the municipality. To some extent, the model was formally adopted but decoupled from the existing organizational practices of waste management collection, which made it possible for the central management to comply with donor demands and introduce the new practice and, simultaneously, stop the rising conflict with the existing household solid waste collection practices. Therefore, the new infrastructure and services were negotiated as pilot projects to test the appropriateness of the model for Managua. The negotiation with donors of a “pilot experience” in several city districts implied compliance with the idea without a commitment either to extend it to the rest of the city or to support its survival after the projects ended. As a result, two institutional logics (Thornton & Ocasio, 2008) of waste management coexist in the Managua city administration: the logic of the existing centralized waste management system based on modern waste trucks in well-paved neighbourhoods; and the logic of an emergent decentralized service provided by informal waste collectors in informal settlements using more traditional and smaller-scale technologies.

The introduction of the new waste transfer stations and of the decentralized waste collection services was conceived as temporary by some city officers from the Waste Management Department (interviews), who feel it will last only until the

streets are paved and the hanging cables are raised. However, other city officers, from the Department of International Relations and some city districts, say that a hybrid and decentralized system, in which an increasing number of waste collector cooperatives collaborates with the formal waste collection system, represents a more efficient and lower-cost model for the future.

The ambivalence of the city management towards the introduction of the new decentralized waste collection practices and infrastructures (Brunsson, 1989) is illustrated by the resistance of the central Waste Management Department to relinquishing control over a critical and public service that is a core municipal function, especially when municipal elections are approaching. This is why, despite its agreement to partner this project, the municipality did not always supply the committed resources, such as the waste trucks to clear out the waste transfer stations regularly. Instead, the municipality tried to balance (Deephouse, 1999; Oliver, 1991) the expectations of multiple constituents, the municipal waste collectors among them. The individual waste operators working in the Waste Management Department also displayed resistance to decentralizing this municipal service (by collecting waste from usually unserved routes or by advising residents not to use the private services) since they perceived that their jobs might be at risk.

Imitation has been conceptualized as a performative process (Czarniawska-Joerges & Sevón, 1996). The decoupling of ceremonially adopted ideas from organizational practices may have consequential effects on formal structures and on day-to-day practices (Sahlin & Wedlin, 2008). Circulating ideas such as waste transfer stations are not only ceremonially adopted in the municipality, but might also result in both organizational and institutional change. Internally in the municipality, the idea is attracting supporters. Most importantly, however, the idea is being

translated in some of the informal settlements of the city, with a number of consequences.

Waste transfer stations and Managua's informal settlements

The waste transfer stations and the associated waste collection practices were adopted, transformed, and sometimes contested in the informal settlements. The construction of new waste infrastructure in districts 5, 6, and 7 and the introduction of the associated waste collection practices were anchored by grassroots organizations, led by community leaders, and through negotiations (Oliver, 1991) in which the municipality promised to provide new critical services to the neighbourhood in exchange for accepting the waste transfer station location. As a result, the barrios got new critical infrastructure, such as paved road accesses, water and sewage infrastructure, and riverbank restoration – and a waste transfer station.

According to our interviews with residents and waste collectors, the new waste collection service was generally well accepted by the residents who had previously lacked such a service. Some neighbourhoods, especially those that were previously served, although irregularly, by the municipal service, protested and resisted paying for the waste collection services.

More aggressive contestation was enacted by residents near the waste transfer station in district 5 who decided to occupy the site in 2011. Similarly, the actions enacted by some employees of the Waste Management Department (i.e., collecting household waste in the agreed-on areas where informal waste collectors were licensed or advising residents not to use the informal waste collector services) also represent a strategy of defiance (Oliver, 1991). Municipal waste collectors deliberately ignored the new rules and went on the offensive in defiance of the new institutional pressure

in fear of losing their work in the future. Defiance and contestation have historically been strategic responses adopted by community-based organizations, squatters, and trade unions in Nicaragua. These strategies are supported by a city administration that ignores (Oliver, 1991) the trade union's defiance, since it has not appropriated the new waste management model, while strong political connections exist between the politicians in the city administration and the waste workers' trade union.

The construction of waste transfer stations served to materially stabilize the new decentralized waste collection practices introduced in the barrios as well as the emergent hybrid waste management model at the city of Managua (Corvellec, Zapata Campos, & Zapata, 2013). The physical infrastructure also succeeded in attracting municipal officers from city districts (as adopters of the idea) and in reinforcing the new practices (e.g., households' disposing of their waste via the new entrepreneurs). Despite that, waste transfer stations and the informal waste collector organizations are still contested by those with vested interests, such as municipal waste collectors or citizens who previously had free waste collection and now must pay for it. The municipality is also aware that infrastructure requires maintenance, and that not maintaining or clearing out the station is a powerful tactic.

Conclusions

This paper demonstrates that new municipal infrastructure and waste management models introduced by external donors were initially decoupled and accommodated within existing waste management models and practices. The paper also demonstrates, based on new institutionalism theory, that introducing this new model via pilot projects challenges the existing logic of a centralized waste management

system, based on modern waste trucks, that ignores the absence of this critical service in the city's informal settlements.

Will the idea become institutionalized or fade away when the barrios' streets are paved, the cables are raised, or the project funding runs out? It is simply a matter of time until we know whether this hybrid system and these competing logics will be accommodated in the city administration, districts, and neighbourhoods. Although these attempts to govern the informal city in new ways may be defeated, previous research demonstrates that even failed new ideas can produce unintended and incremental trajectories of change (Schneiberg & Lounsbury, 2008). A decade ago, the former Managua mayor introduced the model of waste collector cooperatives to provide waste collection services in Managua's informal settlements. The model gradually stopped being used when the mayor changed, and only one of the ten cooperatives survived. Today the model is gaining advocates again, but now associated with the idea of waste transfer stations.

In Managua, as in other cities in the global South, hybrid waste management systems implemented through partnerships between city governments and local entrepreneurs – whether community-based organizations, cooperatives, or micro-entrepreneurs – are becoming increasingly common (Ahmed & Ali, 2006; Bhuiyan, 2010; Fergutz, Dias, & Mitlin, 2011). These hybrid models combine formal and informal practices with modern and traditional technologies. Furthermore, the recent trend of small waste transfer stations located in residential areas, in combination with decentralized primary waste collection, seems to be a good low-cost solution to the problem the lack of waste collection services in informal settlements (UN-Habitat, 2010a). The challenge is to translate this idea to fit local contexts, interests, technologies, and available resources. Policy makers and aid developers could benefit

from better understanding what waste management engineers call “soft issues”: Who is the idea carrier? How is the idea packaged, formulated, and timed? Who is supporting the idea? And how will it be re-embedded in the local context? What ideas succeed in flourishing in new contexts could eventually depend more on who the policy actors are, the policies and models they bring, and the policy networks in which they are embedded than on the ideas themselves, regardless how good they are.

References

- Anand, P. B. (1999). Waste management in Madras revisited. *Environment and Urbanization*, 11(2), 161–176.
- Arroyo, J., Rivas, F., & Lardinois, I. (Eds.) (1998). *Solid waste management in Latin America: The case of small and micro-enterprises and cooperatives*. Gouda: WASTE.
- Ahmed, S. A., & Ali, S. M. (2006). People as partners: facilitating people’s participation in public–private partnerships for solid waste management. *Habitat International*, 30, 781–796.
- BasManagua. (2012). *Report on the initial operation of the waste transfer station at district 7, Managua* (Report from the NGO project BasManagua).
- Bhuiyan, S. H. (2010). A crisis in governance: Urban solid waste management in Bangladesh. *Habitat International*, 34, 125–133
- Brunsson, N. (1989). *The organization of hypocrisy: Talk, decision and action in organizations*. Chichester, UK: Wiley.
- Brunsson, N., & Sahlin-Andersson, K. (2000). Constructing organizations: The example of public sector reform. *Organization Studies*, 21(4), 721–746.
- Caulfield, J. (2002). Executive agencies in Tanzania: Liberalization and third world debt. *Public Administration and Development*, 22(3), 209–220.
- Caulfield, J. (2006). The politics of bureau reform in Sub-Saharan Africa. *Public Administration and Development*, 26(1)15–26.

- Coad, A. (2000). *Planning for sustainable and integrated solid waste management: Report of CWG international workshop, the Philippines, September 2000*. Retrieved from www.skat.ch
- Corvellec, H., Zapata Campos, M. J., & Zapata, P. (2013). Infrastructures, lock-in, and sustainable urban development: The case of waste incineration in the Göteborg Metropolitan Area. *Journal of Cleaner Production*, 50, 32–39.
- Czarniawska-Joerges, B., & Joerges, B. (1996). *The travel of ideas*. In B. Czarniawska-Joerges, & G. Sevón (Eds.), *Translating organizational change* (pp. 13–48). Berlin: de Gruyter.
- Czarniawska-Joerges, B., & Sevón, G. (Eds.) (1996). *Translating organizational change*. Berlin: de Gruyter.
- Czarniawska, B. (2002) *A Tale of Three Cities: Or the Globalization of City Management*. Oxford: Oxford University Press.
- Czarniawska-Joerges, B., & Sevón, G. (Eds.) (2005). *Global ideas: How ideas, objects and practices travel in the global economy*. Copenhagen: Liber & Copenhagen Business School Press.
- Deephouse, D. L. (1999). To be different, or to be the same? It's a question (and theory) of strategic balance. *Strategic Management Journal*, 20(2), 147–166.
- Delmas, M. A., & Toffel, M. W. (2008). Organizational responses to environmental demands: Opening the black box. *Strategic Management Journal*, 29(10): 1027–1055.
- Fergutz, O. Dias, S., & Mitlin, D. (2011). Developing urban waste management in Brazil with waste picker organizations. *Environment and Urbanization*, 23, 597–608.
- Furedy, C. (1992). Garbage: Exploring non-conventional options in Asian cities. *Environment and Urbanization*, 4(2), 42–61.
- Green, M. (2010). Making development agents: Participation as boundary object in international development. *Journal of Development Studies*, 46(7), 1240–1263.

- Hasan, A. (2006). Orangi Pilot Project: The expansion of work beyond Orangi and the mapping of informal settlements and infrastructure. *Environment and Urbanization*, 18(2), 451–480.
- Katusiimeh, M. W., Burger, K., & Mol, A. P. J. (2013). Informal waste collection and its co-existence with the formal waste sector: The case of Kampala, Uganda. *Habitat International*, 38(C), 1–9.
- McCann, E., & Ward, K. (2012). Assembling urbanism: Following policies and 'studying thorough' the sites and situations of policy making. *Environment and Planning A*, 44, 42–51.
- Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, 83(2), 440–463.
- Mitlin, D. (2008). With and beyond the state: Co-production as a route to political influence, power and transformation for grassroots organizations. *Environment and Urbanization*, 20(2), 339–360.
- Oliver, C. (1991). Strategic response to institutional processes. *Academy of Management Review*, 16(1), 145–179.
- Oteng-Ababio, M., Arguello, J. E. M., & Gabbay, O. (2013). Solid waste management in African cities: Sorting the facts from the fads in Accra, Ghana. *Habitat International*, 39(C), 96–104.
- Sahlin-Andersson, K. (1996). Imitating by editing success: The construction of organizational fields and identities. In B. Czarniawska, & G. Sevón (Eds.), *Translating organizational change* (pp. 69–92). Berlin: De Gruyter.
- Sahlin, K., & Wedlin, L. (2008). Circulating ideas: Imitation, Translation and Editing. In R. Greenwood, C. Oliver, K. Sahlin, & R. Suddaby (Eds.), *The SAGE handbook of organizational institutionalism* (pp. 218–242). London: Sage.
- Schneiberg, M., & Lounsbury, M. (2008). Social movements and institutional analysis. In R. Greenwood, C. Oliver, K. Sahlin, & R. Suddaby (Eds.), *The SAGE handbook of organizational institutionalism* (pp. 650–672). London: Sage.
- Scott, W. R. (1995). *Institutions and organizations (Foundations for organizational science)*. Thousand Oaks, CA: Sage.

- Sharfman, M. P., Gray, B., & Yan, A. (1991). The context of interorganizational collaboration in the garment industry: An institutional perspective. *Journal of Applied Behavioral Science*, 27(2), 181–208.
- Silverman, D. (2005). *Doing Qualitative Research*. London: Sage.
- Sulle, A. 2010. The application of new public management doctrines in the developing world: An exploratory study of the autonomy and control of executive agencies in Tanzania. *Public Administration and Development*, 30(5), 345–354.
- Thornton, P. H., & Ocasio, W. (2008). Institutional logics. In R. Greenwood, C. Oliver, K. Sahlin, & R. Suddaby (Eds.), *The SAGE handbook of organizational institutionalism* (pp. 650–672). London: Sage.
- UN-Habitat (2010a). *Solid Waste Management in the World's Cities*. London: Earthscan.
- UN-Habitat. (2010b). *Plan Estratégico para la Gestión Integral de los Residuos Sólidos de Managua Parte B: Plan de Acción Diciembre 2010* [Managua's Solid Waste Management Strategic Plan Part B: Action Plan, December 2010]. Managua, Nicaragua.
- UNDP & Habitar. (2010). *Análisis del sistema financiero sobre la Gestión de los Residuos Sólidos en la Alcaldía de Managua* [Managua solid waste management's financial analysis]. Managua, Nicaragua.
- Wilson, D. C., Velis, C., & Cheeseman, C. (2006). Role of informal sector recycling in waste management in developing countries. *Habitat International*, 30, 797–808.
- Yin, R. K. (2009). *Case Study Research: Design and Methods*. Thousand Oaks, CA: Sage.
- Zapata Campos, M. J., & Hall, M. (2012). Public–private collaboration in the tourism sector: Balancing legitimacy and effectiveness in local tourism partnerships. The Spanish case. *Journal of Policy Research in Tourism, Leisure & Events*, 4(1), 61–83.
- Zapata Campos, M.J. & Hall, C. M. (2013) (Eds). *Organising waste in the city. International perspectives on narratives and practices*. Bristol: Policy Press.

Zapata Campos, M. J., & Zapata, P. (2012). Changing La Chureca: Organizing city resilience through action nets. *Journal of Change Management*, 12(3), 323–338.

Zapata Campos, M. J., & Zapata, P. (2013a). Switching Managua on! Connecting informal settlements to the formal city through household waste collection. *Environment and Urbanization*, 25(1), 1–18.

Zapata Campos, M. J., & Zapata, P. (2013b). Translating aid development into city management practice. *Public Administration and Development*, 33, 101–112.

Project	Funded	Main activities, selected	Implementing agency and executing entity	Stakeholders participating in the implementation	Year/budget
BasManagua: Supporting the system for collecting and managing solid waste and improving the living conditions of the population of Managua	Funded by Italian Cooperation	Integration of the informal waste recovery and recycling sector within the municipal SWM system	Executed by a consortium of Italian NGOs and a Nicaraguan NGO: i.e., Africa70, Movimondo, ACRA, and CAPRI Implemented by the Managua local government	Community leaders, CPCs Brigadas ambientales Waste collector microentrepreneurs: Limpiando Fuerte	2008–2011 EUR 1,263,740
Improving Capacity for Solid Waste Management in Managua	UN-Habitat and the Spanish Aid Development Agency	Formulation of the municipal Sustainable Waste Management system Construction of waste transfer stations in the city districts as part of a process of decentralizing the municipal waste management service	Executed and implemented by UN-Habitat Nicaragua in partnership with the Managua local government	Managua local government, Project Technical Unit	2009–2012
Public–Private Partnerships for Integrated Solid Sustainable Waste Management in Managua Municipality	Dutch NGO WASTE Advisers on Urban Environment and Development, Netherlands Cooperation, and UNDP PPPSD (Public–Private Partnerships for Service Delivery) Implemented simultaneously in: Nicaragua, Peru, Malawi, Lesotho, Nepal, and Bhutan.	Training and formalization of informal waste collectors Constructing a waste transfer station in District V Establishing a PPP between collectors and the local government	UNDP Nicaragua and implemented by the local partner, the Nicaraguan NGO Habitar (Centro de Estudio y Promoción para el Habitar)	Cart-man cooperative Manos Unidas, Community leaders, CPCs Brigadas ambientales	2009–2011 USD 214,930

Table 1. International aid development projects managed by the Managua municipality related to the lack of household waste collection in informal settlements.