

## **“Raising our voice, claiming our space”**

In pursuit of a sustainable solid waste management system in Quito, Ecuador.

*Fernando Granizo Murgueytio*

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Master Thesis Series in Environmental Studies and Sustainability Science,  
No 2017:006

A thesis submitted in partial fulfillment of the requirements of Lund University  
International Master's Programme in Environmental Studies and Sustainability Science  
(30hp/credits)



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**Words: 13,969**

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Submitted May 16, 2017

Supervisor: Torsten Krause, LUCSUS, Lund University

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## **Abstract:**

Ecuador, in its endeavor to overcome the sustainability issues caused by the lack of adequate solid waste management (SWM), introduced an ambitious governance model seeking to stop environmental degradation and include waste recyclers into the system. In Quito, Ecuador's capital, population growth, lack of waste separation at source, and space constraints for the final disposal of municipal solid waste urge the city to find a sustainable SWM system. To address these problems, the municipality introduced a master plan until 2025 that recognizes waste recyclers and its labor as a key element in the system, however, several shortcomings have been identified in the process. Therefore, the momentum that waste recyclers are experiencing made me question. To what extent can the inclusion of waste recyclers into the system drive Quito towards a sustainable SWM system? Following an inductive approach, I chose Complex Systems Theory in order to characterize and understand the interlinkages of the current system. Subsequently, I applied Transition Management as part of a governance framework to investigate to what extent waste recyclers can drive Quito towards a sustainable SWM system. Drawing on 13 semi-structured interviews with stakeholders ranging from authorities to volunteers and a focus group interview with the members of a waste recyclers association, my findings indicate that there are three leverage points where the system can be intervened which are. 1) Education and capacity-building directed to the stakeholders within the system. This will increase the waste recyclers' capabilities as well as strengthen the governance structures of SWM. 2) Recognition of fairer prices of recyclable material, resulting in higher incomes and thus, better quality of life for waste recyclers and 3) Achievement of greater rates of waste separation at household since this is the main driver of a non-efficient SWM system. Waste recyclers are a key element in the accomplishment of the latter as their work can create a bond between them and the civil society, and thus, raise awareness about the relevance of reducing waste generation, as well as educating about the importance for the environment and their livelihoods of separating waste at source. Therefore, my results point out that indeed waste recyclers can be considered as a seed of change capable of driving Quito towards a sustainable SWM. However, to achieve this, major investments in capacity-building, infrastructure, technology, and social welfare are needed. Finally, acknowledgment of context-specific limitations is crucial when it comes to scalability.

**Keywords:** Inclusive Solid Waste Management, associativity, seeds of change, capacity-building, waste separation at source, market prices.

## Acknowledgements

This thesis is not only the end point of a two-year master program but the culmination of a phase that started more than six years ago as an individual objective and ended up as a family project that goes much beyond the academic learning and the acquisition of professional skills. This has been for us a process of continuous learning in which we have managed to overcome difficult moments that brought us closer and made us stronger, but also to valuing more the happy moments that we have spent together. Moments that I will keep and cherish in my heart for the rest of my life. Therefore, as a sign of humility and grateful, it is necessary to acknowledge all the people who have made this possible.

First, I would like to thank Dany and Katty for giving me their vote of confidence to do this master program. To the LUMES/LUCSUS staff for being a source of knowledge and particularly Amanda, Barry, and Torsten for being there when we were up to our ears in a few occasions. To my classmates for being such extraordinary people, a source of inspiration, and committed to making of this a better world for all. To Rugi, for being my brother from another mother in these distant lands, your humor and wisdom are certainly unique, do not lose your essence bro! To the Frostlander family, for being a truly family for us during these years. People with a heart like yours is difficult to find in this world. We wish and hope to keep our friendship “to the infinity and beyond”.

Second, I would like to thank my family. To my parents and siblings in law for being always there with supportive words. To my uncles and aunts and especially my uncle Paty for being a role model in my life. To my cousins for all that affection that characterizes us. To my brothers for this immense love –our trademark- that is able to cross mountains and seas and that keep us together no matter how far or for how long we have been distant. To my grandparents for being the pillars of the family, and giving me my identity and values. For making me feel proud of who I am and where I come from. To my dad, for teaching me that hard work pays off and to always fight for my dreams. For teaching me that the word “surrender” does not exist in our DNA and that we can always achieve what we propose ourselves. To my mom, a fighter, brave and admirable woman. Thanks for making of me the man I am. I owe you everything and it is because of you that I am here in this place right now. You taught me the meaning of love, solidarity, empathy, tenderness and I love you for that with all my strength.

Lastly, I would like to thank the two most important persons in my life. Kari, my wife, thank you for sharing my dreams and making them yours. Thank you for standing always next to me in the good and in the bad times, for being my best friend, my partner of life and adventures, and for kicking my ass from time to time when it was needed. Your courage, joy and the way you face life illuminates mine. I could not be more fortunate to have the honor of spending the rest of my life next to you. And to Juan Martín, my son, for being my source of joy every day, my motor of life, and the reason that makes me feel that there is nothing I cannot do. Seeing you grow as a caring, sweet, curious, and loving boy as you are, makes me feel the happiest and proudest man in the world. My commitment is to always give the best of me for you and provide you with experiences that enrich your life and make you become a great person in every way possible. I love you two with all my heart, soul, mind, and strength and I am indebted to you for all my life. THANK YOU FOR ALL and cannot wait for our next adventure!

Above all, thank God for putting all these things on my way.

## **List of Acronyms**

SWM = Solid Waste Management

MSW = Municipal Solid Waste

COOTAD = Autonomy and Decentralization Organic Code

COA = Environmental Organic Code

EMASEO = Metropolitan Public Cleaning Company

EMGIRS = Metropolitan Public Company for the Integral Management of Solid Waste

IRR = Regional Initiative for Inclusive Recycling

RENAREC = National Network of Waste Recyclers of Ecuador

MAE = Ministry of Environment

MIES = Ministry of Economic and Social Inclusion

IEPS = Institute of Solidary and Popular Economy

MIPRO = Ministry of Industries and Productivity

BAN Ecuador = Development Bank of Ecuador

PNGIDS = National Program for the Integral Management of Solid Waste

CEGAMs = Centers for Education and Environmental Management

CLD = Causal Loop Diagram

PAHO = Pan-American Health Organization

QSE = Quito's Secretary of the Environment

QMP = Quito's Master Plan for the Integral Management of Solid Waste

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# 1 Introduction

*Municipal solid waste*<sup>1</sup> (MSW) is responsible for 3-4% of the global emissions of anthropogenic greenhouse gasses (Onyanta, 2016). However, this is not the only problem associated with waste generation. Environmental, social, and economic problems such as water, air, and soil pollution, informal work, or spread of disease-carrying vectors, among others, are also linked to the lack of efficient Solid Waste Management (SWM) (Hoornweg & Bhada-Tata, 2012; Onyanta, 2016). As stated by Hoornweg and Bhada-Tata (2012) in their report for the World Bank, waste generation rates are expected to reach 2.2 billion tons per year by 2025. Of this, the majority is being produced in cities, making it crucial to find more sustainable SWM systems, especially in lower and lower-middle income countries. Although the per capita generation of waste is lower than industrialized countries, lack of adequate SWM is causing complex sustainability problems (Hoornweg & Bhada-Tata, 2012).

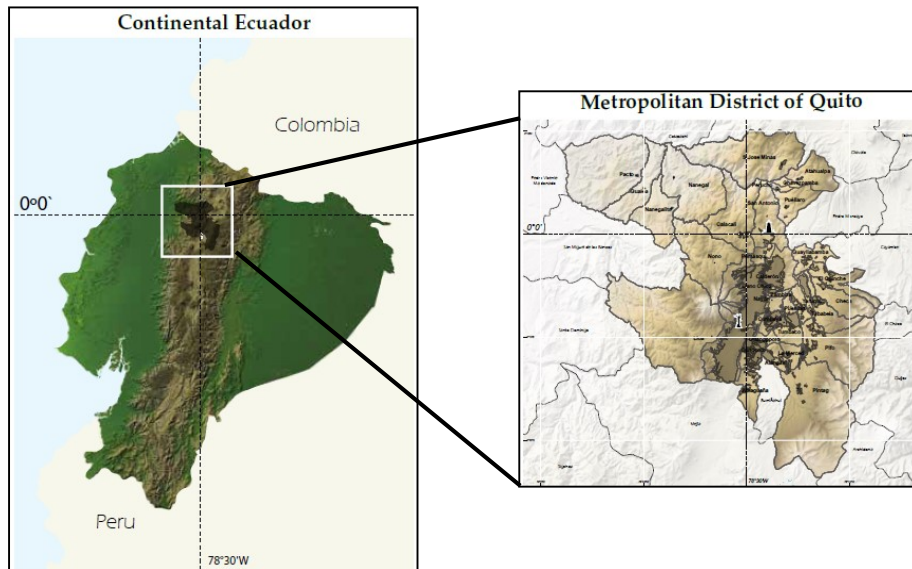
A study conducted in Ecuador by the Pan-American Health Organization (PAHO) in 2002, pointed out a serious situation regarding MSW due to the lack of infrastructure and services for its management (Soares, Bittner, Ortiz, Sánchez, & de la Torre, 2002). Among the sustainability issues related to this is groundwater pollution caused by the leakage of leachate, leading to alterations in areas with high biodiversity, as well as affectations to the agriculture sector (Soares et al., 2002; MAE, 2013). Furthermore, population growth and the lack of waste segregation at source as a general problem in the country, end up affecting land use since more space is required to construct dump sites to store the waste (MAE, 2013). Another problem related to inadequate SWM is the informal recycling sector that used to perform their activities in uncontrolled open pit dump sites in precarious conditions, thus, causing health and social problems to the government and to waste recyclers (OPS, 2013; MAE, 2013).

In Quito (see figure 1), Ecuador's capital with a growing population that is expected to reach over three million inhabitants by 2020, started to manage its MSW technically back in 1994 (Environmental Atlas, 2016). However, waste recycling activities were still allowed in the landfill, causing accidents where even fatalities were registered (Soares et al., 2002). Currently, Quito's

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<sup>1</sup> PAHO's definition stated in Hoornweg and Bhada-Tata (2012), defines MSW as solid or semi-solid waste generated in populated centers including domestic and commercial wastes, as well as those originated by the small-scale industries and institutions (including hospitals and clinics); market street sweeping, and from public cleansing.

landfill which is controlled by the municipality has forbidden waste recycling activities in order to avoid accidents, yet, waste is still arriving the landfill without any sort of separation at source (Environmental Atlas, 2016). In addition, Quito's landfill is already over 80% of its capacity, having thus to increase its volume through the construction of a new storage cell that was opened in January 2017 and that is expected to receive the waste of the city for the following 16 months (El Comercio, 2015; La Hora, 2017). Nevertheless, the construction of a new landfill for the city has not been planned yet (El Comercio, 2015).



**Figure 1.** Map of the Metropolitan District of Quito (Environmental Atlas, 2016).

In order to overcome these problems, the Ecuadorian policy framework which establishes as a municipal competence the management of MSW, and institutional arrangements such as the creation of the National Program for the Integral Management of Solid Waste (PNGIDS), aimed to close all uncontrolled open pit dump sites in the country until 2017 (MAE, 2013). In Quito, legal bodies and the Master Plan for the Integral Management of Solid Waste, delineate the pathway that the city will follow concerning MSW until 2025 (Environmental Atlas, 2016; PMGIR, 2016). However, migration to technical SWM and prohibition to perform waste recycling activities in landfills has led to loss of livelihoods which are causing further socio-economic problems for municipalities due to the lack of inclusion plans for the waste recycling sector (IRR, 2015).

In October 2016, the UN Habitat III conference held in Quito, endorsed the *New Urban Agenda until 2030*<sup>2</sup>, the same that establishes several commitments to ensure a sustainable urban

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<sup>2</sup> The United Nations (2016), describes the New Urban Agenda as as the roadmap for building cities that that can serve as engines of prosperity and centers of cultural and social well-being while protecting the

development. Some of these are adequate waste disposal, sound SWM systems, social inclusion, end of poverty, opportunities for all, etc. (UN Habitat, 2017). Therefore, space constraints, lack of waste separation at household, and the socio-economic inequalities that waste recyclers face make urgent and relevant for Quito to find a more sustainable SWM system that includes all its stakeholders at every stage of the chain value. Furthermore, even though the academic literature and the UN new urban agenda emphasize the application of the *hierarchy of waste*<sup>3</sup> for the integral management of MSW (Hoorweg & Bhada-Tata, 2012; Onyanta, 2016; UN Habitat, 2017), the scope and focus of my thesis is on the management of MSW due to Quito's urgency to achieve a more sustainable SWM system.

Additionally, taking into account that the current SWM system is causing *wicked problems*<sup>4</sup>, my attempt in this thesis is to identify a solution that allows Quito to identify the pathway towards a sustainable SWM system. For this, I intend to address the problem by integrating the knowledge from inside and outside academia in a transdisciplinary and critical way and thus, contribute to the construction of Sustainability Science from a practice-oriented perspective (Jerneck et al., 2011; Miller, 2013). Therefore, the outcomes of this research project are tailored to overcome societal and environmental complex problems, facilitate learning for stakeholders involved in the SWM in Quito, and create knowledge that is useful for both, science and practice (Lang et al., 2012). Finally, the lack of academic research regarding solid waste management in Ecuador fully justifies the realization of this thesis.

### **1.1 Overview of the state of SWM.**

According to Hoorweg and Bhada-Tata (2012) the higher the economic income, the more waste is generated. For instance, OECD countries produce approximately 2.2 Kg a day per capita of solid waste, whereas, in Latin America and the Caribbean, waste production is around 1.1 Kg a day per person (Hoorweg & Bhada-Tata, 2012). However, in low and low-middle income countries, although SWM is the expenditure where most of the municipal budget goes into, most of it is assigned to waste collection, conversely to what happens in high-income countries where less

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environment. It also provides the guidance for achieving the UN Sustainable Development Goals and provides the underpinning for actions to address climate change.

<sup>3</sup> The hierarchy of waste refers to the application of the 3R's principle –reduce, reuse, and recycle-. The most preferred option is to avoid the generation of MSW focusing on consumption patterns, whereas SWM is the least preferred option (Hoorweg & Bhada-Tata, 2012).

<sup>4</sup> Known in the field of Sustainability Science as persistent problems whose solutions are difficult to determine and may involve trade-offs (Jerneck et al., 2011).

than 10% of the budget goes to waste collection due to recycling and composting processes at source (Hoorweg & Bhada-Tata, 2012). In fact, PAHO states that waste disposal remains a critical problem in the region given that 45.6% of the population is still lacking adequate disposal of solid waste (OPS, 2013).

In Ecuador, waste production is on average 0.85 Kg a day per person, whose management is regulated by an exhaustive legal framework ranging from the Constitution to the local legislation (Environmental Atlas, 2016; Madera, 2015). According to the Ecuadorian law, the Land Use, Autonomy and Decentralization Organic Code (COOTAD) in its article 55, and the Environmental Organic Code (COA) that to date remains as a law project, establish the management of waste as a competence and responsibility of each municipal government (El Telégrafo, 2016a; IRR, 2015; MAE, 2013). However, due to technical, operational, and administrative capacities, only 20% of the waste has been disposed in *controlled landfills*<sup>5</sup> until 2010, the remaining 80% has been disposed in *open pit dump sites*<sup>6</sup> (MAE, 2013). Furthermore, only 24% of municipalities have initiated processes of waste separation at source, while the remaining percentage still delivers its waste without any sort of classification (MAE, 2013), which is leading to the construction of more landfills that are filling with valuable material that can re-enter the economy. To respond to this problem, The Ministry of Environment (MAE) created in 2010 PNGIDS with the aim to promote a technical SWM in the country, reduce the environmental degradation, and close all uncontrolled open pit dump sites in Ecuador until 2017 (MAE, 2013).

Quito, on the other hand, produces 0.84 Kg a day per person of waste, which is collected by *EMASEO*<sup>7</sup>. Subsequently, waste is transported to the landfill where *EMGIRS*<sup>8</sup> performs the technical disposal of waste in controlled storage cells, (EMASEO, 2014; EMGIRS, 2016; Environmental Atlas, 2016). Regarding SWM and waste separation at source, Ordinance 332 is the legal body that governs the city, which states as compulsory to the waste producer the

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<sup>5</sup> A controlled landfill refers to a place where technical measures are employed for the management of MSW. i.e. compactation, leachate treatment, soil protection, collection systems for biogas, etc. (Environmental Atlas, 2016).

<sup>6</sup> Open pit dump sites refer to places where MSW has been disposed without any technical measure (Environmental Atlas, 2016).

<sup>7</sup> Metropolitan Public Cleaning Company responsible for the collection of MSW and the cleanliness of the city (EMASEO, 2014).

<sup>8</sup> Metropolitan Public Company for the Integral SWM. Responsible for the technical operation of the landfill (EMGIRS, 2016).

segregation of its waste, even when the municipality does not provide the service of differentiated collection (IRR, 2015). However, despite the regulations and isolated efforts, Quito still suffers from a lack of waste segregation at source. Official municipal reports are limited to present future projects like the construction of waste separation plants with mechanized technical processes (Environmental Atlas, 2016).

## **1.2 Inclusive solid waste management**

Before getting to know the state of inclusive SWM in the world and in Ecuador, it is important to understand what it means. Therefore, the Regional Initiative for Inclusive Recycling (IRR), defines inclusive SWM as the social and economic integration of waste recyclers to the management of solid waste (IRR, 2013).

### **1.2.1 *What is at stake in the world***

Waste recycling can be dated back to ancient times as a livelihood (Rutkowski & Rutkowski, 2015), an activity carried out by the informal recycling sector that in the last years has gained prominence especially in developing countries in Africa, Asia and Latin America (Velis et al., 2012). In the academic world, there is an increasing consensus that the waste recycling sector should be integrated into the waste management planning of the city since waste recyclers represent significant economic benefits for municipalities. They are considered as a reliable supply of secondary raw materials for the industry, and improve the environmental and social performance of the city through the expansion of the lifespan of sanitary landfills and the provision of livelihoods for this sector of the society (Castro, 2012; Dias, 2016; Rutkowski & Rutkowski, 2015; Velis et al., 2012; Wilson, Velis, & Cheeseman, 2006).

On the other hand, many criticisms regarding waste recycling activities refer to problems like occupational health and safety, child labor, exploitation of labor, dispersion of diseases, aesthetic issues, among others (Anne Scheinberg et al., 2016; Velis et al., 2012; Wilson et al., 2006). Nevertheless, there is a wide range of academic literature that provide plenty of alternatives and solutions to overcome these issues such as the development of inclusive policies and strong governance structures (Gutberlet, 2015; Marshall & Farahbakhsh, 2013; A. Scheinberg & Simpson, 2015), support for the creation of organized associations (Dias, 2016; Rutkowski & Rutkowski, 2015), recognitions of its work and formalization, among others (Jaligot, Wilson, Cheeseman, Shaker, & Stretz, 2016; Sembiring & Nitivattananon, 2010). Moreover, according to Wilson et al. (2006), despite the above-mentioned problems, it can be highly counterproductive

to establish SWM systems without including the informal sector since waste recyclers provide a service to the city, and ignoring them can result in failed systems.

In Latin America, waste recycling turned to be a social movement seeking for recognition of its rights and improved working conditions for more than four million people that recover between 50% and 90% of the recyclable material in the region (Castro, 2012; IRR, 2013). In Brazil, for instance, waste recyclers are responsible for a recovery rate of 70% for cardboard, 56% for PET and 28% for paper (Rutkowski & Rutkowski, 2015). In Colombia, the waste recycling sector has grown significantly and is strong enough to influence decision making processes towards inclusive SWM (Castro, 2012). Therefore, IRR was created to claim their interests and integrate waste recyclers from Latin America and the Caribbean into the formal market (IRR, 2015).

### **1.2.2 What is at stake in Ecuador**

In Ecuador, significant progress has been made when it comes to the development of public policy seeking to the inclusion of waste recyclers in the SWM system (IRR, 2015). For instance, the new Constitution in its articles 325 and 326 recognizes the State as the entity that guarantees every form of work, whether of relationship of dependency or autonomous, but at the same time, article 327 prohibits any form of precarious work that affects the rights of workers (Constitucional, 2008). Moreover, article 232 of the COA, promotes the formalization, association, strengthening, and capacity building of waste recyclers at local and national level as a part of the SWM and a strategy to foster social and technical development (El Telégrafo, 2016b).

Furthermore, there is no official data regarding the total number of waste recyclers in Ecuador, however, according to the National Network of Waste Recyclers of Ecuador (RENAREC) established in 2008, there are more than twenty thousand waste recyclers that have been identified in the country of which a little more than a thousand are part of RENAREC (RENAREC, 2015a). Regarding institutional cooperation, MAE, the Ministry of Economic and Social Inclusion (MIES), and the Institute of Solidary and Popular Economy (IEPS) signed in 2014 a two year agreement in order to support waste recycling activities, the same that has been renovated (IRR, 2015; RENAREC, 2015b). Moreover, Laura Guanoluisa president of RENAREC, during her speech commemorating the Recycler Day in March 2015 said that one of the objectives of the federation is to achieve the minimum wage, have access to social security, tax benefits, and access to credits in order to improve the conditions in which they work (RENAREC, 2015a). In addition, President Rafael Correa during his speech in the same event committed to providing the mechanisms for



waste recyclers to have access to credits and social security (RENAREC, 2015c). Milestones like this started to delineate the pathway towards inclusive waste management in Ecuador in the last years.

### **1.2.3 What is at stake in Quito**

In Quito, besides regulating the management of waste, Ordinance 332 promotes the creation of adequate conditions for waste recyclers in order to work in an optimal and healthy environment. Ordinance 332 also establishes the creation of Centers for Education and Environmental Management (CEGAMs) for collection and commercialization of recyclable waste (Secretaría de Ambiente de Quito, 2010). Furthermore, Quito's Secretary of the Environment (QSE) should be included as the institution that regulates and emits normative regarding environmental management in the city (Secretaría de Ambiente de Quito, 2017).

Moreover, the municipality through QSE recently developed the Master Plan for Integral Management of Solid Waste 2016 – 2025 (QMP). The aim is to establish the strategy, politics, principles, and guidelines throughout the whole value chain of the SWM until 2025 under the concept of a *circular economy*<sup>9</sup> (Environmental Atlas, 2016; PMGIR, 2016). Regarding waste recyclers and according to Quito's Environmental Atlas (2016), there are approximately three thousand waste recyclers in the city. Therefore, QSE identified the need to include this sector of the society in QMP through one of its objectives. Objective 5 states: "To promote the social inclusion of waste recyclers in various waste management processes. Goal: To incorporate 50% of the current waste recyclers in 2015" (PMGIR, 2016, p. 5). Moreover, another strategy to achieve a more efficient SWM in the city is through the technification of the current system (PMGIR, 2016).

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<sup>9</sup> For Quito's municipality, the concept of circular economy refers to the prevention of waste generation, modernization of the SWM system, and the reuse of organic and recyclable material to feed productive processes (Environmental Atlas, 2016).

## **2 Research questions**

### **2.1 Overarching research question**

To what extent can the inclusion of waste recyclers into the system drive Quito towards a sustainable SWM system?

### **2.2 Sub questions**

- How can the current SWM system in Quito be intervened to make it sustainable?
- How can a sustainable SWM system overcome the environmental and socio-economic challenges that the city is facing?
- What role does civil society play in order to achieve a sustainable SWM system in Quito?

### **3 Theoretical Framework**

In order to explain the observed phenomena in the field, insights from two theoretical approaches will be employed. The first is Complex Systems Theory that will help me to address the first objective of my thesis, i.e. the characterization of the current SWM system in Quito through the framing of the problem, as well as the identification of places to intervene in the system (Meadows & Wright, 2009; Rotmans & Loorbach, 2009). Since describing the current system is not sufficient to explain the pathway towards a sustainable SWM, Transitions Theory will serve me as the vehicle to address the second objective of my thesis, i.e. to assess to what extent the inclusion of waste recyclers into the SWM could drive Quito towards a sustainable management of MSW. (Nevens, Frantzeskaki, Gorissen, & Loorbach, 2013).

It is important to point out that my thesis has followed an inductive approach since the theory was built on the data and observations collected in the field (Bryman, 2012; Creswell, 2014). Furthermore, it was during the acquisition of empirical data from interviews and observations that I questioned whether what is happening in Quito could be considered as a transition towards a more sustainable SWM system. Therefore, I chose complex systems theory and transitions theory to understand this process (Della Porta & Keating, 2008).

#### **3.1 Complex Systems Theory**

Cities and societies are full of complex systems. In fact, SWM is considered as one of the biggest challenges in municipalities especially in the Global South due to inefficient systems leading to sustainability problems (Gutberlet, 2015). In Quito, deficiencies in the SWM are causing persistent problems that result in environmental degradation, as well as socio-economic challenges for waste recyclers. According to Meadows and Wright (2009); Rotmans and Loorbach (2009), persistent problems are systemic failures that cannot be tackled solely through technological fixes or the application of legislation. As a matter of fact, these are considered as end of pipe solutions attempting to fix the problem by addressing the symptoms instead of the root of the problem (Hörður, 2004). On the other hand, systems thinking allows actors to see beyond their expertise, and to identify persistent problems from an economic, cultural, technological, environmental, and institutional perspective (Nevens et al., 2013; Rotmans & Loorbach, 2009). However, before trying to fix the problem, it is crucial first to understand its interlinkages and dynamics and get to know its actors and institutions. Therefore, the application

of complex systems theory will help me to understand the behavior of a nonlinear system that is constantly evolving as is the case of MSW in Quito (Rotmans & Loorbach, 2009). Moreover, in order to understand the functioning of the system, further properties from systems thinking need to be taken into account which is given by its resilience, self-organization, or hierarchy (Meadows & Wright, 2009. pp. 75 - 85).

*Resilience:* Refers to the capacity of the system to stay over time under the pressure of a changing environment. It is the ability of a system to enlarge the platform where it is based in order to have more space to oscillate during extreme social, economic, and environmental conditions. Additionally, resilience provides elasticity and dynamism to the system through feedback mechanisms since these have the capacity to balance the system (Meadows & Wright, 2009). In the context of MSW, the resilience of the system could be given by the diversity of the stakeholders and the governance structures involved in the management of MSW.

*Self-organization:* Refers to the capacity of complex systems to learn, diversify, gain in complexity, and evolve. Furthermore, new social structures and innovation could also emerge from self-organization, essential features of a SWM system that is attempting to include waste recyclers in it. However, it is important to acknowledge that self-organization could be seen as a threat to national and local governments. Thus, identification of these conditions is essential in order to encourage them in a proper way instead of suppressing them (Meadows & Wright, 2009).

*Hierarchy:* As a consequence of self-organization, hierarchies usually emerge as a natural thing. In Ecuador, the SWM system is not the exception, therefore, hierarchies are key to understand their interactions and identify different alternatives to enhance the functioning of the system. An important point to highlight especially in the case of an inclusive SWM is that most of the times hierarchies evolve from the bottom-up (Meadows & Wright, 2009).

### **3.2 Transitions Theory**

Transitions are considered to be fundamental changes in the structure of a system with the aim to achieve long-term solutions to the sustainability challenges that societies face nowadays (Frantzeskaki, Loorbach, & Meadowcroft, 2012; Geels, 2011; Loorbach, 2010; Nevens et al., 2013; Rotmans & Loorbach, 2009). Applications of this have been registered mostly in the agriculture, energy, or mobility sector (Loorbach, 2010; Nevens et al., 2013). However, socio-environmental challenges of a city such as MSW could also be addressed through a transitions perspective.

Therefore, in order to achieve a sustainable SWM system, radical alterations of the existing one are required. In this sense, a transition management approach could be applied as a governance framework to achieve fundamental changes in terms of culture, practices, and structure of a system (Frantzeskaki et al., 2012; Loorbach, 2010; Nevens et al., 2013). Moreover, the transition management approach is adequate since its focus is directed towards achieving sustainability, it emphasizes on the frontrunners as the actors that promote sustainability outcomes, it is flexible and dynamic, recognizes the plurality of the system in terms of the social sphere that conforms it, and the inclusion and commitment of different stakeholders at different levels (Frantzeskaki et al., 2012; Loorbach, 2010). However, before going deeper into what a transition management as part of a governance framework refers to, it is necessary first to define some of the elements that involve it.

*Regime:* Rotmans and Loorbach (2009) describe the regime as the current system that has its own structure, culture, and practices and that needs to be changed. Moreover, Loorbach (2010) states that transitions happen when the regime is put under pressure by external changes and internal innovative initiatives in the society. In the case of this study, the regime is the SWM system that is currently in place.

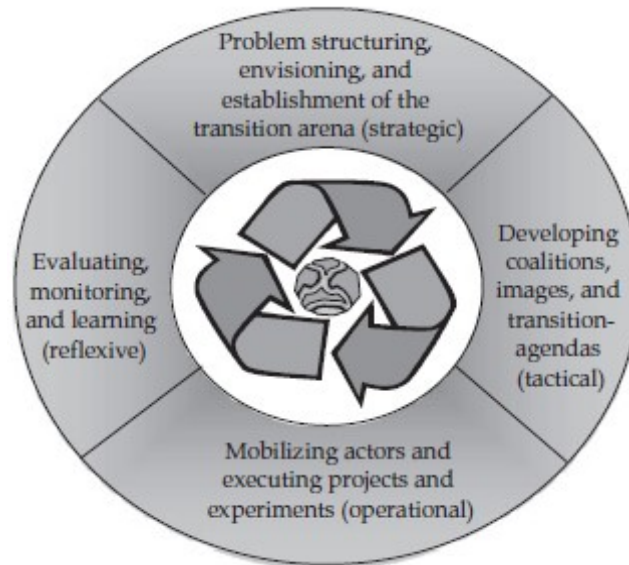
*Niche:* Is considered to be the emergent structure that is comprised of a small group of actors capable of eroding the current system and building up a new regime (Rotmans & Loorbach, 2009). For this study, RENAREC could be considered as the niche that is attempting to change the current regime in the country

*Frontrunners:* Rotmans and Loorbach (2009) define them as visionaries, strategists, people with creative minds, and entrepreneurs capable of conducting disruptive processes. Hence, the group of frontrunners includes actors with different backgrounds that have a deep understanding of the complexity of the problem, and are capable of promoting sustainable development, however, they should not participate on behalf of the organization they belong to (Frantzeskaki et al., 2012; Loorbach, 2010). In this case, frontrunners could be any person from the stakeholders within the system, nevertheless, they should be aware that participation needs to be as individuals and not as delegates of their institution. In addition, frontrunners need to be willing to invest time and energy in the innovative process and commit to it. Finally, it is desired to have an equal number of frontrunners from each of the parties involved in the project (Loorbach, 2010).

*Transition Arena:* Is a small societal network of innovation which is comprised of a group of 10 to 15 frontrunners with a diversity of backgrounds and different perspectives towards a specific persistent problem (Loorbach, 2010; Rotmans & Loorbach, 2009). It is a legitimate and innovative space where frontrunners can operate in a safe way and learn (Loorbach, 2010). However, it is important to highlight that transition arenas require political support in order to guarantee the security of the process. (Frantzeskaki et al., 2012; Rotmans & Loorbach, 2009). Lastly, one of the objectives of a transition arena is to create an envisioning process and the developing of a common vision with the aim to overcome the persistent problem (Frantzeskaki et al., 2012; Loorbach, 2010).

### ***3.2.1 Transition Management as part of a governance framework***

Bearing in mind that the characterization of the current SWM system is not enough, especially since the aim of my thesis is to identify whether waste recyclers have the potential to drive Quito towards a sustainable SWM system, it is necessary to incorporate another approach that will allow me to analyze this. Therefore, transition management is known for being a normative model that aims to achieve sustainable development in the long run and that provides a prescriptive approach towards governance (Loorbach, 2010). It creates the space for frontrunners and for the establishment of a transition arena, a vision, and an agenda for the achievement of sustainability (Frantzeskaki et al., 2012). In addition, transition management is considered to be a cyclical process of development phases at different scale levels as can be seen in figure 2 (Frantzeskaki et al., 2012; Loorbach, 2010; Rotmans & Loorbach, 2009). However, in real life, there is no fixed sequence of steps since transition management activities can happen in parallel or randomly (Loorbach, 2010; Rotmans & Loorbach, 2009).



**Figure 2.** The Transition Management Cycle (Loorbach, 2010)

A brief explanation of what these phases entail can be found below (Loorbach, 2010. pp. 166-177).

- 1) *Problem structuring, envisioning, and establishment of the transition arena (strategic)*: In this phase is where strategic activities are carried out, such as the selection of frontrunners, the establishment of a transition arena, and the development of a long-term sustainable vision (Frantzeskaki et al., 2012; Loorbach, 2010). According to Loorbach (2010), the time scale of this phase is 30 years, therefore, the aim of the activities here is to deal with the norms, values, identity of a societal system in order to reframe and overcome the persistent problem.
- 2) *Developing coalitions, images, and transition agendas (tactical)*: Loorbach (2010) states that at this stage is where the transition agenda is developed, which is based on a long-term sustainable vision created in the previous phase. The time-scale for this phase is between 5-15 years, and the scope is to deal with issues at a regime level. i.e. institutions, organizations, infrastructure, and routines (Loorbach, 2010).
- 3) *Mobilizing actors and executing projects and experiments (operational)*: At this stage is where innovative experiments take place. Moreover, the time-scale for this frame is rather short (0-5years) and carried out by individual ambitions, entrepreneurial skills, or promising innovations that usually emerge in niches (Frantzeskaki et al., 2012; Loorbach, 2010).

4) *Evaluating, monitoring, and learning (reflexive)*: As the name says, this phase is dedicated to assessing the policy framework and the ongoing societal change. This phase is particularly relevant to avoid lock-ins and to facilitate the creation of new ideas and pathways (Loorbach, 2010).

It is important to acknowledge that transition management is still in development, thus, the concepts presented above, as well as the interdisciplinary and practice-oriented approach are still subject to debate (Loorbach, 2010).



## **4 Methods**

For my thesis, I designed a two-stage research approach that consisted of the collection of qualitative data through a desktop study and fieldwork based on semi-structured one-on-one and focus group interviews. The target group for this research project was a range of stakeholders from authorities to waste recyclers. The aim was to gain insights regarding inclusive SWM based on opinions of people that are currently working in this sector. The fieldwork was carried out between the 6<sup>th</sup> of February and the 10<sup>th</sup> of March, 2017 in Quito - Ecuador. The details regarding the methodological approach are explained below.

### **4.1 The Desktop Study**

#### **4.1.1 Academic literature review**

The purpose of the academic literature review was to understand what is at stake in the world and in Ecuador regarding inclusive SWM, collect meaningful and up-to-date research, as well as to acknowledge the criticisms and research pitfalls of the topic (Bryman, 2012; Creswell, 2014). Moreover, the academic literature review helped me to determine the theoretical approaches employed by scholars during research processes as well as the development of questions for interviewees (Creswell, 2014). The LUB research engine was applied using a search string that included the following key words “Solid waste management” and “inclusive\*”, which yielded approximately 600 results. The following selection of articles was based on key words related to inclusive SWM, the same that were identified in the title and the abstract. Some of the key words were: waste pickers/recyclers, inclusive waste management, informal waste recycling sector, or waste pickers/recyclers inclusion. I ended up retrieving 12 articles plus 2 master thesis that I considered closely related to the topic. Table 1 summarizes the selected articles and its relevance for this study. The academic literature review was performed in January 2017. Finally, it is important to mention that the master thesis related to participation and inclusive solid waste management in Ecuador was obtained directly from the author.

**Table 1.** Literature review related to inclusive SWM.

<b>Author/Year</b>	<b>Location</b>	<b>Relevance for this study</b>	<b>Type of document</b>
Castro (2012)	Colombia Argentina	Situation of waste recyclers in these countries and assessment of initiatives.	Master Thesis
Dias (2016)	Brazil Colombia India	Environmental and economic contributions of the informal recycling sector to cities. Framing of SWM towards the integration of waste recyclers.	Article
Gutberlet (2015)	Brazil	Governmental support towards the inclusion of waste recyclers into the SWM. Identification of contributions and challenges of the sector.	Article
Jaligot et al. (2016)	Egypt	Value chain analysis of the informal recycling sector with the aim to improve the position of this sector.	Article
Madera (2015)	Ecuador	The role of citizen participatory processes towards an inclusive SWM	Master Thesis
Marshall and Farahbakhsh (2013)	Developing countries	Systems thinking to integrated SWM	Article
Oguntoyinbo (2012)	Nigeria	The role of waste recyclers and barriers for its inclusion.	Article
Onyanta (2016)	Developing countries	The gap between the North and South regarding SWM. How inefficient SWM systems affect climate change.	Article
Rutkowski and Rutkowski (2015)	Brazil	Inclusive initiatives in the SWM of 25 Brazilian cities	Article
Anne Scheinberg et al. (2016)	Europe	Exclusion of informal waste recyclers from SWM systems in European countries. Elaboration of constructive approaches towards legislation and integration.	Article
A. Scheinberg and Simpson (2015)	Asia Europe North America	The performance of inclusive SWM in five cities through the application of the 'recycling framework analysis'	Article
Sembiring and Nitivattanano (2010)	Indonesia	The role of the informal waste recycling sector in the recovery of recyclable material	Article
Velis et al. (2012)	South America Asia Africa	Socio-economic challenges that affect waste recyclers. Development of the InterRa tool to evaluate these issues in 10 cases around the world.	Article
Wilson et al. (2006)	Egypt	General overview of the positive and negative aspects of informal recycling	Article

#### **4.1.2 Gray literature review**

The review of key policy documents, official reports from government institutions at the national and local level, and non-government organizations was crucial in order to delineate the state of inclusive SWM in Ecuador and understand its complexity. This is public information that has been published in official websites. Furthermore, in order to keep the objectiveness throughout the study, particular interests and purposes of these documents were acknowledged.

#### **4.2 Fieldwork**

For this study, I considered that a qualitative research was a feasible approach to take in order to understand in-depth the view of different stakeholders regarding inclusive SWM in Quito. Moreover, Lang et al. (2012), suggest that the selection of a group of actors within and outside academia and with different backgrounds is appropriate since they will be able to provide me with different perspectives and knowledge concerning a common issue. Furthermore, I considered that this approach allowed me to identify salient and legitimate outcomes in the pathway towards a sustainable SWM system in Quito (Lang et al., 2012).

Additionally, In order to gain a deeper understanding of the role of waste recyclers towards a sustainable SWM system, it was necessary to identify a group of actors who provide me with first-hand information and that at the same time were involved in innovative initiatives regarding MSW within the city (Creswell, 2013). In this sense, Asociación Sonreír has been identified as a waste recyclers association that has been actively participating in inclusive waste recycling initiatives with the municipality and the civil society.

##### **4.2.1 In-depth semi-structured interviews**

In-depth semi-structured interviews are particularly useful when the issue to be addressed is broad and there is a range of possible answers that the interviewee can provide. It also gives space for both the interviewer and the interviewee to expand on the conversation based on relevant information that might appear along the way (Bryman, 2012; Creswell, 2013, 2014). Moreover, the inclusion of relevant stakeholders from different sectors of the society such as policy-makers, experts, authorities from ministries and the municipality, volunteers, NGOs, as well as the leaders of the waste recycling sector and the waste recyclers itself, allowed me through the use of semi-structured questions to understand their views and perspectives towards inclusive management of solid waste (Creswell, 2014). As suggested by Creswell (2013, 2014), for each interview I prepared a general protocol that included a short introduction of

myself, the purpose and objectives of the interview, consent to record and reproduce fully or partially the opinions product of the interview, and name(s) of the interviewee(s). Subsequently, I continued with an *'ice-breaker' question* to distend the environment of the interview before going deeper with specific questions that I would like to know from the interviewee. Is important to highlight that not all the questions that were prepared in advance were necessarily asked to the interviewee. This depended on the profile of the interviewee and the information required from her or him (Creswell, 2013). The complete list of interviewees, date, duration of the interview, and the institution they belong to can be found in Appendix I. The interview protocol for the interviews and the following questions can be found in Appendix II.

Furthermore, a focus group interview was planned with the members of Asociación Sonreír. As Creswell (2013) suggest, “Focus groups are advantageous when the interaction among interviewees will likely yield the best information, when interviewees are similar and cooperative to each other, when time to collect information is limited, and when individuals interviewed one-on-one may be hesitant to provide information” p. 133. Hence, bearing in mind that Asociación Sonreír is comprised of 10 women and that they are not so confident being part of face-to-face interviews, and time constraints, the focus group approach was considered as the most feasible tool to have the opinions of its members. However, not all the members of Asociación Sonreír work full time as waste recyclers, therefore, I had to conduct the focus group interview only with four of its members. The list of attendants can be founded in Appendix III.

Although most of the interviews were planned before going to the field, it is important to point out that the *snowball*<sup>10</sup> sampling method was also applied due to the lack of information regarding persons or institutions relevant or responsible for a particular issue.

### **4.3 Data Analysis**

In order to make sense of the raw information collected in the field, I will draw on Creswell's (2014. pp. 194-200) six-step process for the analysis of my data. Moreover, Bryman (2012) suggests the use of qualitative analysis software in order to assist the researcher in this process. Therefore, the basic features of NVivo software were employed in order to speed up the analysis

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<sup>10</sup> Refers to the approach when the researcher makes initial contact with a small group of people relevant for the study and then these lead to other relevant stakeholders that can provide further information (Bryman, 2012).

of data. Additionally, thanks to NVivo I was able to summarize steps 3 and 4 of Creswell's six steps into one step.

*Step 1: Organize and prepare the data.* All the recordings from the one-on-one and focus group interviews were completely transcribed, as well as the hand-written notes taken in the field.

*Step 2: Read through all the data.* All transcriptions were entirely read to grasp relevant information and reflect on each of the interviews. This process was particularly useful since it allowed me to start to identify themes that needed further research or to prioritize topics with the coming interviewees depending on their profile, expertise, and the institution they represent.

*Steps 3 and 4: Coding the data and generation of labels.* Codification of data was done with the help of NVivo Software. Themes and labels were created according to key concepts emerged during the interviews. During the first codification process, I ended up creating 19 labels, which after a depuration and clustering process ended up being 11 labels. The coding process was carried out by re-reading each of the interviews and assigning labels whenever something important or useful was recognized. Finally, from the 11 labels identified after the depuration process, five served me as headings for the next chapter. However, it is important to point out that the rest of the labels have also been described since they are crosscutting issues relevant for each of the themes (Creswell, 2014).

*Step 5: Representation of the themes.* This step refers to how the results will be presented. Interviewee's opinions, insights from the observations, and relevant findings from the literature review will be organized as a narrative so the story begins to take shape.

*Step 6: Interpretation of results:* This step is particularly relevant since it helps the interviewer to reflect on the findings. In this sense, outcomes of this research project will allow me to confirm the findings from previous studies or deviate from them. Moreover, it is also helpful to raise new inquiries and identify places where further research needs to be conducted. Finally, this step is seen as a starting point for the development of future agendas as well.

Additionally, a *Causal Loop Diagram (CLD)*<sup>11</sup> will be the tool employed to describe the SWM system and identify how elements within are interconnected (Hörður, 2004). Finally, I applied

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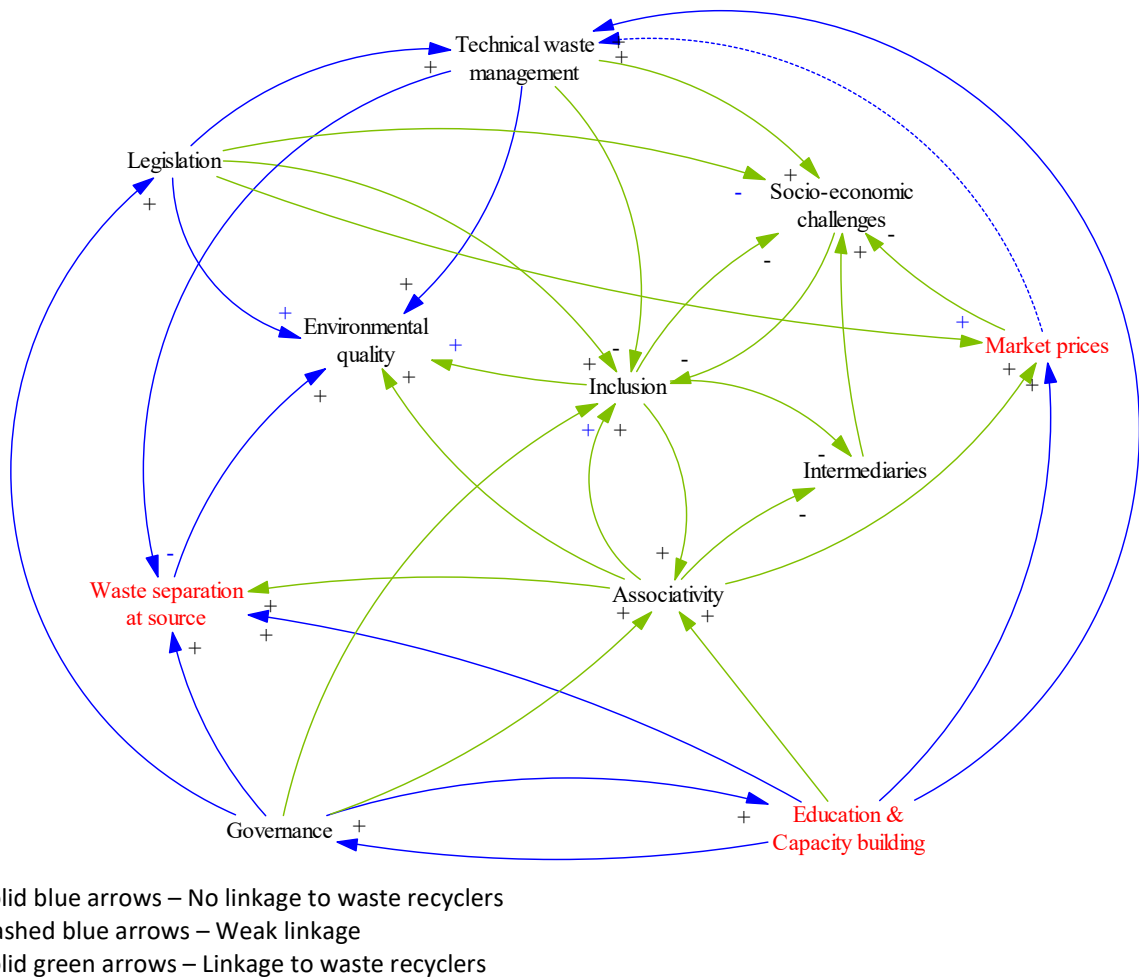
<sup>11</sup> A CLD is a problem-solving tool that allows the visualization of problems and its interconnections without losing its complexity (Hörður, 2004)

triangulation of sources throughout the whole study in order to increase credibility, reliability, and avoid bias as much as possible (Bryman, 2012; Creswell, 2014).

## 5 Results.

### 5.1 Untangling the knot of the current SWM system in Ecuador.

The CLD (figure 3) presented below, illustrates, and explain the current SWM system in Ecuador and its interconnections. It is important to bear in mind that this model is attempting to provide an understanding of the system without neglecting its complexity (Hörður, 2004). The elements in red are considered the *leverage points* where the system can be intervened to steer it towards sustainable SWM. The explanation regarding the leverage points will be presented in the discussion.



**Figure 3.** CLD of the current SWM system in Ecuador.

The Ecuadorian government carries out significant efforts to improve the SWM system, especially through the strengthening of its institutions and the enhancement of its governance and legislation. This led the country to a more technical management of waste, resulting to some

extent, in an improved environmental quality since landfills are better controlled and leachate is not reaching water bodies. However, a more technical SWM does not necessarily translate into lesser socio-economic problems for waste recyclers and municipalities. Conversely, due to the closure of open pit dump sites and the lack of inclusion plans, waste recyclers vulnerability increased since they were excluded from a resource that regardless of its conditions and formality, still represents a livelihood for them (Dias, 2016; IRR, 2015). In Quito for example, interviewees from the municipality argue that containerization – a technological measure – has managed to achieve a better collection service and order in the city. However, they acknowledge that the situation regarding child labor has worsened since waste recyclers are putting their children inside the containers to retrieve recyclable material. Additionally, there has been more conflicts amongst waste recyclers that claim exclusive access to a container.

As part of the strengthening of institutions and in order to solve the socio-economic problems affecting waste recyclers, the central government promoted the creation of inter-institutional agreements. This initiative led by President Correa himself, allowed the waste recycling sector to be visible to the recycling industry and the civil society and resulted in more waste recyclers willing to associate due to the benefits that this entails (RENAREC, 2015c). On the other hand, as a strategy to overcome the socio-economic issues and the lack of waste separation at source, Quito has developed mechanisms such as the “Quito a Reciclar” program, which is the umbrella project that includes waste recyclers into the SWM system of the city and encourages the civil society to sort waste at household.

Moreover, association and inclusion of waste recyclers to the formal SWM system are seen as positive initiatives due to the following reasons: Less environmental degradation since less waste is getting to landfills, and less recyclable material being buried in landfills. Hence, the operative lifespan of landfills has been extended, and recovery rates for recyclable material have increased. One example is the plastic recycling industry which thanks to increased recovery rates is growing rapidly in the country. Decreased number of intermediaries translated into improved economic incomes and working conditions for waste recyclers, and the ability to negotiate directly with the private sector, leads to better market prices for recovered material. Nevertheless, despite the significant efforts and achievements so far, rates of associations affiliated to RENAREC are still low as well as the market prices for recyclable material. Additionally, working conditions are not desirable yet and the civil society is still not sorting waste at source, making the current SWM not sustainable.



### **5.1.1 Governance and inclusion of waste recyclers**

The national strategy for SWM has mainly responded to the urgency to stop environmental degradation. This has been confirmed by the Minister of Environment. “Ecuador first major task is to migrate from open pit dump sites to an integral management of solid waste [...]”. Nevertheless, when being asked about the waste recyclers that used to work in open pit dump sites, he stated “[...] the competence of the MAE is basically the establishment of the links with municipalities in order to help waste recyclers to be included in the integral SWM, to make them visible [...] we also encourage the private sector to generate agreements amongst private companies, the recycling industry, and waste recyclers in order to eliminate the intermediary, so they can be the direct beneficiaries of this relationship [...]”<sup>12</sup>.

Furthermore, the inter-institutional cooperation agreement created by the national government under Correa’s mandate aims to promote the socio-economic inclusion of waste recyclers into the SWM system in Ecuador (IRR, 2015). As explained by Escobar from IEPS “[...] in this tripartite agreement we all have duties [...], we enable members of waste recyclers associations that are part of RENAREC to have access to capacity building [...], we follow up to make waste recyclers’ work inclusive and this task we perform jointly with MIES [...]”<sup>13</sup>. Moreover, this agreement has been considered as a milestone for the waste recycling sector since it provided the space where conversations between waste recyclers and the public sector began to take shape, and as the opportunity to establish a formal dialogue with the national government. Nevertheless, the President of RENAREC states that the cooperation agreement has been partially fulfilled and that there are things such as access to social security that has not been achieved yet. She argues that one of the reasons is their low monthly income which is not enough to pay the affiliation value.

Another governmental instrument to support the work performed by waste recyclers is the agreement between MAE and BAN Ecuador. This arrangement was created with the specific purpose of providing a line of credit for waste recyclers for infrastructure and machinery at low interest rates, as well as training for productive entrepreneurship (RENAREC, 2015b). However, the President of RENAREC states that waste recyclers have not been able to be beneficiaries of this agreement mainly because interest rates are still high and to borrow a loan they need to gather bigger quantities of recyclable material to sell it to the recycling industry. However,

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<sup>12</sup> Walter García, Interview, 23 February 2017.

<sup>13</sup> Paulina Escobar, Interview, 2 March 2017.

Escobar from IEPS says that despite the financial training that IEPS provide, some of the associations that have been granted a loan, not necessarily have spent the money in machinery or to improve their work.

Additionally, the Ministry of Industries and Productivity (MIPRO) in its endeavor to change the *country's productive matrix*<sup>14</sup> introduced a tax for plastic bottles in order to encourage the creation of industries capable to take advantage of this resource, reduce the environmental degradation, promote recycling processes, and support the waste recycling sector (MIPRO, 2011). Therefore, Parra the Vice minister of MIPRO states “[...] recycling processes and the integral SWM is tailored to some production sectors as a service [...]”<sup>15</sup>. Additionally, Valencia from MIPRO argues that the work performed by waste recyclers is very important because without them there would be no recyclable material recovery since separation at household level does not exist.

In Quito, the QMP is the document that sets the guidelines for the SWM system in the city until 2025. It delineates the municipal strategy for the management of the entire value chain of MSW, the same that is performed by three institutions (QSE, EMASEO, and EMGIRS), each with their competences and attributions (PMGIR, 2016). Bearing in mind that the fifth objective of QMP aims to include 50% of the waste recyclers registered in Quito until 2015 into the processes of SWM, Quito's municipality is currently carrying out a program called “Quito a Reciclar” (PMGIR, 2016). The program encourages the separation of waste at source, and waste recyclers are considered to be a key element in the recovery of recyclable material and for the strengthening of the urban fabric through the participation and the co-responsibility of the civil society (EMASEO, 2017). Moreover, within “Quito a Reciclar” program, the municipality put into operation four CEGAMs, places provided by the municipality and administered by EMGIRS with elementary equipment where 66 waste recyclers from different associations gather to recover recyclable material to later sell it to the recycling industry. It is important to highlight that there is no employment dependency between the municipality and the waste recycling associations that work at CEGAMs.

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<sup>14</sup> Ecuadorian strategy to achieve better living conditions and eradication of poverty through the generation of employment and the encouragement of productivity (Vicepresidencia de la República del Ecuador, 2015).

<sup>15</sup> Juan Carlos Parra, Interview, 22 February 2017.

Finally, empirical evidence points out that there is little collaborative work between MAE and Quito's municipality due to political and administrative issues, however, there are possibilities to improve a joint work considering that Quito has more experience regarding inclusive SWM, and PNGIDS needs the know-how to assist other municipalities.

### **5.1.2 Legislation and inclusion of waste recyclers**

Besides the national and municipal legal framework that regulate the SWM system, for some interviewees, the COA which is in process of approval, constitutes a keystone in the matter of inclusive SWM since it defines what waste recyclers are and recognizes their importance as a sector that should be included in the management of MSW. However, for others, COA is a broad legal body that in terms of inclusive SWM remains at a superficial level, thus, it needs to be supported by specialized laws in order to gain depth. Interviewees mention access to social security, market regulations, health and safety at work, mechanisms for accessing credits, among others, as topics to be included in the specific legislation.

In Quito, the legal framework does not only recognizes waste recyclers and their activity and include them into the SWM system, but also settles mechanisms for their inclusion such as the possibility of registration and qualification as waste recyclers of Quito's municipality, or the creation of CEGAMs. However, as mentioned before, the 4 CEGAMs that are operating at the moment have managed to include 66 waste recyclers, thus, there is a limited capacity to include them in these places. In addition, registration and qualification with QSE has not been reflected in increased economic incomes, nor in the achievement of better working conditions for waste recyclers.

Despite the fact that there is an agreement among stakeholders about how important is for waste recyclers to know the law since it provides them with tools to claim their rights and face controversies, as well as to be aware of what is allowed or prohibited in the city. My findings reveal that this is something that in the best of the cases, it is known by the leaders of RENAREC, but not by the waste recyclers' associations. Moreover, a volunteer at ReciVeci<sup>16</sup> argues that even though waste recyclers at Asociación Sonreír have been trained on several occasions about the local policy framework, due to the complexity of the text it is difficult for them to retain this

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<sup>16</sup> ReciVeci is a citizen initiative comprised by a group of volunteers that came together with the aim to raise awareness about the work performed by waste recyclers, educate the civil society regarding waste separation at source, and promote a direct connection between citizens and waste recyclers (ReciVeci, 2016).

information. Moreover, bringing waste recyclers together for training is problematic as they prefer to be working since every minute counts a lot for them.

Finally, some experts and authorities identify the *principle of extended responsibility*<sup>17</sup>, - described in the Ecuadorian environmental legislation - as a promising alternative to support the waste recycling sector. Basically, because it enforces the industry to be responsible for the waste that has been generated after the introduction of its products to the market through the establishment of minimum collection quotas. Interviewees believe that this could lead to the development of alliances and agreements between the private sector and waste recyclers. However, it is pointed out that specific regulation and capacity building is required in order to avoid pitfalls such as the lack of capabilities of the waste recyclers to collect recyclable material. Moreover, the fact that waste recyclers are not categorized as *artisans*<sup>18</sup> is considered as a major hindrance since they cannot enjoy the tributary benefits for this sector such as non-compulsory accounting, 0% of VAT, among others (IESS, 2014).

Additionally, it needs to be mentioned that in many occasions, obtaining a legal status is seen as a hinder for waste recyclers since this entails obligations such as keeping track of the financial accounting of their work, opening a bank account, or payment of taxes. Hence, waste recyclers prefer to continue working with intermediaries since they pay in cash and without formalities.

### **5.1.3 Associativity and inclusion of waste recyclers.**

For many interviewees, becoming an association has been positive for waste recyclers in many regards. For instance, working as an association has allowed them to collect bigger quantities of recyclable material, which means better conditions to negotiate with the recycling industry. More efficiency whilst doing their work since they are able to organize themselves in terms of the neighborhood where they work by dividing up space according to their capabilities, as well as at the moment of classifying material into plastic, paper, cardboard, aluminum, etc. and packing it for sale. Furthermore, being part of an association gives them the opportunity to register in the

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<sup>17</sup> Ecuador's Ministerial Agreement 061 defines the principle of extended responsibility to the obligation that producers and importers have over the life-cycle of a product, from its fabrication or import to the final disposal (Acuerdo Ministerial 061, 2015).

<sup>18</sup> Artisans are those whose work is mainly manual, is carried out directly by the person, and employ a maximum of 15 people in the same establishment (IESS, 2014).

*National System for Public Purchases*<sup>19</sup> as a company of the popular and solidary economy, and thus, more possibilities of being hired since the system prioritizes these type of companies.

Moreover, Guanoluisa from RENAREC claims “[...] we have managed to come together, organize ourselves and become organizations, apart from that, we have managed to be strong, why? Because only organizing ourselves we can work jointly with the municipality, the government, different ministries and institutions including private companies [...]”<sup>20</sup>. In addition, Pulupa from Asociación Sonreír says “It has been good to be organized. First because we are recognized by the civil society, second, because they take us into account as an association [...] our income has increased a little bit, we have an elderly person and she cannot work, but thanks to the association she can stay in “*The Ark*”<sup>21</sup> classifying material, so she earns as much as we do”<sup>22</sup> (See figure 4). It is important to mention that there is no need to pay any fee to become part of RENAREC.



**Figure 4.** Photograph of “The Ark” during the opening ceremony in February 2017. Taken by the author

On the other hand, regarding associativity, Polo from EMASEO states “It is a long process [...] despite the positive things that becoming an association entails, it is one of the most difficult

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<sup>19</sup> Ecuadorian virtual platform for public procurement (SERCOP, 2017).

<sup>20</sup> Laura Guanoluisa, Interview, 8 March 2017.

<sup>21</sup> Name given by Asociación Sonreír members to their collection center for recyclable material.

<sup>22</sup> Blanca Pulupa, Interview, 6 March 2017.

things to achieve, to make them work together and not fight [...]”<sup>23</sup>. Moreover, Madera states that during his investigation he identified low willingness to form an association due to conflict of interests among waste recyclers and lack of knowledge regarding the benefits of becoming an association. In addition, the organizational cost of associativity is high since it requires time and capabilities, things that waste recyclers in their condition of informality and vulnerability do not have or are not willing to put. Thus, changing the mind set of waste recyclers towards formalization and associativity is a tough task. However, it is considered that the experience of other waste recyclers plays a key role when explaining the benefits of associativity since their work is built on trust.

Furthermore, in order to formalize a waste recycling association, it must be registered at the *Superintendencia of Solidary and Popular Economy*<sup>24</sup>. In this process, IEPS is responsible for providing support to the waste recyclers, which entails administrative proceedings that sometimes results in the refusal to consolidate an association since waste recyclers in many occasions lack identity documents or are illiterate. After they become an association they can join RENAREC, an organization that is constantly taking care of the interests of all waste recycling associations at the national level. It is important to mention that there is no need to pay any amount to be part of RENAREC.

Finally, some interviewees argue that even though only a few groups of waste recyclers have managed to organize and form associations, they have made the waste recycling sector visible, it has a strong identity that defends their work and promotes a more effective management of MSW. In addition, they pointed out that associativity rates are growing rapidly as well.

#### **5.1.4 Socio-economic challenges and inclusion of waste recyclers.**

When it comes to the socio-economic challenges, Guanoluisa states that RENAREC’s vision and objectives are threefold: 1) to achieve better prices per ton of recycled material, 2) to achieve greater recognition from the national and local governments, and 3) to have access to the social security. However, these goals have been partially fulfilled. She says that they still cannot access the social security due to the lack of mechanisms to include the waste recycling sector. Moreover paying the affiliation fee as an individual - which is 66USD per month (IESS, 2017) - is too

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<sup>23</sup> Geovanna Polo, Interview, 15 February 2017.

<sup>24</sup> Public institution that supervises and controls the organizations of the solidary and popular economy (SEPS, 2014).

expensive since what they earn is between 180 and 220 USD monthly. In Asociación Sonreír, Pulupa states that none of the members has been able to affiliate to the social security since their monthly income is around 160 USD. In addition, only 8% to 9% of the total population of waste recyclers that are associated have access to social security, whereas the remaining 91% still do not have access to any kind of social security<sup>25</sup>. An example is waste recyclers at CEGAMs in Quito. They have been able to affiliate to the social security since their income has reached the national minimum wage, yet, only 66 waste recyclers are beneficiaries of this program.

Regarding health and safety at work, waste recyclers still perform their activities in precarious conditions (see figure 5). Therefore, they are constantly exposed to work accidents such as cuts, respiratory problems, and physical problems due to excess of weight they have to carry. This is confirmed by the waste recyclers “[...] we suffer cuts in our hands every day [...]”<sup>26</sup>. On the other hand, Quito’s municipality has provided gloves, hats, working aprons, and identification cards to all registered waste recyclers so they can perform their work in a safe and dignified way. Nevertheless, a waste recycler states “[...] To be honest I cannot work with gloves [...], I have worked 40 years as a waste recycler and I have never worn gloves [...]”. Then, another waste recycler adds, “[...] it would be good if people would give us the material sorted already, so we do not have to open bags and put our hands in it [...]”<sup>27</sup>. Finally, Madera says that during his observations, he witnessed that waste recyclers usually work without protection or any health and safety measures.

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<sup>25</sup> Data provided by Felipe Toledo during the interview, 9 February 2017.

<sup>26</sup> Focus group interview with Asociación Sonreír members, 6 March 2017.

<sup>27</sup> Focus group interview with Asociación Sonreír members, 6 March 2017.



**Figure 5.** Photograph of Asociación Sonreír waste recyclers sorting recyclable material. Taken by the author.

Moreover, lack of waste separation at source is another issue that affects the socio-economic challenges of waste recyclers. This forces them to open trash bags and get their hands inside in order to retrieve recyclable material, which makes them prone to suffer accidents and delays since they have to work extended hours to sort the waste. Aware of this problem, ReciVeci focused its work on training the members of Asociación Sonreír so they can later educate the civil society regarding the environmental benefits of waste separation at household, as well as the benefits for the waste recyclers themselves. However, a waste recycler says that although they have trained the neighbors many times, only a few are separating waste properly. Furthermore, she adds “[...] if they would help us separating their waste, we could increase our income [...]”<sup>28</sup>. Lastly, interviewees agree that trust building and the creation of mechanisms to motivate the civil society is key in order to enhance the separation of waste at source.

Despite the Ecuadorian constitution, laws, and local ordinances prohibiting child labor. Yet, this remains a problem related to waste recycling activities. There are few municipal initiatives that provide support for waste recyclers’ children. On the other hand, Escobar from IEPS argues that there are the *Children’s Centers for the Good Living*<sup>29</sup> where waste recyclers can leave their children while they work. Lastly, regarding the installation of waste containers in the city, Knust from the QSE acknowledges that this initiative has led to increased child labor since waste

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<sup>28</sup> Focus group interview with Asociación Sonreír members, 6 March 2017.

<sup>29</sup> Places that shelter children between 0-36 months from families under poverty and vulnerable conditions (MIES, 2016).



containers are big, and waste recycling activities are usually performed by women or elder people who are forced to put their children in the containers to collect material.

Even after the creation of associations, there is a perception that some form of exploitation of labor towards waste recyclers is still present. There is no price list for recycled material, therefore, purchase agreements depend on the integrity and transparency of the company and the experience of the leader of the association, therefore, the prices that the private sector or the intermediaries pay for the material is usually low. Moreover, neither the recycling industry, nor the intermediaries, recognize the added value that waste recyclers give to the recycled material, which is given by the recovery, classifying, cleaning, and packing the material in order to sell it. In addition, even the agreements with the private sector are not exempt from exploitation of labor since these usually entail commitments to deliver recycled material within set deadlines and minimum quantities, which puts an additional burden on waste recyclers forcing them to work in extended hours.

#### **5.1.5 Technical waste management and the inclusion of waste recyclers.**

Containerization is one of the means to improve the performance of the SWM system in Quito. However, apart from the problems mentioned above, this approach result in a decrease of awareness among the civil society regarding management of waste. Separation of waste at source has decreased, people take out their waste at any time, which is leading to increased number of waste recyclers and conflicts among them since more than one is waiting next to the container all the time. In addition, in order to achieve the objective to include half of registered waste recyclers until 2015 into the SWM system, the municipality is planning to have nine CEGAMs, as well as the implementation of the *purchasing model*<sup>30</sup> that includes waste recyclers that work in the streets. Nevertheless, the purchasing model – which is still in trial phase - has been already contested since waste recyclers working under this model are still not reaching the minimum wage, nor being able to affiliate to the social security.

Nevertheless, the operation of CEGAMs entails expenses that are assumed by the municipality. At the same time, rates of recovered material are still low and in order to increase it, there have to be significant investments in vehicles for transport of waste, machinery, infrastructure, and

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<sup>30</sup> Interviewees from the municipality refers to this term as the mechanism in which waste recyclers from CEGAMs buy recyclable material from waste recyclers that work on the streets (those that do not belong to the CEGAM), recognizing the added value that they have given to the recyclable material and thus, paying a fairer price for it.

more. Therefore the municipality is spending more than it receives, which makes the current SWM system economically unsustainable. Moreover, although that the municipality is willing to assume this expense since this is an additional service for citizens and less waste is coming to the landfill for final disposal, it is crucial for the municipality to identify a more sustainable SWM system in economic terms.

## **5.2 Inclusion of waste recyclers as a pathway towards a sustainable SWM system**

Empirical evidence indicates that waste recyclers in Quito are recognized as a key piece in SWM system. For the State and the municipality, waste recyclers and their work have a direct impact on extending the lifespan of the landfill since less waste is getting to it. For the industry, waste recyclers are seen as a source of supply of secondary raw material, which is favoring the national objectives of changing the productive matrix. For the experts, waste recyclers are important in the endeavor of helping the industry to accomplish the principle of extended responsibility. Therefore, as stated by Rotmans and Loorbach (2009), RENAREC could be considered as an emerging niche deviated from the regime and capable of emerging as a new regime with the potential to drive Quito towards a more sustainable SWM system.

### ***5.2.1 Applying the lenses of Transition Management***

#### ***1) The strategy towards a sustainable SWM system***

From the data acquired in the field, it has been difficult to identify a group of frontrunners that fulfills the criteria indicated in the literature. Indeed, there is a group of stakeholders that is constantly pushing the process forward, however, this group is comprised of NGOs, representatives of the national and local government, experts, and waste recyclers, which means that they are participating on behalf of the institutions they represent. Although they meet most of the selection criteria for being frontrunners, they are putting forward the interests of the institutions they represent. Therefore, as stated by Loorbach (2010), this could hinder their ability to operate autonomously as individuals, hence halting the development of innovative initiatives.

Regarding the establishment of a transition arena, despite the fact that the stakeholders involved at the moment cannot be categorized as frontrunners due to the reasons explained above, it was definitely possible to identify a safe space where this group can operate and develop ideas. This safe space is given by the legal framework and the inter-institutional agreements that are attempting to include waste recyclers in the SWM system, as well as the willingness and support

expressed by authorities towards inclusive SWM. In addition, interviews allowed me to identify a joint perception of the problem, as well as a general attitude towards the initiative.

Regarding the creation of a vision and envisioning process itself, my findings indicate that the stakeholders that are aiming to include waste recyclers in the system are basically working according to the objectives and goals of the waste recyclers. However, taking into account that sustainable visions are usually aimed to be long-term (30 years), and their focus is to change the culture of a societal system for a new regime to emerge (Loorbach, 2010). It could be inferred that there is a lack of a long-term vision aiming to achieve a sustainable SWM system.

## ***2) The tactics for change.***

Quito's MP can be categorized as the transition agenda that will drive the city towards a more sustainable SWM since it has a defined vision and measurable objectives to keep track of the process of change. However, this document is contradictory in many regards. As explained above, containerization of the city and the construction of mechanized waste separation plants are actually excluding waste recyclers from the system, however, the MP contemplates the inclusion of half of them to the system until 2025. On the other hand, "Quito a Reciclar" program, which aim is to promote waste separation at source and include waste recyclers into the system could help the municipality to achieve a more sustainable SWM, nevertheless, the development of this program is just beginning to test its functionality with pilot projects.

## ***3) Identification of the innovative experiment***

ReciVeci joined in 2015 a group of waste recyclers that used to work in "La Carolina" neighborhood in Quito with the aim to explain them the benefits of becoming an association (ReciVeci, 2016). Therefore, after a few months of joint work, "La Carolina" waste recyclers decided to found in November 2015 Asociación Sonreír waste recyclers association, which is comprised of 10 members of whom all are women and belong to the same family. Later, in March 2016, the official kick-off of the joint project between ReciVeci and Asociación Sonreír took place in Quito. Since then, ReciVeci volunteers and Asociación Sonreír members have been working together for one year with focus in capacity building so waste recyclers can train the neighbors in terms of waste separation at source and thus, improve their working conditions and monthly incomes.

Therefore, Asociación Sonreír could be categorized as a transition experiment since their working conditions and monthly income has increased from the moment that they decided to organize

and form the association. Moreover, thanks to the joint work with ReciVeci, members of Asociación Sonreír have improved their self-esteem, and thus, lost the fear to work with the private sector and the municipality as it can be seen in figure 6. In addition, increased capabilities which are a result of capacity building have helped them to get closer to the civil society. This is particularly relevant since waste recyclers are training people regarding the importance of waste separation at source, which is beneficial for waste recyclers in the sense that they do not have to open trash bags to classify and retrieve recyclable material.



**Figure 6.** Asociación Sonreír waste recyclers with Mauricio Rodas, Quito's Mayor. (EMASEO, 2017)

#### ***4) Evaluating the transition towards a sustainable SWM system.***

Even though that in the pathway towards a more sustainable system there is no group that can be cataloged as frontrunners as such, the stakeholders that are part of the transition arena are making significant efforts to include waste recyclers into the system. However, I have not been able to identify any monitoring or evaluation process to their work yet. In the context of Quito, despite the fact that the MP has been introduced in the city in 2016, there is evidence in the city that indicates that investments in infrastructure and inclusion of waste recyclers for a sustainable SWM are being carried out (see figure 7). Finally, even though the innovative experiment is in its initial phase, interviews indicate that one of the most interesting outcomes of the interaction between waste recyclers and neighbors is the bond that is emerging from this connection. Empirical evidence points out that a closer relationship has the potential to enhance the separation of waste at household since the people is more aware of its importance, as well as to

strengthen the social capital in the city. However, waste recyclers in Asociación Sonreír argue that raising awareness among the civil society is a complicated thing to achieve.



**Figure 7.** Photograph of a waste container placed on the street. Taken by the author.

## 6 Discussion

### 6.1 Reflections on the SWM System

Even though governance structures and inter-institutional agreements seem to be strong and going towards an inclusive SWM, there are shortcomings that could hinder the achievement of a sustainable SWM system in Quito. For instance, political tensions between the government and Quito's municipality could result in a loss of system stability. Meadows and Wright (2009) state that the lack of stability lessens the capacity of the system to be resilient since there is a rupture of the feedback mechanisms that balance the structures, making it prone to break down. Additionally, political tensions affect the hierarchical order of the system, making it less efficient and susceptible to deviate the attention from its aim as they get entangled in a power struggle (Meadows & Wright, 2009). Furthermore, collaborative governance has been recognized as a necessary tool in the pathway towards a sustainable SWM (Loorbach, 2010; Oguntoyinbo, 2012). Therefore, cooperation amongst stakeholders is key to achieve sustainable outcomes.

Regarding associativity and self-organization, the foundation of RENAREC certainly constitutes a milestone in the pursuit of a sustainable SWM. This has allowed the waste recycling sector to gain recognition and visibility, not only to the public and private sector but also to the civil society. Moreover, the establishment of a federation allowed waste recyclers to have the power to take part in decision-making processes at national and local level. Even policy-makers identify RENAREC as the cornerstone towards an inclusive SWM as they supervise the development of policies that recognize their work, as well as the mechanisms to dignify it. Moreover, associativity has led to decreased exploitation of labor since having a legal status allows them to negotiate directly with the private sector without the need for intermediaries, and thus, better prices for recyclable material. Therefore, it is considered as a general rule that more and better organized waste recyclers mean less vulnerability for this group of society (Wilson et al., 2006)

In addition, lack of compliance with the inter-institutional cooperation agreements obey partially to the pitfalls in the system, and partially to the lack of education of waste recyclers. Regarding the former, the fact of not belonging to the craft sector diminishes waste recyclers willingness to form associations as this implies economic expenditures and investment in working hours, thus, hindering their possibilities to pay the affiliation value to the social security. Regarding the latter, lack of education prevents waste recyclers from managing money in a better way such as

through investments in basic machinery to technify their work, making it difficult to BAN Ecuador to grant loans due to the lack of guarantees for its payback. To overcome these pitfalls, development of specific legislation is needed, the same that should include aspects like capacity-building, market regulations, working conditions, guidelines for associativity, etc. As stated by Velis et al. (2012), the establishment of crosscutting national laws is key since they facilitate local action at the urban level. Therefore, the creation of a specific umbrella law could lead municipalities to establish inclusive plans for the management of MSW, as well as increased willingness amongst waste recyclers to associate, relevant aspect considering the low associativity rates in the country.

As pointed out before, QMP seems to be to some extent contradictory. Empirical evidence indicates that there is a perception that technological measures to improve the SWM system in the city end up excluding waste recyclers from it, as well as exacerbating their socio-economic issues. This implies that it is likely that Objective 5 will not be met in 2025. At the same time, installation of containers in the city, instead of encouraging waste separation at source is leading to less awareness among citizens regarding waste disposal, which in the end diminishes the likelihood to achieve a circular economy as stated in QMP. In addition, Sembiring and Nitivattananon (2010) argue that technological measures could limit the contribution of the informal sector, which makes important to identify mechanisms where both approaches together form a synergy that serves the ultimate goal which is to achieve a sustainable SWM system.

Despite that the municipality is planning to construct five more CEGAMs to increase the recovery rates of recyclable material and include more waste recyclers into the system, fieldwork data reveals that there is limited capacity to include them due to space constraints. Moreover, operational costs of CEGAMs are high, factor that endangers the economic sustainability of the system. On the other hand, although the purchasing model has the potential to include a larger quantity of waste recyclers into Quito's SWM, and thus, meet the goal established in Objective 5, empirical data reveals that waste recyclers working under this mode are still not achieving the minimum wage, nor better working conditions. Therefore, it is important for policy-makers to acknowledge that inclusion of waste recyclers into the SWM system goes beyond giving them an identification card and working clothes. It implies providing them with the mechanisms to improve their living conditions in every sense (Wilson et al., 2006). Hence, Objective 5 in QMP should provide with basic criteria that describe a SWM system as inclusive. Some aspects to take

into account could be minimum wage for the sector, working conditions, rules, and penalties, etc. as those stated in the UN New Urban Agenda.

Regarding quantities of recyclable material, interviewees' opinions indicate that even with the improvement of the conditions in which waste recyclers work, rates of recovered material are still low. Therefore, in order to achieve higher collection rates, technological innovations at both the municipal level as well as at waste recyclers' level are needed (Gutberlet, 2015). However, several limitations such as investment costs or waste recyclers capabilities, hinder the ability to achieve bigger quantities of collected material.

## **6.2 Evaluating the alternatives – The leverage points**

### **6.2.1 *Education and capacity building.***

From the CLD presented above (see page 21), education and capacity building represent a leverage point that constitutes the entry point in the pathway towards a sustainable SWM in Quito. Therefore, it should not be understood as an intervention strategy directed only towards waste recyclers, conversely, it should be directed towards all the stakeholders within the system in order to achieve meaningful results. Bearing in mind that waste recycling in Quito is performed mainly on the streets, experts consider that this could lead to a closer relationship between neighbors and waste recyclers and the creation of a bond between them. Hence, resulting in increased collection rates of recyclable material, higher awareness about the importance of less waste generation, and higher rates of waste separation at source. This ends up increasing their monthly income and being more efficient since they spend fewer hours collecting and classifying material. However, to achieve these outcomes, waste recyclers need to strengthen their capabilities before training civil society. Finally, increased associativity rates is a side-effect of stronger capabilities.

For authorities and policy-makers, enhanced capabilities could lead to the development of better governance and regulations that take into account the needs to improve the efficiency of the SWM, but also acknowledges the importance of waste recyclers for the system. For the private sector, awareness regarding the added value that waste recyclers put to the recyclable material could lead to a greater recognition of the prices for recyclable material. Therefore, Marshall and Farahbakhsh (2013) consider that capacity building and institutional consolidation constitutes a major driver for the good management of MSW.



### **6.2.2 Market prices**

As stated by Anne Scheinberg et al. (2016), prices that the recycling industry pays for the material are less than fair. Therefore, market regulations are essential in order to achieve fairer prices for recyclable material. The recycling industry should take into account the added value that waste recyclers give to the material since they classify, wash, and pack it to sell. In addition, the creation of a list of prices could help the development of cooperation agreements between the waste recycling industry and waste recyclers in a more transparent, legitimate, and fair way. Hence, recognition of better prices for recyclable material can increase significantly the monthly income of waste recyclers, which would allow them to improve their living conditions, have access to the social security, invest in technology to improve their work, etc.

### **6.2.3 Waste separation at source**

The lack of waste separation at source constitutes in my opinion, the driver of an unsustainable SWM system in Quito. Technological innovations have managed to increase the cleanliness and order of the city, as well as a better controlled landfill, however, large quantities of unseparated waste are still arriving at the landfill, hence, reducing its lifespan rapidly. In addition, municipal efforts to achieve higher rates of waste separation at household have not been successful, and the budget for promoting waste separation at source is considered to be too high for the municipality. Therefore, actions tailored to intervene this leverage point are critical in the pathway to achieving a sustainable SWM system. In this sense, I see that waste recyclers could be considered as the agents capable of generating a recycling culture in the society.

#### ***Waste recyclers as seeds of change towards a sustainable SWM system.***

As learnt previously, waste recyclers inclusion into the system can be considered as a transition initiative capable of eroding the regime, however, there are gaps that need to be taken into account in order to manage the initiative as a transition.

Firstly, there is a need to establish an overarching vision that provides the pathway towards a sustainable SWM in the long run. This vision should touch upon the three pillars of sustainability and engage all the stakeholders within the system (Loorbach, 2010). Secondly, trade-offs identified in QMP need to be acknowledged by authorities and policy-makers in order to work on the weaknesses, enhance the strengths and find synergies that allow the municipality to achieve a sustainable SWM. In addition, higher levels of commitment among stakeholders are required (Frantzeskaki et al., 2012), not only with the aim to improve the performance of the

management of MSW but to include waste recyclers in a dignified way, the same that allows them to achieve better living conditions and thrive. Thirdly, regarding the innovative experiment, even though Asociación Sonreír has been recognized as a role model association of waste recyclers, it should be acknowledged that part of its success lies in the way they are organized and the input and training received from ReciVeci. Therefore, it is not possible to generalize results as this case is context specific. Recognition of the societal sphere when aiming for sustainability is crucial to assess the likelihood of an experiment to erode the regime (Frantzeskaki et al., 2012). Fourthly, taking into the account that waste recyclers have the potential to raise awareness regarding the importance of less waste generation and waste separation at source, they can, in fact, be considered as seeds of change emerging from the bottom-up towards a more sustainable SWM system (Loorbach, 2010; Rotmans & Loorbach, 2009). Nevertheless, constant monitoring processes are required to evaluate the progress of a transition initiative (Loorbach, 2010).

## 7 Conclusion

The SWM strategy in Ecuador has recognized waste recyclers as a key element in the integral management of MSW. This has been reflected in the development of a policy framework and inter-institutional agreements that are aiming to include waste recyclers into the system. Despite the fact that waste recyclers associations are still few, the momentum given by the strengthening of waste governance is leading to increased number of waste recyclers associations. On the other hand, the characterization of the SWM system allowed me to unveil some shortcomings as well as leverage points that need to be considered in order to achieve a sustainable SWM. Tailored to the national strategy, QMP is also seeking to include waste recyclers in the management of MSW, nevertheless, space constraints for waste disposal, as well as the need to have cleanliness in the city led the municipality to establish technological measures to increase the performance of the SWM system. Contrary to what was expected, these measures are exacerbating the socio-economic challenges associated with the waste recycling sector, as well as decreased willingness among the society to separate waste at source. Therefore, taking into account the national and local attitude towards an inclusive SWM, the application of the transition management framework allowed me to identify whether waste recyclers can be considered as a driver towards a more sustainable SWM system. My findings indicate that indeed waste recyclers can be considered as a seed of change towards since they have the potential to tackle the main driver of an unsustainable SWM system which is the lack of waste separation at household. Nevertheless, it is important to point out that significant investments at national and local levels are required, the same that should be directed to capacity-building, education, infrastructure, technology, and social welfare. Furthermore, constant monitoring, acknowledgement of context specific particularities it is necessary in order to steer the emerging regime towards the desired outcomes. In addition, although waste recyclers can be considered as seeds of change, it is likely that when a sustainable SWM system is achieved, waste recycling activities as they are known nowadays may not exist in the future. Higher rates of waste separation at source, increased economic incomes, better living conditions, better capabilities, and stronger governance structures may lead waste recyclers to migrate from streets and manual work, to a more technified form of work within the recycling industry, however, this should be assessed in future research projects.

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## Appendices

### Appendix I: List of Interviewees

Name	Institution/Role	Position/Project	Date	Duration
Felipe Toledo	Avina Foundation	Program Manager	9 February 2017	58'48''
Geovanna Polo	EMASEO	Environmental and Recycling Leader	15 February 2017	49'27''
Thorben Knust	Quito's Secretary of the Environment	Waste Management Advisor	16 February 2017	1h02'45''
Roberto Madera	Researcher	Citizen Participation Process and Inclusive SWM in Cotacachi, Ecuador	20 February 2017	28'48''
Juan Carlos Parra	MIPRO	Vice Minister	22 February 2017	26'19''
Alexis Valencia	MIPRO	Under Secretary of Intermediate and Final Industries	22 February 2017	26'19''
Walter García	MAE	Minister	23 February 2017	33'29''
Paula Guerra	ReciVeci; Inter-American Development Bank	Volunteer; Independent Consultant	24 February 2017	48'48''
Paulina Escobar	IEPS	Stakeholders Empowerment Analyst	2 March 2017	30'04''
Jimmy Miranda	IEPS	Stakeholders Empowerment Director	2 March 2017	30'04''
Blanca Pulupa	Asociación Sonreír	President	6 March 2017	34'22''
Claudia Andrade	ReciVeci	Volunteer	7 March 2017	27'43''
Laura Guanoluisa	RENAREC	President	8 March 2017	13'31''

## **Appendix II: Interview protocol and semi-structured questions**

### **Interview protocol**

Good morning/afternoon, my name is Fernando Granizo, and I am a master student at Lund University in Sweden currently performing my thesis about the SWM in the country and the inclusion of waste recyclers to the system. The main objective of this research project is to know to what extent the institutional framework is actually including and favoring waste recyclers, and on the other hand, to what extent are the waste recyclers favoring the objectives of SWM at national and local level (Quito).

This interview aims to know your opinion regarding the current state of waste recyclers towards and inclusive SWM, your expectations at short and mid-term, and the waste recyclers' relevance for the society and the environment, as well as their difficulties to achieve better working conditions.

Before proceeding with the interview, it is necessary to make you know that this interview will be recorded. Additionally, your consent to use your opinions in this research process is also needed. Do you agree with your opinions being totally or partially reproduced in this academic document? Yes / No

Name, Position, and Institution you belong to:




General leading questions.

1. The institution you represent. Has it been working on inclusive SWM? If so, please tell me briefly, what are the actions in which you have been working on.
2. How does your institution see waste recyclers and their situation?
3. Do you know the legal framework affecting waste recyclers?
4. What is the relevance of waste recyclers under your perspective?
5. Is waste recycling a formal activity in the country/city?
6. Is the local legal framework tailored to the national legislation?
7. Do you think that waste recyclers know the SWM legal framework and how it affects them?

8. Do you believe that waste recyclers situation has improved comparing to the past?
9. Which things do you think can be improved?
10. Which factors are preventing waste recyclers work to be recognized by government institutions and the civil society in general?

**\*Note:** Both, the interview protocol and the questions have been translated from its original version in Spanish. All interviews were held in Spanish.

**Appendix III: List of attendants to the focus group interview**

Lund University	
Tesis de Maestría: Environmental Studies and Sustainability Science	
Registro de Asistencia	
Taller de Visión "Asociación Sonreír"	
Nombre: Fernando Granizo Murgueytio	Fecha: 6 de Marzo del 2017
Nombre y Apellido	Firma
Blanca Pedraza	
Aracelis Amaluisa	
Glady Pedraza	
Vanessa Pedraza	