

Waste Pickers: Strategies to Enhance Livelihoods

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EXECUTIVE SUMMARY

Recently in Latin America, the phenomenon of people surviving by picking through trash has received attention from artists, NGOs and policy makers. Waste pickers are poor people who sell recyclables found in trash for a living. Most are neither part of the sophisticated commercial waste management sector nor the public municipal services bureaucracy. Waste picking expanded as a profession in the mid-twentieth century as immigrants and marginalized people could not find jobs in the formal sector and so turned to collecting and selling recyclables to make a living from the rising use of disposable goods. Despite the fact that waste picking brings numerous benefits to the environment, and to the well-being of the community and local government, waste pickers are poor, marginalized and trapped in a cycle of low productivity. To partially solve the problem, waste pickers have organized into cooperatives, a particular business model with special attention to social needs. While this has raised income, further strategies are necessary to improve the living and working conditions of waste pickers, with positive consequences for the environment and the local community.

A central premise of this policy paper is that waste pickers struggle to make a living and develop their business because the current model of waste picking is limited in scale and scope. Limitation in scale is caused by social discrimination and economic exploitation. Waste pickers are discriminated against by the community and local authorities because of their condition of poverty and the nature of the job. As a consequence they are excluded from engagement with people in neighborhoods and waste facilities in ways that might increase the volume of goods collected. When access to waste is reduced or prohibited, the livelihood of waste pickers is compromised. Moreover, waste pickers are exploited by the intermediaries of the recycling supply chain, because waste cooperatives cannot provide the desired consistency in high quality and large volume for recyclables.

The limitation in scope derives from lack of capital, lack of technology and lack of access to trash. Usually waste pickers collect only one or few materials and operate only in one or few neighborhoods because of constricted capacity in transportation, processing machinery, credit, working space and limited or no support provided by the municipality. As a result, cooperatives are unable to scale up and capture value added from forward linkages.

To address these problems some waste pickers have started to organize into cooperatives as a way of pooling human and financial resources to capture economies of scale and scope. This increases the visibility of waste pickers and their needs in the broader society. It also gives them collective bargaining power, allowing them to negotiate a better price for the materials, impact legislature in favor of small scale waste solutions, and better strike deals and agreements with the public or private sector. Unfortunately, this is not enough; additional changes are needed to develop the full potential of waste cooperatives. The goal of this policy paper is to identify the opportunities to raise the productivity of cooperatives through better business management, improved technology and access to more recyclable resources.

It is important to empower waste pickers because their job has significant potential for social and environmental spillovers. The practice of waste picking benefits the workers by providing a source of employment for those who are very poor and received little education. It benefits the environment because more material is recycled, thus increasing the capacity of landfills and reducing water and air pollution from inappropriate disposal of waste. Waste picking also benefits the community: cleaner neighborhoods increase the standard of living while decreasing the spread of disease. Moreover the generation of employment mitigates the risk of people engaging in criminal and illegal activities. Last but

not least, waste pickers reduce the cost of the municipal waste management system, essentially providing a very cheap service for the local government.

The objective of this paper is to recommend strategies that empower waste pickers to improve their lives, the environment and the community they live in. Waste pickers' empowerment is possible by helping them to reach economies of scale and move up the value chain. How? By tackling three things:

1. Strengthening the internal organization of waste cooperatives by providing better business skills, management training, with particular emphasis on the core values and principles particular to cooperatives.
2. Providing the cooperative with technology that allows it to add value to materials before selling them. Examples of value-adding activities are sorting, washing and compacting recyclables.
3. Developing vertical integration with the public and private sector to secure access to higher volume and higher quality materials, for example by entering partnerships with the local municipality or businesses.

Pursuing the steps listed above allows waste pickers to improve their business skills, acquire technology and partner with the municipality or private businesses to access more and better quality recyclables. These changes let the waste pickers scale up their businesses, capture more value in their products and increase revenue for their cooperatives.

The first strategy is one of the building blocks of cooperatives but it is a long-term investment that needs to be tailored to specific needs of the cooperative in order to be effective. The second strategy allows waste cooperatives to reach economies of scale and boost productivity. However acquiring machinery implies high up-front costs that cooperatives alone are unable to face: Resources from an external entity such as an NGO or Development Bank are needed. The first and second strategies are necessary in order to implement the third strategy, i.e. vertical integration. Vertical integration is the best strategy in the short term but it is complex to successfully implement because a great deal of analysis, planning, and coordination is required by all parties.

Empowering waste pickers improves not only their social status, but also their incomes and working conditions. In short, empowering waste pickers means supporting the triple bottom line by providing environmental, social, and pecuniary benefits.

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1. INTRODUCTION

How can waste pickers be more productive and therefore improve their own livelihoods? What are the strategies that allow waste pickers to increase revenue and get out of poverty? These questions were constantly going through my mind during my fieldwork research in Brazil and Nicaragua.

In the summer of 2012 I had the privilege to work and observe waste pickers for the first time in Brazil. I stumbled on the project randomly; I had never heard of “waste picking” as a job and I was not very familiar with the working conditions in the informal economy either. What I found appealing was the opportunity not only to discover a world that is ignored by many but also to contribute by giving waste pickers the visibility they deserve among policy makers in democratic societies.

Waste pickers are people who make a living out of collecting and selling recyclables. For three weeks, I worked closely with *catadores* – Brazilian for waste pickers – who were organized in cooperatives in the outskirts of São Paulo. It was disturbing to see these people work tirelessly collecting materials door-to-door or sorting huge piles of recyclables, hoping to earn enough to support their families.

It was just as eye-opening to learn about the numerous difficulties that waste pickers face in performing their job. Lack of technology and access to credit, poor bargaining positions with buyers, combined with the ambiguous and inconsistent support by the local municipality, hinder cooperatives' current and future business operation. It seemed to me waste picking fills an important niche market, yet too many constraints inhibit their current business model. What could be done to solidify waste pickers' business and, consequently, to improve their working condition?

A few months later, I was in Bluefields, a town located on the Caribbean coast of Nicaragua, working with a young waste cooperative formed solely by women. Where the Brazilian cooperatives

are fairly established and developed, this Nicaraguan cooperative was struggling to keep the pieces together. The women were dealing with many issues related to the internal organization of the cooperative. The underlying problem was that the women were struggling with understanding their rights and responsibilities within the organization; in other words, to master the difference between working individually and working in a group. They were having trouble working as a team to achieve a common goal. As a consequence, their business was not prosperous and they were desperate to make more money. Again, I asked myself what kind of policies and practices could help the *pepenadoras* make a better living with waste picking.

The reason for my interest towards this profession is that waste picking lies at the heart of sustainable development. Its challenges and opportunities affect “the triple bottom line” of sustainable development, an agenda that factors in income, the environment and the social value when considering the merit of a project. Waste pickers' work benefits the local community by creating jobs in high-unemployment areas. The generation of employment also mitigates the risk of people engaging in criminal and illegal activities. Waste pickers' work benefits the municipality because they provide what is sometimes the only recycling program alternative to landfilling, while providing a cheap service for the municipality. The work of waste pickers benefits the environment by extending the life of landfills and supplying a stream of recyclables that diminishes demand for raw materials. Cleaner neighborhoods increase the standard of living in communities while decreasing the risk of spreading diseases.

These qualities become even more valuable when put in the global framework of current ongoing trends. Population growth and urbanization is putting and will put more and more stress on urban developments, the environment, and the demand for raw materials.

Although waste picking is a market-driven activity, it is not a prosperous one. Because waste picking has the potential for considerable positive social and environmental spillovers, policy

intervention is needed. The goal is to identify strategies to make waste picking a profitable economic activity, which in turns make the positive social and environmental spillovers visible and significant. Some NGOs are currently helping, including WIEGO, Inclusive Cities and Avian as well as other intergovernmental institutions such as the Inter-American Development Bank (IDB) and the United Nation Development Program (UNDP). This paper intends to provide a framework for NGOs to help waste pickers in their struggle to develop a sustainable business model with great social and environmental impact for the local community.

Chapter Two gives an overview of waste picking in Latin America. It gives background information on about the people who are waste pickers, how they are organized at the local and international level, how significant their work is compared to official municipal collection systems, and about how they fit within or are excluded from societies in ways that both undermine their self-esteem and reduce their incomes.

Chapter Three analyzes the obstacles waste pickers face in their operation as well as in their attempt to further their enterprises. Waste pickers' productivity is constrained by factors internal to their groups such as lack of education and skills, as well as barriers erected by municipal and national governments.

Chapter Four applies the theoretical analysis to the fieldwork I conducted in Brazil and Nicaragua. The case of Green Grease in Brazil demonstrates the importance of municipalities in providing access to waste as well as the complexity of sharing facilities for processing waste oil. The case of *Luz del Futuro* in Nicaragua highlights the importance of strengthening the internal organization of the cooperative by building management skills.

Chapter Five extrapolates lessons from the cases and presents strategies to enhance waste pickers' productivity. It offers three promising strategies to raise waste pickers' productivity: strengthening the internal organization, providing access to technology and credit, and vertical

integration through cooperation with the municipality. How relevant each strategy is depends on the particular characteristics of each cooperative.

The conclusion offers suggestions for assessing needs and applying these policy tools to cooperatives in Latin America.

2. WHO ARE WASTE PICKERS?

The terms waste pickers, waste collectors, waste workers and recyclers refer to people who make a living by selling recyclables found in trash. They are found in the city streets, in the dumps and even on the municipal trucks that collect and transport waste to disposal locations (Wilson, Velis and Cheeseman 2006) (Scheinberg, SPies, et al. 2011).

Although some waste pickers work alone, the field is dominated by family and micro-private enterprises, women, kids and elderly included. There are families who have been waste picking for generations, others who start because they cannot get a job elsewhere (Wilson, Velis and Cheeseman 2006) (WIEGO 2012b). The appeal of waste picking comes from low barriers of entry and decent profit margins: Waste is easy to access and it is always valuable. Thus, waste picking is the preferred job option for immigrants, marginalized groups, uneducated people and minorities (Wilson, Velis and Cheeseman 2006). Other individuals who do not fall into those categories also become waste pickers in cases of unemployment due to economic downturns (Schamber n.d.). Particularly as Latin Americans have increased their use of disposable bottles and packaging, the sector offers many work opportunities.

It is hard to quantify how many people survive as waste pickers in Latin America and the Caribbean, as data show that they are anywhere between 500,000 and 3.8 million people in the sector (IBD, AIDIS, PAHO 2010) . Nonetheless, the different names for waste collectors in Latin America are witness to the size of the phenomenon; *cartoneros*, *buscabotes* in Mexico, *pepenadores* in Nicaragua and Panama, *basuriegos*, *cartoneros*, *traperos* and *chatarreros* in Colombia, *chamberos* in Ecuador, *catadores* in Brazil, *buzos* in Costa Rica, *cirujas* in Argentina and others like *recuperadores*, *recicladores*, *clasificadores*, *minaderos* and *gancheros* (Wilson, Velis and Cheeseman 2006) (Oscar Fergutz 2011) (WIEGO 2009).

2.1 Hurdles Presented by the Informal Economy and Discrimination

Waste pickers are a vulnerable population for two main reasons: they operate in the informal economy, which means they do not enjoy legal and social protection; and they undergo systematic humiliation and discrimination because of the nature of their job.

Waste pickers work in the informal sector. In the informal economy, the working poor are often unable to work their way out of poverty. Earnings are low while costs and risks are high due to several constraints: lack of productive resources and economic opportunities; lack of economic rights (as workers and producers); lack of social protection; lack of organization and lack of political representation (WIEGO 2012c). In the informal sector of waste, activities are labor intensive and characterized by low technology (CWG; GIZ 2011). Workers often lack the education and skills to adopt more sophisticated technology or they lack access to credit to buy equipment.

From an economic standpoint, informal sector activities are not registered or taxed or reported (Scheinberg, SPies, et al. 2011). Moreover they are not organized, sponsored, financed or recognized by the formal sector of waste management, where the formal sector is represented by the municipal waste management system, whether public or private (CWG; GIZ 2011). Skirting the rules and costs of the formal sector yields mixed results, as municipalities and municipal workers often shun waste pickers, denying them access to the formal waste stream and to social services.

Not only do waste pickers lack legal and welfare protection, they endure humiliation, harassment and exclusion because they work with trash (Scheinberg, Value Added: Modes of Sustainable Recycling in the Modernisation of Waste Management Systems 2011). The nature of the job, with its stereotypes and prejudices, is used as an excuse to leave out waste pickers from any sort of waste management decisions (Scheinberg, Value Added: Modes of Sustainable Recycling in the Modernisation of Waste Management Systems 2011).

One reason for exclusion lies in the unpleasant characteristics of the occupation. The dirtiness of the tasks involved in waste picking affects the status of the workers. Scavenging through rubbish is clearly a very unclean job, with strong visual and olfactory impact. Too often though feelings associated with trash are transposed onto the people handling it. As a result of ignorance, many stereotypes and prejudices are created and used as an excuse for discrimination. Discrimination and low social status leads to harassment and humiliations towards waste pickers, which additionally burdens their own self-esteem.

In many situations, discrimination and exclusion lead to the same outcome: no waste access, as workers are barred from entering wealthy neighborhoods. Without waste access the livelihood of waste pickers is disrupted, their primary mean of subsistence is taken away (Scheinberg, Value Added: Modes of Sustainable Recycling in the Modernisation of Waste Management Systems 2011).

A waste picker once said: “It is the status that we want to change, not the profession itself” (WIEGO 2012a, 14). The literal and perceived dirtiness of their job affect the status of waste pickers, who then get excluded and discriminated against by the rest of the population as well as local authorities. Although in Latin America as well as the rest of the developing world, waste pickers form the base layer of most recycling activity, waste pickers are unrecognized stakeholders of local waste management activities (Scheinberg, Value Added: Modes of Sustainable Recycling in the Modernisation of Waste Management Systems 2011).

2.2 Waste Pickers Recycle More Than the Local Official Waste Management Sector

Despite the difficulties encountered by operating in the informal sector, and despite the additional burden of stereotypes about working with trash, evidence from the literature shows waste pickers recover and recycle much more material than the local official formal sector of waste management (Wilson, et al. 2012) (Scheinberg, SPies, et al. 2011).

Table1. Material recovered from waste entering the system by sector

City	Country	% recovered by formal sector	% recovered by informal sector	Total % materials recovered overall	Proportion recovered by informal sector (informal/total)
Belo Horizonte	Brazil	0.5	1	1.5	67
Canete	Peru	1	11	12	92
Managua	Nicaragua	3	16	19	84

(Adapted from Figure 6 and table 6 of (Wilson, et al. 2012))

There are two major takeaways from Table 1. First, in developing countries the material recovered, in other words the material that is prevented from being landfilled, is very low, from 2 to 20% in the cities examined. Secondly, most of the material is recovered via informal channels (Wilson, et al. 2012) (Scheinberg, SPies, et al. 2011) (CWG; GIZ 2011).

With their work, waste pickers provide a cheap service for the local municipality. The municipality usually has an official waste collection system in place, which operates at a loss and recovers only a small quantity of recyclables. Conversely waste pickers recover a high percentage of recyclables and their business is economically sustainable. Moreover, many Latin American cities have found it difficult to promote mechanized collection. In the future, waste management will be a major challenge because of industrialization and urbanization. Thus collaboration between the formal and the informal sector is desirable under what is known as integrated waste management system.

For most municipalities the primary aim of the Solid Waste Management system (SWM) is to protect public health; the priority is service provision, that is waste removal and waste collection, often with open dumping as the only disposal method available (Marshall and Farahbakhsh 2013) (Wilson, Velis and Cheeseman 2006). "The cities of many developing countries face two major problems in managing their municipal solid waste (MSW), namely insufficient collection and

inappropriate disposal” (Medina 2005, 390). The formal sector faces high operational costs, since the labor costs are high and the quantities recovered are small. Thus it does not achieve high recycling rates. On the other hand, the informal sector activities are solely market driven, based on adding value and trading (Scheinberg, SPies, et al. 2011) (CWG; GIZ 2011) (Wilson, Velis and Cheeseman 2006). These different underlying incentives explain the miserable failure of the formal sector and the partial success of the informal sector. The latter compensates high operational costs with high revenue from materials, which almost always results as a net benefit (CWG; GIZ 2011).

2.3 Threats to Waste Pickers: Waste Sector Modernization and Privatization

With rapid population growth and urbanization, “waste collection services seem to fall further and further behind” (CWG 2003, 1). More urbanization and advanced economic development lead to a higher volume and higher complexity of solid waste, with the consequence of higher solid waste management costs (Ahmed and Ali 2004). Thus it is going to be more and more difficult for local municipalities to find the resources, knowledge and skills needed to tackle the issue.

Currently two trends seem to be prevalent in developing countries: privatization and modernization of the waste sector. They are closely tied together because often one implies the other and vice versa.

National governments are opting more often for private solutions for their waste management problems. Privatization adds new, often large, competitors to the waste sector, and essentially transfers resources from a public to a private domain (WIEGO 2012a). Waste pickers feel threatened because big private corporations are biased towards technology-intensive systems that potentially limit access to waste and negatively impact the environment (WIEGO 2012a). Commercial recyclers tend to gather the most valuable waste, leaving low value, scattered litter to pickers. A waste picker once said: “The threat is the private companies that want recyclable

materials to make a profit out of it, while we – the waste pickers – remain with their problems”

Maria Ortiz, Santa Cruz, Bolivia (WIEGO 2012b).

International donors such as the World Bank and the IDB have pressed Latin American countries to clean up unsightly, unhygienic landfills and, in some cases, to adopt waste-to-energy schemes. When it comes to technological innovation in the waste management sector, the disadvantage of such ‘progress’ is the risk of high-tech bias (CWG 2003). Evidence shows that often stakeholders opt for modern waste management solutions that are technology-intensive and reduce labor cost. In the majority of cases, this approach excludes the informal sector in the decision-making process, often leaving them out of long-term projects all together (CWG 2003). Studies show that “expensive technologies create reverse institutional and systemic linkages that drive out the informal sector in order to pay for themselves” (CWG; GIZ 2011). Marshall (2013) provides a great description of the phenomenon:

“..donor biases exist towards certain technical approaches or insistence on the use of equipment that supports their own export industries; the scale at which donors work is often inappropriate for local conditions; either too small, without sufficient consideration for various larger contexts, or too large for a particular situation; coordination issues arise between donors from different countries, which may be competing for contracts, and within countries as development agencies work at cross-purposes; and donors without the time or political will to produce locally appropriate results opt for large, technical interventions rather than small-scale, context appropriate approaches, since they are easier to understand, finance, and monitor.”(p.8)

This process is ongoing in many cities in Central and South America. The most controversial cases of closing and converting landfills into energy plants are La Chureca in Managua, Jardim Gramacho in Rio de Janeiro and Bordo Poniente in Mexico City. For example, in December 2011 Mexico City closed its biggest landfill, Bordo Poniente, after 27 years of life. The city contracted a consortium of Mexican and Spanish companies to build a waste-to-energy plant on the site with the

aim of producing and selling energy to Mexico City. Over 1,500 families of *pepenadores* and *recicladores* lived on the landfill and based their livelihoods on waste. They were excluded from the decision-making process and to this date it is unclear what form of benefits or compensation they will receive once the plant is operating (Malkin 2012).

3. WASTE PICKERS RESPOND TO DIFFICULTIES AND THREATS BY FORMING COOPERATIVES

3.1 Waste Pickers Organized Into Cooperatives, Labor Unions and NGOs

“The first step to overcome poverty and to securing the livelihoods of informal workers is to be organized, as evidence from the ground suggests” (Dias 2012, 3). If waste picking as a profession is fairly old, the idea of organizing waste pickers into cooperatives is fairly new. Worldwide cooperative organizations bring many benefits to their members. Waste pickers cooperatives have started ad hoc labor unions, national movements and international organizations to give voice to their concerns and have their voices heard. Non-Governmental Organizations (NGOs) operating worldwide support waste pickers further by creating platforms for knowledge sharing through reports and online documentation.

With some exceptions, in Latin American waste pickers initiated collectives and cooperatives at the end of the 20th century (WIEGO 2012b). Instead of working individually, waste collectors started operating as groups, realizing that membership-based organizations bring many advantages with regard to working conditions. Some of these benefits enable waste pickers to gain access to waste, access to work and storage space, increased collected volume and increased bargaining power with the middleman. Moreover collectives of waste pickers can more effectively express their needs and concerns to the local municipality and advocate for supportive policies (WIEGO 2012b).

In recent decades, waste pickers have organized at city, national and international levels. Every stage is an opportunity for waste workers to identify and discuss opportunities and threats to their occupation (WIEGO 2012a). A small local cooperative, for example, is unlikely to challenge international donor support for landfill modernization, while international organizations offer little help in dealing directly with local municipal waste agencies.

The degree of organization varies across cities, countries and continents. Nonetheless, there are a few milestones that are worth noting. Across Latin America, Colombia is the country where waste pickers were first recognized by the government as a political force in the 1990s, followed by

Brazil. The oldest movements of waste pickers' cooperatives include the Colombian Asociación de Recicladores de Bogota (ARB) and the Brazilian Movimento Nacional dos Catadores de Materiais Recicláveis (MNCR), both created in the early 1990s. Soon other countries such as Argentina and Uruguay followed (WIEGO 2009).

Waste pickers from all over the continent met in Brazil for the first Latin American Waste Pickers Network (LAWPN) in 2005. The mission of LAWPN consists of raising awareness on the social, economic and environmental benefits brought by waste pickers, advocating for waste picker-inclusive national and local policies, strengthening waste pickers' organizations and facilitating knowledge sharing (WIEGO 2009).

Besides LAWPN, many other entities work with waste pickers to achieve the same mission: Women in the Informal Employment Globalizing and Organizing (WIEGO), Global Alliance for Incineration Alternatives (GAIA), the Avina foundation, Inclusive Cities, Ciudad Saludable, and the Collaborative Working Group on Solid Waste Management in Low- and Middle-Income Countries (CWG), to name a few.

Although Latin America has been the world pioneer of multi-strata waste pickers' organization for scale and scope, more needs to be done organizationally. National and regional movements need to be more inclusive, more transparent and less corrupt (WIEGO 2012a). The ultimate purpose is to acquire a significant voice to change legislation at multiple levels in favor of waste pickers and waste cooperatives.

3.2 Why a Cooperative Structure?

“Co-operatives are a reminder to the international community that it is possible to pursue both economic viability and social responsibility.”

- Ban Ki-moon, UN Secretary General at the inauguration of the International Year of Cooperatives (2012)

According to the International Cooperative Alliance “a cooperative is an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise” (Ki-Moon 2012).

This section examines the advantages enjoyed by workers who organize into cooperatives.

3.3 Benefits of Cooperative Organizations

Because of its particular structure and philosophy, the business model of cooperatives is the ideal starting point for small producers. Cooperatives allow small businesses to overcome many constraints while enjoying several strategic advantages. Cooperatives allow small producers to take advantage of market opportunities; they constitute the perfect environment for small producers to develop and acquire needed skills; they help develop a stronger local community; and in certain cases they even carry out tasks normally done by the government.

The structure of cooperatives is different than other small enterprises because it puts the people before the business. In a cooperative, the workers or producers of the organization are also the managers and the owners of the organization (WIEGO 2012c). The principles according to which cooperatives operate are: democratic control by members, transparency to members, promotion of solidarity, concern for collective benefits and independence from other entities (WIEGO 2012c).

When working individually, small producers face several difficulties that hinder the economic activity and, as a consequence, social development (FAO 2012). Constraints such as limited access to markets, to high-quality inputs, to loans and to transportation reduce the scale and scope of small businesses (FAO 2012).

Cooperatives enable members to take advantage of market opportunities and mitigate the negative effects of economic shocks and crises (FAO 2012). As part of a collective, members “participate in production, profit-sharing, cost-saving, risk-sharing and income generating activities” that boost bargaining power in the market place (FAO 2012, 4). By pooling human and financial

resources, cooperatives are able to offer members several services: information, communication, input and output markets, technologies and training that reduce transactions costs and improve services and prices (A.Zeuli and Cropp n.d.)(FAO 2012).

This increased access creates the right environment for small producers to develop and acquire new skills. Cooperatives members are essentially entrepreneurs who need to develop the flexibility and the mindset required to grow the business as well as to adapt to changing markets (FAO 2012). Moreover, cooperatives constitute a powerful setting to voice the concerns of small producers, thus gaining visibility and influencing the policy-making process (FAO 2012).

Cooperatives not only improve the lives of their workers, they also help develop the local community. Well-established cooperatives are more likely to retain and create local jobs, invest in the local community and provide community leadership (FAO 2012). They are also more likely to forge relationships with other economic actors or Public-Private Partnerships (PPP). In certain communities, especially in rural areas, cooperatives help replace goods and services that are normally provided by the government such as waste collection, health care, education and public housing (FAO 2012).

3.4 Benefits of Cooperatives Operating in the Waste Sector

In the waste sector the main advantage is that cooperatives sell more volume for better prices. Additional advantages come from the ability to negotiate formal agreements with local authorities, partner with local entities, and voice interests and concerns to change local and national legislation. Last but not least, waste cooperatives are better equipped to fight threats. In the informal economy, the general rule is that the more organized, the less vulnerable workers are to exploitation. With specific reference to the waste sector, the more organized the more workers are capable of adding value to the raw materials they collect (Wilson, Velis and Cheeseman 2006).

For waste pickers the difference between working individually and working as a group is huge. The most immediate benefit derives from selling the recyclables as a group, because selling materials in bulk allows for better prices and thus increases revenues (WIEGO 2012b). To capture even more value, sometimes multiple cooperatives from a region form networks to sell materials as a group. In this way, cooperatives combine the materials to gather even larger quantities to sell at higher prices to bigger buyers (WIEGO 2012b). For example, in Brazil in the city of Belo Horizonte, nine cooperatives formed the network called Cataunidos, which opened the first plastic factory run by waste pickers in Latin America. The factory produces plastic pellets that are then sold to manufacturers. The hope of Cataunidos is to close the loop by manufacturing hoses and buckets from the plastic pellets (WIEGO 2012b).

When organized into collectives, waste pickers can better express their needs and interests to third parties. Since waste workers have organized into cooperatives, labor unions and national movements, they have been able to change national constitutions and laws that legally recognize waste pickers as workers. These changes enabled waste pickers to participate in social security systems for pension and health care and in many cases new laws providing legal access to waste (WIEGO 2009).

Emblematic is the case of Buenos Aires:

“Formed in 2005, the Movement of Excluded Workers (MTE) is the group with the most members (2,500). The city government provides the cooperative with buses and trucks to transport workers and the recyclable materials, plus a monthly incentive of A \$900 (US \$209) for each member, which is on top of what is earned through the sale of products. Workers also receive health insurance, risk insurance, and uniforms. Finally, the cooperative has a child care center as part of their fight against child labor, financed both by the MTE and the city and national governments” (GAIA 2012, 78).

Additionally, organized waste pickers have increased leverage to negotiate formal agreements with local municipalities, thus gaining inclusion in the formal sector. Waste pickers working in collectives can put pressure on a municipality to donate certain resources necessary for waste

cooperatives to operate. Municipalities' contributions are very important and usually involve the donation of a working space such as warehouses, paying utilities or rent on behalf of the cooperative, or sometimes even the donation of machinery. For example, in Argentina

“waste management legislation, the official recognition and inclusion of *cartoneros* in the waste management legislation, the creation of an agency within the government dedicated to *cartoneros*, the extension of alliances with local and international organizations and companies, and a dramatic increase in the budget allocated to *cartoneros* (according to a local source, in 2007 the city government allocated US \$300,000 to grassroots recyclers; by 2008 it reached US \$30 million)” (GAIA 2012, 78-79).

Organized waste workers can also more easily enter agreements with international organizations and NGOs to attract economic and technical resources (IBD, AIDIS, PAHO 2010). Not only is it easier for waste pickers to gain support when organized in collectives, but they are also better equipped to fight threats. Many threats menace the profession of waste pickers, including privatization of the sector, incineration and corruption (WIEGO 2012a).

From an individual and personal perspective, waste pickers agree that being part of a collective has improved their lives. “Some have gone from homelessness and illiteracy to taking on leadership roles that have given them the chance to speak at conferences around the world” (WIEGO 2012b, 5). Despite great achievements, many waste pickers feel the need to do more.

Even though cooperatives have great potential to improve waste pickers' life, not all waste pickers' cooperatives across Latin America enjoy the same achievements. A major factor is the presence of a regulatory framework that recognizes waste pickers as stakeholders with the ability to assume legal and institutional commitments (IBD, AIDIS, PAHO 2010). This is the principal reason why Brazil and Colombia are two countries where waste pickers associations are strongest and where the formalization of relationship between formal and informal sector is most advanced (IBD, AIDIS, PAHO 2010).

4. WASTE PICKERS: WHY CAN'T THEY BE MORE PRODUCTIVE?

4.1 Waste Pickers' Struggle in Capturing Value Added

Although the cooperative business model improves their life and working conditions, waste pickers face a number of problems that membership-based organizations cannot fully solve.

As mentioned above, waste pickers who belong to a cooperative generally enjoy better living and working conditions than those who do not. This is because by working as a group, waste pickers are better able to achieve economies of scale. Since cooperatives can handle much more volume than the individual waste picker and are able to do so more efficiently, they usually enjoy better revenues.

Although forming a cooperative is a good first step to move up the value chain, once the cooperative is formed there are additional constraints that limit its productivity. Constraints include problems of social and economic nature. To briefly summarize the constraints alluded to above, because waste pickers are usually poor and work with trash, they are discriminated and prevented from work in certain areas. Waste pickers usually received little or no education, thus they lack basic business management and business administration knowledge needed to run a small enterprise.

Because in a cooperative the working capital comes from its members i.e. waste pickers, and given that the latter are generally poor, waste cooperatives operate with very little working capital. Not only do they work with limited capital but, given their poverty they also do not have access to credit. Poverty traps waste pickers in a vicious cycle from which is extremely hard to break free without external help.

Waste pickers undergo exploitation from the recycling supply chain actors they are directly in contact with. Because waste pickers represent the base layer of the supply chain pyramid and rely on intermediaries to market their materials, they only capture a minimal part of the value added.

As if that was not enough, municipal and national laws play a great role in empowering or dis-empowering waste pickers. Often laws depict waste picking as an illegal activity or deny waste

pickers access to waste. Even if waste pickers are recognized, they are excluded from the formal system because some high-tech solution is preferred. Each of these constraints is discussed in more detail below.

4.2 Challenges Faced by Waste Pickers' as a Consequence of Poverty

Because waste pickers are poor, they live in isolated and under-served shelters, close to the work site. Working conditions are not much better than living conditions; scavenging is a very strenuous and risky job. The lack of any sort of state-sponsored health and welfare protection schemes makes waste workers even more vulnerable to illnesses and diseases.

Many waste pickers live on or nearby dump sites with the rest of their family. It is common practice that children and the elderly engage in waste picking (WIEGO 2012c). By working and thus not receiving an education, children reduce their possibility of breaking the poverty cycle.

When working, waste pickers face several obstacles that hinder any type of lifestyle and productivity improvement. Scavenging is a dangerous job, where the constant risk of injuries, illnesses and harassment is elevated (Ruiz, et al. 2009). Ann Scheinberg (2011) provides a concise description of the working conditions of many waste pickers:

“They face injuries from dogs, rats, and other vectors, combined with chemical and biological health risks due to contact with toxic substances, health care wastes, fecal matter, body parts, used syringes and other materials in the waste stream. In the best of situations, pickers report ergonomic problems due to the physically taxing nature of the work, and psychological and social disadvantages stemming from their low social status” (p. 49).

Given the difficulties generated by their way of life, the fact that “workers in the informal sector do not enjoy the measures of protection afforded by the formal modern sector in terms of job security, decent working conditions, and old-age pensions” complicates further waste pickers' life (Todaro and Smith 2010). Lack of pensions and health insurance affects waste pickers' decisions that

ultimately also affect productivity. Physical debilitation, lack of education and family responsibilities prevent workers from achieving all that they might.

Waste pickers recognize the importance of welfare policies to the point that at the first Workshop for Waste Pickers, “health, social protection and well-being” ranked at the top priorities to attain (WIEGO 2012a). In theory, much higher incomes via a stronger position in the market could solve many of these problems by enabling waste pickers to buy better housing and health care. In practice, waste pickers need both more market support and social services from the state. One encouraging development came in Brazil, where, after decades of struggles, then-President Luiz Inacio Lula da Silva, approved and implemented laws that financed waste cooperatives, low-income housing and education for members and their families (WIEGO 2012b).

4.3 Organizational Challenges

The process of organizing workers is a slow one and brings many challenges (WIEGO 2012b). The process of building and sustaining these organizations is just as difficult (WIEGO 2012c). Common obstacles concern issues of internal democracy, leadership and organizational management (WIEGO 2012c).

Once waste pickers establish a membership-based organization (MBO) such as a cooperative, they need to ensure that it achieves its goals. Ideally, the process has to be participative and democratic, although realistically many cooperatives go down a winding path before they can become a sound and sustainable organization (WIEGO 2012c).

Young cooperatives face a number of obstacles: free-rider problems, leadership issues, transparency issues, lack of basic business and management skills. This is why for any cooperative in operation, continuous education of its members is fundamental (FAO 2008). With little formal education, members are often unable to resolve problems on their own, whether these involve bookkeeping, negotiation or using electronic machinery. An on-going communication and education

program is critical to keeping members involved and committed to the coop (FAO 2008). The goal of continuous education and communication is to keep members active and motivated in cooperative work. “The need for external support becomes clear” (CWG 2003, 14).

For example, in Mesquita, Brazil, women pioneers of the cooperative Coopcarmo received external help from Belgian and German NGOs, which trained them to build management capacity and environmental sustainability. Thanks to the qualitative resources provided by the NGOs, Coopcarmo was able to legally register as a waste cooperative and to gain official status. In addition, the NGOs supported efforts to improve the cooperative recycling and sorting processes for the following eight years (WIEGO 2009).

4.4 Challenges Faced by Waste Pickers as a Collective: Lack of Technology and Capital

The biggest obstacle in sustaining a cooperative is the lack of financial resources to expand the scope of waste cooperatives' business, i.e. adding value to the materials processed (WIEGO 2012c). Barriers to capital and technology lower the productivity and income of the informal sector (Todaro and Smith 2010). Traditionally, members of cooperatives must provide the capital, which is a challenge for those who have limited capital such as scavengers (A.Zeuli and Cropp n.d.). Financial credit is also unfeasible since the poor or unregistered business do not have the credentials to apply for loans (AVINA 2008).

Adding value to recyclables comes from collecting, washing, sorting and re-selling materials. In order to do that with a large volume of materials, more mechanization is needed. Examples of assets that would expand the scope of waste pickers' business are warehouses, machinery (shredder and compactor, conveyor belts, scales) and collection vehicles. Once those needs are satisfied, financial resources can be used to make investments in other fields relevant to the cooperative community, such as starting a school, garden or a greenhouse.

Machinery allows waste collection cooperatives to reach economies of scale and therefore increase productivity and value-added. Often, not only is machinery lacking but so is adequate space to handle processing (WIEGO 2012b). Other times, the equipment is there but it is in bad shape. At ASMARE, a waste collector cooperative located in Belo Horizonte, Brazil, aged equipment that is falling apart affects productivity. Assessing the situation, an NGO staff member working with ASMARE noted that “productivity means everything, as what they make depends on what they sell” (WIEGO 2012b).

4.5 Waste Pickers Lie at the Bottom of the Recycling Supply Chain

The recycling network is described as a pyramid where waste pickers constitute the bottom layer (AVINA 2008) (Oscar Fergutz 2011) (Wilson, Velis and Cheeseman 2006). At the top of the pyramid there are a handful of recycling companies that are connected directly with intermediaries. These can be formal companies who work with “vast networks of agents, including small middlemen, yard owners and large cartels associated with contractors” (Oscar Fergutz 2011, 602). Finally, at the bottom layer, there are waste pickers, who feed the entire supply chain with recyclable materials (AVINA 2008).

Waste pickers have to rely on the middleman in order to reach the top of the pyramid because recycling companies are located geographically in remote areas that prevent direct market access by waste cooperatives (Oscar Fergutz 2011). Waste pickers lament exploitation by intermediaries; the latter impose harsh conditions on waste pickers because they are in a position to do so. Middlemen pay very low prices for the materials, and sometimes they pay with goods instead of money; others threaten to lower the price to force waste pickers to improve the quality of the material (WIEGO 2012b).

Evidence shows that middlemen pay waste pickers far less than formal businesses for the same type of goods, as much as two-thirds less than the formal sector receives. In addition there

seems to be a perverse solidarity between intermediaries, who capture the majority of the surplus generated. Out of the acquired value, waste pickers receive as little as 10% (Oscar Fergutz 2011).

According to Fergutz (2008), the structure is the “result of recycling companies favoring suppliers with the capability to deliver, on a regular basis, adequate volumes of clean, pressed and bundled materials” (p.603). Generally speaking “the higher a secondary raw material is traded, the greater the added value it possesses. Informal recyclers tend to occupy, and are restricted to, the base of the secondary materials trade hierarchy and this significantly reduces their potential income” (Wilson, Velis and Cheeseman 2006, 800). Although cooperatives have more bargaining power than individual waste pickers, most cooperatives remain small players in this global market. Thus the challenge of raising cooperative income remains.

4.6 The Municipality: Ally or Enemy?

The municipality has incredible potential for increasing the waste pickers' productivity (WIEGO 2012b). Waste collector cooperatives benefit the most when the municipality includes the informal sector in the city's solid waste management and offers support (WIEGO 2012b).

In certain areas in Brazil, waste pickers “have developed formal agreements with cities and towns, establishing themselves as the official providers of recycling services in hundreds of municipalities” (WIEGO 2012b, 5). Being the official providers of recycling services implies that the municipality compensates waste cooperatives for the services provided, just as it would with a private waste company (Dias 2012). In other words, in these cases waste cooperatives’ revenue does not rely solely on the volume of material sold; it also counts on the wage paid by the municipality. A successful partnership is the one established between the waste pickers and city officials of Londrina, Brazil, which reached the highest recycling rates in the country. The implementation of a door-to-door collection system increases the quality of materials collected and reduces the waste

that is collected but cannot be recycled. Moreover, the collection at its source reinforces the bond between waste pickers and the community (Oscar Fergutz 2011).

Unfortunately, very often either the municipality offers inconsistent and ambiguous support or it refuses to assist waste collectors at all (GAIA 2012). In Mexico, many municipalities have hostile relationships towards waste pickers, where waste picking has been repressed and declared illegal (Medina 2005). In some cases local authorities refuse to cooperate with the informal sector because “separation of recyclable items from mixed waste in the street, and the storage of separated items, can result in scattered waste and the untidy appearance of streets and open spaces” (Wilson, Velis and Cheeseman 2006). In other cases, given the tension created by numerous actors operating in the same business, cooperatives themselves do not coordinate demands on the government and do not develop joint projects (GAIA 2012). Government workers also often oppose the use of labor which neither adheres to minimum wage laws nor pays taxes.

Moreover, when integration of the informal sector in solid waste management occurs, it occurs to various degrees and it normally fills small niches that neither the municipality nor the private sector occupies (CWG 2003). For example, the waste picker cooperatives are assigned to locations where narrow streets impede waste collection with municipal trucks.

In La Pintana, Chile, the municipality promotes the work of waste collectors by encouraging citizens to donate recyclables to informal workers (GAIA 2012). Despite these efforts, the municipality has also blocked efforts by waste collectors to organize. In Guatemala, solid waste management innovation projects have been repeatedly shelved or abandoned when, during local elections, all authorities are replaced regardless their involvement in politics (Marshall and Farahbakhsh 2013). In Buenos Aires, the government treats cooperatives unequally, supporting some more than others (GAIA 2012). Even where supportive legislation is passed, laws are not necessarily implemented. For example, a truck that the municipality of Buenos Aires formally promised the cooperative Del Oeste via several agreements never arrived (GAIA 2012).

4.7 The Government: Ally or Enemy?

The national government has the power to emit legal mandates to facilitate or obstruct the inclusion of waste pickers (WIEGO 2012b). The areas where the government should intervene are laws guaranteeing access to waste for waste pickers and social services for waste pickers. Promising examples of legislation and policies that favor the empowerment of waste pickers have taken place in Peru, Brazil and Colombia. In Peru, waste picking is regulated by law 29.419, a law passed in 2009 developed in collaboration with representatives of the movements of waste pickers. Brazil passed in 2010 the National Solid Waste Policy that recognizes waste pickers cooperatives as service providers and as a result “institutes a number of mechanisms to support cooperatives and municipalities that integrate informal waste workers into solid waste systems” (Dias, 2012). In Colombia, the Constitutional Court ruled in favor of waste pickers “by granting them customary rights to access, sort and recycle reclaimable materials” (Dias, 2012). In a recent case, CiViSOL, a foundation that works to amend the cultural and legal norms of state and society, intervened before the Constitutional Court of Colombia on behalf of the waste-pickers of the Navarro dump of Cali. In April 2009, the Constitutional Court of Colombia ruled in favour of the wastepickers, guaranteeing their customary rights to access, sort and recycle waste and their legitimacy to compete in the waste recycling business. The court recognized the importance of waste-pickers, granted them full protection, and recognized their environmental contribution” (UN-HABITAT 2010, 162). Although these countries witnessed the approval of legislation empowering waste pickers, it is fundamental that these laws are implemented and respected at all policy levels. Nonetheless, many countries do not recognize waste picking as a job and have laws banning the activity and thus denying waste pickers access to waste. In Argentina, waste picking became legal only in 2002, after the economic crash of 2001 vastly increased the number of people relying on waste to as many as 100,000 (GAIA 2012). Many governments still do not have appropriate legal frameworks to address all aspects of

waste management services, let alone laws to address pickers' needs. For example, Nicaragua and Mexico lack legislation protecting waste pickers' rights. As a result a few hundred waste pickers living in the capital municipal landfill have protested against the replacement of the dump site with a recycling plant. Nicaraguan waste pickers of La Chureca (the municipal landfill) demanded to be considered stakeholders and take part to the decision-making process. Similar demands were made by waste pickers of Bordo Poniente, the biggest municipal landfill of Mexico City, which will be replaced with a capital-intensive project, featuring a power plant designed by a consortium of European waste management companies (REDLACRE 2012).

Moreover, waste pickers are concerned with political corruption. They recognize that corruption occurs at all government levels and it is an additional cause for lower productivity (Marshall and Farahbakhsh 2013). Generally, corruption negatively affects the economic growth, twists the political system, weakens administration, and undermines the interests and welfare of the community (Marshall and Farahbakhsh 2013). Waste collectors feel crushed by corruption when they have to pay bribes in order to access waste or waste is stripped of its most valuable components, even in countries where they have legal access to waste. Another example of corruption occurs when the government appoints private companies in charge of the waste sector in exchange for financial or social capital (WIEGO 2012b).

4.8. Why Can't Waste Pickers Be More Productive? Conclusion

What hinders progress among cooperatives? To recap, a variety of factors constrain productivity growth in waste picking cooperatives, including the skills of members, their difficulties in accessing credit and equipment, barriers put up by municipalities, and the legal policies of national institutions. The significance of these factors varies from cooperative to cooperative as the following cases of Green Grease and *Luz del Futuro* demonstrate.

5. CASES¹

5.1 Green Grease: Waste Vegetable Oil Recycling in Brazil

Over the spring and summer 2012 I worked for the Green Grease project and to this day I am still involved, although to a lesser extent. Green Grease is a project started in 2009 by MIT students that targets waste pickers of the Saó Paulo periphery in Brazil who collect Waste Vegetable Oil (WVO). The project was born of two ambitions: to decrease water pollution from WVO contamination and to create a valuable use of oil for waste pickers.

In Brazil, fried food has gained considerable popularity with a consequent increase in use of vegetable cooking oil (ICLEI 2009). A liter of oil can pollute up to 25,000 liters of water, causing significant environmental damage to waterways (ICLEI 2009). At the same time waste pickers consider waste oil a great resource because it potentially offers high value for little space and does not need to be sorted. Nonetheless the value of unfiltered WVO is low.

In 2011, a Green Grease team designed and built a filtration system that eliminates food residues and water from WVO, thus adding value to the oil. In the very early stages of the project, the filtration system was piloted at one cooperative, where filtered WVO was used as fuel for the trucks of the cooperative. With time, the engine that MIT students converted to run on filtered WVO broke permanently, so waste pickers decided instead to sell the filtered oil to intermediaries for further processing. At the end of the chain the oil is transformed into biodiesel fuel. The sale of filtered WVO increases the income of waste pickers, which in turn creates incentives to divert more cooking oil from the waste stream.

In the summer of 2012, I spent three weeks working with six cooperatives (COURES, CORA, CRUMA, COOPERALTO, COOPRECICLAVEL, ARES) at the periphery of Saó Paulo and installed filtration systems for seven local cooperatives. I had the chance to see what a waste cooperatives look like,

¹ The content of this chapter reflects notes taken during fieldwork in July 2012 in Brazil, and in January 2013 in Nicaragua.

and I was able to discuss their management and administration with presidents of the cooperatives. The information was used to better understand the operations with the purpose of steering MIT's Green Grease project in new directions to better support the cooperatives.

In addition to installing the filtration system, the team had two other objectives. The first was to collect useful information on the cooperatives and their partners to evaluate the possibility of a public awareness campaign to increase the visibility of the work of waste pickers and to attract more recyclables as well as waste oil. The second was to test the idea of building a network of cooperatives that would sell WVO together, replicating a model that is currently used to sell paper. If we obtained some useful information for the public awareness campaign, the idea of building an oil network failed immediately due to political friction between some cooperatives and the local labor union.

5.1.1. What Is Like to Work in a Cooperative Located Outside of São Paulo?

In Brazil, the cooperatives I visited are well-established. They can count on a relatively strong internal organization, working space, machinery, and trucks, as well as support from local and non-governmental entities.

Some cooperatives are located in São Paulo while others are located in the São Paulo metropolitan area. The six cooperatives I visited include between 20 and 80 permanent members, with a variable number of workers who join temporarily. All cooperatives have established rules on how to run the cooperative, which are enforced by the elected board of directors. Meetings to make decisions and distribute wages are held regularly.

Cooperatives engage with three main stakeholders: the households, the buyers and the local municipality. Some cooperatives are part of the National Movement of Brazilian Waste Pickers, with whom they closely interact. Other cooperatives prefer to be independent and not to be affiliated with any movement. Cooperatives, thanks to an agreement with the municipality, collect recyclables

from households and sell them to buyers. Financial resources come from the municipality itself, development banks or corporations like Petrobras, the seventh-biggest energy company in the world. Cooperatives of São Paulo sell materials to different buyers. Although every material has its own supply chain, cooperatives mainly sell to the highest-bidding intermediary. Some cooperatives are in contact with a large pool of potential buyers, which is beneficial in case of friction with one or more buyer. Other cooperatives do not have the option of ending the relationship with their buyers because they rely on very few of them.

All cooperatives have big, open warehouses where they conduct their daily operations. Space inside warehouses is separated into zones: One zone is where trucks unload unsorted trash; another one hosts the conveyor belt where workers sort the trash and put it into big containers; another zone dedicated to storage of loose recyclables provides further subdivisions according to the material. There is also a zone where the machinery is kept, and another where the compacted recyclables sit waiting to be sold. Usually warehouses also have a couple of offices, a small kitchen, lavatories and showers.

With regard to assets, these Brazilian cooperatives typically have a couple of compactors, a shredder, a conveyor belt and multiple trucks that are used for door-to-door collection. With regard to materials, these cooperatives collect and sell many recyclables: paper, cardboard, many types of plastic, Styrofoam, tetrapak, vegetable oil, metals, plastic bags and glass.

Brazilian cooperatives usually enjoy the support of the municipality and the local labor union. The municipality helps in a variety of ways, often by paying for rent or utilities, paying for the fuel for trucks, or providing the work space. The extent of support varies across municipalities and cooperatives. The local labor union is called Rede Catasampa and functions as the local São Paulo chapter of *Movimiento Nacional dos Catadores de Materiais Reciclaveis* (MNCR), the Brazilian national union of *catadores*. The chapter, established in 2006, is comprised of fifteen recycling cooperatives and associations. The chapter's main objective is to improve the livelihoods of

catadores by implementing strategies that ultimately increase the revenue from recyclables and by training *catadores* on sustainable business practices. Additional support comes from the local development banks or NGOs. An important point is that certain cooperatives receive, from both the municipality and Rede Catasampa, more help than others due to political corruption.

In contrast to low standards of living among many Latin American waste pickers, some Brazilian cooperative members own cars and almost all of them own cellphones. They all wear uniforms at work and some of them use safety measures such as gloves. However they still survive outside the mainstream of São Paulo's increasing affluent lifestyle: children lack schools, housing is inadequate and most are relatively poor.

5.1.2 The Successful Campaign of Cata Oleo

One of the main goals for the trip was to scope out the possibility of designing and planning a public-awareness campaign for waste cooperatives collecting oil. The purpose of the campaign was to increase the visibility of waste cooperatives as well as to increase WVO donations.

Our model was Cata Oleo, a successful public awareness campaign implemented by CORA, the waste cooperative in the city of Arujá. CORA's campaign was launched in 2010 with the support of the Environmental Secretary of the municipality, and targeted schools. Essentially, the campaign targeted schools and used children as a way to spread awareness of oil collection to their families. Thirty-six schools became collection points where school children would bring WVO from home. Thanks to Cata Oleo CORA's WVO collection doubled, from 800 liters to around 1600. Because it was very successful and WVO collection increased so much, the Cata Oleo campaign was featured in the local media.

One factor in particular contributed to the success of the campaign: the partnership with the municipality. Thanks to the local municipality, the cooperative received technical support such as graphics, designs, prints and materials. This partnership also opened school doors to CORA to

engage directly with local students. This enabled the cooperative to lecture children about the importance of recycling WVO.

In 2010, besides the public awareness campaign, the first MIT-designed filtration system was also piloted at CORA. The cooperative used to receive between 30 and 50 cents of Reais per liter of unfiltered oil but with the new technology, they were able to negotiate as much as 90 cents of Reais per liter of filtered oil.

Thanks to the positive combination of the public awareness campaign with the filtration system, oil became 10-20% of the total income of *catadores*.

5.1.2.1 Is There the Basis for a Public Awareness Campaign?

Despite the positive experience of the Cata Oleo campaign at CORA, it became clear at the beginning that a one-size-fit-all public awareness campaign was not possible to design and implement for four main reasons. First, cooperatives' capacity is limited by space. Second, different cooperatives do not have the same probability of forming successful partnerships with the municipality. Third, cooperatives want to prevent partnerships with third parties such as corporate sponsors if all the visibility will go to the third party. Fourth, a public awareness campaign needs to be mindful of competition.

First, I discovered that the single most important inhibitor to cooperatives expansion is the lack of space. At least half of the cooperatives interviewed lamented that operations could not be expanded because of limitation in space. Often materials sit around to wait for the appropriate time to be sold to the highest bidder. For example, it is better to sell the paper around Christmas time because of the high demand (and high price) for gift wrapping. The cooperative COOPERALTO implemented a public awareness campaign to increase collection of various materials but had to stop it because they could not take in any more material. With a bigger space, cooperatives could hire more workers and provide jobs for more people.

Second, cooperatives enjoy different degrees of partnership with their respective municipalities. Out of the six cooperatives, one has already partnered with the local government, three have a good probability that the municipality would approve and support an awareness campaign, while the remaining two have a low probability of receiving help from the municipality. For example, COOPRECICLAVEL, the cooperative located in Guarulhos, not only has a good relationship with the municipality but also has a partnership with two hundred public schools. Additionally, it has a partnership with Acai, a private company that treats the city water. Acai donates WVO and other materials to the cooperative.

In contrast, others do not have a good relationship with the municipality, thus they receive little support from it, such as CRUMA and COURES. So, these waste cooperatives are excluded from all decision making processes that involve waste and are not recognized as stakeholders in waste matters.

The third obstacle to the design of a public awareness campaign is that in the past, on similar occasions when the cooperative partnered with a private company, the latter received all the visibility. For example, the cooperative CRUMA, located in the town of Poá', partnered with Tetra Pak, the Swedish multinational food packaging and processing company, on a campaign where the cooperative distributed Tetra Pak products to the community. The problem was that the products did not contain any sort of information about the cooperative, thus drawing away attention from CRUMA while enhancing the environmental reputation of the multinational company. As a result, CRUMA stated that it will no longer enter partnerships where the partners gain more attention than the cooperative.

Similarly, when CORA implemented Cata Oleo, the company Bioauto received advertising in exchange for minor infrastructural help. At CORA, cooperative members felt the exchange was not really fair.

Fourth, cooperatives of *catadores* are not the only party interested in WVO and other recyclables. The market is also crowded with individual *catadores* working independently on the streets and middleman companies that are interested in collecting the oil to re-sell it to biodiesel processors or to entities even higher in the oil supply chain. Often middleman companies offer cleaning products to restaurants and businesses in exchange for the oil. Waste picking cooperatives cannot afford to offer any form of compensation in exchange for oil.

In a different case of competition, the president of COOPERALTO, the cooperative located in the town of Biritiba-Mirim, mentioned the fact that a one-size-fit-all campaign would have not worked in his town due to the cultural tradition of the local people using WVO to make soap. He explained that neighbors work together to use oil to make soap and then sell it together. In his mind, a successful campaign to increase WVO collection should focus on the environmental damage caused by soap-making with WVO, and the health risks for the skin when using WVO-base soap. This strategy might have aided COOPERALTO, but at the expense of improving another potentially sustainable activity.

Because of these four reasons (lack of space, unknown support by the municipality, risk of lack of visibility if third parties are involved, and competition) no agreement was made over a big campaign to be implemented in the towns of the six cooperatives.

5.1.3 The Paper Network

The idea to form a network of cooperatives to sell oil together to one buyer was inspired by the current network of cooperatives that sell paper. Selling material together means better prices and increased revenue for the cooperatives.

Before forming the network, cooperatives used to sell paper for R\$ 0.1/Kg to the middleman. When cooperatives started selling paper together, they received five times the previous price, i.e. R\$ 0.5/Kg. Paper coming from all the cooperatives participating in the network is stored at CRUMA

before it was sold. This is a temporary solution while the central location is being identified. CRUMA was chosen because it is the single cooperative with the most storage space. The network was formed and supervised by Rede Catasampa, the local labor union. Rede Catasampa would provide the rules and some support to the network in exchange for visibility.

Despite the dramatic increase in price, the successful paper network has incurred a few problems. One is a space management and logistical issue. CRUMA intends to sell the paper at higher quality by sorting the paper according to colors and materials. There is insufficient space and funding to purchase the machine that would sort the paper. Another issue is the access to market information for paper. The president of CRUMA, is in charge of the negotiating process to sell the paper and he would like to expand his knowledge regarding additional potential buyers and some more detailed market information regarding the price of paper. Finally, because the paper network is so administratively centralized, only the cooperatives closest to CRUMA participate in the network. The task of bringing paper to CRUMA imposes prohibitively high costs on outlying cooperatives.

5.1.3.1 Is There the Basis to Form a WVO Network?

When we presented the idea of a WVO network, similar to the paper network that was already in place, representatives of the cooperatives were not enthusiastic and raised many good points. At first the issues seemed to be exclusively logistical. When it comes to WVO, the quantity varies quite a bit from month to month depending on how much is donated to and/or collected by the cooperatives. The price of WVO not only varies over time as a result of market forces but also varies greatly geographically: Cooperatives located relatively close to one another are offered different prices for the same product (unfiltered oil in this case). This is a result of many variables: volume, negotiating skills, and transportation arrangements (whether WVO is picked up by the buyer or dropped off by the cooperative).

How is it possible to form a network if cooperatives collect different quantities of oil? How does the revenue get split? Where should the oil be stored? Is it economically viable to transport the oil to a centralized location instead of having the buyer come and pick it up? Who will be in charge of negotiations? How will transparency in bookkeeping be ensured? Who will the oil be sold to if currently cooperatives have different buyers? Should the oil be used as fuel for the trucks of the cooperatives?

They were all good points that needed attention. When the conversation moved to the long-term vision of the network, things started falling apart. The stumbling block was the hesitancy towards the participation of Rede Catasampa, the local labor union affiliated with the National Movement of Brazilian Waste Pickers. A few cooperatives agreed to identify the network with the local labor union to commercialize the oil while other cooperatives firmly refused to participate in the network if the labor union became in charge of it. It clearly became a political problem: Some cooperatives believed in the genuine support and work of Rede Catasampa, while other cooperatives challenged its lack of transparency and consistency. Some cooperatives also accused R-C of favoring certain cooperatives over others, with monetary compensation and assets donation.

Although a WVO network with the six cooperatives did not occur, Green Grease will try to build a WVO network with fewer cooperatives, geographically close.

5.1.4 Outcomes of the Experience

Although the plan to create a network was disbanded, during the rest of its time in São Paulo, our team visited the six cooperatives and installed filtration systems to those who requested it. During the visits we learned more about the functioning and specific situation of each cooperative; we came across some good and creative practices.

For example, many cooperatives set up collection points for WVO as well as for other materials at schools or supermarkets. In other cooperatives, it is now common practice to have

trucks play a jingle to invite household residents to bring recyclables outside. Another cooperative collects oil also from the kitchen of fire stations.

Another interesting finding is that at the cooperative COOPRECICLAVEL, a change in wage calculation boosted productivity by 40% in two months. Instead of the wages being hourly, as they have been for the past nine years, COOPRECICLAVEL made pay based on how much material is processed at the end of the month. Workers are working harder and an evaluation made two months after the policy change showed the significant improvement in productivity.

The hope of *catadores* is to increase collection of materials, especially WVO. One day they hope to have enough volume to skip the middleman and sell directly to the processing companies. In other words they would like to be more productive in order to move up the value chain.

5.2 Luz del Futuro: Waste pickers in Bluefields in Nicaragua

In January 2013, I had the privilege of working with a very young all-women waste cooperative located in Bluefields, a town on the Caribbean coast of Nicaragua. The purpose of the trip was to assess the situation of the cooperative and to identify key steps to support its development.

The original population of the Atlantic Coast is constituted by indigenous people and ethnic communities with multilingual characteristics. A third of the population lives in urban areas while the remaining two thirds lives in rural areas. The rate of illiteracy among the population 10 years old or older is 43%, but in rural areas it increases to 55%, and it is even higher among the female population. In comparison, the illiteracy rate for the whole country of Nicaragua is just 24%. Three fourths of the population of the coast lives in a situation of poverty or extreme poverty (FADCANIC 2013).

The plan for the trip was threefold. Our first objective was to assess the situation after a change in the municipal leadership, following the elections of three months before. Our second objective was to raise funds for a public awareness campaign by striking a deal with Blue Energy, a

local NGO funded by USAID and other European entities. The third and last goal was to propose and get approval of a door-to-door collection system, where women of the cooperative would collect recyclables directly from households instead of from the dump site.

The plan was just a piece of the bigger puzzle that in the long-term will be put together in eastern Nicaragua. The ambitious idea is to design a comprehensive waste recycling management system for three Nicaraguan towns located on the Caribbean Coast, including Bluefields. The single inhibitor to the economic viability of individual towns' waste systems is the disproportionately high cost of shipping out recyclables. All material is currently sent to Managua, the capital of Nicaragua located near the Pacific coast; from Managua materials are sent to recycling plants abroad, even to China. The Inter-American Development Bank (IDB) and the United Nations Development Program (UNDP) have recently approved funding to create an alternative waste route that excludes Managua and creates incentives to recycling waste by lowering transportation costs.

The cooperative *Luz del Futuro* was born in January 2012, not without struggles. Nicaragua is the second-poorest country of the Americas after Haiti, where the main driver of waste management efforts is public health. People pay little or no attention to waste collection despite the presence of a municipal collection system; it is normal to throw garbage on the street or in the sea just as it is normal to burn trash in the backyard. The situation improves slightly in touristy areas.

The women of the cooperative *Luz del Futuro* make their livelihoods by collecting and selling metals and plastic from the municipal sanitary landfill of Bluefields. The cooperative has twenty members and is currently not accepting any more workers because revenues are so low. Most of the members have very little schooling, average three to four years, with the most educated worker having completed middle school.

We recognized immediately that the cooperative is not as organized, not as evolved, and lacks the member commitment that is found in the Brazilian cooperatives. As a result, my teammates' work focused exclusively on the organizational strength and education of the cooperative. However,

in the end, we were able to achieve a partnership with Blue Energy for the public awareness campaign and we were also able to expand a partnership with the municipality to pilot a door-to-door collection system in a new neighborhood that currently lacks service, a first necessary step to introduce segregation at the source.

5.2.1 Challenging Living Conditions

When working in the field in Nicaragua, I observed close-up the challenging living and working conditions of women waste pickers in Bluefields.

The women, or *Las Mujeres* as we were urged to call them, live in wooden shacks in a very poor neighborhood at the edge of the town. The main road that winds through the houses and leads to the landfill is not paved and is shared by kids as well as dogs. Very few vehicles venture in this area due to the road conditions, especially when it rains. Even taxis charge a higher fare to make up for the bumpier and longer trip.

In this part of town, houses do not have running water and only have open-air latrines. Few houses have stoves for cooking or purifying water. Moreover, cracks in the wood allow bugs and other small animals to come in. For example, I visited the house of Margarita, the president of the cooperative, a few times. The entrance had no door and people were just coming in and out as they pleased. Besides the armchair where she sat, the common area had wooden chairs and a table. A patch of fabric divided the living room from the bedrooms. The only thing that made it a home was a couple of pictures of the family pinned to the wooden walls. No man was in the picture and, even though all women of the cooperative had children, we never saw men in these homes during the time we spent there.

The landfill where the women work is located on a hill a couple of miles from town. The road is too steep of an uphill and the distance is too far for the women to walk there. To go to work they rely on the garbage truck that goes to the landfill twice a day. The fact that women do not have their

own independent transportation makes them less productive. They actually complain that the truck is late and does not respect the schedule. Sometimes they miss work because the truck does not come by.

5.2.2 Challenging Working Conditions

At a time before the cooperative was formed, women picked trash at a dump located in the middle of their neighborhood. They worked together with children and pigs and the place was also known to be infested with boa constrictors. Since the municipality invested in a sanitary landfill, waste is covered with dirt at the end of every day. This occurred at about the same time the cooperative formed. Upon formation, the cooperative banned children under 18 from the new site.

Because the landfill is located at the top of a hill, it has the benefit of a gorgeous view over the forest and some wind that takes away the smell. The women work in the tropical sun, sharing the landfill with birds, dogs and rats. The cooperative operates with little machinery, no safety measures, some support from the municipality and little support from external entities.

The women use a long stick with what looks like a hook at the end to take out valuable recyclables from trash. They only collect plastic and metals, including aluminum cans. It is not economically viable to collect and sell other materials such as paper and glass due to low volume and high cost of transportation to Managua, the capital located near the opposite coast of the country. Women pick up recyclables and hand wash plastic bottles without safety equipment. Some women waste pickers refused to process plastic material for fear of cuts and infections, and confined themselves to collecting recyclables with sticks.

The collected plastic is loaded onto a truck that is then unloaded in a nearby open space owned by the municipality, to be washed, sorted and compacted. Thanks to an agreement with the municipality, the women in charge of plastic can borrow the compactor from the local government. Because of gender discrimination, women are not allowed to operate the compactor, which is

currently operated by a male municipal worker. The municipality can take away the right to use machinery at any time. Women hope one day that the cooperative will own the machinery necessary to process materials. The women sell the plastic to the municipality for a fixed price of three Cordobas –or 12 cents in the US –per kilogram, regardless of the type of plastic. Then the municipality transports the plastic to Managua. The plastic goes first to El Rama by barge and from Rama it is transported in trucks to Managua. A staff member of the municipality personally follows the journey of the plastic to negotiate the final price in Managua. From Managua, the plastic is shipped to China.

The revenue received in Managua by the municipality from one kilogram of plastic ranges from 3-7 Cordobas (12-30 cents of US\$), depending on several factors. If the plastic is thick, it has been washed, the paper label has been removed from bottles, there is no grease and it is not burned, the plastic will sell for the highest price. Otherwise the price is lower depending on the quality of the plastic. Almost all of the revenue received by the municipality from plastic is barely sufficient to cover transportation, staff wages and electricity. Transportation is the greatest cost in the plastic supply chain. An alternative transportation route might be critical to success.

The cooperative receives some in-kind support from the municipality, through the Ministry of the Environment in the form of transportation and land for storage. It does not receive any other external support. The municipality of Bluefields had never worked with recyclables before and officials explained to us how it is still a learning process to work with the waste cooperative. The municipality recognizes the value the cooperative brings by working with waste: It is hard to work with garbage and they believe it is important to take advantage of women's willingness to work with trash.

In November 2012 municipal elections took place in Bluefields and a turnover of leadership occurred. For a while it was uncertain whether the new mayor and vice-mayor would support the project the same way the previous mayor did. Towards the end of our stay the new leadership

granted its collaboration with our project. Nonetheless, at the time of my departure it was still unclear whether the environmental council member was going to be replaced. The council member in charge of environmental services at the time of our visit was very supportive of *Luz del Futuro* and he has always been a fundamental contact at the municipality. He has followed the cooperative since its unofficial formation and has a good relationship with the president of the cooperative and its members.

The environmental council member was one of the first supporters of a deeper integration between the cooperative and the formal sector of waste management. The partnership between the municipality of Bluefields and the women cooperative is about to go one step further. In January 2013, the municipality agreed to identify a neighborhood to pilot a door-to-door collection performed by the cooperative. Moreover, the local NGO Blue Energy will fund a public awareness campaign to promote separation of wet and dry waste and to educate the community on how to sort recyclables. This recent agreement has the potential to dramatically improve the environmental services offered by the cooperative and promote a cleaner community.

5.2.3 Issues

The women of *Luz del Futuro* are extremely poor, and most of them need a second job in order to support the family. These women are the breadwinners of the family and from their perspective the greatest accomplishment of the cooperative has been the banning of children from dump site.

Being a young cooperative, *Luz del Futuro* has yet to learn the power of synergy resulting from teamwork. Before they formed the cooperative they worked individually, fighting over every single tin can. Now that they work together the situation is better, although the women still need to learn to work as a team. They are all very grateful to be part of a cooperative and collaborate with the municipality. They recognize the benefit of working together rather than being each other's

competitor. However, they all agree that they make little money and there is a real need to identify new methods to improve their livelihoods. At the official registration of the cooperative, the president of the cooperative received a handbook that contains the fundamental principles and articles of cooperativism and of all stages of the life of a cooperative. Unfortunately that there is only one copy and the fact that the booklet is text-heavy discouraged its circulation among members.

The women of *Luz del Futuro* lament their lack of administrative and managerial skills. The women would like to collect trash not only in the dumpsite but also from city streets and households. There are also issues about the distribution of wages, the distribution of work, and the monitoring of work. Many women feel that some members work harder than others, or that others consistently miss work. When the male supervisor is present, women work harder than when he is absent.

There is inconsistent bookkeeping, ineffectiveness in running meetings and poor communication within the group. The leadership is strongly exercised by the president with little room for power dissemination and transparency. Technically there is supposed to be an executive board but its members either forgot they are a part of it or do not know what power to exercise. Even if long-term ideas and plans are brought up in meetings, such as the opening of a bank account or starting a greenhouse, the women do not know how to pursue them.

5.2.4 Conclusion

My experience in Bluefields gave me a completely different perspective on waste pickers than the one I gained in Brazil. I experienced how building and nurturing a new cooperative is time- and energy-consuming, especially in one of the poorest areas of the Americas.

Our work with the cooperative focused heavily on how to run meetings, designing the first logo for the cooperative, and writing the constitution of the cooperative, as well as stating rights and

responsibilities of cooperative members, and identifying a good neighborhood to pilot the door-to-door collection. The purpose of these efforts was to strengthen the internal organization of the cooperative and to help identify ways to add value to materials to have a better livelihood.

6. STRATEGIES TO INCREASE WASTE PICKERS PRODUCTIVITY

Although these cases appear to describe different situations, there are certain commonalities. In this chapter I extrapolate from the cases three strategies to increase waste pickers' productivity and improve waste pickers livelihoods. The three strategies are:

1. Strengthening the internal organization
2. Adding value to materials through technology and capitalization
3. Establishing closer linkages with the public and private sector

6.1 Strengthening the Internal Organization

The first of the strategies to increase productivity is to fortify the internal organization.

“Organizing and training informal recyclers into small and medium enterprises is a very effective way to upgrade their ability to add value to collected materials” (Wilson, Velis and Cheeseman 2006, 800). Organizing and training waste pickers is a slow process and requires external support in terms of funding and education, for two main reasons. First, in Latin America it is uncommon for low-level workers to operate without a boss and second, many workers lack basic business and management skills, as well as soft skills needed for commercial relationships like leadership and self-confidence. In past decades during the initial stages of forming cooperatives, local or national NGOs and community-based organizations took the lead in improving the working conditions of the informal sector (Wilson, Velis and Cheeseman 2006). More still needs to be done with established cooperatives. Simply because a cooperative is officially registered does not mean it is functioning at its maximum potential.

The success of a cooperative depends in large part on the way it is governed and managed (FAO 2010). A common denominator among waste cooperatives is the struggle to manage the business once the cooperative has formed. Cooperative members struggle to grasp and apply the principles of self-management, or to create a business environment without a boss (WIEGO 2009).

For people who have been poor and marginalized it is a cultural and a social expectation in Latin America to have a boss and rely on others for important decisions and it is especially challenging for informal workers to think in organizational terms.

Training and skills development is important but so are other soft skills, for example leadership and entrepreneurship, negotiation and self-confidence, business development, policy development and advocacy. Given the nature of these social enterprises, managers need specially adapted business training that takes into account the core values and principles particular to cooperatives such as the principle of democracy (where the maximum authority is a meeting where all members are present); mutual help (people working individually for a common purpose); equality (same rights and responsibilities for every member); equity (recognition of every member's work); and solidarity (FAO 2008). It is not enough to be able to bargain hard, as one might if operating as an individual. Leaders need the agility to bargain hard with outside buyers while building a sense of common purpose and mutual support among members.

While training waste pickers, special attention must also be given to improving the social status in the community to reduce harassment, violence, prejudices and exclusions. A relatively simple way to do so is to create tangible symbols that identify waste pickers as workers. Examples are uniforms, logos and identity cards. A sign or a symbol indicating membership to an organization brings professionalism to the job and raise visibility and validity of the profession of waste pickers (WIEGO 2012a).

6.1.1. Evaluation

Training is a long-term investment, especially for waste pickers who have other jobs and a family to take care of. To be effective, training has to be tailored to the specific situation of the cooperative and of its members.

For example, women from *Luz del Futuro* have had little schooling. Many of them are not comfortable reading and writing, do not feel at ease in a classroom environment, and have very short attention spans. In their case, the training should cover a wide spectrum of teachings, from basic reading and writing exercises to topics such as business and communication. The large quantity of material, with its relative complexity, indicates that it needs to be spread over time, emphasizing the practice over the theory, with a few, simple takeaways at a time.

Training members of an entire cooperative is also very challenging logistically. The women of *Luz del Futuro*, for example, do not have the resources or the time to move away from their home neighborhood, because they need to take care of the family. Training waste pickers requires appropriate teaching materials and financial resources only an external entity can offer. A possibility for the women of *Luz del Futuro* comes from Fadcanic, a local NGO whose objective is the sustainable development of the Nicaraguan Atlantic Coast. Fadcanic operates thanks to funds coming from entities like USAID, the Austrian organization for development cooperation and the Norwegian embassy to Guatemala. Fadcanic specializes in the education of indigenous and ethnic people who have low literacy rates.

6.2 Adding Value to Materials

Once waste pickers are organized, the next step to improve their productivity and expand the scope of their work is to engage into processes that add value to materials, a step that the industry calls valorization. Evidence shows that the productivity of waste pickers' cooperatives is directly correlated to their level of capitalization (Oscar Fergutz 2011).

Some of the valorization activities are labor-intensive and therefore can be easily accomplished by the workers, for example collecting, sorting and washing. However, to process more volume and add more value some level of mechanization is needed. This is why cooperatives must gain access to trucks (to expand volume collected), equipment (to squeeze more value in the

same unit of space) and warehouses (where the value of materials can be protected from the weather or theft)

Adding value to recyclables before selling them is a way to expand the scope of waste cooperatives, increase revenue and improve livelihoods (Avina, 2008; Wilson et al, 2006). There are different methods to add value to materials:

- collection of more recyclables
- sorting: the deeper the sorting differentiation, the higher the value
- pre-processing: washing, shredding, compacting, bailing
- small-manufacturing craftsmanship: transforming waste into useful and affordable goods to sell to the community
- trading: selling materials to the global industrial value chain.

The order of these activities reflects how easy it is to perform each task. At a small-scale operation, collection and sorting is relatively simple because it requires very few assets. The rest of the valorization activities require expensive machinery and space. At a medium or large scale, the cooperative needs a good level of technology and assets at all stages: trucks for collection and transportation, conveyer belts for sorting, machinery for pre-processing, and storage and working space.

6.2.1. Evaluation

This strategy is not as easy to implement as it seems.

First of all, machinery needs to be acquired. The only viable option for waste pickers is through donations from third parties, like NGOs or municipalities. Being poor, access to credit for waste pickers is basically impossible because on average poor people pay interest rates considerably more than the rich (Banerjee and Duflo 2012). This happens for many reasons: it is very costly to collect information about the trustworthiness of the borrower, poor people are much likely to default, and

when they do it is a lot of work on the lender's part to enforce credit contracts. For these reasons credit to the very poor is not available (Banerjee and Duflo 2012). Microfinance overcomes some of these issues but unfortunately is of no help to waste pickers. The sum needed to purchase two or three pieces of machinery is too big; the large investment would start paying back at an indefinite time in the future and the pay-back time period itself would be too stretched out in the future to see the benefit of such a choice (Banerjee and Duflo 2012). For all these reasons waste pickers have to rely on donations from NGOs, development banks, workers associations or state entities at the local and national levels.

Second, acquiring machinery implies access to electricity, resources to pay for the energy used to operate the machinery and the skills or funds to cover maintenance costs. Moreover it is advisable to acquire one machine per type or typology, i.e. a truck, a compactor and a shredder. Having only one of the three does not increase value of materials or productivity.

Other factors hinder the implementation of using machinery to add value to materials. For example, in the case of Green Grease, the next strategy to add value to WVO is to control for quality by measuring fat content. To measure the percentage of fat present in the oil, not only is expensive machinery needed but also chemicals in order to run the machine. In other words, waste pickers would need to learn the legal framework that allows chemicals to be handled in warehouses where people and other materials are present. Acquiring the machinery and abiding by the law might make this value adding strategy less beneficial for waste pickers.

6.3 Linking the Formal with the Informal Sector

Strengthening the internal organization and access to machinery are preparatory phases to the last and most important value-adding strategy: vertical integration with the public or private sector. Once trained and provided with the technical capacity, the cooperative is ready to establish

partnerships with those entities that will supply an adequate quantity and quality of recyclable materials.

The most important step a cooperative can take to increase productivity is to partner with local entities in order to move up the valorization pyramid (AVINA 2008). Partnerships with local governments and municipal solid waste managers are mutually beneficial, but they are not always successful. Several factors lie at the heart of a successful partnership.

This stage involves good outreach strategies to fight the competition and gain the attention of business as well as the municipality. A cooperative can be involved with many businesses and can reach many households through the municipality.

6.3.1. Evaluation

However, vertical integration can be challenging to implement. Often its success goes beyond the agreement per se. For example, some sort of awareness program is needed to explain thoroughly what material is being collected and how to separate it from the rest in a way that preserves quality. Another variable that plays a great role in vertical integration is the option of centralizing or decentralizing the operations to cut transportation costs and to increase efficiency. Decentralization usually implies the construction of mini transfer and sorting stations where waste pickers can unload the vehicle several times a day.

The following are some of the factors that contribute to the success of inclusive models, according to researchers.

First is to analyze existing informal collection and recycling systems and build on those (Wilson, Velis and Cheeseman 2006).

Secondly, a great deal of planning is necessary to bring together local stakeholders (GAIA 2012). Often, an external and independent facilitating agency is the best actor to “provide proper

and effective incentives for all formal and informal” parties (Wilson, Velis and Cheeseman 2006, 806).

Thirdly, good governance is essential for low-income groups to influence policy and resource allocation (Marshall and Farahbakhsh 2013). Good governance means that stakeholders need to come together with clear roles and responsibilities (FAO 2012).

The government, with appropriate policies and laws, can create the right business environment, design transparent laws and regulations and support successful and innovative cooperatives with the scaling-up process (FAO 2012).

NGOs need to assist and support existing cooperatives that, compared to newly created organizations, have a strong grassroots commitment. The role of research institutions is to assess the impact of cooperatives by collecting quantitative, qualitative data and make them available to the public (FAO 2012). Inclusive models are advocated by many in the literature and there are several examples of integration with the private sector that succeeded (WIEGO 2012b) (CWG 2003). Waste cooperatives can also explore partnerships with the private sector. Examples include the steel group Gerdaus in Chile and Brazil, which has asked waste cooperatives to provide packaging collection services (AVINA 2008). The cosmetic company Natura, operating in Argentina, Colombia, Brazil and Chile has asked waste cooperatives to do the same. Another example is the partnership between Wal-Mart and CAEC (Cooperative of Ecological Agents and Waste Pickers) from Canabrava, Brazil. Customers of the Wal-Mart stores in the Salvador metropolitan region can use recycling stations to drop-off recyclables which are then collected by waste pickers (AVINA 2008).

.In the public sector, the most common strategy is for the municipality to support waste cooperatives in developing a door-to-door collection system. This particular strategy allows waste collectors cooperatives gain in terms of more volume and more quality materials while it allows the municipality to reduce its cost of trash disposal. The advantage of having waste pickers segregating recyclables at the source is their advantage of providing services in areas where the formal sector is

unwilling to serve, such as where the access is difficult and where fees must be lower. However, the door-to-door strategy is meaningful only if residents are educated in waste segregation (Clarke 2012). Often, a public awareness campaign is implemented in parallel to a source-segregation system. The main risk of such a partnership is the creation of competition, misunderstanding and hostility between the formal and informal sector (UN-HABITAT 2010). There is also the risk of waste pickers scattering unwanted waste on the street; in addition, waste pickers who handle handcarts can cause traffic congestion because of their low speed; city authority sometimes object to the use of such carts because of bad appearance, which gives a bad impression of the city (UN-HABITAT 2010). Especially when it comes to door-to-door collection models, new attitudes and behaviors of both waste collectors and residents need to change; the former have to learn to be punctual and to professionalize their appearance, while residents have to learn how to treat waste workers as human beings (WIEGO 2012a).

7. RECOMMENDATIONS AND CONCLUSION

In recent decades, the phenomenon of people surviving by picking through trash has received increasing attention from policy makers. Waste pickers are poor people who sell recyclables found in trash for a living. Despite the fact that waste picking brings numerous benefits to the environment, the community and the local government, the practice is limited in scale and scope. To partially solve the problem, waste pickers organized into cooperatives – a particular business model with special attention to social needs. Further strategies are necessary to dramatically improve the living and working conditions of waste pickers, with positive consequences for the environment and the local community.

Forming a cooperative and being part of national and international associations is necessary but not sufficient to guarantee appropriate livelihoods to waste pickers. Nonetheless, increasing waste cooperatives' efficiency and productivity is possible. There are a few success stories of waste cooperatives that, when empowered, provide benefits for the community while breaking the cycle of poverty.

My thesis proposes three strategies to increase the productivity of waste cooperatives and allow them to capture more value added. The first strategy is to strengthen the internal organization of cooperatives by teaching them basic business skills and improving their social status. This strategy is one of the building blocks of cooperatives but it is a long-term investment that needs to be tailored to specific needs of the cooperative in order to be effective. The second strategy is technology acquisition, to reach economies of scale and boost productivity. Acquiring machinery implies high up-front costs that cooperatives alone are unable to face: Resources from an external entity such as NGO or development banks are needed. The third strategy is to create closer linkages and vertical integration with the public and private sector. A cooperative can have one partnership with the municipality and many partnerships with local businesses. This is the best strategy in the short-term although to work it assumes the cooperative is well established and has already access to machinery

(unless the partner itself can provide it). Moreover, detailed planning is required to calculate accurately costs and benefits for all parties.

Depending on the status of cooperatives, different policy recommendations are needed for a sound and sustainable development of a cooperative. In order, a cooperative should achieve organizational strength first, acquisition of technology second and vertical integration last. If the right combination is offered, sometimes it is advisable to follow multiple changes at a time: for example technology acquisition and vertical integration.

Supporting and empowering waste pickers is challenging, yet it is worth while to support the triple bottom line.

Bibliography

- A.Zeuli, Kimberly, and Robert Cropp. "Cooperatives: Principles and Practices in the 21st Century." University of Wisconsin, n.d.
- Ahmed, Shafiul Azam, and Mansoor Ali. "Partnerships for Solid Waste Management in Developing Countries: Linking Theories to Realities." *Habitat International* 28 (2004): 467-479.
- AVINA. *Reciclaje Sostenible y Solidario*. Brasil: Fundación Avina, 2008.
- Banerjee, Abhijit, and Esther Duflo. *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty*. New York: Public Affairs, 2012.
- Clarke, Felicity. *Waste Pickers Struggle from Landfill Closure*. June 21st, 2012. <http://rioonwatch.org/?p=4032> (accessed 2013).
- CWG. *Solid Waste Collection that Benefits the Urban Poor*. Collaborative Working Group on SOLid Waste Managements in Low- and Middle-Income Countries, 2003.
- CWG; GIZ. *The Economics of the Informal Sector in Solid Waste Management*. Collaborative Working Group on Solid Management in Low- and Middle-Income Countries (CWG); Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), 2011.
- Dias, Sonia. *Waste and Development - Perspectives from the Ground*. Institut Veolia Environment, 2012.
- FADCANIC. *Autonomous Regions of Nicaragua*. 2013. <http://www.fadcanic.org.ni/?q=node/17> (accessed August 2013).
- FAO. *Agricultural Cooperatives: Key to Feeding the World*. Food and Agricultural Organization (FAO), 2012.
- GAIA. *On the Road to Zero Waste: Successes and Lessons From Around the World*. Global Alliance for Incinerator Alternatives (GAIA), 2012.
- IBD, AIDIS, PAHO. "Regional Evaluation on Urban Solid Waste Management in Latin America and the Caribbean - 2010 Report." 2010.
- ICLEI. "ICLEI Case Studies." *ICLEI.org*. June 2009. <http://www.iclei.org/resources/publications/iclei-case-studies.html> (accessed July 2012).
- INFOCOOP. *Los 7 principios del cooperativismo*. 2013. http://www.infocoop.gob.ni/index.php?option=com_content&view=article&id=8&Itemid=6 (accessed August 2013).

- Ki-Moon, Ban. *International Year of cooperatives*. 2012. <http://social.un.org/coopsyear/> (accessed February 2013).
- Malkin, Elisabeth. *For Some in Mexico, Trash is a Treasure Worth Defending*. February 16, 2012. http://www.nytimes.com/2012/02/17/world/americas/for-some-in-mexico-trash-is-a-treasure-worth-defending.html?pagewanted=all&_r=0 (accessed 2013).
- Marshall, Rachel E., and Khosrow Farahbakhsh. "Systems Approaches to Intergrated Solid Waste Management in Developing Countries." *Waste Management*, 2013.
- Medina, Martin. "Serving the unserved: informal refuse collection in Mexico." *Waste managemetn & Research* (SAGE), 2005: 390-397.
- Oscar Fergutz, Sonia Dias, Diana Mitlin. "Developing Urban Waste Management in Brazil with Waste Picker Organizations." *Environment and Urbanization* (Sage publications) 23(2) (2011): 597-608.
- REDLACRE. "Red Recicladores." *Red Recicladores*. 2012. <http://redrecicladores.net/> (accessed August 2013).
- Ruiz, Albina, César Zela, Manuel Pajuelo, Paloma Roldán Ruiz, and José Carlos Rodríguez. *Through Garbage: Changing minds and Hearts*. Lima, Peru: Ciudad Saludable, 2009.
- Schamber, Pablo Javier. *El Sector Informal en la Gestión de Residuos: El Caso de los Cartoneros de Buenos Aires*. D-Waste, n.d.
- Scheinberg, Anne. "Value Added: Modes of Sustainable Recycling in the Modernisation of Waste Management Systems." *PhD Thesis*. 2011.
- Scheinberg, Anne, Sandra SPies, Michael H. Simpson, and Arthur P.J. Mol. "Assessing urban recycling in low- and middle-income countries: Building on Modernised mixtures." *Habitat International*, no. 35 (2011): 188-198.
- Todaro, Michael P., and Stephen C. Smith. *Economic Development (11th edition)*. Addison-Wesley, 2010.
- UN-HABITAT. *Collection of Municipal Solid Waste in Developing Countries*. UN-HABITAT, 2010.
- UN-HABITAT. *Solid Waste Management in the World's Cities: Waterand Sanitation in the World's Cities 2010*. London, Washington DC: UN-HABITAT, 2010.
- WIEGOa. *First Global Strategic Workshop of Waste Pickers: Inclusive Solid Waste Managemtn*. Cambridge, MA, USA: Women in Informal Employment: Globalizing and Organizing (WIEGO), 2012.

WIEGO. *God is my alarm clock*. Cambridge, MA, USA: Women in Informal Employment: Globalizing and Organizing (WIEGO), 2012.

WIEGO. *Refusing to Be Cast Aside: Waste Pickers Organising Around the World*. Cambridge, MA, USA: Women in Informal Employment: Globalizing and Organizing (WIEGO), 2009.

WIEGO. *The Only School we Have. Learning from Organizing Experiences Across the Informal Economy*. Cambridge, MA, USA: Women in Informal Employment: Globalizing and Organizing, 2012.

Wilson, David C., Ljiljana Rodic, Anne Scheinberg, Costas A Velis, and Graham Alabaster. "Comparative Analysis of Solid Waste Managemtn in 20 Cities." *Waste Management & Research* 30, no. 3 (2012): 237-254.

Wilson, David, Costas Velis, and Chris Cheeseman. "Role of the informal sector recycling in waste management in developing countries." *Habitat International*, no. 30 (2006): 797-808.

8. APPENDIX

Picture 1. Map of Brazil.



[illegible]



Picture 4. Green grease project. ARES, Salesópolis: Storage area.



Picture 5. Green Grease Project. ARES, Salesópolis: Collection Vehicle unloading materials.



Picture

6. Green Grease Project. COOPERALTO, Biritiba-Mirim: View of the warehouse.



Picture 7. Green Grease. Building the filtration system.



Picture 8. Green Grease Project. COURES, Suzano: Sorting process using a conveyor belt.



Picture 9. Green Grease Project. CRUMA, Poá: Paper collected from the network, waiting to be sold.



Picture 10. Green grease Project. CRUMA, Poá: Catador unloading recyclables on the conveyor belt.



Picture 11. Map of Nicaragua.



Picture 12. Luz del Futuro, Bluefields: Working space and storage area.



Picture 13. Luz del Futuro, Bluefields: Logo of the cooperative designed in January 2013



Picture 14. Luz del Futuro, Bluefields: Waste pickers unloading plastic to be washed and processed.



Picture 15. Luz del Futuro, Bluefields: Bail of plastic ready to be shipped to Managua.



Picture 16. Luz del Futuro, Bluefields: View from the working space.



Picture 17. Luz del Futuro, Bluefields: The women working at the sanitary landfill with sticks and bare hands.



Picture 18. Bluefields: Narrow street in a neighborhood of Bluefields.

