Leiden University
Master in Latin American Studies (LAS)
2013–2014

MASTER THESIS

Solid waste management and the strategic role of waste–pickers: scavengers' cooperatives in Rio de Janeiro

Author: Andrea Tedde
Student number: S1442465
Supervisor: Dr. M.L. Wiesebron

July 2014

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Keywords: Cooperatives; informal sector; recycling; Rio de Janeiro; scavenging; solid waste management; waste–pickers; waste policy.

Number of words: 19.926

Cover picture: Jardim Gramacho (Duque de Caxias), 2011.
Source: http://julinhoambiental.blogspot.nl/

ACKNOWLEDGEMNTS

I would like to express my special appreciation and thanks to Professor Marianne Wiesebron for her assistance and guidance with this thesis. Furthermore, I would like to thank Maria Serrenti for her friendship and invaluable advices. In addition, special thanks to Alda Cotta and Maria de Lourdes Silva for their support during the fieldwork in Rio de Janeiro. Last but not the least, I would like to thank my friends for their help and encouragement.

Un ringraziamento speciale alla mia famiglia per starmi vicino anche da lontano.

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INTRODUCTION

Solid waste management is one of the main problems worldwide. Nowadays, according to the United Nations (2010) more than 20 million people depend with their livelihood on waste picking. The informal sector recycling activities largely contribute to the increasing industrial demand for recyclable materials and waste–pickers have an important role in reducing the amount and cost for solid waste management. Nevertheless, the vast majority of them work in precarious conditions and live in misery. In fact, in many developing countries, they do not get a fair remuneration, as their work is not recognized either by local governments or by citizens.

This research intends to analyse the actual situation of solid waste management in Rio de Janeiro. The city is the second largest in Brazil with an official population of 11.470,644 million people (metropolitan area)[1] and produces around 9000 tons/day of solid waste[2]. It is estimated that in the metropolis there are around five thousand waste–pickers. Most of them work informally and are vulnerable to the exploitation from middlemen.

This study is divided in three chapters. The first is focused on the analysis of the debate concerning informal recycling and the role of waste–pickers' cooperatives within the solid waste management system. The second chapter analyzes the situation of Brazilian scavengers and the projects that in recent years have been implemented to better integrate them in the society. Finally, the third chapter describes the main outcomes of the author's fieldwork in Rio de Janeiro in 2013.

Starting from the distinction between waste pickers who work individually and those working in cooperatives, this study aims at examining scavengers' role within the complex waste management system. In particular, the research analyses, firstly, scavengers' main features and working conditions. Secondly, it examines the social impact of waste–pickers' cooperatives. Thirdly, it investigates scavengers' performance and efficiency in the waste collection, especially since the main landfill of Rio de Janeiro, Jardim Gramacho, has been closed in 2012. This issue requires solutions to reduce the amount of waste sent to landfills but at the same time it can be seen as a chance to revaluate scavengers' potential in the municipal solid waste management.

Following the objectives of the research, the study attempts to address the following questions:

1. Which are the main features of waste pickers (gender, age, residence area…) in Rio de Janeiro?
2. Do cooperatives improve waste–pickers' working and living conditions?
3. Is the cooperative system effective in enhancing waste collection rates by waste–pickers?

[1] http://worldpopulationreview.com/countries/brazil-population/
[2] http://www.abrelpe.org.br/_download/JoseHenriquePenido.pdf

Researcher's hypothesis to the previous questions were:

1. Waste pickers are from disadvantaged areas, do not have high education and they have few job opportunities.
2. Waste pickers who work in cooperatives achieve better working conditions and obtain higher salaries, as they have more power while negotiating with industries and get better prices for the collected materials.
3. Waste pickers who work in cooperatives enhance waste collection rates as they receive some support from the public administration to buy equipment and vehicles.

The data used for this study was mainly collected during a five weeks fieldwork in Rio de Janeiro and Jardim Gramacho (Duque de Caxias) from November to December 2013. During that period, the researcher interviewed thirty-one scavengers (structured questionnaire) and the managers of five different cooperatives of waste–pickers (semi–structured interviews). In addition, the interview with the service manager of 'Light', a private electric firm, addresses the issue of the commitment of Brazilian companies with sustainability and waste recycling.

The research was possible thanks to Mr. Wanderson Silva, manager of Coopersocial, and Mr. Robson Corcino, manager of a recycling company in Jardim Gramacho, who gave the researcher the chance to acquire important information through the 'participatory observation' of waste–pickers working and living conditions. Finally, Mrs. Georgina, volunteer at Coopcal, helped the researcher with establishing contacts from the local waste–pickers, and gave him the contact details of Mrs. Fernanda Mayrink's service manager of 'Light'.

Figure 1: Map of Rio de Janeiro

Source: http://www.viagemdeferias.com/mapa/rio-de-janeiro.gif

1 Chapter

Cooperatives and solid waste management

Introduction

Waste–pickers have an important role in the solid waste management but they normally work under hazardous and precarious conditions. This chapter, firstly, examines the differences between waste pickers who work individually and those who work in cooperatives. Secondly, it analyzes the role of cooperatives in the recycling trade hierarchy. Finally, it points out both the beneficial and critical aspects of waste–pickers' cooperatives.

1.1. Waste collection and informal sector

Some studies estimate that developing country cities collect only 30–70% of waste generated and open dumps often represent the only option to the uncollected waste. It induces environmental degradation and high public health risks. For this reason, many countries are trying to improve their own waste management system by taking the positive example of some developed countries as Japan, USA and Germany (Wilson *et al.,* 2009:916). However, different factors such as rapid population growth, migration to urban areas, lack of financial resources and technical knowledge due to a low–skilled labor force, make difficult to implement an efficient system of collection (Wilson *et al.,* 2006:798).
Lino and Ismail (2012:107) have noted that in the literature there are many reports about different experiences in recycling all over the world. In the United Kingdom, for instance, the government has established some recycling programs and adopted successful initiatives to encourage population to recycling[3]. On the contrary, in developing and highly populated countries such as Brazil, China and India most of the solid waste is sent to landfills or dumps.

In most cases, in the areas where no formal service exists, the waste collection is undertaken by the informal sector (Ezeah *et al.,* 2013:2509). Nowadays, according to the United Nations (2010) more than 20 million people worldwide depend with their livelihood on waste picking. Many studies have shown that scavengers are usually rural migrants, poor people and part of marginalized minorities (Ezeah *et al.,* 2013:2510; Medina, 2000:229). In fact, Wilson *et al.* have argued:

> "Informal recyclers often form discrete social groups or belong to minorities, examples of which include the Zabbaleen in Egypt, Pepenadores, Catroneros and Buscabotes in Mexico, Basuriegos, Cartoneros, Traperos and Chatarreros in Colombia, Chamberos in Ecuador […]" (2006:798).

According to Wilson *et al.* (*ibid.),* it is possible to identity different categories of scavengers, depending on the place and on the way materials are collected:

[3] According to Lino *et al.:* "some countries as Japan, Sweden Switzerland, Belgium, Austria and Denmark show indexes of reutilization of solid waste more than 90%. Other countries such as Poland, Turkey, Mexico and Brazil show reutilization index less than 10%, where the predominant treatment system is burying in landfills" (2010:916).

1. Itinerant waste–pickers: door–to–door collectors who buy or barter recyclable materials from households. This activity is on the increase all over the world as householders have realized that selling materials can be quite profitable. In some cases, they tend to specialize themselves in specific materials and may use a work vehicle. At instance, in Philippine or Mexico cities door–to–door waste pickers mostly collect materials such as cans, bottles, paper and old mattress. They also use various types of vehicles to transport these items include animal–drawn and push carts (Medina, 2000:55).

2. Street waste–pickers: they collect materials from the streets or bins. In Pune (India), for example, there are "approximately 10.000 'rag pickers' […] recover recyclables from garbage thrown into the streets"(*Ibídem*).

3. Municipal waste–pickers: they collect secondary raw materials from vehicles transporting waste to disposal sites. This practice is common in countries like Mexico, Colombia, Thailand and the Philippines (Wilson *et al.,* 2006:798).

4. Dump waste–pickers: waste materials are recovered from the final disposal. In order to minimize transportation costs, many of them occupy the lands close to the dumps to build their own house[4]. There, living conditions are poor and urban services are not provided, i.e. sanitary facilities or clean water (Ezeah *et al*., 2013:2515*;* Wilson *et al.,* 2006:798). It means that activities take place in a very dirty environment with serious consequences for their own health. *Wilson et al.* (*Ibíd.:*803) have argued that this activity is common in many developing cities, such as Manila, Mexico City, Cape Town, Guadalajara (Mexico) or Rio de Janeiro, and it is mostly carried out by women, children, elderly and illiterate people.

1.2. The recycling trade hierarchy

An important aspect when we analyze waste–pickers' working conditions, living standards and income generation, is the level of organization of their activities (Carmo and Oliveira, 2010:1261–1262; Medina, 2000:58; Tirado–Soto and Zamberlan, 2013:1004). As a general rule, the level of organization determines both the quality of items they collect and the kind of threats they are vulnerable. In fact, according to Wilson et al. when an informal recycling sector is few organized the workers are unable to add value to the raw materials. It makes them much weaker and vulnerable to the power of intermediate dealers (2006:800).

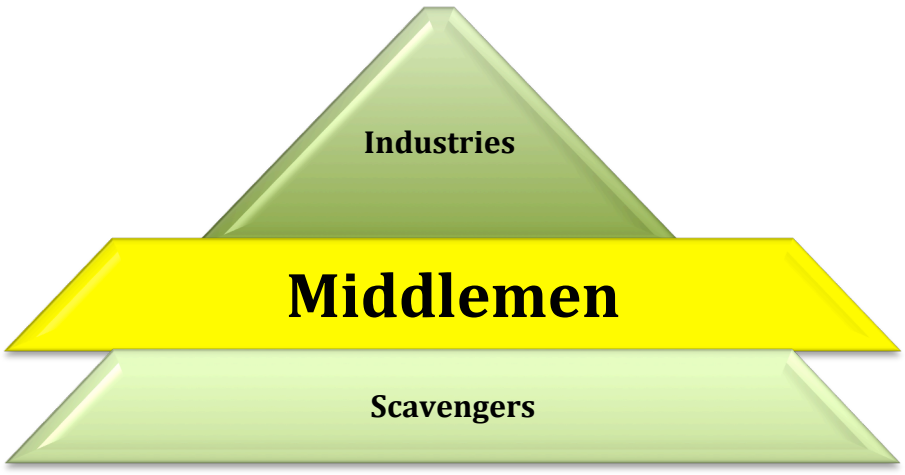
[4] Medina has argued: "setting around a dump also allows entire families to recover materials there and to raise pigs by feeding discarded organic materials found in the dumps" (2000:56).

Moreover, in most of the cases, the structure of the recycling network resembles that of a trade hierarchy (see Figure 2) in which the waste–pickers[5] occupy the base and the industries the top of the pyramid. Between the scavengers and the industries there are the middlemen: intermediate buyers/dealers who buy items from waste–pickers and sell them to the industries (Ezeah *et al.,* 2013:2513; Tirado–Soto and Zamberlan, 2013:1006; Wilson *et al.,* 2006:800).

As figure 2 shows, middlemen have a key role in the recycling hierarchy as they represent the link between the formal (industries) and informal sector (scavengers). In fact, industries prefer buying material from middlemen because, on the one hand, they are reluctant to have a direct contact with individual scavengers and, on the other hand, they want to have a guarantee on the quality of the items they get (Medina, 2000:54). However, it significantly reduces waste–pickers' income, in particular of those that have not the possibility to work in a cooperative (Wilson *et al.,* 2006:800).
Many studies have also showed that, in the monopsonistic market[6], in which there is only one buyer, they can obtain a great profit from the waste–pickers (Ezeah *et al.,* 2013:2514). In fact, Fergutz *et al.* have claimed:

> "There is a 'perverse solidarity' between intermediaries, agents and industry, which allows the generation of more than 500 per cent surplus between the values of the recycled materials that are collected and the final value of the recycled 'products', with only 10 per cent being secured by waste–pickers" (2011:602).

Figure 2: The recycling trade hierarchy



Source: CEMPRE (1996) in Tirado–Soto and Zamberland (2013:1006) – modified by the author.

[5] Waste–pickers are not always the poorest of the social hierarchy but generally they are perceived in the lowest part of it (Medina, 2000:53).
[6] Waste–pickers' bad economical situation mostly depends on middlemen that, especially, in monopsonistic markets pay low prices for raw materials. Scavengers who work in dumpsites are much more exploited than the rest of waste–pickers. In fact, dumps are most of the times isolated and it makes harder for waste–pickers to transport the items collected to industries (*Ibídem*).

Figure 3 shows as middlemen (merchants) can obtain high profits by buying recyclables from waste–pickers, taking the examples of three different countries: India, Colombia and Mexico.

Figure 3: Prices paid for corrugated cardboard

Country	Currency	Price per ton		
		Scavenger sells to **small merchant**	**Small merchant** sells to **large merchant**	**Large merchant** sells to **Industry**
India	Rupee	100–200	900	1800
Colombia	Peso (Col.)	1000	3000	5500
Mexico	Peso (Mex.)	900	1100	4000

Source: Holmes (1984) in Medina (2000:54).

1.3. Public policies towards informal recycling

In many developing countries, informal waste–workers live in a very hostile social environment largely due to negative government attitude and public policies (Ezeah *et al.,* 2013:2515; Medina, 2000:57; Wilson *et al.* 2006:805). Ezeah *et al.* have claimed:

> "in some instances the sector is viewed as suspicious and so authorities and the police are openly hostile. Apart from being harassed and facing abuse, for instance, sexual abuse, they are often subject to bribery. If they refuse to pay the bribes they will not be able to work in the area. These attitudes, as well as the conceptual association with waste, reinforce the low social status of the scavengers" (2013:2515).

According to Medina (2000:56) public policies towards informal recycling can be classified into the following:

- Repression: in most of cases in developing countries waste–pickers are seen as "inhuman, a symbol of backwardness, and a source of embarrassment and shame for the city or country" (*Ibíd.:*57), for this reason they are considered illegal and punished by police – e.g. in Colombia[7], India and The Philippines (*Ibídem*; Wilson *et al.,* 2006:805). Moreover, some countries are developing new technologies in order to enhance operational and environmental performance of solid waste

[7] Medina has argued that: "In Colombia, for instance, the so–called 'social cleaning campaign', conducted by some paramilitary groups, considers scavengers as 'disposable' and harasses, kidnaps and expels them from certain neighborhoods and town. […] One of the most dramatic illustrations of this campaign occurred in 1992, when 40 corpses of scavengers were found at a local university (the Universidad Libre de Barranquilla) […]. The scavengers had been killed, their organs recovered and sold for transplants. The rest of their bodies were sold to the university to be dissected by medical students" (2000:53).

management systems and it may restrict the access for the informal waste sector and threaten their livelihood[8] (Paul *et al.,* 2012:2018);

- Neglect: in other countries, public authorities do not consider waste pickers at all. They are not punished or persecuted but simply ignored and left alone. This scenario is typical of some West African cities such as Bamako (Mali), Cotonou (Benin) and Dakar (Senegal) (Medina, 2000:57);
- Collusion: when waste–pickers are tolerated by public officials in return of bribes or mutual profit (Wilson *et al.,* 2006:805). For instance, Medina has noted:

> "In Mexico City, some of the illegal relationships include the payment of bribes to government officials by the local bosses known as "caciques" for ignoring caciques' abuses of power. The Mexican government gets bribes and political support from scavengers, obtain legitimacy and stability in their operations" (2000:57).

- Stimulation: recently governments and local authorities of some developing countries have started to see at waste–pickers in a different way by giving to them more attention and even starting to support them (*Ibídem*)[9]. For instance, Ezeah *et al.* have claimed that one possible form of stimulation is represented by the integration of waste–pickers into the formal waste management system through different means like:

> "social acceptance, political will, mobilization of cooperatives, partnerships with private enterprises, management and technical skills, as well as legal protection measures" (2013:2509).

1.4. The role of cooperatives: the power of joint action and social integration

One of the major challenges in developing cities is to guarantee good working conditions and livelihoods to the informal sector by strengthening, at the same time, the municipal waste collection (Carmo and Oliveira, 2010:1261; Wilson *et al.,* 2006:802). In fact, according to many studies, Municipal Solid Waste (MSW) is an important instrument to address the Millennium Development Goals (MDGs) of the United Nations Organization (UN)[10], as set for the year 2015 (Paul *et al.,* 2012:2020; Wilson *et al.*, 2006:797; Wilson *et al.,* 2009:629).

[8] At instance, Wilson has argued: "The relationship between the formal and informal sector remains uneasy; the official municipal perception of those who work in the informal sector is often negative (dirty, unclean) and in some instances, where the city aspires to a "modern" waste management system, the relationship is openly hostile" (2009:269).

[9] Medina has given some examples of active support: "Supportive policies range from legalization of scavenging activities, encouraging the formation of scavenger cooperatives (in Indonesia), the awarding of contacts for collection of mixed wastes and/or recyclables (in some Colombian towns), to the formation of public–private partnerships between local authorities and scavengers (in some Brazilian cities)" (2000:58).

[10] Paul *et al.* have illustrated that: "in September 2000, the Millennium Declaration was ratified at the United Nations (UN) Millennium Summit. This declaration proclaims eight

Lino and Ismail have claimed:

> "One possible way which can help to create jobs, income and enhance the environmental sustainability is the treatment and adequate exploration of the socioeconomic, environmental and energetic potential of the solid waste" (2012:106).

The recyclable solid waste if explores adequately permits to combat the extreme poverty and helps reduce the operation costs of solid waste (*Ibídem*).
Cooperatives could contribute significantly to achieve these goals[11] by improving informal waste workers' working and living conditions (Lino and Ismail, 2012:112; Paul *et al.,* 2012:2018). Many studies have shown that cooperatives of waste pickers have a key role in informal sector's social integration and may provide a solution to the solid waste management. For these reasons, according to Carmo and Oliveiva:

> "Many governments and expert now consider the incorporation of the informal recyclers' work into the municipal waste management system by organizing and formalizing them into cooperatives. The cooperatives help strengthen the municipal waste management capacity without the need of hiring new people or services. Recyclers also contribute to the increasing industrial demand for recyclable materials. This represents the recognition of the recyclers as important workers doing something valuable for society, consequently diminishing the negative image they generally have – they are considered as "environmental workers" and not more as beggars or robbers" (2010:1261).

Being part of a cooperative can be useful both to the waste–pickers themselves, to reinforce their feeling of belonging to the society and achieve better working conditions, and to the population in general, by reducing the need for trash disposal (Tirado–Soto and Zamberlan, 2012:1004). By doing so, in fact, waste–pickers feel part of a group and it reduces their social marginalization and exclusion[12]. For instance, Ezeah *et al.* have noted that:

> "Wearing uniforms and carrying ID cards formalizes their appearance and makes them 'visible' in society. This constructs a better relationship with the general public and builds self–confidence and self–esteem amongst the workers who could the feel they belong to a professional public service" (2013:2518).

In addiction, cooperatives reduce waste–pickers' vulnerability by creating a certain level of social and economic support[13] (Wilson, 2006:797). About the

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Millennium Development Goals (MDGs), that also address the Informal Waste Sector (IWS) and waste pickers" (2012:2020).

[11] In particular three of the Millennium Development Goals (MDGs): MDG1 (eradicate extreme poverty); MG6 (combat HIV/AIDS, malaria and other diseases) and MG7 (ensure environmental sustainability) (Paul *et al.,* 2012:2020).

[12] Gutberlet has argued: "social development work with recycling cooperatives strengthens the members' identity and awareness and helps build their self–esteem" (2008:664).

[13] This idea, according to Tirado–Soto and Zamberlan, is connected to the "concept of collective efficiency, formulated by Schmitz (1997), i.e., the competitive advantage that comes from the externalities of joint actions" (2013:1005).

power of cooperatives and the importance of joint action, Ezeah et al. have explained:

> "Cooperatives are a powerful means of promoting grassroots development of the informal sector. Strengthening of the organizational structure of the informal sector into formalized groups dignifies the workers in the labor market" (2013:2517–2518).

Many studies also underline that waste pickers obtain better working conditions thought the cooperative and group action (Ezeah *et al.,* 2013:2518; Fergutz *et al.,* 2011:602; Gutberlet, 2008:663; Medina, 2000:59–60). As we have previously seen, in many developing cities, waste–pickers do not have a direct contact with the recycle industries, for this reason they have to negotiate with middlemen to sell collected materials (see figure 1) and it reduces their income. According to Tirado–Soto and Zamberlan (2013:1004), through the cooperatives it is much easier for waste–pickers to have a direct access to the industries, bypassing the middlemen (see figure 4). It guarantees to the scavengers better prices for materials they collect and an improvement of their living conditions[14]. With regard to this aspect, Medina has claimed:

> "The formation of scavenger cooperatives attempts to circumvent the middlemen and thus pay higher prices to the cooperatives members. Higher prices to the cooperative members, in turn, translate into a higher income and a better standard of living for the scavengers" (2000:59–60).

Figure 4: The role of cooperatives in the recycling trade hierarchy

Source: the author.

[14] In addiction, Wilson *et al.* have argued: "organizing and training informal recyclers into micro and small enterprises (MSEs) is a very effective way to upgrade their ability to add value to collected materials. By circumventing intermediate dealers, their income can be significantly increased and their activities become more legitimized and socially acceptable" (2006:798).

Medina (2003) has also noted that in many developing countries, cooperatives can also provide other benefits to the waste–pickers like: "opportunities for education, improved living and working conditions, loans and scholarships, or life and accidence insurance" (in Gutbetlet, 2008:663).

1.5. Health and social problems associated with informal recycling

Cooperatives have also an important role in combating diseases (MG6) (Paul et al., 2012). In fact, they are formal networks that receive some support from public administrations such as recycling warehouse, personal protective items and equipment. It means that waste pickers can work under safer conditions and it reduces the risk of health infections (Bleck and Wettberg, 2012:2010). Fergutz *et al.* have argued:

> "Working individually, waste–pickers do not have access to protective equipment or training, nor do they observe basic principles of hygiene and occupational health and correct waste handling" (2011:602).

The informal sector recycling activities largely contribute to reduce the amount and cost for solid waste management but waste–pickers normally work under hazardous and precarious sanitary conditions (Paul *et al.,* 2012:2026). Since waste collection, recycling and disposal are often informal, workers are vulnerable to health risks, they generally do not have access to adequate medical treatment and they are social discriminated and excluded (Bleck and Wettberg, 2012:2010). Bleck and Wettberg have claimed:

> "Waste pickers, street sweepers and household waste collectors have higher incidents of diarrhea, viral hepatitis as well as significantly higher incidence of obstructive and restrictive respiratory disorders than control groups and suffer from dog and rat bites, skin diseases and jaundice" (*Ibídem*).

In general, waste workers in developing countries are highly exposed to health risks (Figure 5) than their counterparts in developed countries due to many factors like: the direct contact with materials collected; lack of adequate protective equipment; long working days and malnutrition (Wilson *et al.,* 2006:803)[15]. Wilson et al. have argued:

> "The most severe cases of adverse health effects have been reported for communities that live and work in shanty towns on or besides open dumps. Mexico City dumpsite scavengers were reported to have a life expectancy of 39 years, while that of the general population was 67 years. Manual sorting of mixed waste within or near the living space can create very unsanitary conditions" (*Ibíd*.:804).

[15] Wilson *et al.* have explained that: "risks from manual handling of mixed waste may come, e.g., from direct contact with broken glass, human/animal faecal matter, paper that may have become saturated with toxic materials, containers with residues of chemicals, pesticides or solvents, and needles and bandages from hospitals. Inhalation of bioaerosols, and of smoke and fumes produced by open burning of waste, can cause health problems" (2006:803).

Figure 5: Occupational hazards of waste collectors

Hazard	Tasks
Muscular–skeletal disorders	Lifting and carrying heavy loads, pushing pushcart
Biological agents	Handling of organic waste, handling contaminated materials, working in contaminated environment (mould, dirt)
Hazardous substances	Working with mixed wastes, near heavily frequent roads, on dumpsite
Mechanical hazards	Unintentional contact with sharp items, deliberate handling of sharp items work near moving parts of machinery/vehicles, work on elevated platforms/ in restricted areas/ near heavily frequented roads
Fire/explosion	Waste picking on the dumpsite
Noise	Working near heavily frequented roads, in vicinity of loud machinery/vehicles (workshops, collection trucks)
Vibration	Pushing vehicles on uneven ground
UV/IR radiation	Working under the sun
Electrical risks	Taking waste from workshops
Human beings	Working in the streets (assaults)
Animals	Working in the streets/entering compounds (mammals); working in unhygienic (insects)
Psychological burden	Working with waste, disrespect of society

Source: Bleck and Wettberg (2012:2010)

However, as we have previously seen, many studies have additionally shown that vulnerable groups such as children, elderly and women are the most exposed to health risks and stigma[16], because of their position in the weakest part of the monopsonistic market and because of the critical roles they play in informal recycling activities (Medina, 2000:59; Carmo and Oliveira, 2010:1261–1262; Wilson *et al.,* 2006:800).

1.6. Critical aspects of waste–pickers' cooperatives

Some studies have also pointed out some critical aspects and challenges of waste–pickers' cooperatives.

[16] Carmo and Oliveira have underlined that "the fragile structure that permeates their universe results in extremely low earnings for recyclers and promotes their "invisibility" in the market, as they usually work informally" (2010:1263).

First of all, one of the main challenge cooperatives may face is self–management (Tirado–Sodo and Zamberlan, 2013:1006). In fact, most of them are 'inducted networks', it means that often the process of their establishment is not spontaneous but it depends on the initiative of external actors like non–governmental organizations (NGOs) and government agencies. According to Tirado–Sodo and Zamberlan, it involves some kind of risks:

> "Inducted networks find it harder to achieve self–management. According to Martinho (2003), in the case of 'inducted networks', the construction of the network need careful further development of the ties of belonging to the group. In other words, it requires a movement for categorization, grouping, uniting and creating ties. As this is a result of the maturation of social relations within the network, an induced network usually requires more time to become cohesive and organic" (2013: 1006).

Secondly, in some developing countries, bureaucracy can represent a huge obstacle in the formation of scavengers' cooperatives, especially for the less organized groups. For instance, Gutberlet has noted that:

> "Some of strongest cooperatives are already organized in secondary regional networks. For smaller and less structured groups bureaucratic hurdles with the legalization of cooperatives or associations remain the major impediment to this development"(2008:664).

Another challenge that cooperatives may face it is the lack of efficiency of their members. In fact, according to Tirato–Soto and Zamberlan, in some cases, cooperatives are constituted by groups of "homeless people in informal stages of organization with very low efficiency" (2013:1006). This also means that they are unable to "deliver the materials in sufficient amounts and with regular timing, hindering the joint sale of their materials" (*Ibídem*). This re–enforces the power of middlemen and do not allow waste–pickers improve their working and living conditions (Carmo and Oliveira, 2010:1263).

In addiction, cooperatives of waste pickers in order to work effectively need the participation of all stakeholders: citizens, manly through the waste sorting[17]; governments, through the implementation of public policies; and financial institutions by providing funding. In many developing countries, it is hard to achieve due to various reasons such as restricted funds and lack of educational programs to encourage citizens to separate recyclable materials (Ezeah *et al.,* 2013:2518; Gutberlet, 2008:668; Lino and Ismail, 2012:921–922).

Finally, the last critical aspects are linked to the lack of financial resources[18] and with the way local governments see at cooperatives[19]. In fact, although, during

[17] Carmo and Oliveira have argued: "The rise of environmentalism has charged the way society sees recycling today, as something positive and even profitable that can facilitate recyclers' organization in cooperatives" (2010:1262).

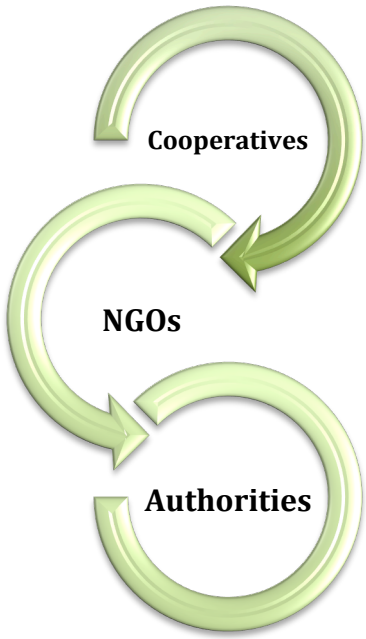
[18] Tirado–Soto and Zamberlan have claimed that: "although the waste–pickers' cooperatives act as key link in the chain, they are at the base of the structure, because they cannot add value to recyclable materials, particularly due to lack of investment in

recent years, cooperatives have increased their importance, governments and local authorities still look at this sector with prudence and skepticism excluding it by the recovery process (Gutberlet, 2008:667). As consequence, most of the times, cooperatives have few financial resources. According to Fergutz *et al.:*

> "In general, recycling cooperatives lack financial resources. Cooperatives have limited access to loans and the credit lines that are available are incompatible with the characteristics of waste picker organizations" (2011:602)

However, some studies have pointed out that non–governmental organizations (NGOs) can play an important role by trying to link cooperatives and public authorities (see Figure 6) (Ezeah *et al.,* 2013:2518; Medina, 2000:67).

Figure 6: The role of non–governmental organizations (NGOs)



Source: the author

Non–governmental organizations (NGOs) can help cooperatives obtain both loans and technical and legal assistance. At the same time they can act as a pressure group to obtain better working conditions and social benefits[20] (Medina, 2000:67).

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physical infrastructure and information technology, as well as the lack of public policies that support selective collection with inclusion of waste–pickers"(2013:1006).

[19] Wilson *et al.* have argued: "Experience shows that it can be highly counterproductive to establish new formal waste recycling systems without taking into account informal systems that already exist. The preferred option is to integrate the informal sector into waste management planning, building on their practices and experiences, while working to improve efficiency and the living conditions of those involved" (2006:797).

[20] Wilson et al. have claimed that: "there is clear potential for "win–win" co–operation between the formal and informal sectors, as providing support to the informal sector, to

At this regard, Ezeah *et al.* have argue:

> "Networking and collaborating with NGOs [...] will add credibility to the role whilst opening channels of communication with the government, formal stakeholders, decision–makers, industry and the community. [...] It can help in accessing subsides, grants and collateral–free loans to develop infrastructure (i.e. environmental educational programs, skills developing training, sorting and storage areas, social services, etc.) and purchase adequate equipment (for example battery–driven handcarts, safety equipment, tools, uniforms)" (2013:2518).

Conclusion

In many developing countries, although scavengers have an important role in the waste management system, they occupy the base of the recycling trade hierarchy In fact, industries prefer buying recyclable materials from middlemen because they want to have a guarantee on the quality of the items they get and, at the same time, they do not want a direct contact with scavengers (Medina, 2000:54).

Some studies have underlined that cooperatives could contribute significantly to improve informal waste workers' working and living conditions (Lino and Ismail, 2012:112; Paul *et al.,* 2012:2018). According to Tirado–Soto and Zamberlan (2013:1004), through the cooperatives it is much easier for waste–pickers to bypass the middlemen. It guarantees to the scavengers better prices for recyclable materials and an improvement of their living conditions. Some other studies have pointed out some critical aspects and challenges of waste–pickers' cooperatives such as the lack of efficiency of their members or the lack of financial resources (Tirado–Soto and Zamberlan 2013:1006).

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build recycling rates and to address some of the social issues could reduce the overall costs of waste management for the formal sector" (2009:634).

Chapter 2

Solid waste management in Brazil

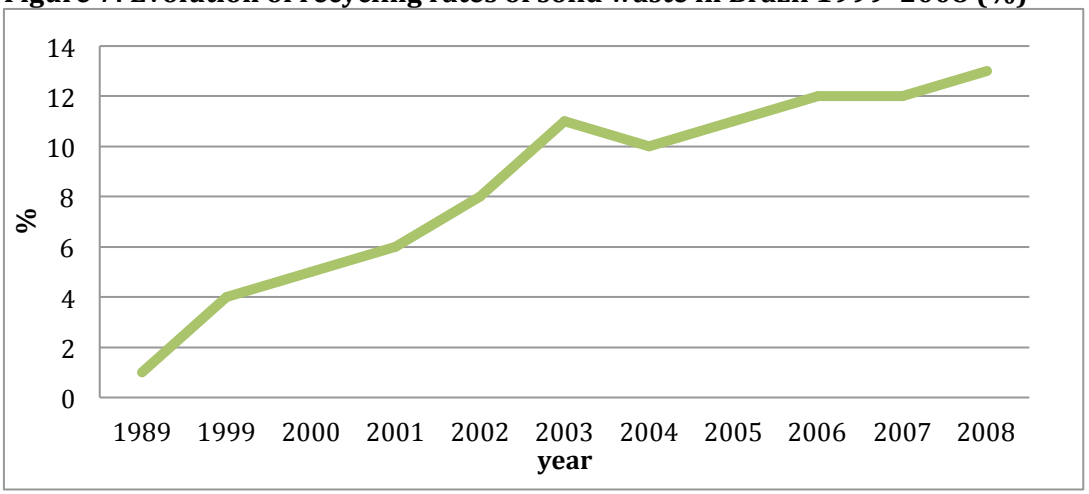
Introduction

In Latin America countries the organization of informal sector recycling has improved during recent years. An increasing number of waste pickers currently work in cooperatives and/or associations in order to obtain better income and living conditions. This chapter analyzes the historical evolution of solid waste management in Brazil and the organization of waste–pickers in cooperatives. In the country, in fact, although most of scavengers work informally, there are also many formal cooperatives of waste pickers that collaborate each other and contribute significantly to clean the cities and reduce the volume of solid waste destined to the dumps. The country has also one of the largest and best national networks of scavengers that fight for their rights.

2.1. Waste recycling in Brazil

At present day, Brazil has an official population of approximately 200 million inhabitants and it is estimated that in volume terms, 1835 million tons of municipal solid waste (0,97 kg per capita per day) are collected daily (Campos, 2014:131; IBGE, 2010). The recycling programs in the country have been implemented since the mid–1980s but they have started being effective during the next decade (Bosi, 2008:103). In 1992, Rio de Janeiro hosted the United Nations Conference on Environment and Development (UNCED)[21], and it encouraged the recycling activities at national scale. In fact, in the late nineties the country achieved a quantum leap in recycling rates by developing high technology in the recycling of some materials such as aluminum and plastic (Figueiro, 2012:n.p.; worldsummit.org).

Figure 7: Evolution of recycling rates of solid waste in Brazil 1999–2008 (%)



Source: Figueiredo (2012: n.p.) from data of CEMPRE (2009), APRELP (2008) and SNIS (2007).

[21] The protection of the environment was one of the main aspect of the UN summit, for more information, see the website: http://habitat.igc.org/agenda21/rio-dec.htm

Figure 7 shows the positive trend in urban recycling during the last 20 years: in 2008 it reached 13% while in 2000 it was 5% and in 1989 only 1%[22].

In Brazil, aluminum and PET plastics are the most recovered materials among recyclable goods (Fergutz *et al.,* 2011:601). The country was the first in Latin America to produce aluminum in the fifties and to recycle this material in the early eighties. In 2010, the recycling rate of aluminum beverage cans reached 98% and since 2002 the country has the world hegemony in the recycling rates of this material (Campos, 2014:131 from data of CEMPRE, 2012; Figueiro, 2012:n.p). In addition, in 2003 Brazil reached the third world position in the recycling of PET plastics (16,5%), only after Germany (31,1%) and Austria (19,1%) (Bosi, 2008: 103–104).

This positive trend, it is also shown by Figure 8: on the one side, in 2008, 58,3% of domestic solid waste was sent to sanitary landfills and 19.8% to dumping site; on the other side, in 2000, only 35,4% was channeled to sanitary landfills compared to 32.5% disposed to dumps.

Figure 8: Final disposal of domestic solid waste (2000–2008)

Final destination	Quantity in 2000 (t/day)	%	Quantity in 2008 (t/day)	%
Sanitary landfill	49.615	35.4	110.044	58.3
Controlled landfill	33.854	24.2	36.673	19.4
Dumping site	45.485	32.5	37.361	19.8
Composting plant	6.365	4.5	1.520	0.8
Material recovery facility	2.158	1.5	2.592	1.4
Incineration	483	0.3	65	0.1
Wetland areas	228	0.2	35	0.1
Unspecified sites	877	0.6	–	–
Other units	1.015	0.7	525.20	0.3

Source: Campos (2014: 131)

Despite this concrete evolution, sound solid management is still a complex issue in the country (Campos, 2014:131; Fergutz *et al*., 2011:601). In fact, according to Fergutz *et al.,* only 5,8% of all municipalities in Brazil has a correct waste collection system, while approximately 2.5% maintains partnership with scavengers' cooperatives (2011:601).

[22] Fergutz *et al*. have added that recycling market is increasing quickly and has a great potential: "Specialists provide very optimistic estimates regarding the recycling marketing, which already generates a turnover of US$ 1.2 billion a year in Brazil" (2011: 601).

2.2. Brazilian waste pickers

Scavenging and the informal recycling of waste materials are not a recent activity. At this regard, Medina has pointed out:

> "Evidence suggests that scavenging and recycling activities appeared in colonial America as an adaptive response to scarcity. [...] The reuse and recycling of materials involved less effort and energy them obtaining them from virgin sources" (2001:230).

In 1947, the Brazilian poet Manuel Bandeira wrote the poem 'O Bicho', in which he compared waste–pickers to animals due to their need to pick up food from garbage in order to survive:

O Bicho

'Vi ontem um bicho
Na imundície do pátio
Catando comida entre os detritos.

Quando achava alguma coisa,
Não examinava nem cheirava:
Engolia com voracidade.

O bicho não era um cão,
Não era um gato,
Não era um rato.

O bicho, meu Deus, era um homem'.[23]

According to Bosi scavengers have become numerically significant and visible in Brazil in the mid of 1980s (2008: 102–103). The causes of scavenging were mostly economic and many people turning to this activity because of lack of other opportunities. Most of waste–pickers had another profession but they were forced out of the labor market due to their aging or physical disability (Bosi, 2008: 105; Medina, 2001: 230).

The situation of Brazilian waste–pickers is in general more advanced than in other developing countries, where sometimes, as we have seen in the first chapter, their activity is considered even illegal, eg. India and the Philippines (Ezeah *et al.,* 2013: 2511; Medina, 2000:57). In Brazil's major cities, according to an estimate by the *Movimento Nacional dos Catadores(as) de Materiais Recicláveis* (*MNCR*), there are more than half a million scavengers[24] and their number has

[23] 'O Bicho', by Manuel Bandeira (1947), in:
http://worldpoems.org/indexpoemas.php?idPoema=44

[24] Probably the number of waste–pickers is even higher, since an official census has not been conducted yet. Moreover, the sector depends on the performance of the economy, so the number of people involved in this sector constantly changes (Gutberlet, 2008:664).

increased fast in the last 15 years[25] (Bosi, 2008: 105; Fergutz et al. 2013:597). They are known as *catadores de lixo* (cart–men) and they have an important role in reducing the amount and cost for solid waste management.

Belo Horizonte, in Minas Gerais, was the first Brazilian city that in 1993 recognized them as 'agents of the selective collection'. That was the first step of their national recognition and increasing visibility[26]. In this regards, Campos has added:

> "In 1997, the United Nations Children's Fund (UNICEF) conceived and articulated the implementation of the National Program 'Garbage and Citizenship' and the campaign 'Child in the garbage never more' that had repercussions in other Latin America countries, drawing attention to the thousands of families living and working at dumping sites" (2014:133 from Campos, 1997).

Nowadays, even if most of waste–pickers still work informally, there are about 500 official cooperatives, with about 60,000 members (Fergutz *et al.,* 2013:598; Gutberlet, 2008: 664; Medina, 2008:3). According to Souza *et al.* (2012:251), the first cooperatives in Brazil have been created during the 1990s in order to establish a link between waste–pickers and local authorities. The number of recycling cooperatives is constantly increasing in all Brazilian cities, from Rio de Janeiro to Salvador (Medina, 2000:61). In Porto Alegre, for instance, scavengers have been integrated in recycling management, reducing the costs of waste collection and serving 79% of city residents (*Ibíd.).*

2.3. Associations of waste pickers

In Latin America countries the inclusion of scavengers in the municipal solid waste management is always more common and there are many associations that support scavengers in organizing themselves into cooperatives (Ezeah *et al.,* 2013:2511; Medina, 2000:60)[27]. In Brazil, for instance, the industrial association *Compromiso Empresiaral Para Reciclagem* (*CEMPRE*) has prepared a training kit to better assist scavengers and NGOs in the formation of cooperatives. The success of the initiative has encouraged them to export the project to other countries of the region like Argentina, Costa Rica, Mexico and Uruguay (Medina,

[25] According to Bosi, in 1999 the number of waste–pickers was around 300.000 (2008: 105).

[26] Campos has noted as over the last 15 to 20 years waste–pickers have gained visibility also thanks to movies such as 'Island of Flowers', 'Estamira', 'Lixo Estraordinário' and 'À Margem do Lixo', and marketing campaigns as the one produced by Coca Cola (2014:134).

[27] According to Medina (2000:60), in Colombia the movement of waste–pickers is one of the most dynamic of the all region. For example, the 'Fundación Social' is a non-governmental organization that has been helping waste–pickers in the formation of cooperatives since 1986. For more information, see the website: http://www.fundacion-social.com.co

2000:61). Another good initiative is the *Associação dos Catadores de Papel, Papelão e Material Reaproveitável* (*ASMARE*), in Belo Horizonte, one of the first groups composed by former street waste pickers. Today, it has 380 members, 55% of them are women (Medina, 2008:3–4). Associations and NGOs have also incentivized the dialogue among cooperatives and the formation of the MNCR[28].

2.4. The National Movement of Recyclables Materials Waste Pickers

One of the first initiatives to create a national voice for Brazilian scavengers was the meeting on the Paper and Reusable Waste Pickers' Popular Organization, held in Santos in 1992 (Fergutz *et al.,* 2011:599). In that important occasion waste pickers from all the country had the chance to get to know each other and share their own experiences. From that moment more and more steps have been taken in order to fight for scavengers' rights and pave the way for a social movement. In fact, some years later, in 1999, in São Paulo it was organized the first National Meeting of Waste Pickers in which the MNCR was created. The Movement was finally formalized in 2001 during the first National Congress of Recyclable Waste Pickers of Brasilia[29], which attracted more than 1,700 scavengers from every Brazilian city (Fergus *et al.,* 2011:599–600; MNCR.org). The Movement has as objective the creation of a sustainable and fair society in which, on the one hand, waste–pickers are appreciated for their important contribution to reduce municipal waste[30] and, on the other hand, municipal waste is considered by local authorities as a key resource to eradicate the extreme poverty by guaranteeing an income to waste pickers (MNCR.org).
In 2003, the MNCR organized the first Latin American Congress of Recyclables Waste Pickers[31], which was held in Caxias do Sul (Brazil) and was attended by scavengers' delegations from Argentina, Brazil and Uruguay and by experts from Spain, France, Canada and Mexico. The idea was to coordinate a common Latin American action by encouraging the dialogue among countries and sharing experiences about this issue[32].

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[28] For more information see the website: http://www.mncr.org.br

[29] During the Congress it was also issued the *Carta de Brasilia,* an official document that aims at protecting scavengers' needs, promoting their social inclusion and assistance and at the same time regulating the recycling trade ('Carta de Brasilia', in: http://www.mncr.org.br/box_1/principios-e-objetivos/carta-de-brasilia; Fergutz *et al.,* 2011:599).

[30] One of the main goals of MNCR regards the fight for the payment of a fair salary to the waste pickers, since there is evidence that the work they do is more efficient than the private sector, in: http://www.mncr.org.br

[31] The Latin American Network of Waste Pickers, in Spanish 'Red Latinoamericana de Recicladores' (Red Lacre) is a representative and inclusive organization whose members come from 17 countries (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Paraguay, Peru, Domenican Republic, Uruguay and Venezuela), for more information see the website: http://www.redrecicladores.net

[32] 'Carta de Caxias do Sul', in: http://www.mncr.org.br/box_1/principios-e-objetivos/carta-de-caxias-do-sul

The MNCR also represents an important intermediate among waste–pickers, private companies and the Federal Government, in fact, according to Fergus *et al.*:

> "The MNCR influenced the creation of the Inter–ministerial Committee for the Social and Economic Inclusion of Waste Pickers, which was established in September 2003. Further objectives are inclusion in the government's Zero Hunger Programme, and the eradication of dump sites" (2011:599).

In 2006, for instance, the MNCR organized the *Marcha até Brasilia*, an historical event in which 1200 scavengers from all the country marched in *Esplanada dos Ministérios* to request to the Federal Government the creation of 40.000 jobs and a recognition of their rights[33].

2.5. Brazil' National Policy for Solid Waste

Solid waste management and recycling remain one of the big challenges worldwide, especially in the developing countries. In Brazil, in 2010, it was approved the new *Política Nacional de Resíduos Solídos* (*PNRS*) (Law 12.305/2010) in order to find a way to adequately collect and dispose the tons of solid waste generated per year[34] (Jabbour *et al.,* 2014:7). The PNRS has as main goals:

- The promotion of sustainable development, recycling and ecological collection of municipal solid waste in order to reduce its negative environmental impact[35];
- The prioritization of green technologies and the adoption of incentives to foster the use of raw materials;
- The integration of recyclable material collectors in the waste management. (Jabbour *et al.,* 2014:7–8; PNRS, 2010).

The law, in particular, has already helped the inclusion of 800,000 scavengers in waste management programs and promoted their work in cooperatives[36]. This last aspect should not be underestimated. In fact, as we have seen in the first chapter, the work in cooperatives can contribute significantly the improvement

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[33] 'História do MNCR', in: http://www.mncr.org.br/box_1/sua-historia

[34] Just to give an example, in 2011, Brazil's population produced 61,9 million tons of solid waste and 42% of the total collected was inappropriately disposed (Albuquerque, 2012 in Jabbour, 2014:7).

[35]Campos has noted that an important aspect of PNRS is "the obligation of the Brazilian cities to deposit only the solid waste treatment tailings in sanitary landfills after August 2014. This policy implies the need to create material recovery facilities more adequate to the needs of waste recovery with a view to obtaining the least amount of residual material not amenable to solid waste treatment" (Campos, 2014:130).

[36] Fundación AVINA argues that: "the MNCR expects that the law will lead to an increase in average income of waste collectors, currently near the minimum wage (USD 250 per month)", in: http://www.avina.net/eng/nota/recycling-in-brazil/

of waste pickers' working and living conditions (Lino and Ismail, 2012:112; Ezeah *et al.,* 2013:2518).
Finally, to successfully achieve the objectives of PNRS is required, on the one hand, the collaboration among the different stakeholders involved in the generation and collection of solid waste and, on the other hand, the promotion of community awareness campaigns and training activities for waste pickers. Such simple actions will improve both the quantity of materials collected and waste pickers' income (Murakami *et al.,* 2014:6).

Conclusion

In Brazil, the recycling activities have been developed since the mid–1980s but they have started being effective during the 1990s (Bosi, 2008). The urban recycling rate has a positive trend and the quantity of domestic solid waste sent to sanitary landfills has steady increased in the last 20 years (Campos, 2014; Fergutz *et al*., 2011; Figueiredo, 2012). Nevertheless, solid waste management is still a complex issue in the country. The situation of waste–pickers is in general advanced and during recent years an increasing number of projects and initiatives have been implemented in order to improve their working conditions. The first cooperatives in Brazil have been created during the 1990s in order to establish a link between scavengers and local authorities (Souza *et al.*, 2012).

Nowadays, at least 576,000, of a total of 800,000 waste pickers who MNCR estimates live in the country, work in hazardous and hard condition. In addition most of cooperatives cannot add value to recyclable materials, particularly due to the lack of public policies (Tirado–Soto and Zamberlan, 2013).

The new *Política Nacional de Resíduos Solídos* (Law 12.305/2010) represents an important step towards the correct collection on solid waste and the full integration of scavengers within the waste management system but required the cooperation of all stakeholders in order to be efficient.

Chapter 3

Fieldwork in Rio de Janeiro

Introduction

This chapter analyzes the social impact of waste–pickers' cooperatives in the city of Rio de Janeiro. In particular, its objective is to show the results of the fieldwork in Rio de Janeiro and Duque de Caxias conducted by the researcher from November to December 2013. During that period, thirty-one scavengers (structured questionnaire) and the managers of five different cooperatives of waste–pickers (semi–structured interviews) were interviewed. Finally, the last part of this chapter addresses the issue of the commitment of Brazilian companies with sustainability and waste recycling.

3.1 Waste collection and waste pickers in Rio de Janeiro

Rio de Janeiro is the second largest city in Brazil with an official population of approximately 6.3 million people (11.470,644 in metropolitan area) [37] and produces around 9000 tons/day of solid waste [38]. The recycling is mainly performed by informal waste–pickers, many of whom live in poor conditions. It is estimated that in the city there are around five thousand waste–pickers. They have an important role as they divert solid waste from landfills, especially since the main landfill of the city, Jardim Gramacho, has been closed in 2012 (Tirato–Soto and Zamberlan, 2013:1004). According to Carmo and Oliveira:

> 'Many recyclers are migrants from poor areas of the country. They have low education levels that limit their working opportunities, and as a consequence, they are limited to marginal and informal activities, like recycling' (2010:1264).

Most of scavengers in Rio de Janeiro work individually. On the one hand, it makes more difficult for them to be competitive in the recycling market and get better prices for the collected materials. On the other hand, it makes them more vulnerable to the exploitation from middlemen, as we have seen in the first chapter (Wilson *et al.,* 2006:800). For this reason, since the 1990s, the municipality has been helping the inclusion of scavengers in waste management programs and promoting their work in cooperatives (Carmo and Oliveira, *Ibidem*). Nevertheless, according to Tirato–Soto and Zamberlan, in the city, there is still a lot to do in order to better integrate waste–pickers in the solid waste management system and improve their living conditions (2013:1011).

3.2. Methodology and data collection

The research was divided in two main phases:

1) The desk phase was based on the study of major literature, preparation of questionnaires and interviews, and on the collection and analysis of secondary data.

[37] For more information about Brazilian population see the website: http://worldpopulationreview.com/countries/brazil-population/

[38] http://www.abrelpe.org.br/_download/JoseHenriquePenido.pdf

2) The fieldwork phase had a threefold goal. Firstly, the aim was to collect data on features, socio–economic and working conditions of waste pickers who work in formalized cooperatives. Secondly, it tried to analyze the role of cooperatives in the waste collection management and the issues that they face daily. Finally, the aim was to examine how local community and companies are involved in waste sorting and recycling. For these purposes, the following methods were used:

   - Questionnaires: thirty-one scavengers, members of six different cooperatives located in Jardim Gramacho (Duque de Caxias), Campo Grande and Vargem Pequena (Rio de Janeiro) answered to forty-one questions of a structured interview.
   - Semi–structured interviews with the managers of five different local cooperatives of waste–pickers and with Mrs. Fernanda Mayrink, service manager of 'Light', one of the top Brazilian companies committed to sustainability and to waste recycling.

The data used for this study was mainly collected a five weeks fieldwork in Rio de Janeiro and Duque de Caxias from November to December 2013.

3.2.1 Questionnaire

The researcher [39] interviewed thirty-one scavengers from six different cooperatives using a structured questionnaire. The questions were read exactly as they appear on the questionnaire and waste–pickers had a fixed number of options to answer to the different questions. In order to see if there was a connection between the working place and the given answers, the researcher tried to interview waste–pickers from different areas of Rio de Janeiro and Duque de Caxias. In addition, every scavenger was interviewed singularly in order to avoid influenced answers by other interviewees.

As table 1 shows, the gender balance among the interviewees was almost respected as 16 scavengers are women (W) and 15 are men (M). They are all associated with a different cooperative (6 in total), located in the suburbs of Rio de Janeiro and Duque de Caxias:

1. BARRACOOP in Vargem Pequena (Rio de Janeiro)
2. COMITRA and COOPCAROB in Campo Grande (Rio de Janeiro)
3. COOPER GRUPO AMBIENTAL, COOPERSOCIAL and COOPTOTAL in the Jardim Gramacho (Duque de Caxias).

[39] The researcher is the author of this thesis.

Table 1: Cooperatives, locations and number/gender of scavengers interviewed (November–December 2013)

COOPERATIVE	LOCATION	W	M
BARRACOOP	Vargem Pequena	8	
COMITRA	Campo Grande		4
COOPCAROB	Campo Grande	6	5
COOPER GRUPO AMBIENTAL	Jardim Gramacho		1
COOPERSOCIAL	Jardim Gramacho	1	4
COOPTOTAL	Jardim Gramacho	1	1
TOTAL		**16**	**15**

Source: questionnaire

The area of Jardim Gramacho in the Brazilian city of Duque de Caxias was chosen because until 2012 it was one of the largest dumpsites in the world and it was the place where most solid waste of Rio de Janeiro was dumped. It closed after 34 years of operation but many waste–pickers have built their houses and kept living around the previous landfill (Tirato–Soto and Zamberlan, 2013:1004).

3.2.2 Semi–structured interviews

The aim of interviews with the managers was to acquire additional information about the way cooperatives operate and the difficulties they face daily. Table 2 shows the list of interviewees and provides some information about the cooperatives they work in.

Table 2: List of interviewees (November–December 2013)

	Name	Cooperative	Year of foundation	Location	Number of workers
1	Wanderson	Coopersocial	2001	Jardim Gramacho	5
2	Alex	Cooper Grupo Ambiental	2013	Jardim Gramacho	10
3	Beroni	Cooprospera	2013	Jardim Gramacho	79
4	José	Cooptotal	2010	Jardim Gramacho	10
5	Orlando	Comitra	1997	Campo Grande	28

Source: interviews

In addition to the questionnaires and to the interviews with the five managers, the researcher have had the chance to interview Mrs. Fernanda Mayrink, service manager of 'Light' one of the top Brazilian companies committed with sustainability and waste recycling. During the interview, Mrs. Mayrink talked about the project 'Light recicla' that might serve as a model for what business companies can do in order to promote the recycling of waste materials and for stimulate civil society to do it.

3.2.3. Limitation and difficulties of this research

During the desk phase, the researcher contacted more than 20 cooperatives by email, but only 5 of them answered and confirmed they could help him in collecting information. The main reason for having received so few replies compared to the number of people contacted was due to the fact that the official list of cooperatives located in Rio de Janeiro was updated for the last time in 2009. Meanwhile, many cooperatives failed or simply changed their contact details or location. In addition, other cooperatives expressed low interest in taking part in this research because it did not bring them any benefits, at least in the immediate future.

Once arrived to Rio de Janeiro, it was particularly difficult to make an appointment with the managers of the different cooperatives. Several times they have asked to postpone a scheduled appointment at the last minute or they did not turn up at the agreed place or time. In other cases, they have changed their minds and decided not to meet the researcher. Moreover, due to long distances, heavy traffic and an inefficient public transportation system it was extremely hard to reach the cooperatives. In fact, the cooperatives that agreed to meet the researcher are mainly located in the suburb of Rio de Janeiro or in a quite isolated area of Duque de Caxias, called Jardim Gramacho – more than a 3 hour drive.

During the fieldwork phase, the researcher contacted other local cooperatives by phone or email. As it was impossibility to talk directly to the manager or to any other key person who could assist in establishing a connection with a member of the cooperative, the researcher was unable to contact them. In other cases, they offered to provide information for the exchange of money, but due to the researcher's refusal they preferred not to collaborate with him. Moreover, the fact that the researcher is not Brazilian sometimes it made more difficult to collect data. In fact, many cooperatives or waste–pickers saw him as an external member of the community and were afraid to give him relevant information.
For all these reasons, the only way to access the cooperatives and make interviews was through the help of key people. They made the researcher more accepted by the waste–pickers who started to see him with less suspicion.
In some cases they asked not to make any pictures or report the name of a person in this research.

3.3. Data analysis

The 31 interviewees answered 41 questions divided into six parts:

1. Socio–economic data aimed at collecting information about the main features of waste–pickers who work in cooperatives;
2. General information about the job (reason of being waste–pickers; years of activity; material collected; working hours per day and monthly income);
3. Waste materials: specific information about collecting places; type and quantity of collected materials;
4. Main issues linked to the job and social support (personal and family needs; social grant; discrimination and prejudice in the local community);
5. Work environment aimed at evaluating the working relationship with colleagues and the level of job satisfaction;
6. Cooperative: more specific information about the work in cooperatives. The goal is to understand if cooperatives can help waste–pickers to achieve better working conditions and obtain higher salary by improving at the same time workers' level of job satisfaction.

Picture 1: Jardim Gramacho (November 2013)

Source: the author

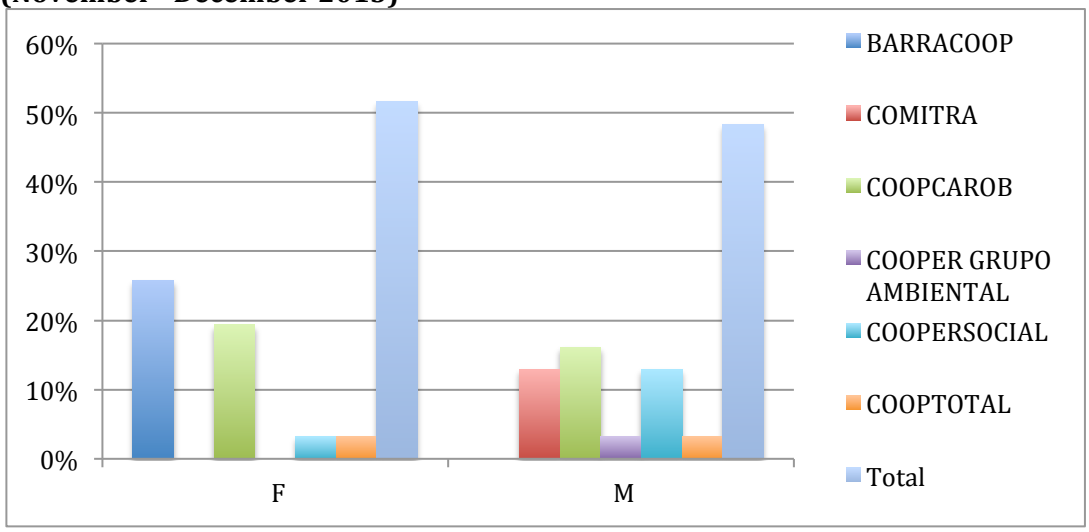
3.3.1. Socio–economic data

This section of the study is focused on the analysis of waste–pickers' features. In particular, the researcher took into consideration the following data: gender, age, level of education, civil status and family members, house and the contribution of scavengers in family livelihood.

1. Gender

As Table 3 shows the number of female and male interviewees was almost balanced. In fact, a total of 52% interviewees were woman and 48% were men. However, in two cooperatives was not possible to interview waste–pickers from both genders: 'Barracoop' (only female workers) and 'Comitra' (only male workers). According to one of the scavengers of 'Barracoop', in the cooperative there were only female workers because: "women get paid less than men for equal work and accept unfair working conditions without grumbling or complaining"[40]. In 'Comitra', on the contrary, apparently the absence of female workers was just casual[41].

Table 3: Percentage of female and male interviewees (November –December 2013)



Source: questionnaire

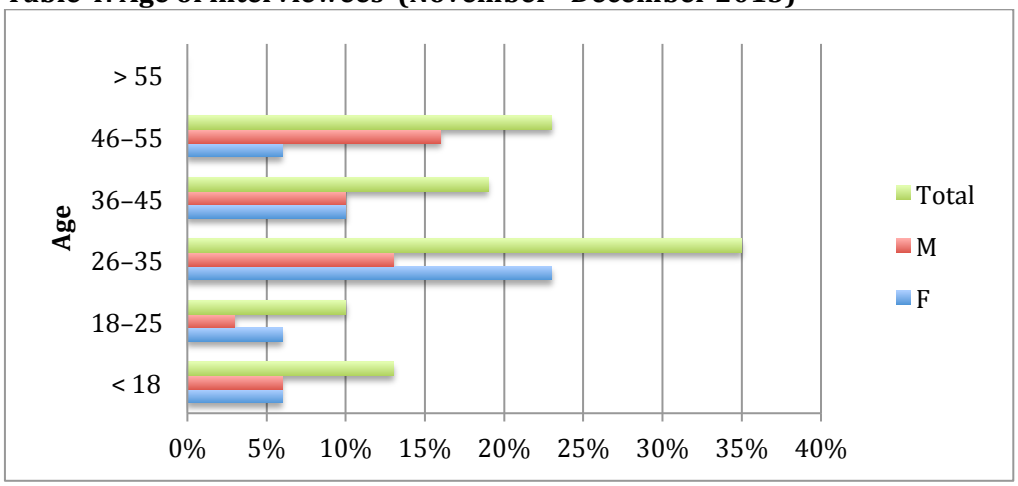
[40] The waste–picker requested not to write her name on this research (Vargem Pequena – Rio de Janeiro, 13th December 2013).

[41] Mr. Orlando, manager of 'Comintra', interviewed by the researcher, on the 12th December 2013, in Campo Grande (Rio de Janeiro).

2. Age

More than half of interviewees (58%) were under the age of 36, with 35% of them in the 26–35 age group (23% woman). Moreover, 13% of them were under 18, while 19% was in the 36–45 age group. None of them was older than 55 years old.

Table 4: Age of interviewees (November –December 2013)

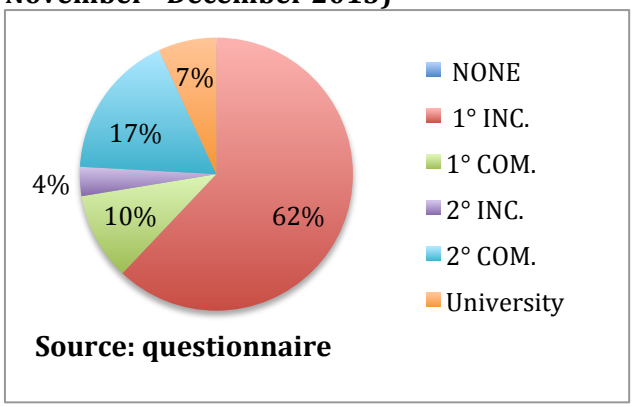


Source: questionnaire

3. Level of education

The pie chart shows interviewees' level of education and their percentage. The level of education has been divided into 6 levels: none; 1° level incomplete; 1° level complete; 2° level incomplete; 2° level complete and university. Although the majority of respondents did not complete the first level of education (62%), all of them at least attended the first year(s) of education. In marked contrast, 17% completed the second level of education. Finally only 7% had a university degree.

Table 5: Level of education
November –December 2013)



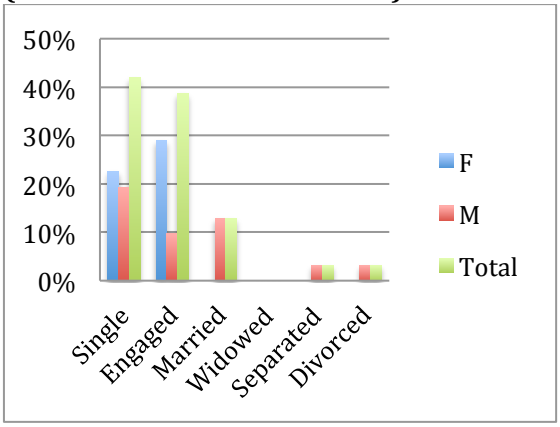
Source: questionnaire

With regards to this aspect, Mr. Wanderson (Coopersocial) has claimed that the quality of education, especially in Jardim Gramacho, is extremely bad: 'it is difficult to find qualified teachers who want to teach here due to the poverty and precarious living conditions of waste–pickers. They feel unsafe'. However, he has added: 'most of students are not interested in learning and they are not motived by their families'[42].

[42] Mr. Wanderson, manager of 'Coopersocial', interviewed by the researcher, on the 6th December 2013, in Jardim Gramacho.

4. Civil status and family members

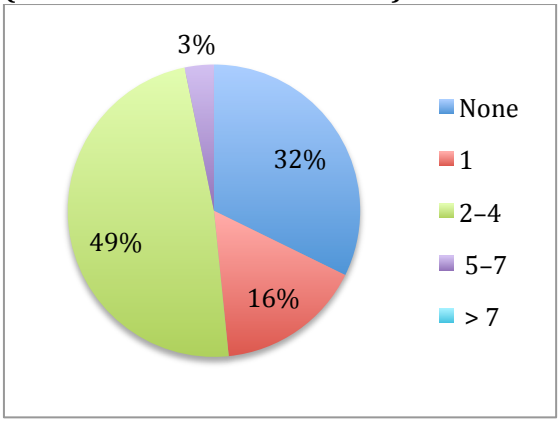
Table 6: Civil status (November –December 2013)



Source: questionnaire

Table 6 shows interviewees' civil status. The vast majority of respondents were single (42%), with a small difference between woman (23%) and man (19%). In contrast, the number of women who declared to be engaged (29%) was almost three times higher than man (10%). However, married, separated or divorced women were absent, while 13% of men were married, 3% separated and 3% divorced.

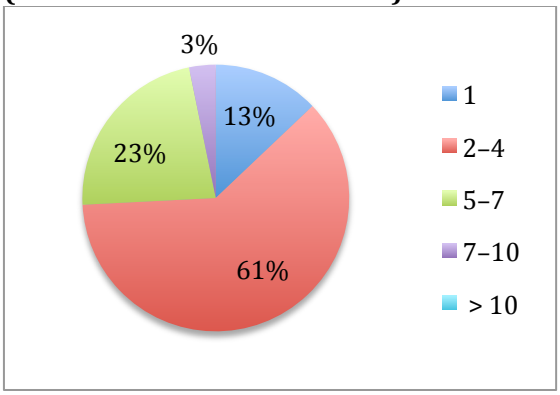
Table 7: Sons and daughters (November –December 2013)



Source: questionnaire

Turning to interviewees' number of sons and daughters (table 7), all of them stated to have at least one son/daughter (32%), and almost half of respondents (49%) to have 2–4 sons/daughters. In Jardim Gramacho, to the question "how many sons/daughters do you have?" many respondents asked "registered or not registered?" declaring that it was not very important as it does not bring any benefits to them.

Table 8: Number of family members who live in the same housing (November –December 2013)



Source: questionnaire

Table 8 shows the number of family members the interviewees live with and their percentage. 61% of them declared to live with additional 2–4 people, most of the time being their partner and sons/daughters. Relatively few responds (13%) live only with another person (partner or one of the parents). However, almost a quarter lived with 5–10 family's members due to economic reasons.

Regarding waste–pickers' features, interviewees with the managers mostly confirmed the data analyzed in the questionnaires. In fact, all respondents claimed that scavengers are mostly single or engaged; they have a low level of education or are illiterate, and have at least two children[43].

5. Housing

Table 9: Housing (November –December 2013)

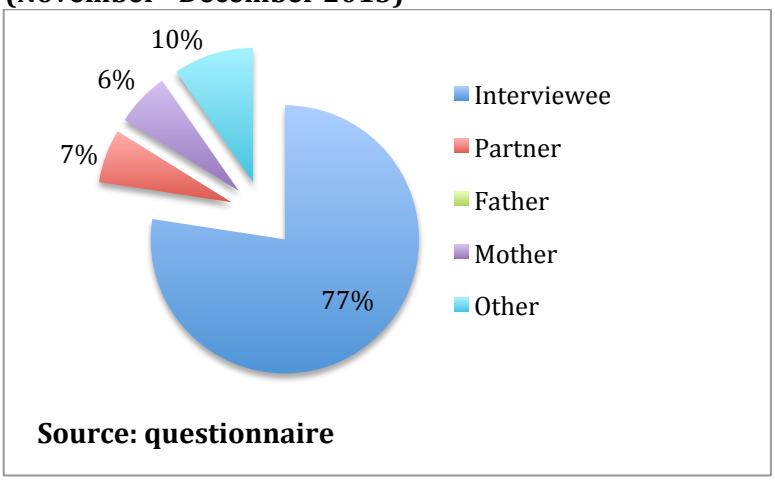
	Own	Rented	Family	Project house	Other
Total	**48%**	**45%**	**6%**	**–**	**–**

Source: questionnaire

Speaking of their housing (table 9), 48% of interviewees claimed to own a property while 45% to rent a house. In contrast, no one lived in a project house. In fact, especially in Jardim Gramacho, waste pickers claimed that the local authority 'abandoned' them to their own destiny, as it is almost impossible to get a project house. However, Mr. Beroni (Cooprospera) has underlined that waste–pickers' houses are mostly dilapidated[44] and Mr. Wanderson (Coopersocial) has added that the majority of scavengers lives in wood houses and do not have access to water[45].

6. Contribution of waste–picker's activity into family livelihood

Table 10: Responsible of family livelihood (November –December 2013)



Source: questionnaire

Turning to the question: 'Who is the responsible of family's livelihood?' the vast majority of respondents (77%) declared that they were the main person responsible comparing to 7% who stated that it was his/her partner and 6% his/her 'mother'. Finally, 10% choose the option 'other' (see table 10). It implies

[43] The researched interviewed the managers of the cooperatives, in Rio de Janeiro and Duque de Caxias (November–December 2013).
[44] Mr. Beroni, manager of 'Cooprospera', interviewed by the researcher, on the 12th December 2013, in Jardim Gramacho.
[45] Mr. Wanderson, manager of 'Coopersocial', interviewed by the researcher, on the 6th December 2013, in Jardim Gramacho.

that for these families, the waste activity represents the main source of livelihood.

Picture 2: Typical house in Jardim Gramacho (November 2013)

Picture 2 shows a typical house of a family of waste–pickers. Inside, there was a hotplate to cook food, electricity and some mattresses. Hygienic conditions were quite precarious.

Source: the author

Picture 3: Street and house in Jardim Gramacho (November 2013)

Picture 3 shows a wooden house and a muddy road. Many houses do not have any windows and especially during summer time it is quite impossible to stay inside.

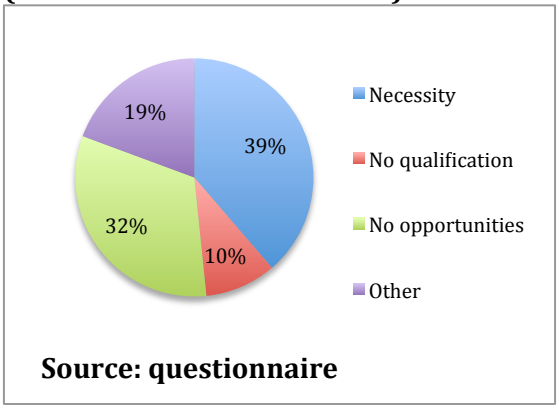
Source: the author

3.3.2. Job

This section will provide more information about respondents' working conditions, income and collected materials.

1. Reasons of being waste–picker

Table 11: Reasons of being scavenger (November –December 2013)

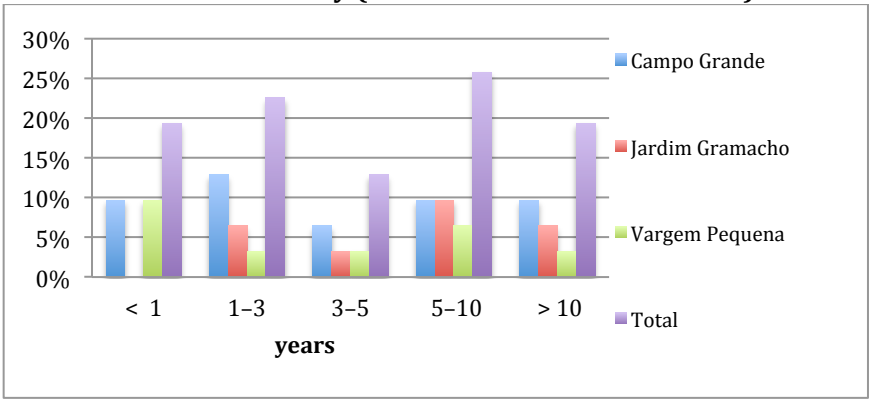


Source: questionnaire

Table 11 shows the reasons of being scavengers and their percentage. The vast majority of the respondents (39%) declared to turn to waste picking as an alternative out of economic necessity, while 32% claimed not to have other opportunities or alternatives. In addition, in Campo Grande, some workers answered that they liked their job and that was the main reason they decided to work in this field. According to Fergutz *et al.*, the number of people who work in this field is increasing due to the fact that it is easy to enter in the industry and to the lack of alternative livelihoods (2011:598).

2. Working conditions

Table 12: Years of activity (November –December 2013)



Source: questionnaire

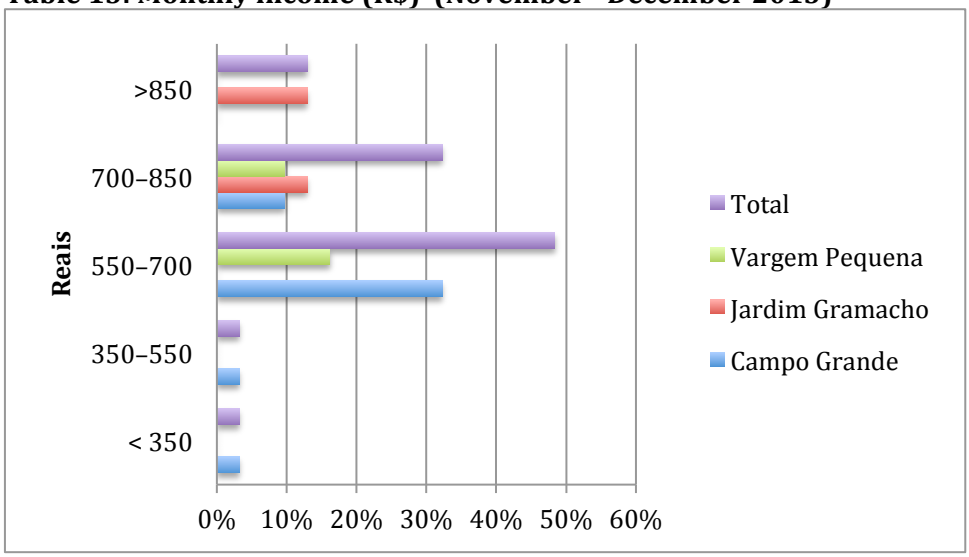
Although the majority of interviewees (26%) had been already working as scavengers for 5–10 years, there were some differences according to the place they worked in (see table 12). In fact, in Jardim Gramacho, all respondents had been in this profession at least for more than a year. In Campo Grande, in contrast, the majority of them (10%) had been working for less than one year and in Vargem Pequena 13% had 1–3 years' experience.

3. Working Hours per day

Almost every respondent (90%) declared to work for 5–8 hours per day[46]. On the other hand, only 2 of the 31 interviewed (6%) declared to work for more than 8 hours per days, and just 1 (3%) to work for more than 10 hours per day. These last 3 waste–pickers worked in Campo Grande.

4. Salary

Table 13: Monthly income (R$) (November –December 2013)



Source: questionnaire

Table 13 illustrates waste–pickers' monthly income and their percentage in the different places where the research took place. Overall, the vast majority (48%) of them declared to earn approximately 550–700R$ per month and 32% between 700 and 850R$. In contrast only 13% claimed that his/her monthly salary was more than 850R$ while only 6% stated that it was 350–550R$ or less than 350R$ (3% respectively). The chart shows also the existence of a correlation between the salary and the place of work. For instance, all interviewees from Jardim Gramacho (26% of the total) declared to earn more than 700R$ per month. Conversely, all 6% of waste–pickers who claimed that his/her salary was 350–550R$ or less than 350R$ worked in Campo Grande. This difference was due to the fact that in Campo Grande salary was directly proportional to the experience waste–pickers had.

Table 14: Is your salary fair? (November –December 2013)

	YES	NO
Campo Grande	35%	13%
Jardim Gramacho	6%	19%
Vargem Pequena	10%	16%
Total	**52%**	**48%**

Source: questionnaire

[46] Waste–pickers' number of working hours per day has also been confirmed by the five managers during the semi–structured interviews (Rio de Janeiro and Duque de Caxias, November–December 2013).

To the question: Do you think that you get a fair salary? 52% of the respondents claimed that they did consider their salary fair while the rest (48%) answered that it was unfair (see table 14). Also in this case the answers depended on the place where the cooperative was located. In particular, the vast majority of respondents who considered their salary fair came from Campo Grande (35%) while only 6% came from Jardim Gramacho. Many waste–pickers in Jardim Gramacho justified their answers by saying that their salary was not enough especially taking into consideration the hard working conditions and the knowledge they had. According to Fergutz *et al.*, scavengers receive unfair remuneration both from the buyers (industries) of recycled materials and municipalities that do not recognize the important work waste–pickers do (2011:598).

3.3.3. Waste materials

The questionnaire has also specific questions about raw materials and the collecting place.

1. Collecting place

Picture 4: Waste materials in Jardim Gramacho (November 2013)

Source: the author

All the interviewees stated to collect waste materials directly in the cooperatives. This aspect is quite important because, on the one hand, it minimizes transportation costs and makes waste–pickers' work much easier reducing the collecting time. On the other hand, in that way scavengers felt less discriminated, as they did not have a direct contact with the rest of the community.

With regard to this aspect Medina has claimed:

> "By settling around the around the dumps scavengers minimize their transportation costs, occupy land that may be undesirable to others, have access to discarded materials that can be used as construction materials for their home – usually shacks – and thus save on housing costs" (2000:56).

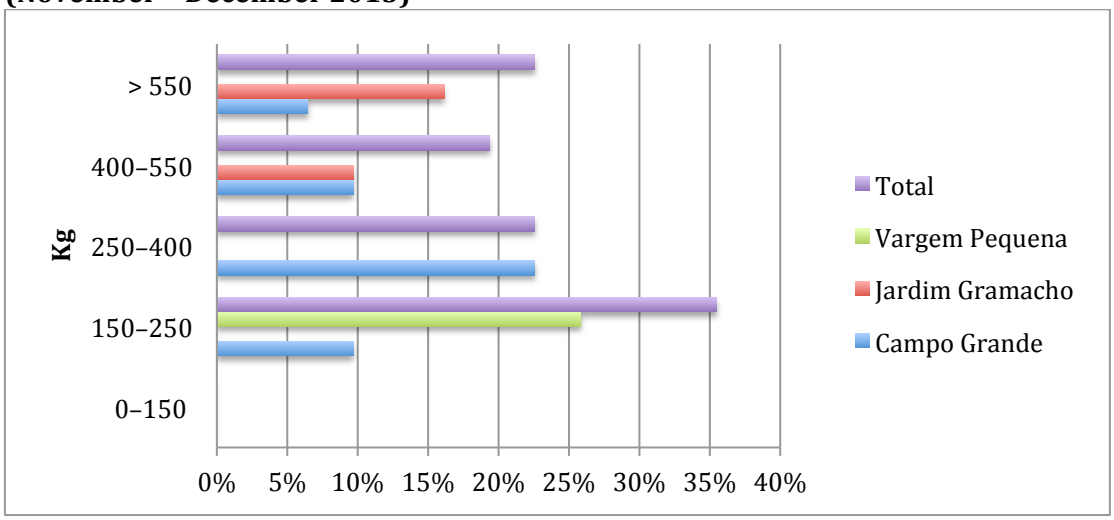
2. Raw materials

Interviewees claimed that they collected all kind of waste–materials and in particular card, cardboards, glass, plastic and aluminum. After collection, waste–pickers separate materials and decide which materials could be sold and which have to be sent to landfills as could not be recycled.

3. Quantity of materials collected per day

Table 15 shows the percentage of waste materials collected per day by each scavenger. Although, the vast majority of interviewees (35%) stated to collect 150–250 kg of materials per day, the quantity of collected material vary depending on the collecting place. For instance, all scavengers that worked in Jardim Gramacho declared to collect 400–500 or more kg of waste materials per day. Conversely, no respondent in Vargem Pequena stated to collect more than 250 kg of material per day. The difference can once again be due to the more experience that waste–pickers from Jardim Gramacho gained during the years. In addiction, the fact that many cooperatives are located in the same area help them to interact with each other and share knowledge and work vehicles.

Table 15: Quantity (kg) of waste material collected per day (November – December 2013)

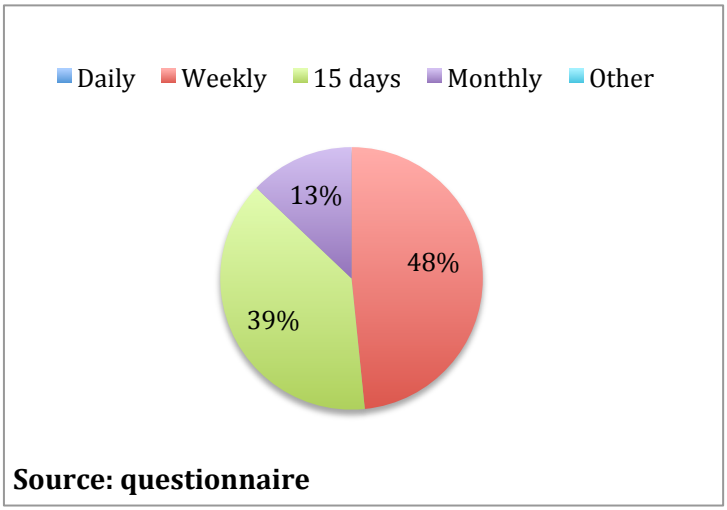


Source: questionnaire

According to Fergutz *et al.,* itinerant waste–pickers carry up to 300 kilos of recyclable materials per day even if their working conditions are much harder due the fact that they work 'in crowded streets, fighting for space with motorcycle riders, buses, trucks and cars' (2011:598).

4. Sale of waste materials

Table 16: How often is collected material sold? (November –December 2013)



Source: questionnaire

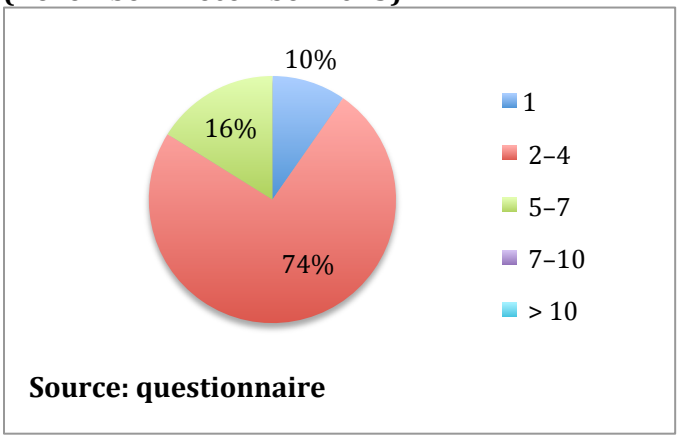
Once waste materials have been mixed and cleaned, they need to be sold to the industries. In that regard, table 16 shows that almost half of the respondents (48%) stated that their cooperatives sold materials to the industries every week, 39% every 15 days and 13% monthly. The reason for such different answers is due to the fact that cooperatives negotiate with a vary number of industries which have different needs and level of organization.

3.3.4. Main issues

The next section provides some information about the main problems faced by scavengers. Firstly, it analyzes the relationship between scavengers' monthly salary and family needs. Secondly, it better investigates some recurring issues waste–pickers may face. Finally, it takes into consideration whether the scavengers have been victim of violence and prejudice.

1. Income and family

Table 17: Monthly salary and family members (November –December 2013)

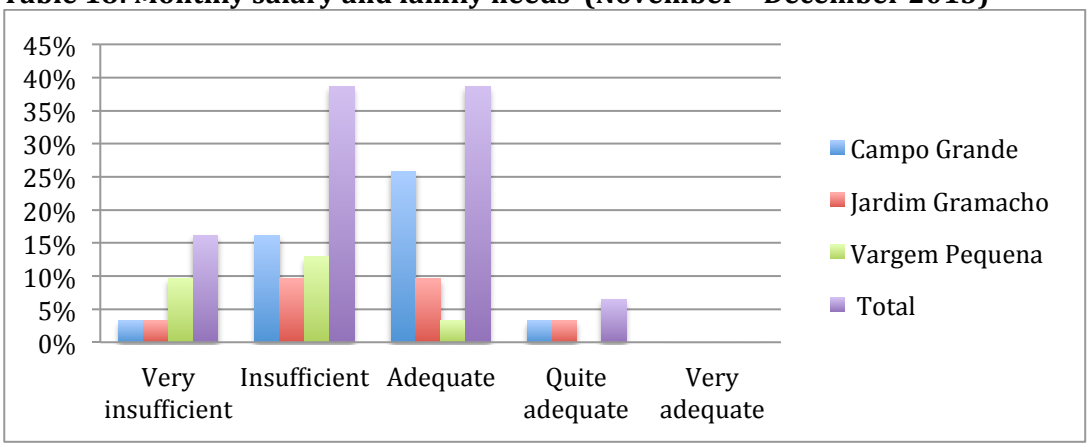


Source: questionnaire

Table 17 shows the number of family members who live with respondents' monthly income and its percentage. Almost a quarter of interviewees (74%) stated that they needed to share their income at least with 2–4 members of the family compared to 16% and 10% who shared it with 5–7 people and one person respectively. It explains why, according to table 18, only 6% of the respondents considered their income 'quite adequate' for family's needs. In contrast, the percentage of interviewees who considered it 'adequate' was equivalent to those who considered it 'insufficient' (39%), even if the answers changed depending

on the place where the cooperatives were located. For instance, 26% of waste–pickers who claimed to get an 'adequate' salary worked in Campo Grande, 10% in Jardim Gramacho and only 3% in Vargem Pequena. In contrast of the total of 16% who claimed to get a 'very insufficient' salary, 10% worked in Vargem Pequena and 3% both in Campo Grande and Jardim Gramacho.

Table 18: Monthly salary and family needs (November – December 2013)

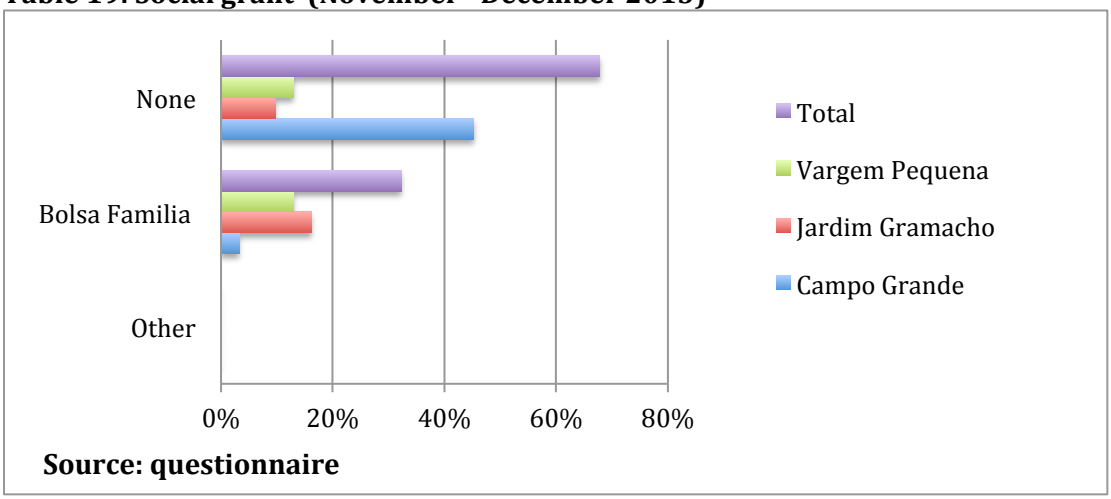


Source: questionnaire

According to Fergutz *et al.,* although in Brazil several initiatives have been implemented in order to encourage waste–pickers' social inclusion, there is still much to be done. For instance, an important step would be recognizing their work by paying fair wages for the important service they provide to the community (2011:604–605).

2. Social grant and specific issues

Table 19: Social grant (November –December 2013)

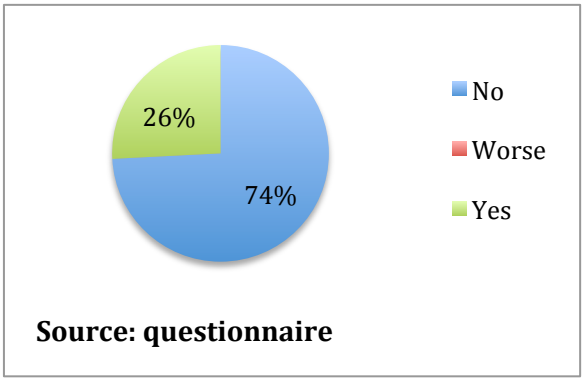


Source: questionnaire

Table 19 shows the kind of social grants respondents got from the government and their percentage. The majority of waste–pickers (68%) claimed not to receive any kind of social grants. The reason for this answer is that many families, especially in Jardim Gramacho, do not always register their sons as they think it does not bring them any benefits. On the other hand, 32% of waste–pickers declared to get the 'Bolsa Familía' (3% worked in Campo Grande; 16% in Jardim Gramacho and 13% in Vargem Pequena). 'Bolsa Familía' is a social

welfare program of the Federal Government that provides financial aid to poor Brazilian families, if they ensure that their children attend school and are vaccinated[47]. Speaking of this social grant, Mr Wanderson (Coopersocial) has claimed: 'parents send their children to school mainly moved by financial considerations than by educational motivations'[48].

Table 20: Health issues
(November – December 2013)



Source: questionnaire

Health is one of the main issues that waste–pickers face (see table 20). 74% of respondents claimed not to suffer of any specific disease and nobody stated that any physical conditions got worse due to their job. Nevertheless, all of them said that it was difficult to get medical assistance in case of necessity, as also managers confirmed during the interviews. For instance, Mr Beroni (Cooprospera) has claimed 'waste–pickers do not have access to medical assistance'[49], and Mrs José (Cooptotal) has added 'especially in Jardim Gramacho, hospitals are far away from the place where waste–pickers work and live'[50]. However, Mr Wanderson (Coopersocial) has noted that 'collecting expose waste–pickers to many risks and precarious hygienic conditions'[51]. With regard to this aspect, Medina has claimed:

> "Due to their daily contact with garbage, scavengers are usually associated with dirt, disease, squalor, and perceived as a nuisance, a symbol of backwardness and even as criminals" (2000:52).

To the question: 'What is your main need?' (see table 21), 55% of interviewees answered 'medical assistance', while 'food' and 'everything' were both chosen by 19%. It is also interesting to notice that all those who indicated the 'house' as the main need (6%) worked in Jardim Gramacho. On the other side, it is also important to recognize that informal recycling brings some social benefits. In fact, Wilson *et al.* have noted that despite waste–pickers' poor living conditions and limited access to facilities, recycling 'does allow those involved to survive and be employed in regions that often have high unemployment' (2006:802).

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[47] The program, established by Law 10.836/2004, is part of the 'Fome Zero' network of federal assistance programs. For more information, see the website: http://www.mds.gov.br/bolsafamilia

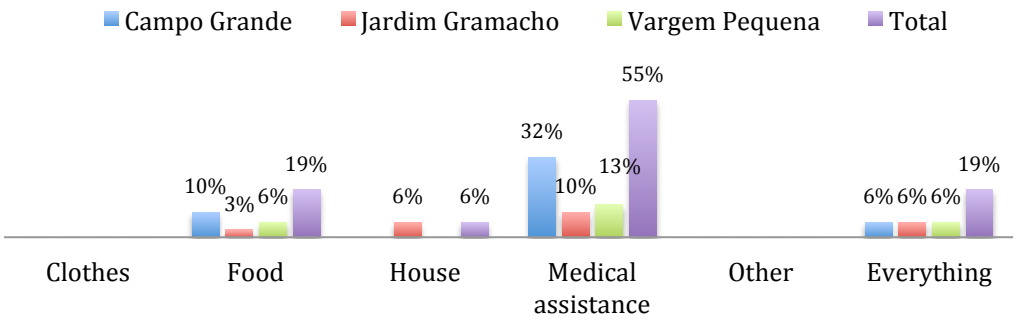
[48] Mr Wanderson, manager of 'Coopersocial', interviewed by the researcher, on the 6th December 2013, in Jardim Gramacho.

[49] Mr Beroni, manager of 'Cooprospera', interviewed by the researcher, on the 12th December 2013, in Jardim Gramacho.

[50] Mrs José, manager of 'Cooptotal', interviewed by the researcher, on the 6th December 2013, in Jardim Gramacho.

[51] Mr Wanderson, manager of 'Coopersocial', interviewed by the researcher, on the 6th December 2013, in Jardim Gramacho.

Table 21: Main need (November – December 2013)



Source: questionnaire

3. Violence and prejudice

To the questions: 'have you ever been victim of any kind of violence?' the researcher got a unanimous answer: 'none'. In fact, all the respondents claimed that they have never been victim of violence (verbal, physical or other). All interviewees gave their answers without any uncertainty. Changing the word 'violence' with 'prejudice' gave a similar result even if their answers were not unanimous. This time, waste–pickers could choose among five different options ('never'; 'sometimes'; 'frequently'; 'daily' and 'no answer') and 90% of them answered 'never' while 10% 'sometimes'. These last respondents justified their answer by saying that they do not live close to the working place and they suffer from social discrimination because of their clothes. According to Gutberlet, the fact that scavengers suffer from prejudice depends on the fact that their work 'is not recognized as resource recovery and the wider public usually does not see the benefits [...] to environmental health and global sustainability' (2008:662).
Contrary to waste–pickers' answers, the managers of cooperative claimed that their workers suffer a lot of discrimination. For instance, Mr. Wanderson (Coopersocial) has noted: 'waste–pickers are discriminated by the rest of the local community, that is one of the reason they prefer living close to the working place and isolated from the rest of citizens'[52] and Mr. Beroni (Cooprospera) has added: 'the local government has done a lot to try to integrate waste–pickers in the local community and reduce the discrimination but there is still a lot to do'[53].

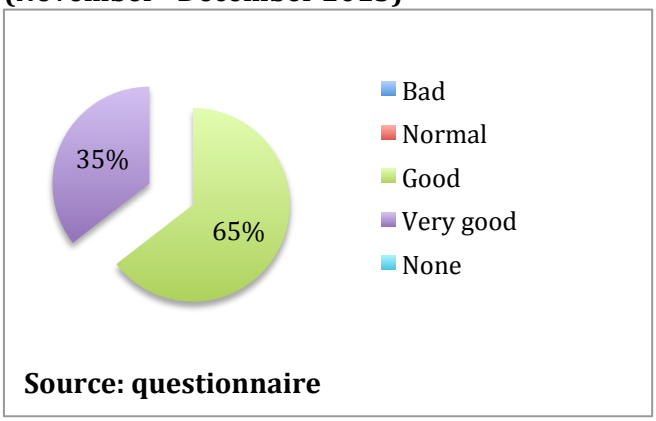
[52] Mr Wanderson, manager of 'Coopersocial', interviewed by the researcher, on the 6th December 2013, in Jardim Gramacho.
[53] Mr Beroni, manager of 'Cooprospera', interviewed by the researcher, on the 12th December 2013, in Jardim Gramacho.

3.3.5. Work environment

The next section examines more deeply respondents' working conditions. In particular, it analyzes waste–pickers' working environment, their job satisfaction, future expectation and their relationship with the local community.

1. Working relationship

Table 22: Working relationship with colleagues (November –December 2013)

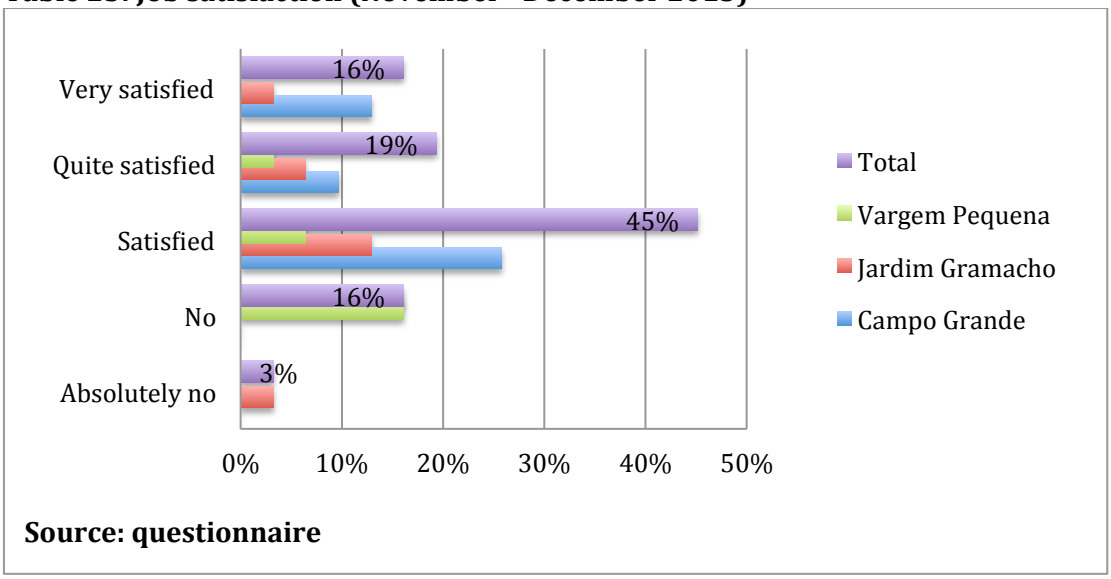


Source: questionnaire

About working relationship, 65% of respondents stated that they had a 'good' relationship with their colleagues and the rest 35% considered it 'very good' (see table 22). However, for this question, the working place had no influence on waste–pickers' answer.

2. Job satisfaction

Table 23: Job satisfaction (November –December 2013)

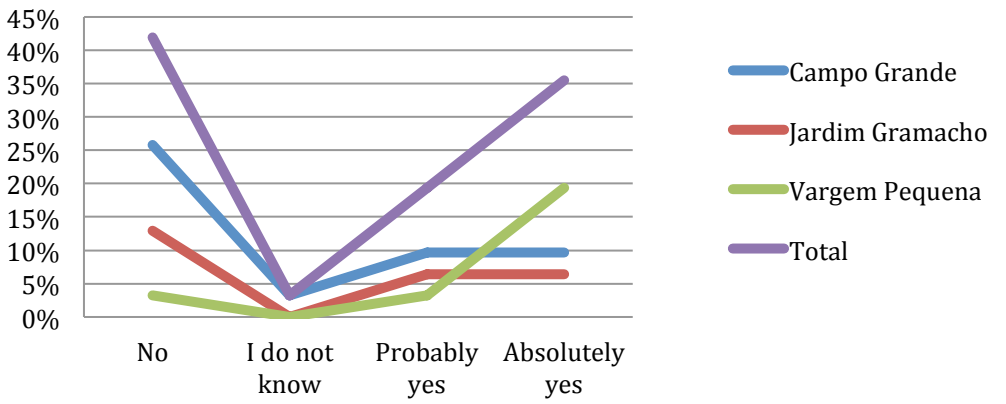


Source: questionnaire

Table 23 shows the level of job satisfaction and its percentage. The majority of interviewees claimed to be 'satisfied' with his/her job (45%), 19% 'quite satisfied' and 16% stated to even be 'very satisfied' with it, especially in Campo Grande. Conversely, 16% declared not to be satisfied, all of them worked in Vargem Pequena, and 3% 'absolutely no'. In addition, to the question: 'would you like to change your job?' (see table 24), 42% answered 'no' (26% worked in Campo Grande, 13% in Jardim Gramacho and 3% in Vargem Pequena), only 3% chose the option 'I do not know' while the rest 55% answered 'yes' (20%

'probably yes' and 35% 'absolutely yes' respectively). Once again, the vast majority of waste–pickers who declared to really want to change his/her job worked in Vargem Pequena (19%).

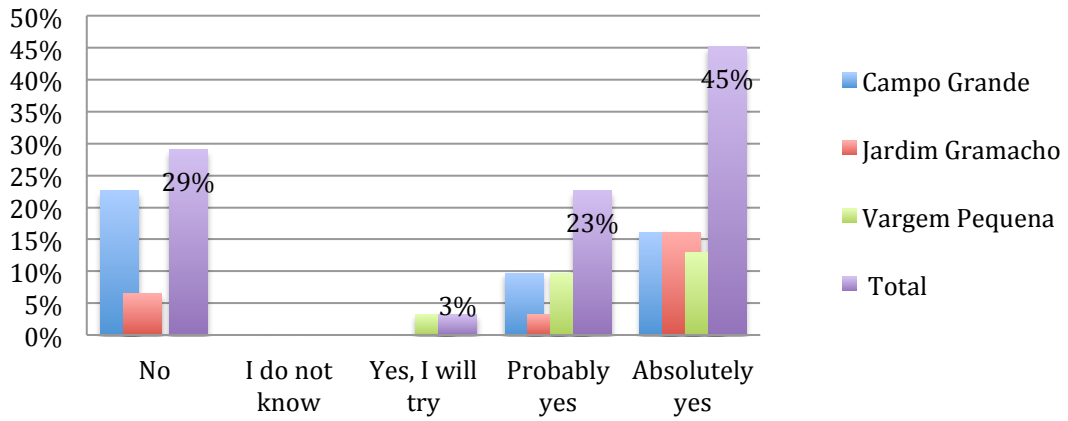
Table 24: Would you like to change your job? (November –December 2013)



Source: questionnaire

Turning to the question: 'in the next 5 years will you change your job?' (see table 25) on the one hand, 45% of interviewees answered 'absolutely yes', 23% 'probably yes' and 3% 'yes, I will try'. On the other hand, among those who answered 'no' (29%), 23% worked in Campo Grande confirming the data of table 23.

Table 25: In the next 5 years will you change your job? (November –December 2013)



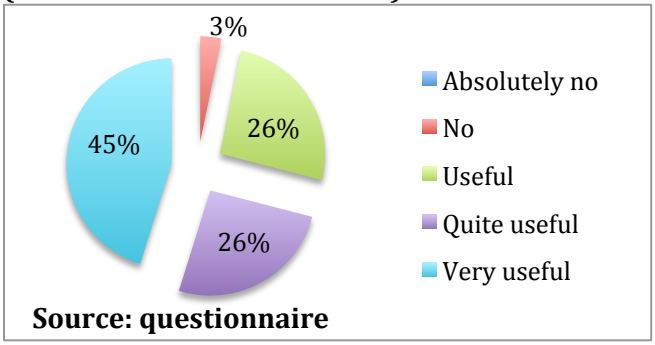
Source: questionnaire

In that respect, Mrs. José (Cooptotal) has noted that even if the vast majority of waste–pickers want to change their job, 'they do not have an entrepreneurial attitude. They work because they need money to survive and they are not interested in changes if they do not see immediate benefits.' It makes it hard for them to grow professionally[54].

[54] Mrs José, manager of 'Cooptotal', interviewed by the researcher, on the 6th December 2013, in Jardim Gramacho.

3. Relationship with the local community

Table 26: Is your job useful for the community? (November –December 2013)



Source: questionnaire

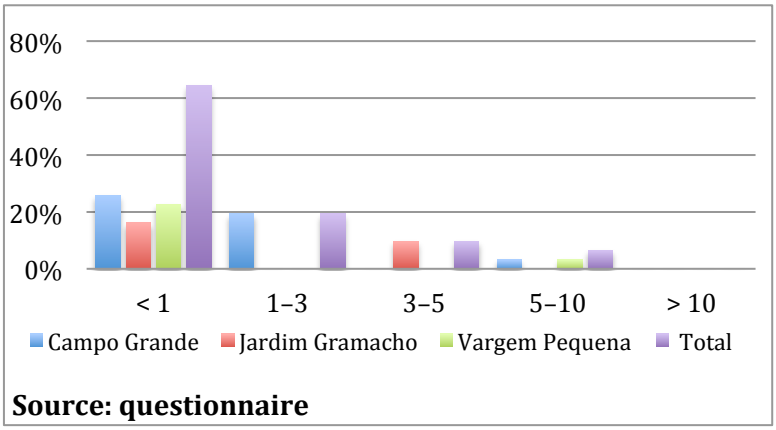
In general, according to table 26, interviewees considered their job useful for the local community. In fact, only 3% claimed that it is not useful, comparing to 45% who valuated it 'very useful' and 52% who stated it is 'quite useful' (26%) or 'useful' (26%). All interviewees also claimed that local community's support in the recycling would be very important to facilitate waste–pickers' work and, at the same time, to reduce environmental pollution. In this regard, Mrs. José (Cooptotal)[55] emphasized the need to educate and encourage citizens to recycling because it would offer an important help to waste–pickers and at the same time would contribute to keep cities cleaned. In addition, Fergutz *et al.* have argued that tax incentive would encourage citizens to recycle and donate recyclable materials to cooperative (2011:603–604).

3.3.6. Cooperatives

This section provides more specific information about waste–pickers' work in cooperatives. In particular, it analyzes if cooperatives help them achieve better working conditions and obtain higher salary by improving at the same time their job satisfaction.

1. Years of working in a cooperative

Table 27: Years of working in a cooperative (November –December 2013)



Source: questionnaire

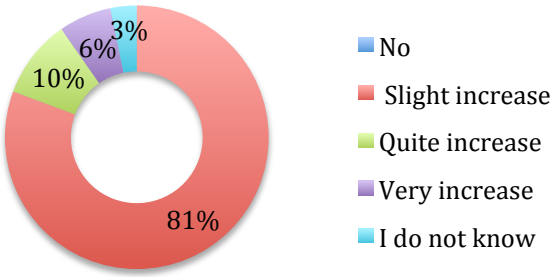
According to table 27, the vast majority of respondents (65%) had been working in a cooperative for less than 1 year. In fact, most of them previously worked individually and were not associated with any cooperatives. Conversely, only 10% of waste–pickers had been working in the same cooperative for 3–5 years (all of

[55] Mrs José, manager of 'Cooptotal', interviewed by the researcher, on the 6th December 2013, in Jardim Gramacho.

them worked in Jardim Gramacho) and just 6% for 5–10 years (3% worked in Campo Grande and 3% in Vargem Pequena).

2. Salary

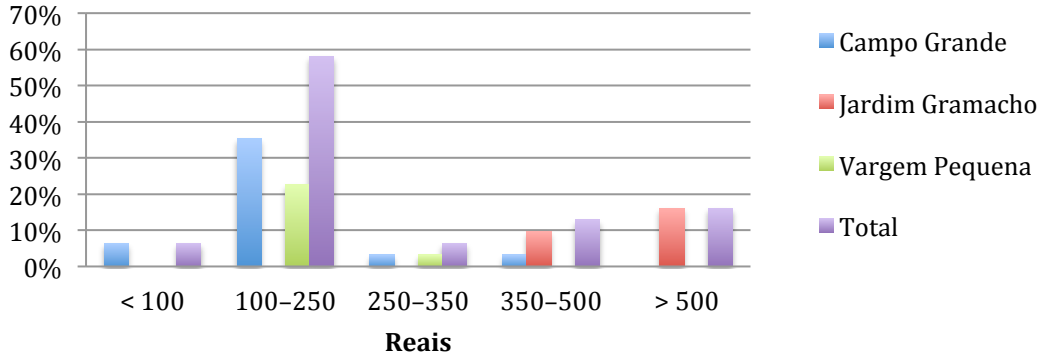
Table 28: Salary increase (November –December 2013)



Source: questionnaire

Chart 28 shows how respondents answered to the question: 'has your salary increased since you have been working in a cooperative?' and its percentage. Although all interviewees stated that their salary increased, only 6% and 10% chose the options 'very increased' and 'quite increased' respectively while 81% declared that it increased 'slightly'. To be more precise, according to table 29, on the one hand, the majority of waste–pickers (58%) stated that their salary increased between 100 and 250 Reais and 6% less than 100 Reais (slight increase). On the other hand, 6% and 13% claimed that it increased between 250–350 and 350–500 Reais respectively (quite increase). Finally, all 16% who declared that their salary increased more than 500 Reais worked in Jardim Gramacho.

Table 29: Monthly salary increase (R$) (November –December 2013)



Source: questionnaire

However, according to Mr. Beroni (Cooprospera): 'waste–pickers live in misery'[56], while Mr. Wanderson (Coopersocial) has claimed: 'even if their salary has increased since they have started working in the cooperative, in some cases it is not enough, especially for waste–pickers who have many children'[57] (see table 7).

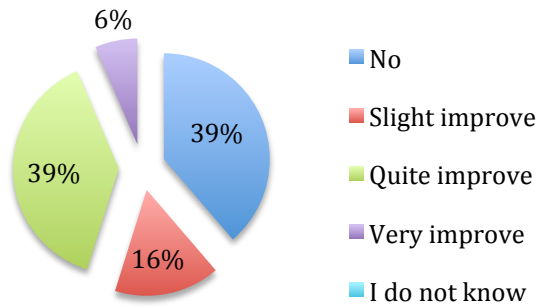
[56] Mr Beroni, manager of 'Cooprospera', interviewed by the researcher, on the 12th December 2013, in Jardim Gramacho.

[57] Mr Wanderson, manager of 'Coopersocial', interviewed by the researcher, on the 6th December 2013, in Jardim Gramacho.

4. Living conditions

As explained to the interviewees, for living conditions the researcher means the relationship among economic resources, job, quality of housing and access to medical assistance.

Table 30: Living conditions (November –December 2013)

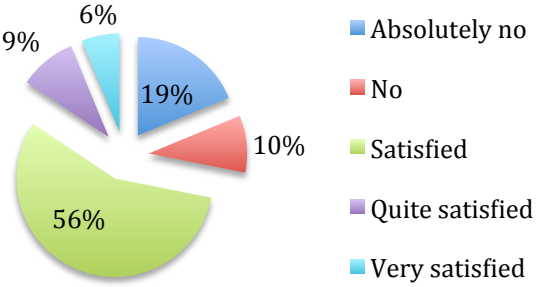


Source: questionnaire

About the improvement of living conditions, respondents gave contrasting answers (see table 30). In fact, on the one hand, 39% and 16% of them stated that living conditions did not improve at all or 'slight improve' respectively; on the other hand, 39% chose the option 'quite improve' and 6% 'very improved'.

In this regard, the managers of the cooperatives added that local government has a wrong perception on how waste–pickers live and the problems they face daily. In particular, Mr. Wanderson said: 'there is a lack of continuity in local government policies and programs. Every time the government changes, policies change and it makes it hard to reach long–term goals'[58].

Table 31: Satisfaction about living conditions (November –December 2013)



Source: questionnaire

Speaking of satisfaction about living contidion (table 31), the vast majority of them (71%) were satisfied with their living conditions, in particular 56% declared to be 'satisfied', 9% 'quite satisfied' and 6% 'very satisfied'. In stark contrast, 10% and 19% of interviewees chose the options 'no' and 'absolutely no'. The managers of cooperatives have noted that even if waste–pickers are satisfied with the work they do, they do face several kinds of problems, such as: economic, medical assistance, house and food[59].

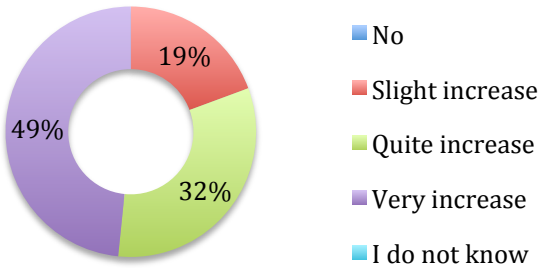
[58] Mr Wanderson, manager of 'Coopersocial', interviewed by the researcher, on the 6th December 2013, in Jardim Gramacho.

[59] The researched interviewed the managers of the cooperatives, in Rio de Janeiro and Duque de Caxias (November–December 2013).

5. Raw material collection

About raw material collection, all the interviewees stated that by working in a cooperative it is much easier to collect raw materials. In fact, according to table 32, the vast majority of waste–pickers (49%) declared that since they started working in a cooperative the level of collection increased very much, compared to 32% that declared that it 'quite increase' and 19% that said that it 'slight increase'.

Table 32: Raw material collection (November –December 2013)



Source: questionnaire

In particular, the majority of interviewees who said that the increase was slight (less than 100kg per day) worked in Vargem Pequena (19%), while those that declared the higher increase (between 350 and 500kg per day) 6% worked in Jardim Gramacho and 3% in Campo Grande. Respondents also added that working in a cooperative helped them sell materials to the industries without the need to pass through a middleman. At this purpose, Gutberlet (2011:664) has noted that shared work improves scavengers' ability to meet industries material expectations in terms of quantity and quality.

In addition, during the interviews with the five managers it was found that raw material collection is both beneficial for waste–pickers themselves as they can work in a safer environment and, beneficial for the industries as they get some money from the raw materials. In particular, Mr. Wanderson (Coopersocial) stated that his cooperative buys raw materials (plastic) from small firms and industries for 0,20 Reais per Kg and once materials have been mixed and cleaned they are sold to industries for 0,96 Reais[60].

The interviews have also showed that cooperatives with a reduced number of workers (Coopersocial, Cooper Grupo Ambiental and Cooptotal) are specialized in the collection of specific raw materials, especially plastic and cardboard, while the bigger ones (Cooprospera and Comitra) collect all kinds of materials.

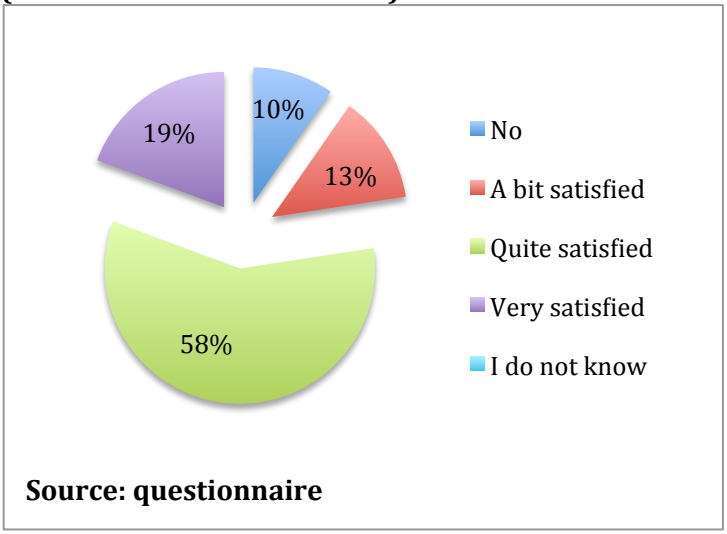
6. Job satisfaction

Table 33 shows how interviewees answered to the question: 'are you satisfied with the cooperative in which you work in?' and its percentage. More than a half of respondents (58%) answered that they were 'quite satisfied' and 19% 'very satisfied'. Conversely, 13% declared to be 'a bit satisfied' and only 10% were not satisfied at all. Scavengers' satisfaction with the work in cooperative partly

[60] Mr Wanderson, manager of 'Coopersocial', interviewed by the researcher, on the 6th December 2013, in Jardim Gramacho.

depends on the fact that it provides them with a chance to reduce their social and economical exclusion. In fact, according to Gutberlet, cooperatives have a 'larger bargaining power to receive better prices and to improve working conditions' and give to waste–pickers an important opportunity for personal growth (*Ibídem*).

Table 33: Satisfaction with the work in cooperative (November –December 2013)



Source: questionnaire

Nevertheless, the interviews with the managers have showed that cooperatives constantly face different kinds of difficulties. Firstly, a main one is to contacting industries to sell recycled materials. In fact, it is hard to win industries trust and there is a sort of rivalry among the cooperatives to have the largest number of buyers. This penalizes the small cooperatives that have less resources and working tools than the bigger ones.
Secondly, they complained about the complex bureaucracy and excessive costs to register a cooperative. At this purpose, Mrs José (Cooptotal)[61] explained that the registration in some cases can cost 2000 Reais and Mr. Wanderson (Coopersocial)[62] added that it takes at least 20 days to be completed. However, all interviewees stated that although cooperatives do an important work for all the community, there is a lack of financial and logistical support from local authorities and Federal Government.

7. Objectives of the cooperative

Speaking of the objectives of the cooperatives, the five managers gave two different types of answers:

1) Related to the cooperatives themselves

– To buy working tools in order to improve waste material collection and workers' safety (Wanderson)[63].

[61] Mrs José, manager of 'Cooptotal', interviewed by the researcher, on the 6th December 2013, in Jardim Gramacho.
[62] Mr Wanderson, manager of 'Coopersocial', interviewed by the researcher, on the 6th December 2013, in Jardim Gramacho.
[63] *Ibidem.*

- To offer better working conditions to the workers (Beroni)[64].
- To regularize contract workers and to offer more jobs and a better salary to employees (José)[65].

2) Related to a social purpose

- To apply for a loan for the construction of workers' houses (Wanderson)[66].
- To facilitate waste–pickers' integration in the local community (Alex)[67].
- To improve workers' rights and allow them to study (Orlando)[68].

3.4. Interview with Mrs. F. Mayrink ('Light')

The aim of the interview with Mrs Fernanda Mayrink[69], service manager of 'Light', was to acquire information about the commitment of Brazilian companies with sustainability and waste recycling.

1. 'Light' and 'Light Recicla' program

Light Serviços de Eletricidade S.A. (Light) is a private electric company located in the State of Rio de Janeiro. Founded in 1904 in Canada with The Rio de Janeiro Tramway, Light and Power Co. Ltd., it started to operate in Brazil in 1905. Today, the company is responsible for the distribution of electricity in the city of Rio de Janeiro and in part of Baixada Fluminese[70].

Picture 5: Light recicla

Source: http://www.light.com.br

According to Mrs. Fernanda Mayrink, the 'Light recicla' program is a good example of Light's commitment to sustainability and waste recycling. The project takes place in the communities of Santa Marta and its surrondings (Botafogo e Humaitá), Chapéu Mangueira, Babilônia, Rocinha, Chácara do Céu, Cruzada São Sebastião, Morro dos Cabritos and Ladeira dos Tabajaras and allows low–

[64] Mr Beroni, manager of 'Cooprospera', interviewed by the researcher, on the 12th December 2013, in Jardim Gramacho.
[65] Mrs José, manager of 'Cooptotal', interviewed by the researcher, on the 6th December 2013, in Jardim Gramacho.
[66] Mr Wanderson, manager of 'Coopersocial', interviewed by the researcher, on the 6th December 2013, in Jardim Gramacho.
[67] Mr. Alex, manager of 'Cooper Grupo Ambiental', interviewed by the researcher, on the 6th December 2013, in Campo Grande (Rio de Janeiro).
[68] Mr. Orlando, manager of 'Comintra', interviewed by the researcher, on the 12th December 2013, in Campo Grande (Rio de Janeiro).
[69] Mrs Fernanda Mayrink, service manager of Light, interviewed by the researcher, on the 19th December 2013, in Rio de Janeiro.
[70] For more information see the website: http://www.light.com.br

income population to pay their electricity bill through recyclable materials. Started in August 2011, the innovative project has specific social, environmental and economical goals. In fact, it helps citizens in the collection of garbage by contributing to protecting the environment and at the same time offering the customers a discount on their electricity bill. In addition, the initiative also contributes to the reduction of public expenditure for urban hygiene.

2. How does it work?

Clients need to bring mixed and cleaned recyclable materials to one of the ten ecopoints located in the areas where the project takes place. At the ecopoints, materials are weigthed and clients receive a receipt of the value of the discount on their electricity bill. The discount depends on the type and quantity of materials. In fact, each material has its own value and respective discount[71].

3. Difficulties and success of the project

According to Mrs. Mayrink, the most difficult aspect of the project is to convince people on the importance of recycling. In fact, they want to be sure that it will be beneficial for them. Only when they are sure of it, they will start collaborating.
The success of this project depends on an intense coordination effort with the various institutions together with the active involvement of local stakeholders.

Conclusion

Solid waste management presents great challenges in Rio de Janeiro and there is still a lot to do in order to integrate waste–pickers in the recycling system.
It is estimated that in the city there are around five thousand scavengers and although they have an important role in diverting solid waste from landfills, most of them live in poverty (Tirato–Soto and Zamberlan, 2013:1004).

Some important results emerged from data analysis. First of all, it showed that most of respondents share some common features: they are mostly single or engaged; they have a low level of education or are illiterate, and have at least two sons/daughters. It was also noted that in many cases there was a connection between the working place and the given answers.

Second, medical assistance has emerged as one of the main issues that waste–pickers face daily. In fact, although 74% of respondents claimed not to suffer of any specific disease, all of them said that it was difficult to get medical assistance in case of necessity.

Third, it was particularly interesting to notice that waste–pickers and managers had a contrasting view regarding the issues of prejudice and discrimination. In

[71] For more information see the website: http://www.light.com.br/grupo-light/Sustentabilidade/desenvolvimento-da-area-de-concessao_light-recicla.aspx

fact, on the one side, 90% of waste–pickers claimed that they have never been victim of discrimination. On the other side, the five managers reported that their workers suffer a lot of discrimination.

In addition, the majority of interviewees claimed to be 'satisfied' about their job (45%), nevertheless, the same percentage think to change their job in the next 5 years. In that respect, Mrs. José (Cooptotal) has noted that even if the vast majority of waste–pickers want to change their job, 'they do not have an entrepreneurial attitude. They work because they need money to survive and they are not interested in changes if they do not see immediate benefits.'[72].

Fourth, scavengers' salary has emerged as an issue. In fact, on the one side data showed that waste–pickers' salary has increased since they have been working in a cooperative and has a major role in supporting family livelihood. On the other side, the managers underlined that their workers still live in misery.

Fifth, the interviews with the managers have also showed that cooperatives constantly face different kinds of difficulties, such as contacting industries to sell recycled materials or the excessive costs to register a cooperative. In addition, all interviewees stated that although cooperatives do an important work for all the community, there is a lack of financial and logistical support from local authorities and Federal Government.

Finally, from the interview with Mrs. Mayrink, service manager of 'Light', emerged the role of Brazilian business companies in promoting the recycling of waste materials and the need of more sensitization to stimulate civil society.

[72] Mrs José, manager of 'Cooptotal', interviewed by the researcher, on the 6th December 2013, in Jardim Gramacho.

CONCLUSION

This study has showed as solid waste management is one of the main problems worldwide. Especially in developing countries, different factors such as rapid population growth, migration to urban areas, lack of financial resources and technical knowledge due to a low–skilled labor force, make difficult to implement an efficient system of collection.

The research in Rio de Janeiro and Jardim Gramacho (Duque de Caxias) confirmed that there is still a lot do in order to integrate waste–pickers within the society and in the waste management system. In fact, although there are a lot of scavengers' cooperatives and during recent years an increasing number of projects and initiatives have been implemented, more actions are needed.

One of the leading questions of this study was: Which are the main features of waste pickers in Rio de Janeiro?

Questionnaires and interviews confirmed researcher's hypothesis: waste pickers are from disadvantaged areas, do not have high education and they have few job opportunities. In addition, it emerged that most of interviewees are mostly single or engaged and have at least two children. Many studies have also shown that they are usually rural migrants and belong to marginalized minorities (Ezeah *et. al.,* 2013; Medina, 2008).

Speaking of discrimination, interviews with the managers confirmed that waste–pickers are social discriminated and excluded (Bleck and Wettberg, 2012). While interviewed waste–pickers had a contrasting opinion and claimed that they have never been victim of discrimination.

In addition, the research confirmed that waste–pickers work under hazardous and precarious sanitary conditions (Paul *et al.*, 2012) and that generally they do not have access to adequate medical treatment (Bleck and Wettberg, 2012). In fact, medical assistance has emerged as one of the main issues that waste–pickers face daily.

Secondly this study has analyzed if cooperatives improve waste–pickers' working and living conditions.

The research showed that cooperatives contribute significantly to improve informal waste workers' working and living conditions (Lino and Ismail, 2012; Paul *et al.,* 2012). In fact, the majority of interviewees claimed to be 'satisfied' about their work in cooperative, nevertheless they think they will change their job in the next 5 years. In addition, the managers of cooperatives pointed out that even if waste–pickers are satisfied with their work, they do face several kinds of problems, such as: economic, medical assistance, housing and food.

Speaking about scavengers' salary, on the one hand, many authors such as Tirado–Soto and Zamberlan (2013) have noted that thought the cooperatives it is much easier for waste–pickers to have a direct contact with the recyclable

industries and obtain better prices for materials. On the other hand, the managers underlined that even if scavengers' salary has increased, they still live in misery. However, they have also claimed that it is hard to win industries trust and there is a sort of rivalry among the cooperatives to have the largest number of buyers.

In addition, the interviews with the managers have showed that cooperatives constantly face different kinds of difficulties. Firstly, they confirmed that bureaucracy represents a huge obstacle in the formation of scavengers' cooperatives, especially for the less organized groups (Gutberlet, 2008). In fact, they claimed that registration can cost up to 2000 Reais and takes at least 20 days to be completed. Secondly, they have noted that waste–pickers do not have an entrepreneurial attitude and that there is a lack of efficiency (Tirado–Soto and Zamberlan, 2013). Finally, all interviews stated that although cooperatives do an important work for all the community, there is a lack of financial support from local authorities. By saying it, they confirmed that there is a need of educational programs to encourage citizens to separate recyclable materials (Damghani *et al.*, 2008; Ezeah *et al.,* 2013; Gutberlet, 2008).

Turning to the last question of this research: is the cooperative system effective in enhancing waste collection rates by waste–pickers?

All the interviews stated that by working in a cooperative it is much easier to collect raw materials and to sell materials to the industries without the need to pass through middlemen. In addition, they confirmed that shared work improves waste–pickers' ability to meet industries expectations in terms of quantity and quality of materials (Gutberlet, 2008).

In sum, from the research has emerged that in Rio de Janeiro, although scavengers' living conditions have improved during recent years, more actions are needed. In addition, the study showed the need of educating citizens to recycling because it would offer an important help to waste–pickers and at the same time would contribute to keep cities cleaned.

Annex 1: QUESTIONÁRIO PELA PESQUISA

Dados socioeconômicos

1. Sexo:
( ) Feminino
( ) Masculino

2. Qual é a sua idade?
( ) Até 18
( ) 18–25
( ) 26–35
( ) 36–45
( ) 46–55
( ) > 55

3. Qual é o seu nível de formação escolar?
( ) Sem formação escolar
( ) Primeiro Grau Incompleto
( ) Primero Grau Completo
( ) Segundo Grau Incompleto
( ) Segundo Grau Completo
( ) Outro: _____

4. Qual é o seu estado civil?
( ) Solteiro(a)
( ) Junto(a)
( ) Casado(a)
( ) Viúvo(a)
( ) Separado(a)
( ) Divorciado(a)

5. Quantos filhos você tem?
( ) Não tenho filhos
( ) 1 filho(a)
( ) 2–4 filhos(as)
( ) 5–7 filhos(as)
( ) Acima de 7 filhos(as) – Total: ____ filhos

6. Quantas membros da sua família moram na sua casa?
( ) 1 pessoa
( ) 2–4 pessoas
( ) 5–7 pessoas
( ) 7– 10 pessoas
( ) Acima de 10 pessoas – Total: _____ pessoas

7. Sua residência é:
( ) Própria
( ) Alugada

( ) Da sua família
( ) Mora de favor
( ) Não tem residência
( ) Outro: _____

8. Quem é o principal responsável pelo sustento da sua família?
( ) O(a) próprio(a) entrevistado(a)
( ) Esposo(a)
( ) Pai
( ) Mae
( ) Outro(s) _____

Trabalho

9. Por que você escolheu fazer o que faz?
( ) Necessidade
( ) Desempregado sem qualificação
( ) Única oportunidade
( ) Outro(s): _____

10. Há quanto tempo exerce essa atividade?
( ) Menos de 1 ano
( ) 1–3 anos
( ) 3–5 anos
( ) 5–10 anos
( ) 10 anos ou mais

11. Onde você coleta materiais?
( ) Rua
( ) Supermercados
( ) Lixão
( ) Hospitais
( ) Outro(s): _____

12. Quais são os materiais que você coleta?
( ) Alumínio
( ) Papel/Papelão
( ) Vidro
( ) Todos os materiais
( ) Outro(s) _____

13. Geralmente, quantas horas por dia você trabalha?
( ) menos de 3 horas por dia
( ) 3–5 horas por dia
( ) 5–8 horas por dia
( ) 8–10 horas por dia
( ) Mais de 10 horas por dia

14. Em media, qual é a quantidade do material coletado por dia?
( ) até 350 kg
( ) 350 kg a 550 kg
( ) 550 kg a 700 kg
( ) 700 Kg a 850 kg
( ) Mais de 850 kg

15. Qual é a frequência da venda do material?
( ) Diariamente
( ) Semanalmente
( ) Cada 15 dias
( ) Mensalmente
( ) Outra opção _____

16. Qual é o valor recebido pelo material vendido por mês?
( ) até 150 reais
( ) 150 a 250 reais
( ) 250 a 400 reais
( ) 400 a 550 reais
( ) Mais de 550 reais

17. Acha que o preço pedido pelos materiais é justo?
( ) Sim
( ) Não

18. Quantas pessoas vivem dessa renda na sua família?
( ) 1 pessoa
( ) 2–4 pessoas
( ) 5–7 pessoas
( ) 7– 10 pessoas
( ) Acima de 10 pessoas – Total: _____ pessoas

<u>Principais dificuldades</u>

19. A remuneração adquirida com a venda dos materiais é suficiente para sustentar sua família?
( ) é muito pouco
( ) é pouco
( ) é o suficiente
( ) é um pouco mais que suficiente
( ) é muito mais que o suficiente

20. Recebe benefícios sociais do governo?
( ) Não recebo
( ) Bolsa família
( ) Outro(s): _____

21. Qual a sua maior necessidade hoje?
( ) Alimentos – Cesta básica
( ) Casa
( ) Tratamento Médico
( ) Roupas
( ) Outro(s): _____

22. Adquiriu problemas de saúde decorrentes dessa atividade?
( ) Não
( ) Agravei problemas de saúde já existentes
( ) Sim

23. Sofreu alguma violência no exercício da sua profissão?
( ) Nunca sofri violência
( ) Sim, violência verbal
( ) Sim, violência física
( ) Sim, violência física e verbal
( ) Não quero responder

24. Sofreu algum preconceito por causa do trabalho?
( ) Nunca sofri preconceito
( ) Algumas vezes
( ) Frequentemente
( ) Todos os dias
( ) Não sei

25. Se sim, qual? _____

<u>Relações no ambiente de trabalho</u>

26. Qual é o seu relacionamento com os seus colegas?
( ) Péssimo
( ) Normal
( ) Bom
( ) Muito bom
( ) Não tenho relacionamento

27. Está satisfeito(a) com o seu trabalho?
( ) Absolutamente não
( ) muito pouco
( ) Normal
( ) bastante satisfeito(a)
( ) muito satisfeito(a)

28. Se tivesse oportunidade, trocaria de emprego?
( ) Não
( ) Não sei, nunca pensei nisso
( ) Muito provavelmente, sim
( ) Sim

29. Nos próximos 5 anos, você acha que vai trocar do trabalho?
( ) Não
( ) Não sei, nunca pensei nisso
( ) Sim, se eu conseguir outro trabalho
( ) Muito provavelmente, sim
( ) Sim

30. Acha que o seu trabalho é útil para a comunidade?
( ) Não é útil
( ) Pouco útil
( ) Útil
( ) Muito útil
( ) Fundamental

31. Está satisfeito(a) com a situação atual em que vive?
( ) Absolutamente não
( ) Muito pouco
( ) Normal
( ) Bastante satisfeito(a)
( ) Muito satisfeito(a)

32. Falta apoio da comunidade e do poder publico na coleta seletiva do lixo?
( ) Falta apoio da comunidade, mas não é importante
( ) Falta apoio, ele seria muito importante
( ) Tenho apoio, mas não faz tanta diferença
( ) Tenho apoio na comunidade onde coleto, é muito importante
( ) Não sei

<u>Cooperativa</u>

33. Você está associado(a) a alguma cooperativa?
( ) Sim
( ) Não (vai pergunta 35)
( ) Sempre trabalhei numa cooperativa

34. Se sim, qual? _____

35. Por que você não está associado(a) a uma cooperativa?
( ) Prefiro trabalhar independente
( ) Não sei, nuca pensei nisso
( ) Não quero pagar a taxa de associação
( ) Acho que as cooperativas são inúteis

36. Há quanto tempo está associado(a) a uma cooperativa?
( ) Menos de 1 ano
( ) 1–3 anos
( ) 3–5 anos
( ) 5–10 anos
( ) 10 anos ou mais

Só se antes não trabalhava numa cooperativa

37. O seu salário tem melhorado desde que você começou a trabalhar na cooperativa?
( ) Não (vai pergunta 39)
( ) Sim, um pouco
( ) é bastante melhor
( ) é muito melhor
( ) Não sei (vai pergunta 39)

38. Quantos reais você consegue ganhar a mais por mês?
( ) Até 100 reais
( ) 100 a 250 reais
( ) 250 a 350 reais
( ) 350 a 500 reais
( ) Mais de 300 reais

39. As suas condições de vida e de saúde têm melhorando desde que você começou a trabalhar na cooperativa?
( ) Não
( ) Sim, um pouco
( ) Sim, são bastante melhores
( ) Sim, são muito melhores
( ) Não sei

40. Acha que com a cooperativa você pode coletar mais material?
( ) Não (vai pergunta 42)
( ) Sim, um pouco mais
( ) Sim, bastante mais
( ) Sim, muito mais
( ) Não sei (vai pergunta 42)

41. Quanto material você consegue coletar a mais por dia?
( ) até 100 kg
( ) 100 kg a 250 kg
( ) 250 kg a 350 kg
( ) 350 Kg a 500 kg
( ) Mais de 500 kg

42. Acha que é mais fácil encontrar pontos de venta?
( ) Não
( ) Sim, um pouco mais fácil
( ) Bastante mais fácil
( ) é muito mais fácil
( ) Não sei

43. Em general, você está satisfeito(a) com a cooperativa?
( ) Não
( ) Sim, mas não muito

( ) Sim, estou bastante satisfeito(a)
( ) Sim, estou, muito satisfeito(a)
( ) Não sei

Annex 2: ENTREVISTAS COM OS GERENTES DAS COOPERATIVAS

1. Cooperativa: _____
2. Tempo de existência da cooperativa: _____
3. Quantos catadores trabalham na cooperativa?
4. Onde os catadores coletam os materiais?
5. É difícil contatar as empresas? e vender os materiais?
6. Quais são os objetivos principais de cooperativa?
7. Quais são os projetos realizados pela cooperativa para melhorar as condições de trabalho, renda e vida dos catadores?
8. Quais são os problemas principais enfrentados pelos catadores?
9. Como você analisa a atuação do governo municipal frente aos catadores?
10. Como deveria ocorrer a solução dos problemas ambientais provocados pelo lixão?
11. Você julga que os catadores que trabalham na cooperativa estão satisfeitos com o trabalho que realizam?

Annex 3: ENTREVISTA COM F. MAYRINK ('LIGHT')

1. Como surgiu a idéia da 'Light recicla'?
2. Como está indo o projeto?
3. O que a 'Light' ganha com isso?
4. Como tem sido a resposta da população?
5. A 'Light' tem o apoio da municipalidade na realização do projeto?
6. Qual é a destinação do matérial reciclado?

7. Quais são os próximos projetos da ‘Light’?

8. Como é a situação da coleta seletiva na cidade de Rio de Janeiro? Você viu algumas melhoras nos últimos anos?

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