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Thesis

Title: Inter-municipal cooperation within the solid waste management network in Cuenca-Azogues Emerging Metropolitan Region.

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Summary

Municipalities are becoming spatially, socially and economically interdependent with their neighboring territories, leading to the emergence of metropolitan regions. The "metropolitanization" of a territory adds complexity to the social, institutional, and inter-organizational dynamics because it increases the interdependence among different stakeholders from more than one municipality. To deal with this new scenario, a different degree of collaboration among stakeholders might be necessary. Scholars have studied inter-municipal cooperation (IMC) in North American, European and Latin American contexts as a mechanism to increase economies of scale, improve service delivery and promote regional coordination and economic development. However, most studies have focused on consolidated metropolitan regions with populations of over 5 million inhabitants while intermediate cities and emerging metropolitan regions with fewer inhabitants have received little attention. Studying IMC in emerging metropolitan regions helps to explain how stakeholders interact within existing network arenas, such as the solid waste management sector, and how particular factors influence their cooperation arrangements and outcomes before the complexity of the territory demands urgent yet suboptimal solutions.

While cities face a plethora of urban challenges such as pollution and climate change, the agglomeration of people, institutions and ideas also increases opportunities for cooperation and innovation in urban management. Highly densified cities often have greater chances of achieving economies of scale, which are factors that reduce the average cost of providing urban services such as waste management. For this reason, municipalities managing highly populated cities might be able to collect enough resources to provide services on their own and be financially sustainable. However, in the particular case of small and intermediate cities, which in general terms are not the main center of urbanization and investment within a country, the agglomeration factor might not be as sufficient for having economies of scale that would allow them to deliver complex services efficiently. Inter-municipal cooperation is a public administration solution that has helped small and intermediate cities achieve economies of scale and better results in service delivery.

Further, there are multiple forms of IMC and not necessarily all types of arrangements might result in similar outcomes. This brings opportunities for academic research to contribute to public policy at the inter-municipal level through a careful analysis of the factors that lead to successful IMC levels. Understanding the factors that lead to different IMC levels helps to explain why some municipalities choose to cooperate in particular ways and not in others. Analyzing to what extent these differences result in better or worse outcomes could help create policy on promoting the factors that lead to favorable IMC arrangements and avoid the factors that prevent their success.

This thesis contributes to expanding the knowledge on this research field through an embedded case study in the emerging metropolitan region of Cuenca-Azogues (CA-EMR) in Ecuador. While most literature on IMC indicate economic and demographic characteristics of stakeholders as factors of IMC, this research indicates that leadership, network management and common ground play a stronger role on IMC levels. Furthermore, comparing sub-cases, findings indicate that higher IMC levels lead to better content outcomes from the Integrative Sustainable Waste Management perspective.

Keywords

Inter-Municipal Cooperation, Emerging Metropolitan Regions, Intermediate Cities, Solid Waste Management, Leadership, Common Ground, Network Outcomes, Cuenca-Azogues, Ecuador.

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Abbreviations

AME	Asociación de Municipalidades del Ecuador / Association of Municipalities of Ecuador
CA-EMR	Cuenca-Azogues Emerging Metropolitan Region
COOTAD	Código Orgánico de Organización Territorial, Autonomía y Descentralización / Organic Code of Territorial Organization, Autonomy and Descentralization
EMR	Emerging Metropolitan Region
EU	European Union
GAD	Gobiernos Autónomos Descentralizados (GADs)
IHS	Institute for Housing and Urban Development
IMC	Inter-Municipal Cooperation
ISWM	Integrated Sustainable Waste Management
LAC	Latin America and the Caribbean
MAE	Ministry of the Environment
NGT	Network Governance Theory
PNGIDS	Programa Nacional de Gestión de Desechos Sólidos/ National Programme of Integral Solid Waste Management
SWM	Solid Waste Management
TULSMA	Texto Único de Legislación Ambiental / Single Text of Environmental Legislation

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CHAPTER 1: INTRODUCTION

1.1.Background and Problem Statement

While cities face a plethora of urban challenges such as waste, pollution and climate change, the agglomeration of people, institutions and ideas also increases opportunities for cooperation and innovation in urban management. Highly densified cities often have greater chances of achieving economies of scale, which are factors that reduce the average cost of providing urban services such as waste management. For this reason, municipalities managing highly populated cities might be able to collect enough resources to provide services on their own and be sustainable. However, in the particular case of small and intermediate cities, which in general terms are not the main center of urbanization and investment within a country, the agglomeration factor might not be as sufficient for having economies of scale that would allow them to deliver complex services efficiently. In response to this, inter-municipal cooperation (IMC) is a public administration solution that has helped small and intermediate cities achieve economies of scale and better results in service delivery. This thesis focuses on expanding the knowledge on IMC in small and intermediate cities belonging to an emerging metropolitan region.

There is a significant body of literature on cooperation between neighboring municipalities, and it is widely accepted that cities can benefit through inter-municipal cooperation (Olsson and Cars, 2011, Lintz, 2016). For instance, Olsson and Cars discuss the challenges of inter-municipal cooperation for polycentric development in Stockholm metropolitan region and suggest that institutions for inter-municipal cooperation may contribute to building social capital which in the long term might improve regional spatial planning. Similarly, much research has been done on environmental policymaking and planning at the municipal level on topics such as how multilevel governance improves climate change policy implementation (Betsill and Bulkeley, 2007). Moreover, useful work has been done on how IMC in waste management between small municipalities helps reduce costs (e.g. Bel and Mur, 2009). However, cooperation between neighboring municipalities in the environmental field does not yet seem to have been systematically investigated even though cooperation is more likely to be relevant for cities within the same province or region (Lintz, 2016). Further, few studies (Vázquez, 2013, Maturana, Sposito, et al., 2017) have been conducted on the topic in small and intermediate cities, although in the Latin American and Caribbean (LAC) region some authors (Nickson, 2016, Helmsing, 2001) have started to pay attention to IMC and regional development. This work aims to add to that growing body of knowledge.

For municipalities, a process of improving performance often starts with being aware of their own weaknesses and strengths. A second step is to understand how other actors both within and outside a given municipality can contribute to minimize their weaknesses and benefit from their strengths. Finally, a successful process where stakeholders from municipality A and stakeholders from municipality B exchange knowledge, tools and resources should allow mutual benefits for all parties. These three steps constitute what inter-municipal cooperation IMC should be all about and it can involve more than two municipalities (Agranoff and McGuire, 2004). However, being aware of one's own limits and of the potential benefits other actors can add to the municipalities' own development agenda is not part of a systematic process of analysis within local governments.

In addition, there are multiple forms of IMC and not necessarily all types of arrangements might result in similar outcomes. This brings opportunities for academic research to contribute to public policy at the inter-municipal level through a careful analysis of the factors that lead to successful(United Nations, 2015) IMC arrangements. Understanding the

factors that lead to different IMC arrangements could help us explain why some municipalities choose to cooperate in particular ways and not in others. Analyzing to what extent these differences result in better or worse outcomes could help create policy on promoting the factors that lead to favorable IMC arrangements and avoid the factors that prevent their success.

Successful IMC arrangements can be defined in different ways according to the particular sector under analysis. While IMC has traditionally been studied as a mechanism to improve economies of scale, it is important to avoid focusing exclusively on financial terms. Rather, IMC success should be analyzed through the economic, social and environmental pillars that encompass the sustainability approach which is the common language of the current global agenda (United Nations, 2015). For the solid waste management sector, authors have proposed the Integrated Sustainable Waste Management (ISWM) framework as a way to adapt the sector needs to sustainability standards (Schübeler, Christen, et al., 1996, Wilson, Velis, et al., , 2013). This thesis explains the ISWM framework as a general guide for assessing integrated outcomes in the SWM sector. However, since ISWM is a complex concept and often involving multiple variables, a proxy variable such as the implementation of ISWM local policies is used as a way of measurement within the scope of this thesis.

Furthermore, researching IMC in small and intermediate cities is a relevant response to existing urbanization trends. Urbanization is concentrated in urban settlements with less than 0.5 million inhabitants. The proportion of the world's urban dwellers residing in settlements of this size is close to one in two, while only around one in eight live in mega-cities with more than 10 million inhabitants (United Nations, 2015).

Current trends also show that almost in every country there is at least one region where cities expand so rapidly that the territorial dynamics are embedded across more than one municipal administration. As cities expand and new urbanization occurs, the phenomenon of secondary city cluster appears (Roberts, 2014). This leads to the emergence of new metropolitan regions which increases the opportunities for cooperation. Emerging Metropolitan Regions (EMR), as this research defines, are municipalities in transition to become integrated with other municipalities into a larger region for purposes such as common service delivery. They present an opportunity to early adopt inter-municipal cooperation as a mechanism to generate economies of scale, reduce externality costs and generate innovative regional solutions, such as ISWM, to urban challenges.

LAC has a long-tradition of community organization and there have been some experiences of inter-municipal cooperation through association of municipalities known as *mancomunidades* and other metropolitan associations (Spink, 2005, Finot, 2003). Within the LAC region, Ecuador has made developments favorable to IMC in the solid waste management sector. In the past 10 years, Ecuador has led a process of political reforms, which included a new national constitution in 2008 which put environmental and urban issues at the center of the policy debates (Código Orgánico De Organización Territorial, Autonomía Y Descentralización (COOTAD) , 2011).

This new constitution led to the development and adjustment of two key documents. First, the review of the Single Text of Environmental Legislation / *Texto Único de Legislación Ambiental (TULSMA)*, which now establishes ISWM as a national priority of public interest (Government of Ecuador, 2012). This document also establishes in its chapter VI, article 57 that municipalities should "get rid of all open-air dumps" following all technical procedures in a period established by the environmental authority (pg. 179, TULSMA, 2012). The second document is the Organic Code of Territorial Organization/ *Código Orgánico de Organización Territorial* (COOTAD, 2010) which provides a legal ground for different IMC

arrangements. This context offers the municipalities both the incentive to cooperate (getting rid of open-air dumps and transition to a more integrated solid waste management) and the mechanism through which they could improve efficiency in the SWM sector.

After a careful analysis, this thesis identifies Cuenca and Azogues, two regional capitals, as two intermediate cities that form an emerging metropolitan region in association with other smaller municipalities within the provinces of Azuay and Cañar. The region fits the characteristic of studying intermediate and small cities because of their population size (around 0.5 million) and their role as provincial capitals in the system of Ecuadorian cities. Also, the region has recently experienced different IMC arrangements that allows a comparison between sub-cases, which leads to a better understanding of the factors that explain the differences in the types of IMC. Furthermore, the national policy of "getting rid of open-air dumps" provides a proxy variable to assess what IMC levels in the region explain differences in the outcomes of policy implementation.

Following a recently proposed framework for analyzing inter-municipal cooperation within the environmental sector (Lintz, 2016), a widely accepted collaborative governance framework (Ansell and Gash, 2007) and one of the most cited methodologies on network outcomes (Klijn, Steijn, et al., 2010), this thesis proposes a combined theoretical framework to measure (a) factors that lead to different IMC arrangements, (b) IMC processes and (c) ISWM outcomes (these will later be explained in chapter II). Each of the authors mentioned provide sufficient theoretical and methodological substance to build a tailor-made framework for the purposes of this thesis. Furthermore, through an embedded case study in the emerging metropolitan region of Cuenca-Azogues (CA-EMR) in Ecuador, the results of this thesis will contribute to expanding the knowledge on IMC and adding to the literature beyond that of North American and European contexts.

1.2. Research objective

The objective of this thesis is twofold. First, it focuses on identifying and explaining the factors leading to the current IMC levels. Secondly, it aims to provide an explanation on which IMC levels lead to different outcomes from the perspective of ISWM. The objective is presented below:

Objective: *Identify and explain the factors leading to the current inter-municipal cooperation levels of the solid waste management network in Cuenca-Azogues Emerging Metropolitan Region and which Inter-Municipal Cooperation levels enhanced Integrated Sustainable Waste Management*

The thesis achieves its objective through a process of answering a main research question and sub-questions.

1.3. Provisional research question(s)

In order to guide the research, this thesis follows a main research question and four sub-questions that are aligned with it. The following table shows the provisional research questions.

Table 1: Provisional research questions. Source: author.

Main research question:	Which factors explain the current inter-municipal cooperation levels within the solid waste management network in Cuenca-Azogues Emerging Metropolitan Region and how differences in these levels enhanced Integrated

	Sustainable Waste Management?
SQ1:	Which are the factors that explain inter-municipal cooperation according to literature?
SQ2:	What are the current levels of IMC within the solid waste management network in Cuenca-Azogues Emerging Metropolitan Region?
SQ3:	Which factors from literature explain the current levels of IMC within the solid waste management network in CA-EMR?
SQ4:	What level of IMC led to the implementation of ISWM policy in CA-EMR?

Answering the main research question comes as result of answering the four sub-questions. The thesis answers the first sub-question in chapter 2 by providing a state-of-the-art literature review of factors that explain IMC in other studies. The main variables and indicators presented in chapter 3 are the basis for answering the next questions. The researcher answers the second sub-question in chapter 4 by providing an explanation of the current levels of IMC and the corresponding sub-cases. Chapter 4 continues by answering the remaining questions. The answer to the third sub-question results from a careful analysis of qualitative data to identify the most relevant factors of IMC used in other contexts that also apply to CA-EMR. For sub-question 4, the researcher answers through an assessment on how different IMC sub-cases managed to implement ISWM policy using "get rid of open-dumps" as a proxy variable and content outcome indicators. Finally, in chapter 5 the thesis answers the main research question through a logical qualitative analysis showing connections between the independent, intermediary and dependent variables.

1.3.1. Significance of the study

This thesis is significant both for the academic and policy fields. The academic significance, as previously indicated, comes from adapting three theoretical and methodological approaches into a tailor-made theoretical framework. While Lintz's framework (2016) for analyzing inter-municipal cooperation within the environmental sector provides a solid theoretical ground, the empirical application of it is rather new. Similarly, while Ansell and Gash (2007) provide a widely accepted collaborative governance framework to study the processes of IMC arrangements, which is the result of a meta-analytical study of 137 cases of collaborative governance, it does not provide a clear methodology to measure outcomes of collaborative governance. Therefore, given the academic relevance of the work of Klijn, Steijn et al. (2010) on network outcomes, this thesis includes key elements of their methodology while also providing new empirical evidence on the topic beyond European and North American contexts.

While these three academic references guide the theoretical framework, there are specific variables that come from other sources included in this research. For instance, leadership, network management, common ground, and stakeholders' characteristics have been studied as factors that improve governance arrangements but few studies attempted to empirically analyze which of these factors have a higher influence on particular IMC arrangements within the SWM sector. This thesis contributes to that missing part in literature.

In terms of policy relevance, the study provides insights on how to improve IMC in CA-EMR and serves as a guide for urban projects and metropolitan governance arrangements in regions with similar characteristics in Ecuador and beyond.

1.3.2. Scope and limitations

This thesis bases the analysis on an embedded single case qualitative study of CA-EMR considering Azuay and Cañar provinces as two sub-cases within the region. The researcher conducted semi-structured interviews to stakeholders from CA-EMR and reviewed documentation relevant to inter-municipal cooperation. The thesis provides depth on the CA-EMR due to the extensive qualitative information collected, but generalizations of the findings are limited because the theoretical framework was tailor-made to the particular context of the region studied. Further studies in other regions and applying a similar theoretical framework and methodology while controlling certain variables could improve the external validity.

Due to time constraints, the fieldwork and data analysis is limited to one month each following the Master´s on Urban Management and Development schedules and procedures. Therefore, the researcher only conducted interviews within CA-EMR from July 1st to July 24th, 2018. Stakeholders who were not present in CA-EMR at the time of the fieldwork did not participate which might had an effect on excluding some relevant stakeholders. The time constraint also limited the research to two sub-cases (Cañar and Azuay) while further research could explore in more depth different IMC arrangements in the region and consider each arrangement as a sub-case in itself.

1.3.3. Organization of the chapters

Following the introduction, the next chapter summarizes the state-of-the-art research on IMC, outlines potential leading factors derived from earlier scholarship and present a tailor-made theoretical framework. Later, chapter 3 describes the research strategy and methodology. Chapter 4 details the results of the empirical study and discusses the data gathered. The final chapter, Chapter 5, concludes the work by providing answers the research questions, highlighting the relevance of the findings, and laying down the opportunities for improving IMC levels and ISWM outcomes.

CHAPTER 2: LITERATURE REVIEW / THEORY

This chapter focuses on reviewing the main theories related to emerging metropolitan regions, inter-municipal cooperation, solid waste management and leading factors of IMC. After interconnecting the main ideas, the researcher introduces a conceptual framework that serves as the basis for the operationalization of variables in chapter 3.

State of the art of the theories/concepts of the study

In order to follow a logical sequence of analysis of the main literature related to the thesis topic, the researcher follows six steps. First, he focuses on the phenomena of EMR. This provides a synthesis of the main theories related to intermediate cities, metropolitanization and the challenges and opportunities that EMR face and why IMC is relevant within this context. Second, the researcher discusses the main theories that help conceptualize and operationalize IMC. Third, he explains which are the main factors leading to IMC. Fourth, he discusses theories and best practices regarding efficient SWM and explains the concept of ISWM and how it could help assessing SWM impacts from an integrative perspective. Fifth, he explains network outcomes theory is a complementing tool of the ISWM framework to better measure both processes and outcomes. Finally, he summarizes the interconnections amongst different sources, selects the most relevant literature and presents the theoretical framework.

2.1. Emerging metropolitan regions (EMR) and intermediary cities

The Cambridge Dictionary defines the word emerging as “starting to exist.” Metropolitan Region refers to concentration of urbanized areas with high levels of population, urban function and landscapes (Fang and Yu, 2017). Thus, an EMR is a geographical area that is beginning to concentrate smaller urbanized areas such as municipalities. In connection with the topic of this thesis, the researcher refers to EMR as municipalities in transition, which are beginning to integrate spatially and functionally with other municipalities into a larger region.

There is no universal definition of what a metropolitan area or region is. However, some authors argued working definitions that provide a general framework. In a recent publication, Gomez-Alvarez et al, (2017) argue that in the same way that academic definitions vary from author to author, the size, shape and other characteristics of metropolitan areas differ based on the particular context of the territory. The same authors argue that what matters is the phenomena of metropolitanization where the functions and physical extensions of cities transcend their own political boundaries. In consequence, various administrative units (municipalities, districts, etc.) collide into a greater physical extension that requires new mechanisms to collaborate and provide integral solutions. A clear example is the transportation system that, as cities and commuters increase, new coordination mechanisms are required to provide fair and efficient transport services.

According to current urbanization trends, the phenomenon of EMR will mainly occur in intermediary or secondary cities (United Nations, 2015). While there is no universal agreement on the concept of intermediary cities, a recent publication (Roberts, 2014) provides a clear summary on the main ideas within this concept. This author argues that cities are replacing nation-states as the main drivers of trade and investment. For this reason, it is important to focus on systems of cities rather than systems of nations for public policy purposes such as decentralization, budget allocation and international cooperation. Within this approach, categorizing cities based on their functions, roles and relevance is a first step.

A first categorization Roberts (2014) discusses is the size of secondary cities. While new trends and technology are making it more diffuse to draw a clear line between size of primary and secondary cities, most authors provide a range that goes from 100,000 to 1 million inhabitants (ibid). The assumption here is that cities below the range would be too small to play a significant role in a system of cities and that a city bigger than the range would most likely be the capital of a country or be too complex to not be called a primary city.

In terms of spatial and economic typology, authors (see Roberts, 2014 and Song, 2013) categorize secondary cities in (a) subnational (b) metropolitan and (c) corridors of secondary cities.

Subnational secondary cities are the most common type, generally with a population of over 200,000 inhabitants and serving as provincial capitals, manufacturing and transport hubs or natural resource industry centers (Roberts, 2014). Their development is generally associated with a colonial history or culturally bounded. Examples include cities such as Belo Horizonte (Brazil), Kumasi (Ghana), Vancouver (Canada) and Basel (Switzerland). Authors such as Steel (2013) recognize world heritage tourists centers such as Cusco, Peru as intermediate or secondary cities which is similar to the characteristics of Cuenca as a UNESCO world heritage center.

Metropolitan secondary cities develop as a given core city grows and the land prices push industries and investments to relocate or expand to the outskirts. New secondary cities form as part of this economic and spatial situation eventually forming a metropolitan region of secondary cities. Recent studies (see Rodriguez-Vignoli and Rowe, 2018) also indicate developments of metropolitan secondary cities based on migration reasons. One example is the temporary refugee camps such as Daadab (Kenya) that eventually became a region of secondary cities. In the LAC context, rural-urban internal migration and temporary informal settlement in the periphery of cities is another example such as the case of Ciudad del Este, Paraguay (Vázquez, 2013).

Corridor secondary cities, the third classification, refers to a cluster of cities along a trade or transport corridor (Song, 2013). Research of cities along economic corridors in Asia that share common characteristics of secondary cities shows the potential for improving the sustainability of waste management and other commercial, social and environmental uses towards sustainable development of regions and across nations. Understanding the dynamics of these corridors is extremely relevant for cities that in isolation might not be playing a national role but when understood from this perspective new investment and governance solutions could improve their relevance.

Many authors (Geddes, 1915; Gottmann, 1957; Wang, 2002; Fang and Yu, 2017) have investigated the development of urban agglomerations. Wang (2002) suggested that the development of urban morphology follows steps from individual cities to metropolitan areas, urban clusters, urban agglomerations and greater metropolitan areas. To explain this process, Wang coined the term “metropolitanization”. Fang and Yu (2017) argue that the current forces of economic globalization and the information era follow a spatiotemporal path that goes from city to metropolitan area, metropolitan area belts, large metropolitan belts and megalopolis. This thesis focuses only on the first step from cities (Cuenca and Azogues) to metropolitan area or region (CA-EMR). However, rather than describing the process, it focuses on how the emergence of a metropolitan area brings both challenges and opportunities for inter-municipal cooperation.

The concept of emerging metropolitan region used in this research paper refers to cities whose urban dynamics are beginning to extend beyond the existing political and

administrative units (mainly municipalities) but have not yet created formal inter-municipal or metropolitan governance structures at a regional level. Focusing on emerging metropolitan cities is relevant for both academic and policy purposes. From the academic standpoint, understanding the dynamics of cities before they become metropolitan is a field yet to be explored and especially in LAC region where few studies exist on the matter. Adding new empirical findings provides new insights to fields such as network governance and inter-municipal cooperation. From a policy perspective, the study identifies and explains the challenges and opportunities to improve IMC, which governments and relevant stakeholders can use to adjust their policies before the complexity of the territory grows to a level where there is little room for testing innovations.

2.2. Inter-Municipal Cooperation

This section defines Inter-Municipal Cooperation (IMC) and provides a synthesis of the state-of-the-art theories on the topic. The main overall theory that guides the analysis is network governance theory (NGT) because within the scope of the thesis an emerging metropolitan region is treated as a network and sub-networks of stakeholders from different municipalities. In addition, NGT focuses on horizontal interactions among stakeholders, which fits the characteristics of IMC where municipalities have similar levels of autonomy and power and thus require governance arrangements to cooperate.

While there are small variations in the definitions of IMC, all share similar concepts and characteristics. This thesis follows Agranoff and McGuire (2003) definition that conceives IMC as a process involving joint agreements and co-production among municipalities as a means to gain economies of scale, improve service quality, and promote regional service coordination. In other words, IMC is a process of collaboration across municipalities where different stakeholders within a specific network and sub-networks work together to reach common goals (outcomes) and develop long-term formal institutions.

Within the development studies debate, authors such (Konteh, 2009 p. 74) argue that in low-income countries, the greatest challenge ‘‘is to strike the right balance between policy, governance, institutional mechanisms and resource provision and allocation.’’ SWM systems are highly influenced by the relationship among different levels of governments, citizen participation and the influence of party politics in municipality administration (Schübeler, Christen, et al., 1996). Therefore, analyzing IMC through governance lenses provides important insights regarding the improvement of SWM systems.

Theory and empirical research on urban governance developed in the past 20 years and new perspectives are available to be tested. Discussions of concepts such as network governance (Klijn and Koppenjan, 2012), multi-level governance (van Dijk, Edelenbos, et al., 2017) , metropolitan governance (Gómez-Álvarez, Rajack, et al., 2017), co-production, co-participation and co-governance (Iaione, 2016) provide new insights on how to approach the management and governance of cities.

Despite the differences, these approaches agree that one of the key changes in urban governance is the shift from government to governance (Kooiman, 1993). This change implies a change from a vertical structure to a horizontal process of collaboration amongst different stakeholders towards common goals. Shifting from government does not mean entering in a state of anarchy; rather it changes the role of city governments from managers of bureaucracies to coordinators of complexities (van Dijk, Edelenbos, et al., 2017). According to the authors, the main challenge in dealing with cities today is creating an effective chain of actions on a multilevel scale where government (national, regional and local), civil society and private stakeholders coordinate projects together.

Frameworks to measure IMC

In this subsection, the thesis discusses the approaches within governance theory that propose frameworks to measure IMC.

Authors such as Lintz (2016) have proposed frameworks for analyzing inter-municipal cooperation within the environmental sector. He argues that environmental issues often require a focus on social steering and governance. Environmental problems, such as waste accumulation, can be complex because the trajectory from the source of environmental damage and the effect on the population can be uncertain and easily cross municipal borders. The author explains further that even when municipalities do not share negative environmental effects (i.e a contaminated river that passes through two municipalities), they could cooperate on the basis of potential benefits such as efficiency gains of creating synergies between municipalities.

Lintz (2016) argues from a multilevel governance perspective that cooperation between neighboring municipalities can take place in a two-level governance system which includes intra-municipal and inter-municipal negotiation. According to Lintz´s proposed framework (see figure 1 below), the perceived environmental problems and their characteristics lead to particular intra and inter-municipal negotiations. The characteristics of actors (knowledge, values and power) and institutional framework of the negotiations affect how the cooperation will result. For instance, joint projects can be time and resource consuming in the search for more efficient SWM solutions. The difference in perceived costs and benefits of actors (based on their knowledge and experience) and the way municipalities arrange the institutional frameworks of IMC could mean better or worse opportunities for IMC. Therefore, following this framework, understanding the actors and the institutional features of a particular field such as SWM could be a way of measuring and explaining IMC.

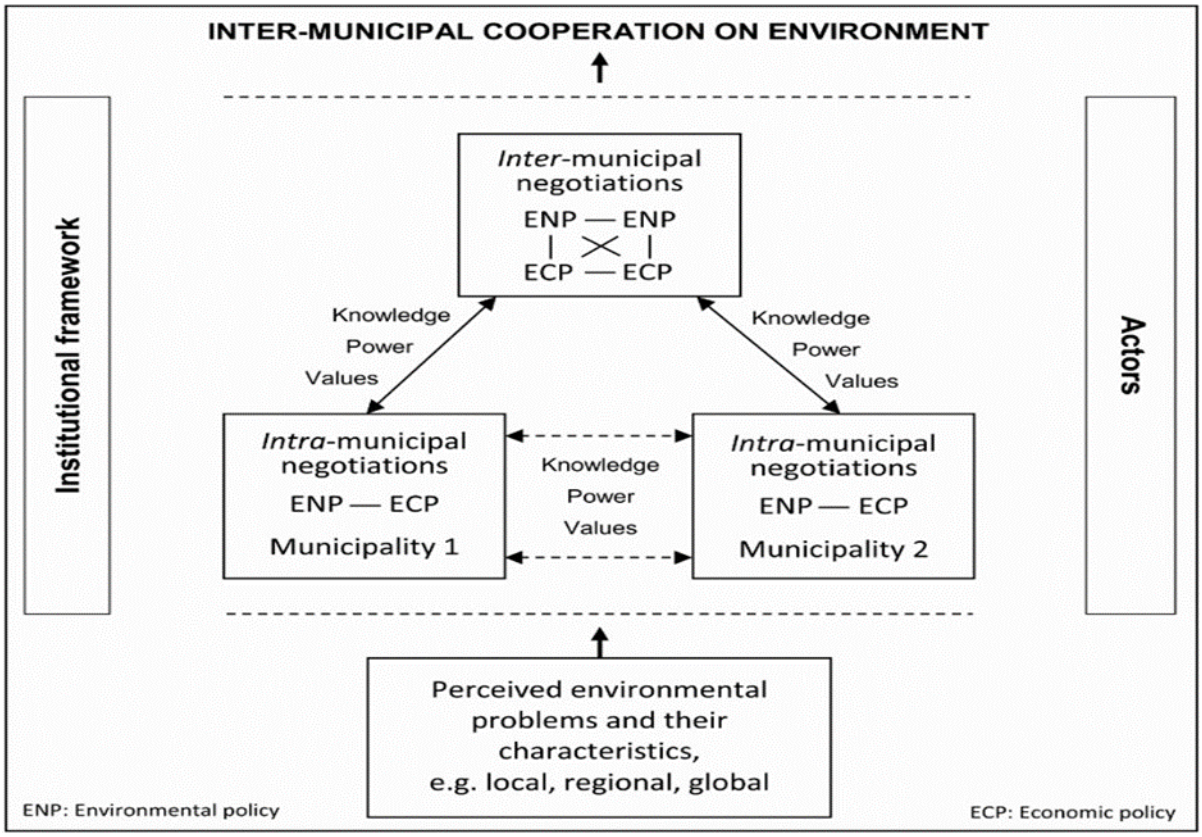


Figure 1: Inter-Municipal Cooperation on Environment. Source: Lintz, 2016

A related concept to multilevel governance is collaborative governance. Ansell and Gash (2007) define the term as follows:

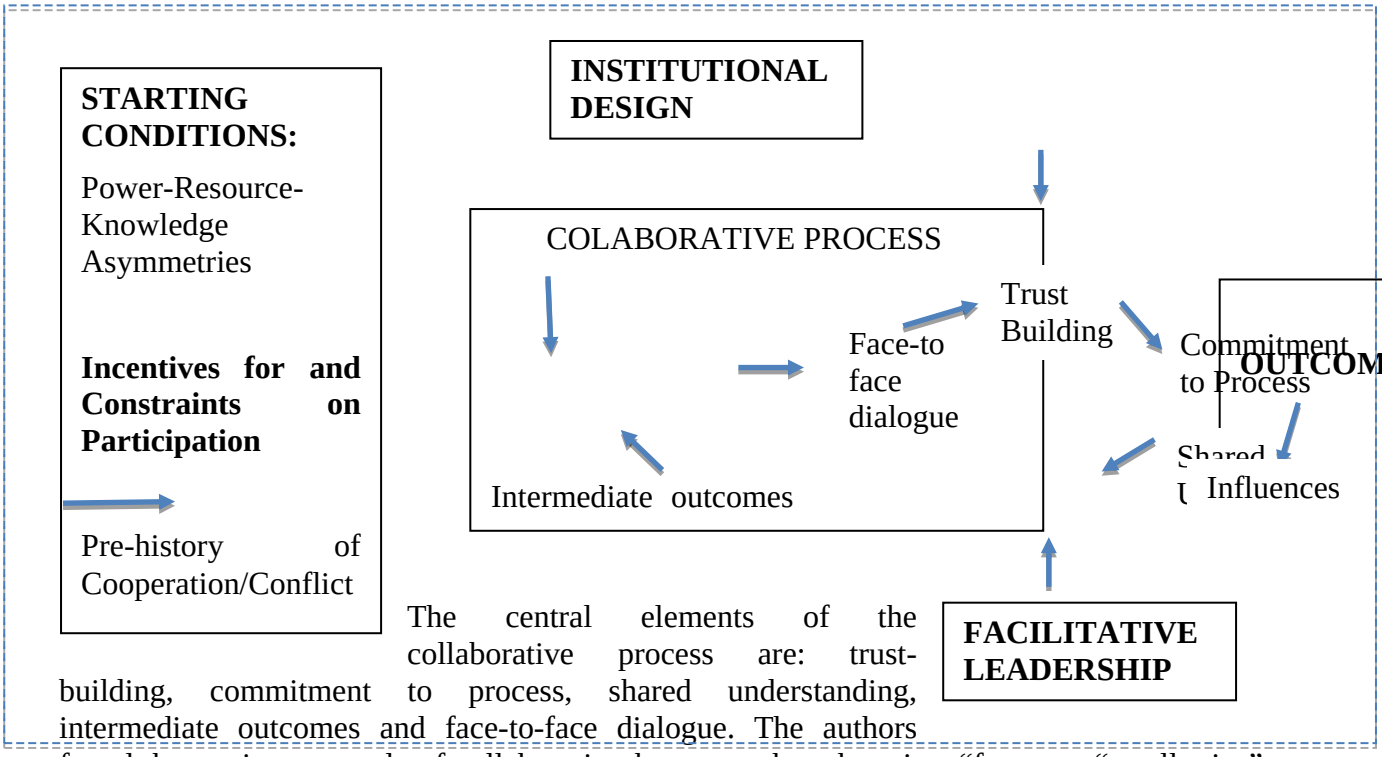
> *"A governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets."*

This definition is framed as a governing arrangement and stresses four important criteria. First, public agencies are the initiators of engagement which includes non-state actors. Second, it implies a certain level of formality in the institutional arrangements and engagement process. Third, it focuses on public management and policy implementation through a consensus-oriented and deliberative process. This last point implies that participants are not only consulted by public agencies but they also engage in decision making. The authors argue that these criteria are more restrictive than found in other literature for the purposes of comparability of cases.

After conducting a meta-analytical study of 137 cases of collaborative governance, (Ansell and Gash, 2007) identified key variables for the successful development of this type of collaboration. Their framework begins with the starting conditions which is centered on the incentives and constraints for stakeholders to participate. These incentives and constraints are influenced by two sub-variables: prior history of conflict or cooperation and power-resource-knowledge asymmetries. Starting conditions "set the basic level of trust, conflict, and social capital that become resources or liabilities during collaboration" (pg. 550). In addition to starting conditions, the two other key variables that influence the collaborative process are

facilitative leadership and institutional design. Facilitative leadership refers to bringing stakeholders to the table, facilitating dialogue and empowering some weaker stakeholders. Institutional design indicates the procedural rules, such as participatory inclusiveness, which are critical for the legitimacy of the collaborative process (see figure 2 below).

Figure 2: Collaborative governance framework. Source: Adapted from Ansell and Gash, 2007



The central elements of the collaborative process are: trust-building, commitment to process, shared understanding, intermediate outcomes and face-to-face dialogue. The authors found that a virtuous cycle of collaboration happens when there is a "focus on "small wins" or intermediate outcomes such as strategic plans or joint fact-finding that "deepen trust, commitment and shared understanding." (pg.543).

Both frameworks presented while having variations, follow a similar three-step process. First, there are the initial conditions or problem characteristics, which influence a particular collaboration or negotiation process that leads to certain outcomes. While these frameworks do mention outcomes resulting from the collaborative process/inter-municipal negotiation, the empirical application need further methodological elaboration which can be complemented with inputs from network outcomes theory (explained in a following sub-section). Furthermore, a closer look at different types of cooperation and literature that explain preconditions or leading factors to IMC completes a robust set of theoretical tools to analyze the complexities of IMC using these two frameworks as reference.

Different types of IMC

Literature shows there are different types of arrangements that municipalities choose to cooperate with other municipalities. These arrangements relate to the institutional design aspects mentioned in the collaborative governance and IMC frameworks. According to Bel and Warner (2015), they can be classified into three broad categories:

a. Joint service provision
b. Contract it to one of the members (inter-local contracting)
c. Contract to an outside party.

In Europe, inter-local contracting is very rare. For instance, it is virtually non-existent in Spain (Bel and Warner, 2008); in other cases, it is of little relevance, as in the Netherlands, where only 4 per cent of municipalities contract solid waste collection to neighbouring municipalities, whereas 15 per cent of municipalities use inter-municipal cooperation by means of joint delivery (Bel, Fageda, et al., 2010, Gradus, Dijkgraaf, et al., 2014). By contrast, in the USA inter-local contracting is more common than joint production (Warner and Hebdon, 2001). In Latin America, the research is more limited on this field and there are few documents (Helmsing, 2001) that systematize the different experiences of IMC, although there are experiences of formation of *mancomunidades* (association of municipalities) in Ecuador and Brazil which generally take the form of joint service provision.

Municipalities enter into these IMC arrangements on a voluntary basis and generally through inter-municipal agreements (Bel and Warner, 2015). These agreements are typically pay for-service or co-financing production arrangements with other local governments. While pay-for-service agreements are arrangements in which a city provides payment to other local governments in exchange for services, co-financing agreements are joint investment deals for the supply of mutually agreed services.

Engaging in IMC involves a two-stage decision. A city first decides whether to enter into cooperative agreements with another local governments or not and then determines the amount of cooperation. While IMC agreements help create scale efficiencies by enlarging the citizen base and by increasing the utilization of specialized resources, these agreements generate transaction costs. These include bargaining and negotiation costs, agency costs, and risks of opportunism because of susceptibility of asset specificity and measurement difficulties in exchange (Shrestha and Feiock, 2011). Therefore, a careful analysis of what type of IMC arrangement will provide the best outcomes at a lower transaction cost is important for public policy decision.

The literature available on the effects of different types of cooperation arrangements is limited. Most studies that use IMC as an independent variable operationalize it as a dummy variable making no differences regarding the type of IMC arrangement (see Bel and Warner, 2015). Studies focus on the effect of IMC on specific topics such as public local spending in French municipalities (Frère, Leprince, et al., 2014) or the consequence of IMC on local storm planning and management in Utah, USA (Armstrong and Jackson-Smith, 2018).

The literature on SWM and IMC focuses also on the differences between privatization of SWM services or IMC for service delivery and their effect on cost reduction (Bel and Mur, 2009). Using panel data for almost all Dutch municipalities between 1998 and 2010, Dijkgraaf et al. (2013) compared different arrangements in SWM including private enterprises, intermunicipal cooperation, municipality-owned enterprises and in-house collection and they concluded that the cost advantage of IMC is higher than privatization. However, this thesis did not find studies on particular differences between IMC arrangements and their effect on outcomes. Therefore, a new particular line of research within IMC could emerge from this literature gap.

Other relevant literature treats IMC as a dependent variable and explores the leading factors or conditions that explain why certain municipalities choose IMC while others do not (see Bel and Warner, 2015). The next section focuses on summarizing the main contributions on leading factors to IMC.

2.3.Leading factors

The previous section linked IMC to network governance theory and provided a discussion on relevant frameworks to measure IMC. This section focuses on defining and reviewing the leading factors that lead to better IMC.

This research defines leading factors as explanations and conditions that serve as catalyzers or reduce barriers for inter-municipal cooperation. The researcher focuses on providing a discussion on relevant available literature on how different factors contribute to IMC. A recent extensive analysis of factors leading to IMC by Bel and Warner (2015) is the main reference point combined with other more specific studies. In their paper, the authors provide one of the few in-depth meta-analysis studies on factors explaining IMC. They argue that the main theoretical contributions can be classified into two major groups: a. cost and fiscal factors and b. organizational and governance characteristics. Within this scope, they found 49 articles (published or forthcoming) and working papers from the fields of Economics, Political Science, Public Administration, Public Policy, Urban Studies, and Area Studies. Their main findings indicate that fiscal constraints, spatial and organizational factors are the main drivers for cooperation.

Regarding cost and fiscal factors, the discussions focus on geographic scale and density required to reach optimal levels for economies of scale. There is a tension between economic growth patterns that follow a regional model and the municipal political boundaries that are a result of historical processes and identities but currently might be suboptimal in terms of jurisdictional functionality (Lobao, Martin, and Rodriguez Pose, 2009; Bel and Warner, 2015). Therefore, IMC might be a way for municipalities to keep the traditional political boundaries while at the same time expanding their service provision in coordination with other municipalities to achieve more efficiency. The key variables that authors analyze to find the optimal geographic scale for service provision are volume of service, size of population, and dispersion of population (Ladd 1992). Most empirical findings conclude that rather than amalgamation (integrating municipalities into one administrative unit) an alternative to address suboptimal jurisdictional functionality and reduce costs is IMC (Bel and Warner, 2015).

Fiscal stress is also an issue for many municipalities and privatization has been an early attempt to reducing it. However, IMC has been growing as an alternative to privatization on helping reduce cost and reduce fiscal burden (Homsy and Warner 2014). Similar types of cost and fiscal factors can be all classified as economic or managerial characteristics of municipalities.

In regards to governance and institutional factors, the main problem addressed in literature is the fragmentation of local government systems in service delivery (Bel and Warner 2015). Among the governance factors of IMC, authors found that (a) homogeneity of interests and institutional structures (Feiock 2007), (b) network management (Brown and Potoski 2003) as well as (c) regional governance bodies (Thurmaier and Wood 2004; Bel, Fageda, and Mur 2013) could lead to better IMC levels. The homogeneity or heterogeneity of interest and structures can be linked to similar characteristics of stakeholders such as wealth or common cultural history or shared values. While racial or wealth homogeneity/heterogeneity is difficult to change within municipalities, shared visions and values conducive to IMC can more easily be constructed through a process of facilitative leadership (through regional governance bodies or other actors) and network management.

Among the policy recommendations derived from the meta-analysis, Bel and Warner (2015) indicate that while fiscal and other economic constraints are drivers for cooperation, it is

unclear if cooperation will lead to efficiency gains. For this to happen, it is necessary to promote professional management (which implies leadership and network management) that would help reduce the transaction costs and maximize the opportunities of IMC. The authors also recommend that policy makers recognize that cooperation is rooted in space and promoting cooperation between neighboring municipalities sharing a metropolitan area could lead to successful IMC results.

Furthermore, the meta-analysis concludes by arguing for the need of a wider theoretical framework beyond the traditional efficiency concerns. The authors claim that future research should focus more on policy challenges affecting municipalities from organizational, spatial and contextual approaches.

In search for this wider theoretical framework, this thesis acknowledges the relevance of standard variables such as stakeholders' characteristics but incorporates leadership, network management and common ground as alternative factors for explaining IMC. Keeping the sub-variable stakeholders' characteristics allows comparison to most existing literature. Adding leadership and network management follows Bel and Warner recommendations to investigate if this variable could play a stronger role on IMC beyond stakeholders´ similarities or differences. While leadership and network management look at the effect of particular actors of the network (the leaders), common ground, which involves shared values and visions, takes a more contextual approach. This variable investigates if, independently of heterogeneity or homogeneity of stakeholder economic, demographic, political characteristics or similar, shared values and agendas could play a stronger leading role in promoting IMC. In other words, adding these two variables could help explain if, despite differences in stakeholder characteristics, the particular skills and activities of leaders (leadership and network management) and the shared values and vision of the group (common ground) IMC could thrive. Comparison between the effect of common ground and leadership and network management are also possible to measure if the characteristics of a small group (leaders) are stronger than the shared featured of the bigger group (all actors) and if they complement each other. Therefore, these three sub-variables are included as part of this thesis conceptual framework.

2.3.1. Characteristics of stakeholders as factors for multi-stakeholder collaboration

Specific characteristics of the municipalities involved within the network could be drivers of IMC. One of these characteristics could be the level of fiscal wealth. Authors (see Krueger and McGuire 2005; Shrestha and Feiock 2011) have suggested that fiscal wealth is likely to decrease stakeholder collaboration because local governments will have fewer incentives to cooperate, whereas poor financial conditions are likely to motivate cooperation.

Other authors argue that higher levels of cooperation happen both at the high and low ends of the income spectrum (Morgan and Hirlinger 1991; LeRoux and Carr 2007). This finding is consistent with the idea that municipalities with higher concentration of lower income residents are more likely to pool resources with other communities in a similar situation to generate common resources to promote economic prosperity (Krueger and McGuire 2005). On the other hand, municipalities with a large share of wealthy citizens are also likely to engage in multi-stakeholder collaboration to promote innovation and regional competitiveness (Bel and Warner, 2015).

Another characteristic that could be a factor for higher IMC is the size of the municipalities. For instance, Bel et al. (2010) provide evidence that cooperation can be more effective than

privatization in reducing costs in the provision of solid waste services in smaller municipalities.

Tyler and Jackus (2005) found that, while economies of scale (as Agranof and McGuire definition of IMC suggest) may be a motivating factor for IMC, similarities and differences between municipalities in individual provision levels of solid waste services, ability to pay, and expectations for future solid waste service demands are statistically more relevant in influencing IMC.

Another characteristic that could contribute to IMC is the political competition and the homogeneity of the network. Since the benefits from cooperation are long-term, it becomes attractive for local officials seeking re-election to search for investments that target specific groups and political supporters and/or have short-term, highly visible benefits that signal competence to their constituencies (Feiock 2002; Veiga and Veiga 2007). Intra-jurisdictional homogeneity reduces the transaction costs of delegation to organizations to IMC, because elected officials face less diverse policy preferences from their constituents (Carr and Tavares, 2015). In addition, Bel et al. (2013) found evidence to suggest municipalities with right-wing mayors tend to cooperate less. This last finding, they argue, might be explained as a reaction from right-wing mayors that did not want to ascribe to cooperation policies promoted by left-wing parties.

From a spatial analysis perspective, Bel et al. (2013) also identified explanations in variables such as municipal dispersion (measured through the numbers of neighborhoods within a municipality), financial difficulties and political ideology of the mayors. The authors found that greater municipal dispersion provides greater incentives to maintaining the service production under the local administration, given the difficulties involved in supervising the quality of the service.

Kolsut (2016) on a case study in Poland identified that cultural, political and historical background of particular regions or voivodeships explained differences in IMC within the SWM sector. The author grouped voivodeships and municipalities into four regions with historical differences and found a positive correlation between cultural characteristics such as cooperative spirit and higher levels of IMC.

Most of the research on stakeholders' characteristics focuses on the characteristics of municipalities. Therefore, characteristics of municipalities are part of the focus of this thesis. This approach is complemented with leadership, network management and common ground analysis which is developed in the following sub-sections.

2.3.2. Leadership and network management

The author defines leadership in a broad sense as a process through which individuals or group of individuals with distinguished characteristics (leaders) influence other members of a group or network. In previous sections, the thesis introduced the concept of facilitative leadership as part of the framework on collaborative governance. Facilitative leadership is a factor that influences collaborative processes in IMC by gathering, connecting and empowering stakeholders. However, besides facilitative leadership, the literature on leadership has other approaches.

In emerging metropolitan regions (EMR), the spatial and functional boundaries of cities become blurred. IMC in this context requires leaders to make the connections among a diverse set of stakeholders. Similar to the connection between facilitative leadership and collaborative governance, Network Governance Theory (NGT) indicates that network

management is one of the key characteristics required for initiating and facilitating interactions as well as for conflict management and innovation.

Network management refers to a deliberative effort to manage processes in networks that aim to achieve common goals (Meier and O'Toole, 2001). There is a close connection between leadership and network management where one of the key roles of leaders is attempting to managing the network. For instance, Gains et al. (2009) show that adjusting policy, tools and incentives in the structure of local government improves the effectiveness of leadership by allowing better network management. Furthermore, particular types of leadership could lead to the creation of particular IMC arrangements because of the particular influence of leaders within networks. Therefore, it is important to understand how leadership and network management affect IMC levels and how particular contextual aspects of the network (such as common ground) help strengthen the potential of leadership within EMRs.

Given the horizontal and interdependent nature of EMR interactions, a type of leadership conducive to network management rather than traditional top-down managerial forms (Agranoff and McGuire, 2001).

According to network management theory, leaders act as network managers when they initiate and facilitate interaction processes between stakeholders (Friend et al. 1974) (Agranoff and McGuire, 2004), create and improve network arrangements (Scharpf 1978; Rogers and Whetten 1982), guide interactions (Gageand Mandell 1990; Kickert et al. 1997) and explore new concepts and approaches (Koppenjan and Klijn, 2004).

Authors such as Van Meerkerk (2014) and Williams (2002) have indicated boundary spanning leadership (BSL) as a key factor in facilitating and initiating governance practices. BSL is a process through which leaders manage the interface and negotiate the interactions between their organization and its environment (Van Meerkerk and Edelenbos, 2014). For instance, a municipality (organization) and its EMR (environment). In other words, BSL could be a leading factor of IMC in EMRs.

Van Meerkerk and Edelenbos (2016) summarize three main characteristics of BSL according to existing literature. These include (a) connecting and linking stakeholders across organizations, (b) selecting information from both the organization and the environment, and (c) translating information to both sides of the boundary. The same authors add a fourth characteristic which consist of creating and establishing innovative cooperative arrangements. Even though they mention this fourth characteristic within the context of interactive civic-induced interactive governance, it could also fit within the context of EMR. The emerging nature of EMR requires creating innovative cooperation arrangements to ensure optimal IMC.

Similarly, Edelenbos, Bressers and Scholten (2013) mention leadership in the form of connective capacity. They argue that in increasing complex networks, such as the water sector, the role of connecting between and across levels is of increasing relevance for water governance. Connective capacity refers to connecting organizations, actors and institutions from different domains to achieve better performance results in complex systems (ibid). The same could be the case for complex networks such as solid waste management in EMR where connective capacity could enhance IMC.

Another methodology to understand leadership within Public Administration research is the biographical approach. Lambright and Madison (2011), argue that this approach focuses on how an individual leader and his or her influence affects the organization and the environment. They mention that this approach seeks to understand how particular skills, knowledge and experiences of leaders influences performance.

While there are small differences between the different approaches to conceptualize leadership, what is clear is that leadership has a direct connection to network management. This thesis focuses on analyzing leadership from a general perspective but always in connection to network management activities that could improve the collaborative network processes within the context of the study.

2.3.3. Common ground as an influential factor for IMC

In previous sections, the researcher explained the conceptual framework of collaborative governance. Within this framework, previous history of conflict or cooperation and values, knowledge and power asymmetries are preconditions of the collaborative process. Related literature to this has been coined as common ground. Common ground is an influential factor or condition for collaboration (Innes and Booher, 1999; Edelenbos and van Meerkerk, 2017). Organizations in governance networks face the tension between, on one hand self-interest, understood as intra-organizational goals, and on the other hand, collective interest, which implies achieving common goals (Thomson and Perry, 2006). Therefore, within the context of IMC, it is important to find common interests, values and goals that would improve the institutionalization of the network process. Linking Ansell and Gash (2007) framework to common ground theory one could argue that shared values and goals facilitate IMC while the absence of common ground disturbs its development.

Literature on common ground can be helpful for analyzing IMC in emerging metropolitan regions. Authors define common ground as constant mutual understanding, interests and goals that support interdependent actions in joint projects (Clark, 1996; Edelenbos and van Meerkerk, 2017). For Klein, Feltovich, and Woods (2005) common ground is a defining factor for collaborative work in complex multi-stakeholder contexts.

In a recent paper, Edelenbos and van Meerkerk (2017) combined the different theoretical discussions and came out with three points that guided the operationalization of common ground in the context of urban projects in The Netherlands. The core idea behind the concept of common ground used in the operationalization was how different stakeholders, such as the public, private and non-profit sectors “grow closer” to each other regarding interests, goals and understandings. Adapting these concepts and operationalization of common ground to the context of IMC in EMR is a next step in the research.

While there might be differences in levels of trust, information and power among stakeholders, having common ground could potentially help overcome the differences by focusing on the shared interests. Following this idea, this thesis focuses on common ground as a key leading factor for IMC and leaves aside other literature that focuses on aspects of trust, identity and power analysis.

In the context of EMR, the process of building common ground might be triggered by a new common challenge that arises due to various reasons. One of these reasons could be of institutional nature such as new policies or environmental regulations from provincial or national governments.

Kołsut (2016) explains how in Poland the term ‘waste revolution’ is often used to describe local institutional adjustments in the SWM sector as a result from European Union (EU) regulations. The new EU standards generated arenas for building mutual understanding and to develop joint projects within the SWM sector that eventually led to the institutionalization of network processes. The main institutionalization process that derived from this new common ground was that after decades of institutional confusion, municipalities became the main actors of SWM. Once municipalities knew their main responsibility on SWM, they started a process of ‘mimetic isomorphism’ which means that rather than changing for

obligation, they sought to minimize atypical behavior and mimic other organizations or municipalities through IMC.

In the Ecuadorian context, the active implementation of the policy to "getting rid of open-air dumps" might have similar effects that the ones Kolsut indicates in the Polish case. However, there are no studies that have yet measured such connections. This thesis contributes to drawing the first conclusions regarding the effects of this new environmental policy.

Another factor that could contribute to the formation of common ground is the influence of particular leaders who through their personal characteristics, knowledge and skills could bring stakeholders together, facilitate interactions and help construct common visions. Therefore, the interactions between these two sub-variables is also analyzed.

2.4. Solid Waste Management

Previous sections discussed literature that complements the first two steps of collaborative governance and IMC frameworks. A third part related to the outcomes. Giving context to what types of outcomes are aimed (which vary from sector to sector) through the collaborative process allows clarity and choosing the right indicators. In this section, the researcher gives context to the SWM sector and highlights ways to identify relevant outcomes. First, the researcher explains how the origins of Solid Waste Management (SWM) were driven by five main factors in a sequential process but then argues that in current times, particularly in developing countries such as Ecuador, an integrative approach is required. Later, he introduces the Integrated Sustainable Waste Management (ISWM) framework as an approach to integrate the different dimensions of SWM and guide the selection of outcomes.

Emerging metropolitan regions face an increase in the demand of key services such as solid SWM. According to the Pan-American Health Organization (2005), Municipal Solid Waste (MSW) is solid or semi-solid waste generated in population centers including waste from households, commerce and small-scale industries and institutions. Since there could be variations of type of waste collected from region to region, this thesis generally defines MSW in simple terms as solid waste collected by municipalities.

Ahmed and Ali (2004) define SWM as an integral urban, environmental and public health service. The World Bank (2012) stresses that SWM is probably the one thing that every municipality in [intermediate] cities provide to its citizens. SWM is arguably one of the most important municipal services for cities in low-income and middle-income countries (ibid). SWM involves a series of complex activities that require technical and managerial capacity. Failing to provide efficient SWM will result in problems in health, environmental degradation, climate change and economic costs. Therefore, municipalities that want to ensure a long-term efficient SWM should consider inter-municipal cooperation as a strategy to innovate.

Historically, humans have been mass-producing solid waste since the appearance of non-nomadic societies around 10,000 BC (Worrell and Vesilind, 2012). As urbanization increased and towns and cities became denser, waste disposal became more problematic (Ahmed and Ali, 2004). Small communities managed to bury solid waste just outside their households or dispose of it in water bodies, but as population increased, these practices no longer prevented the spread of foul odors or health concerns (Seadon, 2006).

Marshall and Farahbakhsh (2013) argue that when SWM made a significant progress in industrialized countries, it was driven by five principal factors:

a. Public health
b. The environmental movement

c. Resource scarcity and the value of waste
d. Climate change and
e. Public concern and Participation.

The public health factor has its origins in the late 1830s in London with the appointment of the Sanitation Commission (Marshall and Farahbakhsh, 2013). This commission established the first connections between disease and poor sanitary conditions, which drove governmental interest in SWM (ibid). Municipalities focused on collecting and removing waste from residential areas and disposing them on landfills (Wilson, 2007; UN-HABITAT, 2010). However, from 1900 to 1970, disposal was mostly unregulated and consisted on dumping and burning (Wilson, 2007).

Nowadays, dumping and burning waste without regulation is at least an environmental concern. However, it was not until the 1960s and 1970s that environmental movements in industrialized countries influenced public policy that address issues such as the connection between SWM and water, land and air pollution (Wolsink, 2010; UN-HABITAT, 2010). Awareness of the link between SWM and the effect on cross-boundary resources such as water and air could motivate inter-municipal cooperation.

Resource scarcity and the value of waste was a third factor in the development of SWM (Marshall and Farahbakhsh, 2013). Similar to informal waste pickers of today, during the industrial revolution, resources were scarce and the value of waste rose, which resulted in the emergence of a market of collection, re-use and re-sold of waste materials (UN-HABITAT, 2010). By 1970s, land scarcity propelled the concept of "waste hierarchy" which originated in The Netherlands as a strategy to reduce waste going to scarce landfill sites (Wolsink, 2010; Wilson, 2007). This concept later influenced the current EU policy, which led to new treatment options such as incineration (Marshall and Farahbakhsh, 2013).

Climate change awareness was a fourth factor of SWM development (Marshall and Farahbakhsh, 2013). After studies showed that waste found in landfills was a major source of methane emissions, the climate change advocates put pressure for SWM to focus on energy recovery from waste (UN-HABITAT, 2010; Wilson, 2007).

The fifth factor, public concern and participation restricted the development of SWM. While there is public awareness of the importance of SWM facilities, a common attitude of "Not In My Backyard" or NIMBY is rooted on past poor practices such as burning dumps and polluting incinerators (Wilson, 2007). In other words, people want SWM but as long as it is located as far away from their vicinity and no matter how clean or sustainable the solution might be (ibid). Therefore, municipalities that want to implement strategies such as recycling repair, reuse and community composting first need to focus on generating awareness campaigns and facilitating arenas for active participation of stakeholders as a way to motivate behavioral change (Schübeler, 1996).

As explained, SWM is a complex endeavor. Municipalities have to consider at least these five factors. While Marshall and Farahbakhsh (2013) argue that those five factors developed in industrialized countries, they also recognize that similar factors drive SWM in developing countries; particularly health concerns. Yet, they stress that while in industrialized countries the different drivers came as part of a sequential process; developing countries have to deal with these drivers almost simultaneously. This particular situation in developing countries deserves an integral approach to cover technical, institutional, social, economic and environmental aspects.

A new paradigm: Integrated Sustainable Waste Management (ISWM)

Wilson, Velis and Rodic (2013) explore the concept of Integrated Sustainable Waste Management (ISWM). Their paper focuses particularly in how ISWM could work as a solution to the current challenges of SWM in developing countries. The term ISWM has its origins in the early 1990s when international agencies and civil society organizations (CSO) dissatisfied with the purely technical approach to SWM promoted the creation of a more holistic approach (ibid). As a result, UNDP, UN-Habitat and the World Bank set up a collaborative program on SWM, which concluded with a conceptual framework coined ISWM (Schübeler, 1996).

The framework included different aspects each related to one specific question (Wilson, Velis and Rodic 2013; Schübeler, 1996). The table below summarizes the framework.

Table 2: ISWM Framework, source: author based on Wilson, Velis and Rodic 2013; Schübeler, 1996

Type of question	Explanation
What? (Scope)	Refers to the scope, including the physical components of a waste system and other key planning and management approaches such as strategic planning, public participation, financial management and similar ones.
Who? (Actors)	Focuses on the integration of different stakeholders or actors. For instance, different race, ethnicity, religion, gender or social class. Also, could be the integration of civil society, private and public sector.
How? (strategic objectives)	Refers to key strategic objectives and issues such as political, institutional, social, financial, economic and technical ones.

Overall, we see an important development of SWM that went from landfilling waste and passing by to technical approach to reach ISWM, which pursues a balance between environmental effectiveness, social acceptability, and economic affordability (Marshall and Farahbakhsh, 2013).

Wilson, Velis and Rodic (2013) went further to synthetize the ISWM approach focusing on two dimensions: physical and governance. The table below summarizes ISWM based on the two dimensions.

Table 3: ISWN Physical and Governance dimensions, source: Wilson, Velis and Rodic, 2013

Physical	Public health (linked primarily to waste collection)
	Environment (protection of the environment throughout the waste chain, especially during treatment and disposal)

	3Rs – reduce, reuse, recycle (driven by resource values and more recently by concepts of circular economy)
Governance	Be inclusive, allowing stakeholders to contribute as users, providers and enablers
	Be financially sustainable, which means cost-effective and affordable
	Rest on a base of sound institutions and proactive policies.

As seen in the table 3, the physical dimension focuses on the outcomes such as environmental protection while the governance dimension concentrates on the process of managing solid waste through the ISWM framework. In practical terms, municipalities that have an effective waste collection service and avoid waste accumulation cover the public health aspect. If this coverage incorporate separation from the source (houses / businesses) and material classification then it covers aspects of the 3Rs. The final disposal of waste, whether it is an open-air dump or a landfill has a direct link to the environmental aspect of the physical dimension because the potential hazard on soil, water and air pollution.

Since physical dimensions were part of the discussions before ISWM, it can be argued that the main current development of SWM is the new approach to governance, which involves stakeholder interaction, financial sustainability and institutional development.

ISWM provides a framework that this thesis uses as a way to consider different dimensions in the SWM sector. For the particular case of CA-EMR, the policy to "get rid of all open-air dumps" is assessed to the extent to which the different sub-cases of IMC incorporate both the physical and governance aspects of ISWM.

However, reaching the goal "get rid of all open-air dumps" considering all the physical and governance dimensions require a comprehensive methodology. Network outcome theory has been tested in similar contexts such as the water sector and this thesis adapts it to the SWM network in CA-EMR.

2.5.Network Outcomes

While ISWM provides a general framework to holistically assess SWM, other complementary literature is necessary to differentiate and empirically measure the physical and governance dimensions. The physical dimension refers more to management processes or "soft" variables while the physical one indicates "hard" variables such as the impact of policy implementation. In this sub-section, the researcher presents relevant literature on network outcomes that complements the ISWM framework and facilitates its operationalization.

Existing literature (Agranoff and McGuire 2003; Meier and O'Toole 2007) on network outcomes acknowledges the complexity of measuring outcomes in this field, particularly within environmental contexts such as SWM. However, some authors have developed an operationalization of network outcomes considering both the content of the outcomes and the process that leads to the final results (Koppenjan and Klijn 2004; Klijn et al. 2008; Provan and Kenis 2008; Klijn et al. 2010a, 2010b; Skelcher et al. 2005). Further, recent studies have

used network outcome as a dependent variable of network management (i.e. Ysa et all, 2014; Klijn et al. 2010a).

Klijn et al. (2010a) argue that environmental projects are suitable testing grounds for testing network management strategies and outcomes, because they involve complex decision-making processes in governance networks. These authors develop a framework to measure network outcomes, which include both processes or "soft" variables and content or "hard" impact measurements. The content outcomes refer to aspects such as innovation, integrality, contribution of actors to tangible results and effectiveness, efficiency and sustainability of solutions. The process outcomes include aspects of management, conflict resolution, inclusion of different perspectives in the crafting of solutions, frequency of interaction and support among stakeholders. The full table is presented below:

Table 4: Measurement of Network Outcomes. Source: Klijn et all., 2010

Measurement of Outcomes	
Content outcomes	**Items**
1. Innovative character:	Do you think that innovative ideas are developed during the project?
2. Integral nature of solution	Do you think that different environmental functions have been connected sufficiently?
3. Involvement of actors (content)	Do you think that in general the involved actors have delivered a recognizable contribution to the development of the results?

4. Effectiveness solutions	Do you think that the solutions that have been developed really deal with the problems at hand?
5. Effectiveness in the future	Do you think that the developed solutions are durable solutions for the future?
6. Relation costs and benefits	Do you think that – in general – the benefits exceed the costs of the cooperation process?
Process outcomes	**Items**
1. Level of management	Do you think that the involved actors have contributed substantively to the management of the project?
2. Conflict resolution	Do you think that conflicts and differences of opinion have been solved adequately during the project?
3. Deadlocks	Did you witness any disturbing deadlocks during the project?
4. Productive use of differences	Do you think that the involved actors have made use of the existing different perspectives and insights (among the actors) in an adequate way with regard to solutions and problems in the project?
5. Contact frequency	Do you think that the involved actors had frequently contact with each other during the project?
6. Support	Do you think that the results from the project can expect the support of the involved actors?

This framework is widely accepted reference point within the public administration and network governance literature (Ysa, Sierra, et al., 2014) and this thesis combines it with the governance and physical dimensions of the ISWM as a way to better adapt the operationalization of variables to the SWM context (developed in chapter 3). On the one hand, the governance dimensions of ISWM are paired with the process outcomes measurements. On the other, the physical dimensions are assessed in combination with the content outcomes variables. This adaptation is important because the connection between ISWM dimensions and type of outcome for some variables is not always direct. For instance, cost and benefit analysis is part of the governance dimension (soft) in the ISWM framework while Klijn et al. (2010) include it in the content outcomes (hard).

While the frameworks presented are relevant and comprehensive, they do not include (or partly include) other relevant aspects that might play an important role in IMC such as leadership and institutional design. Also, given the time constraints, the researcher has to be selective and only choose the most relevant network outcome indicators in the operationalization section.

2.6. Summary and relationships among theories

In the different sections, this thesis discussed various concepts that have connections among each other. The chapter started explaining the concept of metropolitanization and how intermediary cities are playing an important role within current urbanization trends. The main discussion here is that cities transcend their own historical political boundaries and therefore require new ways to deal with the increasing complexities of the interdependence of stakeholders within emerging metropolitan regions.

Then, NGT explains that governance is a response to traditional top-down approaches to manage cities. The relevance of a governance approach to understand intermediate and small cities forming an EMR was also discussed in terms of rising complexity, early diagnosis of problems and current urbanization trends.

Later, the section discussed recently developed frameworks on collaborative governance and IMC. Lintz's proposed framework to study IMC argues that the perceived environmental problems and their characteristics (conditions or leading factors) lead to particular intra and inter-municipal negotiations (processes). The characteristics of actors (knowledge, values and power) and institutional framework of the negotiations (rules of the game) affect how the cooperation will result (outcomes).

Ansell and Gash (2007) framework on collaborative governance follows a similar logical three-step process for analysis including a. leading factors, b. collaborative process and c. network outcomes. It begins with the starting conditions (or leading factors) which is centered on the incentives and constraints for stakeholders to participate in the collaborative process. Two other leading factors of the collaborative process included in the framework are facilitative leadership) and institutional design (rules of the game).

The main difference between both frameworks is that while Lintz mentions characteristics of actors, Ansell and Gash focus on facilitative leadership. Although leaders are actors of a given network, there is an implicit difference in their approach which indicates that while Lintz does not explicitly make distinctions between the influence of different actors, Ansell and Gash view leaders and facilitative leadership as key leading factors of collaborative processes. This thesis also stresses the importance of leadership because the same way networks need network management to efficiently collaborate and achieve outcomes (Klijn et al., 2010), different actors require leaders to bring them together, facilitate interactions and empower actors with weaker voices. Further, definitions of facilitative leadership come close to definitions and activities related to literature on network management since both involve strategies related to improving (or enabling) the institutional framework and collaborative processes. Therefore, this thesis operationalized these two concepts together.

Particularly, the section argued that SWM requires an integral approach to deal with complex urban, environmental and public health components. Further, the researcher mentioned literature that indicates that while industrialized countries historically had to deal with different SWM components in a sequential process, emerging economies have to approach it in an integrative and simultaneous manner to cover technical, institutional, social, economic and environmental aspects.

NGT connects to SWM theory through the ISWM framework that Wilson, Velis and Rodic (2013) propose. This framework includes two dimensions: physical and governance. The researcher then linked these dimensions to network outcome theory that proposes methodologies to measure processes and content. Through this connection, the researcher proposes to deal with SWM governance aspects as process outcomes and physical ones as

content outcomes. Network outcome theory provides the methodical tools to connect physical aspects to content outcomes and governance aspects to process outcomes.

In the next section, the researcher provides a conceptual framework that graphically explains the interconnections between variables.

2.7. Conceptual Framework

Based on the literature review, in this section the author presents a core conceptual framework that follows the main variables of the research question and an expanded one that is the basis for later operationalization.

The three step-process found in the theoretical frameworks analyzed led to a theoretical construct of independent, intermediary and dependent variable. Leading factors are constructed as independent variables that influence levels of IMC arrangements (intermediary). Each IMC arrangement can also lead to different impact outcomes which are constructed as dependent variable (see graphic below). The core conceptual framework shows the relationship between the variables. The context is the SWM network of stakeholders in CA-EMR.

Figure 3: *Core conceptual framework. Source: author*

Context: Solid Waste Management Network in CA-EMR

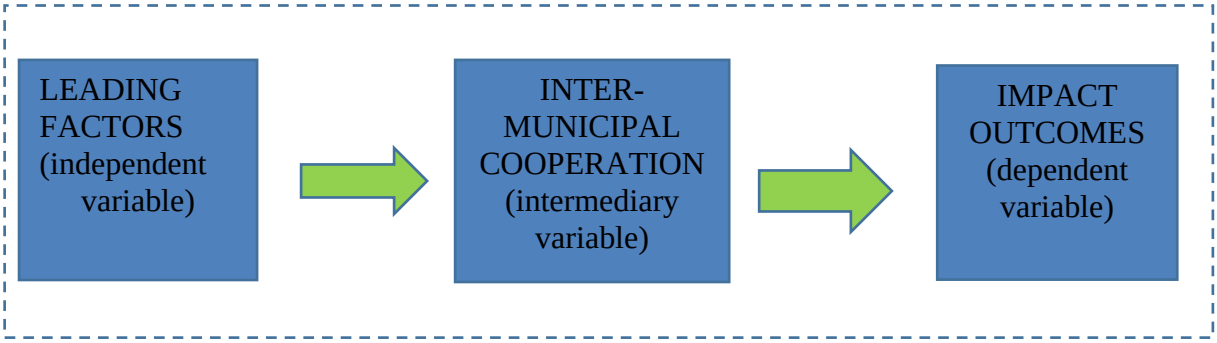
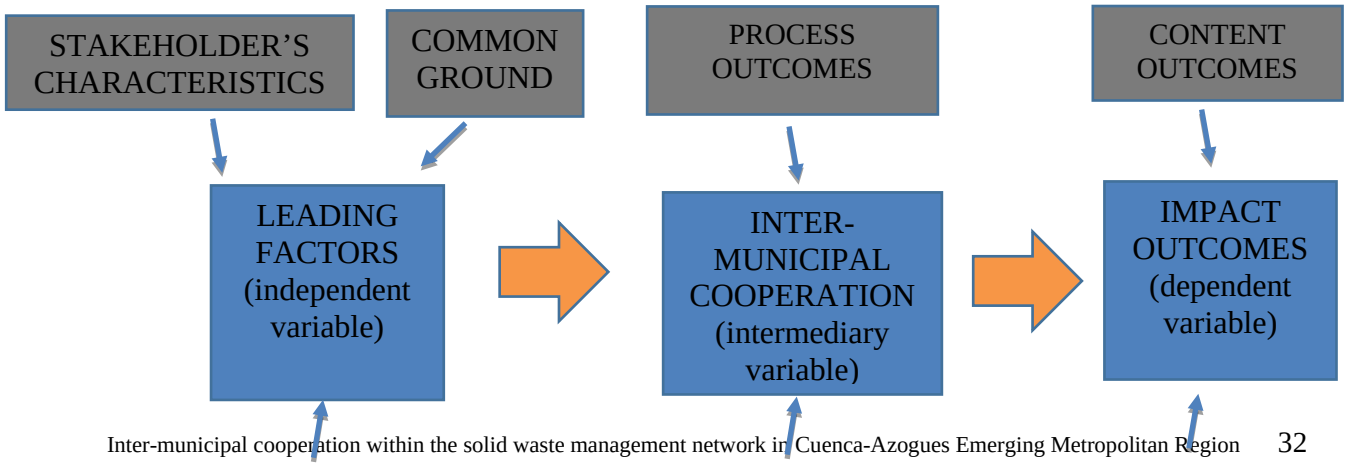


Figure 4: *Expanded conceptual framework. Source: author*

Context: Solid Waste Management Network in CA-EMR



The expanded conceptual framework shows the relationships of the independent and dependent variables as well as the core sub-variables that are operationalized in chapter 3.

The sub-variables for the independent variable include:

- **Stakeholder's characteristics:** differences such as the size, budget, political position and agendas of stakeholders across municipalities is the focus.
- **Leadership and network management:** the presence of (facilitating, enabling, connecting, BSL) leadership and deliberative efforts to improve network dynamics in the development of IMC arrangements and processes.
- **Common ground:** constant mutual understanding, interests and goals that support interdependent actions in joint projects (Clark, 1996; Edelenbos and van Meerkerk, 2017).

The sub-variables for the intermediary variable are:

- **Process outcomes:** conflict resolution, inclusion of different perspectives in the crafting of solutions, frequency of interaction and support among stakeholders.
- **Institutional arrangements:** types of IMC arrangements such as joint service provision, contracting to a network member or contracting to an outside party.

The sub-variables for the dependent variable include:

- **Content outcomes:** how IMC led to outcomes such as innovation, integrality, contribution of actors to tangible results and effectiveness, efficiency and sustainability of solutions.
- **Proxy-closing open-air dumps:** how IMC levels led to the implementation of the environmental policy at a municipal and regional level.

In the next chapter, these variables and sub-variables are operationalized as part of the research design and methods.

CHAPTER 3: RESEARCH DESIGN AND METHODS

In this section, the author describes the research design and methodology of the thesis. First, he presents the research questions and sub-questions that guide the process. Second, he explains the research strategy. Third, he explains the operationalization of concepts, variables, indicators and questions. Fourth, the data collection, sampling and data analysis methods are described. Finally, the author highlights the scope of the research and limitations of the chosen methodology.

3.1.Revised research question(s)

The revised research questions are the same ones already presented in chapter one. Answering all these questions required a logical qualitative analysis of the all the data collected, summarizing the findings and showing connections between the different variables and sub-variables.

The following table provides an overview of the questions and sources of answer.

Table 5: Revised research questions and source of answers

Category of question	Question	Source of answer
Main research question:	Which factors explain the current inter-municipal cooperation levels within the solid waste management network in Cuenca-Azogues Emerging Metropolitan Region and how differences in these levels enhanced Integrated Sustainable Waste Management?	Review of data and findings from SQ1, SQ2, SQ3 and SQ4.
SQ1:	Which are the factors that explain inter-municipal cooperation according to literature?	Literature review (chapter 2)
SQ2:	What are the current levels of IMC within the solid waste management network in Cuenca-Azogues Emerging Metropolitan Region?	Semi-structured interviews and document review.
SQ3:	Which factors from literature explain the current levels of IMC within the solid waste management network in CA-EMR?	Semi-structured interviews and literature review.
SQ4:	What level of IMC led to the implementation of ISWM policy in CA-EMR?	Semi-structured interviews, document review and findings from SQ1, SQ2 and SQ3.

3.2. Research strategy: single case study with nested design

The research strategy for this paper is a single case study in the emerging metropolitan region of CA-EMR. A case study is conducted in real-life settings, attempts to find a policy solution to a particular context and concentrate on a limited number of situations that are studied in great detail (Van Thiel, 2007). While the breadth of information is an advantage of a single case study, the small number of units of study can endanger the validity and reliability of this research strategy. However, distinguishing sub-units within a particular case can counter this problem through a nested design (Van Thiel, 2007). This thesis follows this approach by selecting CA-EMR as the particular case and distinguishing two provinces (Azuay and Cañar) as sub-units.

CA-EMR does not have an official definition or recognition; however, the sub-units are two official provinces with similar general characteristics. Both Azuay and Cañar have an intermediate city (regional capital) that concentrates services and actors and which has an influence on smaller municipalities of the region (see Map 1). In Azuay the capital is Cuenca and in Cañar it is Azogues which are also the most populated municipalities in each province. For the purpose of this research, the author has chosen the conurbation of these two municipalities which are connected through the Pan-American highway and smaller

municipalities as well connect to them within two hours' drive as the particular case. Cañar province includes 7 municipalities (Azogues, Biblián, Cañar, Déleg, El Tambo, La Troncal and Suscal) while Azuay has 15 (Cuenca, Camilo Ponce Enríquez, Chordeleg, El Pan, Girón, Guachapala, Gualaceo, Nabón, Oña, Paute, Pucará, San Fernando, Santa Isabel, Sevilla de Oro and SigSig). This study also provides new insights on the current conurbation of CA-EMR.

The analysis comes from a single moment measurement. A one-month immersion (24th of June to 26th of July, 2018) in CA-EMR allowed a general observation of the metropolitan dynamics in the region. Similarly, the on-site presence facilitated the conduction of face-to-face semi-structured interviews with stakeholders and informants from selected municipalities. The observations and interviews are complemented with desk research of official documents and relevant secondary publications.

This type of research strategy is relevant to have a detailed explanation of the context and generate depth in the analysis (Van Thiel, 2014). A case study allows exploration, description, and explanation of a phenomenon. This strategy is also appropriate when few previous studies with similar characteristics are available. To the best of the researcher knowledge, while there have been few other studies on SWM and governance in Cuenca, there are no previous academic research on the phenomenon of Cuenca and Azogues forming an emerging metropolitan region or related to inter-municipal cooperation in the SWM network.

3.3. Operationalization: variables, sub-variables, indicators, sample questions

In this section, the conceptual framework introduced in chapter 2 is operationalized into variables, sub-variables and indicators. The independent, intermediate and dependent variables are presented through a complete table each (see tables below). All the sub-variables and indicators come from the revision of literature in chapter 2 and adapted to the particular case study.

Table 6: Independent Variable Operationalization. Source: Author based on literature review

Variable	Definition	Sub-variable	Definition	Indicator	Sample Questions
Leading factors	Explanations and conditions that serve as catalyzers or reduce barriers for inter-municipal cooperation	**Stakeholders characteristics**	Background and features such as size, wealth, fiscal aspects of municipalities and characteristics of stakeholders	**Municipality features and management capacity**	Does the municipality size, wealth, fiscal health and similar features affect the capacity to manage SWM services on their own? To what extent the municipalities features affect their reliance on IMC to provide SWM services?
				Stakeholders sectors	Who are the main stakeholders and which sectors they represent? Are there differences in stakeholders between sub-cases that might influence different levels of IMC?
				Cultural and political history	Are there any cultural or political differences/similarities among actors that might hinder or help IMC?
		Leadership and network management	The presence of (facilitating, enabling, connecting, BSL) leadership and deliberative efforts to improve network dynamics in the development of IMC arrangements and processes.	**Characteristics of leaders**	Who are the leaders? What are their main skills and characteristics?
				Type of leadership	What type of leadership do leaders exercise? Facilitative, boundary spanning, connecting? What type of activities do leaders do to improve IMC?
				Relevance to network management	What is the main contribution of leaders? Do they play a key role in the initiation, maintenance and creation of networks? In what ways do they contribute to better network interaction or new forms of IMC arrangements, if so?

		Common ground	Arenas for constant mutual understanding, interests and goals that support interdependent actions in joint projects (Clark, 1996; Edelenbos and van Meerkerk, 2017)	**Common network arenas**	In the network, do the different stakeholders share common arenas where they can share interests, goals, and understanding? Are there any spaces where stakeholders meet on a regular basis and build a common vision?
				Shared interests, threats, incentives and agendas	In the network, do the stakeholders share interest, incentives and agendas? Do they face common threats or urgencies that require cooperation?

The researcher chose leading factors as the independent variable following the main research question. The sub-variable stakeholders' characteristics aims to encompass the different literature that linked characteristics such as wealth, fiscal characteristics and size as factors that motivate or hinder IMC. One example of this is the literature that argues that wealthier municipalities have less incentives to cooperate with less wealthy municipalities. Therefore, the researcher argues that indicators such as municipality size and management capacity could capture empirical differences between sub-cases. The indicator perceptions and positions of actors captures differences in framing the problems and finding solutions. The indicator cultural and political history searches for differences in regards to previous history of cooperation or socio-cultural homogeneity/heterogeneity. The leadership and management indicators search characteristics, type of leadership and the presence of network management to the extent that these variables explain the emergence of IMC arrangements. Common ground indicators focus on arenas such as community centers and common urgencies (such as avoiding environmental sanctions) and visions.

Table 7: Intermediary Variable Operationalization. Source: Author based on literature review

Variable	Definition	Sub-variable	Definition	Indicator	Sample Questions
Inter-Municipal Cooperation	Process involving joint agreements and co-production among municipalities as a means to gain economies of scale, improve service quality, and promote regional service coordination (Agranoff and McGuire, 2003).	**Process outcomes**	Soft outcomes related to interactions within the collaborative process	**Conflict resolution**	Do you think that conflicts and differences of opinion have been solved adequately during the project?
				Productive use of differences	Do you think that the involved actors have made use of the existing different perspectives and insights (among the actors) in an adequate way with regard to solutions and problems in the project?
				Contact frequency	Do you think that the involved actors had frequently contact with each other during the project?
				Support	Do you think that the results from the project can expect the support of the involved actors?
		Institutional arrangements	Type of arrangement and level of cooperation	**Type of arrangement**	What are the types of institutional arrangements for IMC? a. Joint service provision, b. Contract it to one of the members (inter-local contracting), c. Contract to an outside party. D. Other?
				Level of cooperation based on the arrangements	Based on the most predominant arrangements, how can the level of cooperation in the sub-case be categorized? Indirect? Transactional? Collaborative?

Table 8: Dependent Variable Operationalization. Source: Author based on literature review

Variable	Definition	Sub-variable	Definition	Indicator	Sample Questions
Impact outcomes	Integrative outcomes that include economic, social, public health and environmental aspects	**Content outcomes**	Hard outcomes related to physical aspects of ISWM	**Innovative character**	Do you think that innovative ideas are developed during the project?
				Integral nature of solution	Do you think that different environmental functions have been connected sufficiently? Are there evidence of solutions implemented that integrate public health, environmental and circular economy outcomes?
				Effectiveness of solutions	Do you think that the solutions that have been developed really deal with the problems at hand?
				Effectiveness in the future	Do you think that the developed solutions are durable solutions for the future?
		Proxy-closing open-air dumps	Ways of implementation of environmental policy **closing** open-air dumps at a municipal and regional level.	**Policy implementation**	In what ways, if so, the particular the particular process outcomes and institutional arrangements of IMC led to the implementation of the "closing open-air dumps" policy?

Tables 7 and 8 detail the intermediate variable (IMC) and the dependent variable (Impact Outcomes) respectively. The sub-variables of IMC include process outcomes and institutional arrangements. The assumption here is that if the SWM network produce process outcomes, then IMC follows a collaborative process that could eventually lead to more tangible impact outcomes. The indicators for process outcomes come directly from network outcome theory although questions are adapted to capture the singularities of the SWM sector. The sub-variable institutional arrangements and the indicators selected explain differences of choices among sub-cases in the way they institutionally arrange and design their cooperation processes.

The researcher chooses impact outcomes as the dependent variable to emphasize tangible results as opposed to process outcomes of the collaborative process. While process outcomes are conceived as results of the IMC whose indicators and variables affect each other in a cycle of interactions (making it hard to isolate the most relevant ones), the impact outcomes happen as a result of the whole IMC success or failure. The indicators come directly from network outcome theory in combination with the physical components of the ISWM framework that include health, socio-economic and environmental aspects from a holistic perspective. The most tangible available proxy to analyze whether IMC leads to ISWM solutions in CA-EMR is to assess the level of policy implementation of the closing open-air dumps environmental mandate.

3.4.Data collection methods

In order to get information for the variables and indicators, the researcher combines two types of data collection methods: desk research and semi-structured interviews.

For the desk research, documents such as newspapers, legislation, local research and local development plans were analyzed. The main sources analyzed were:

- INEC, National Institute of Statistics and Censuses for SWM data to compare impact outcomes between sub-cases.
- National Plan and Territorial National Strategy, planning regional Agenda zone 6 2013-2017 and Azuay Provincial Pluriannual Plan 2014-2019 to provide background information on common visions and institutional frameworks.
- Organic code of territorial order, autonomy and decentralization (COOTAD) to explore available options and legal frameworks municipalities can use to enter into IMC arrangements.
- *Texto Único de Legislación Ambiental* (TULSMA, 2012) which establishes integrated solid waste management as a national priority of public interest. This document also establishes in its chapter VI, article 57 that municipalities should “get rid of all open-air dumps” following all technical procedures in a period established by the environmental authority (pg. 179, TULSMA, 2012).
- Newspaper articles: to access early progress on SWM policy implementation and to identify relevant actors for the interviews.

For the semi-structured interviews, face-to-face interviews with an interview manual as a guideline is the data collection method. This method allows answering the main questions without losing flexibility to go back and forth on connected ideas and find unexpected but relevant information. The research searched for depth and rich information that brings specific local knowledge.

3.5.Data Analysis Methods

For the data analysis, the researcher used the software Atlas TI, which allowed a systematic process of analyzing the data. After each interview, which was conducted in Spanish (the official language in Ecuador), the researcher transcribed and uploaded the transcription to the software in the original language. With all the interview documents, the researcher created specific codes related to the thesis variables and indicators as well as some other relevant information collected during the interviews. After the coding, the researcher did a translation of all quotes to include them in the final document. The codes (see table 9) allow a comparison of relevant information, grouping of ideas and organization for a clearer qualitative analysis. Future researchers could easily replicate similar studies using the organization of codes shown in table 9 or the information in the interview guide (see annex 1) in other research projects such as meta-analysis.

The following table summarizes the codes used in the analysis of the interview transcriptions which are aligned with the sub-variables as code groups and indicators as codes.

Table 9:Codes for analysis. Source: Author

Code group	Codes
1.Stakeholder's characteristics	a. Municipality size and management capacity, b. Perceptions and Positions of actors, c. Cultural and political history.
2.Leadership and Network Management	a. Characteristics of leaders, b. Type of leadership, c. Relevance to network management.
3.Common Ground	a. Common network arenas and b. Shared interests, incentives and agendas
4.Process outcomes	a. Conflict resolution, b. Productive use of differences, c. contact frequency, d. support
5.Institutional arrangements	Related indicators
6.Content Outcomes	Related indicators
7.Proxy-closing air-dumps	Related indicators

3.6.Sample size and selection

For selecting the respondents, the researcher used purposive sampling and snowball technique. The first respondents interviewed were selected based on existing publications, studies and media information. These respondents were chosen through purposive sampling based on the overall knowledge they have on the topic.

After each of these four interviews, the researcher asked respondents for recommendations of other key stakeholders and informants that could add valuable information to the research. The researcher also asked for recommendations of relevant local document or publications

that might only be known by people within the network. Review of these documents also led to find new potential respondents.

The type of respondents selected were experts and key stakeholders who have relevant knowledge and provided insights to answer the research questions.

The researcher searched for respondents from at least three different municipalities and from a variety of sectors: civil society, public sector, private sector and academia. However, a stronger priority was given to respondents within the public sector, particularly municipalities and SWM public companies because most of the SWM processes happen there.

A total of 15 interviews were conducted, out of which 14 were recorded and transcribed guaranteeing the anonymity of respondents to reduce socially-acceptable or politically-correct answers. One interview was not recorded at request of the respondent and while the researcher took notes, the results were not coded since no new information was added also confirming saturation of information. The following table summarizes the general profile of respondents.

3.6.1. General Profile of interviewees

Table 10: General Profile of Interviewees. Source: Author

Number	Sector	Characteristics	Municipality/Level
1	**Civil Society**	Expert on SWM and active member of SWM networks.	**CA-EMR**
2	**Private**	Entrepreneur in the SW business sector.	**CA-EMR**
3	**Public**	High level position in SWM at a municipality	**Azogues-Cañar**
4	**Public**	A key technical level civil servant	**Mancomunidad Rio Jubones – Azuay**
5	**Public**	High level public servant from the Ministry of Environment.	**National government**
6	**Public**	High level public servant from regional government.	**Cañar Province**
7	**Public**	High-level manager at SWM company	**EMAC-Cuenca**
8	**Public**	Technical professional at SWM company	**EMAC- Cuenca**
9	**Civil Society**	High-level representative of civil society organization within the SWM sector at the National Level.	**National**
10	**Public**	High level manager of SWM company	**Mancomunidad Pueblo Cañari – Cañar**
11	**Private**	Informal SW collector	**Paute-Azuay**
12	**Academia**	Academic/expert in SWM.	**CA-EMR**
13	**Academia**	Academic/expert in Governance.	**CA-EMR**
14	**Public**	Technical level manager of SWM	**Paute-Azuay**
15	**Public**	Representative from PNGIDS (National program of Solid Waste) – unrecorded	**National**

3.6.2. Validity, reliability scope and limitations

As most research, this thesis is no without limitations. In terms of resources and time, the research is part of a Master Program with specific deadlines and timeframes that allowed one-month fieldwork and one month of data analysis and final report. The researcher had limited connections in CA-EMR, which could have had an effect on potentially not including or not being able to contact a few key stakeholders. The snowball sampling helped reduce this limitation and the most relevant stakeholders were included.

Another methodological limitation was that CA-EMR is not officially a metropolitan region and the researcher did not find previews studies that give an indication of where the boundaries of an emerging metropolitan region could be. This situation left the criteria on the researcher who did not have expertise or local knowledge before the fieldwork. To counterbalance this situation, the researcher interviewed local experts and reviewed other new relevant material that provided an initial proposal on the limits of a region with a dynamic transformation. The unanimous agreement was that an emerging metropolitan region does not extend beyond the provinces of Azuay and Cañar; although there are disagreements on which municipalities should be considered part of the EMR. Nevertheless, the data used included all municipalities of Cañar and Azuay given that also statistical data was sometimes only available at a provincial level.

Another challenge was that a single case study provides results that are highly influenced by the specific context and the findings of the research cannot be generalized, which means it has low external validity. A way to counterbalance this is documenting each step in the research process so the same methodology is available for research projects in other contexts that could lead to future generalizations of common findings.

Also, it is difficult to show internal validity because the analysis and observations will be based on the opinions of a small set of stakeholders and influenced by the way researcher organizes the information. To overcome this, triangulation was done in the following way:

- On the role of researchers: local experts from Universidad de Cuenca commented on the findings to avoid mistakes related to the foreign nature of the researcher.
- On the research methods employed: desk research (document content analysis) supporting the primary data (interviews) and participation in a one-week workshop on SWM organized by Universidad de Cuenca which added insights from informal conversations with participants (stakeholders from the SWM from the local, regional and national levels) and review of the participatory conclusions of the workshop.
- On the included municipalities: Interviews with stakeholders from five different municipalities (Cuenca, Azogues, Cañar, Paute and Santa Isabel).
- On the operationalization: more than one measurement for the same variable (similar question from a different angle)

CHAPTER 4: RESEARCH FINDINGS

This chapter focuses on presenting the findings based on semi-structured interviews supported by desk research, observations and informal conversations with stakeholders from the SWM network of CA-EMR. The data from semi-structured interviews and the desk research are the empirical evidence while observation and informal conversations either confirmed the evidence or provided new insights to adapt particular questions during interviews. Only one particular finding from an informal conversation is included as empirical evidence because one of the respondents considered politically incorrect or risky to answer in detail within the context of the semi-structured interview which took place in a professional setting (municipal office). However, while the researcher did not record the informal conversation, he took notes and included the findings in the discussion because of the relevance of the details provided.

Chapter 4 is organized in the following way. First, the researcher describes the general characteristics and background of CA-EMR and its solid waste network. Second, he provides a synthesis of the interview coding and analysis using the software tool using Atlas TI that led to a more focused examination of variables. Third, he analyzes the findings on each variable starting from the independent (leading factors) followed by the intermediate (IMC) and then dependent variable (impact outcomes). Finally, he summarizes the connections among the independent, intermediate and dependent variables that lead to the final conclusions developed in Chapter 5.

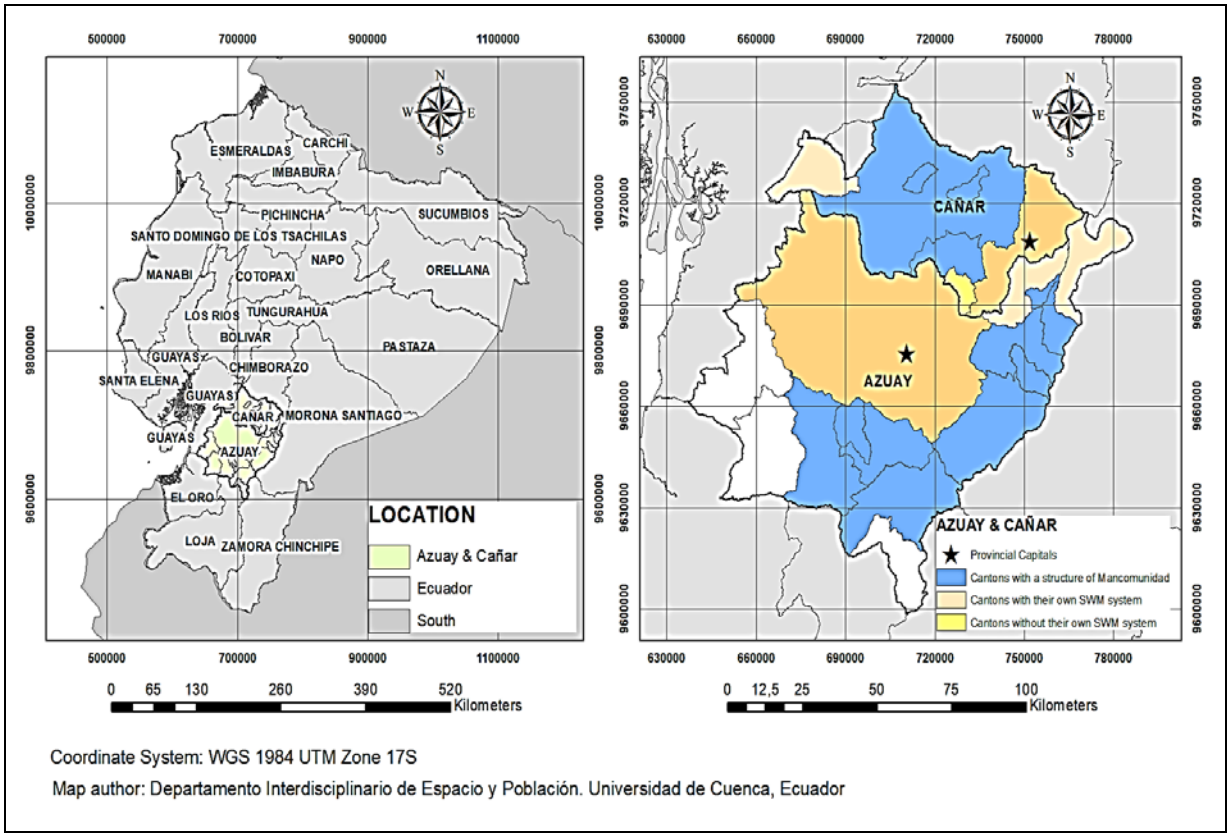
5.1. A nested case study of CA-EMR based on empirical findings from the SWM network.

5.1.1. Cuenca-Azogues Emerging Metropolitan Region (C-A EMR) and the implementation of the ISWM policy.

At the beginning of the research, Cuenca was chosen as a city of reference to explore an emerging metropolitan region in the provinces of Azuay and Cañar located in the southern part of Ecuador (see map 1). Cuenca is the capital of Azuay and a pioneer in SWM innovations in Ecuador and Latin America. However, the fieldwork revealed that while Cuenca continues to be the biggest and most influential city in the region, an Emerging Metropolitan Region is developing out of the influence of two cities: Cuenca and Azogues, which is the provincial capital of Cañar province. Thus, a more precise name for the region is Cuenca-Azogues Emerging Metropolitan Region (C-A EMR).

The interviews and observations also revealed that CA-EMR could include 12 municipalities (instead of 15) from Azuay province and all 7 municipalities from Cañar province. The white area on Map 1 indicate the municipalities that some respondents indicate have less interaction with CA-EMR (Camilo Ponce Enriquez, Pucara and Oña) because of either their mostly rural condition and/or their lack of infraestructure to connect with other municipalities. The blue area indicates the municipalities that formed *mancomunidades*. The stars are provincial capitals (Cuenca and Azogues). The light orange area represents municipalities that have their own system of SWM and do not fit other categories. The yellow area indicates the municipality of Deleg which does not have their own SWM system but cooperates with Cuenca and Azogues for waste treatment and disposal (more details on the arrangements are explained in the intermediate variable section).

Map 1: Azuay and Cañar Provinces, Ecuador. Source: Departamento Interdisciplinario de Espacio y Población, Universidad de Cuenca based on author's preliminary findings.



According to respondents, Ecuadorian government has historically focused on development projects in Quito and Guayaquil and the rest of regions and municipalities (or cantons) did not receive much attention. However, since the establishment of a new Ecuadorian constitution, which was followed by policy documents such as the COOTAD, the role of municipalities or Autonomous Decentralized Governments (GADs) became more relevant and the national government became more involved in transferring responsibilities and resources to municipalities.

The COOTAD (2010) established that municipalities could merge and form metropolitan regions or cooperate through regional enterprises and alliances for the provision of services. However, to July 2018 when the fieldwork finished, only Quito had an official status of Metropolitan Region and no new project of amalgamation was found in the study. A variety of examples of inter-municipal cooperation exists in Ecuador but academic analysis of these experiences is rare. One of the most important findings in the COOTAD (2010) document review is that there are a variety of legal options for municipalities to cooperate at an inter-municipal and regional level besides amalgamation. The challenge, therefore, rather than being legal it related to governance and implementation aspects. Another important finding in the COOTAD (2010) is that it established that municipalities are the main responsible institutions to manage solid waste.

Within the context of SWM, the MAE analyzed data from 2002 to 2010 and concluded that few improvements were accomplished in regards to SWM. From a total of 221 Ecuadorian municipalities, 160 disposed their waste in open-air dumps (*botadero a cielo abierto*) which contaminated water, soil and air resources. This environmental hazard, harmed the health of citizens and in particular that of people making a living by collecting and reselling garbage in

inadequate conditions. In light of this, the MAE started to impose administrative sanctions to municipalities that did not meet minimal SWM standards such as closing open-air dumps. However, the multidimensional nature of the challenge and inadequate municipal management capacities required not just sanctions or quick-fix solutions but a new approach to SWM. This analysis led to the creation of the National Programme for the Integral Solid Waste Management known as *Programa Nacional para la Gestión Integral de Desechos Sólidos* – (PNGIDS). The main objective of PNGIDS is to implement an environmental policy of ISWM in Ecuador focusing on inclusive recycling and sustainable disposal of waste following the environmental legislation included in the *Texto Único de Legislación Ambiental* (TULSMA, 2012). A specific objective of PNGIDS is the promotion of the creation of association of municipalities known as *mancomunidades* for the joint provision of SWM services, particularly between small municipalities. In other words, a management arrangement or process outcome.

PNGIDS also set a content outcome goal that by 2014 would promote the elimination of open-air dumps in 70% of Ecuadorian municipalities. The goal had slow progress and the deadline was extended to 2017 before new sanctions. However, as this research found out, by 2017 while there was progress in some municipalities, yet not a single one province out of 24 in Ecuador met the goal. The only exception happened in July 2018 in the province of Cañar while this research was being conducted (later explained in impact outcomes section). Within this new context, municipalities had to find creative solutions to transition towards more sustainable forms of SWM. IMC has been an alternative for municipalities in other contexts such as Brazil (Mello, 2012), Netherlands (Bel et al. 2010; Gradus et al. 2014) and United States (Bel, 2013). This thesis explores and describes the current level of IMC in CA-EMR and in light of the existing literature explains the factors that facilitate IMC and the impacts of IMC in the region.

4.2. Interviews, data preparation and analysis

4.2.1. Interviews, transcriptions, codes and analysis

For this thesis, the researcher conducted 15 semi-structured interviews out of which only one was not transcribed because the respondents argued they were not authorized to give recorded interviews. This interview was not included in the analysis because no new relevant information was added.

As a way to guide the analysis based on a prioritization, the researcher followed three steps. First, he coded all transcripts using the indicators as codes and sub-variables as code groups. Second, using the query tool on the software Atlas TI, he created a report of a co-occurrence table of all the codes and highlighted the boxes with more than 15 co-occurrences. Third, he moved to the analysis of quotes following two criteria. The first criterion was that high co-occurrence could indicate a pattern in the analysis and thus he focused on that part of the transcripts. The second criterion was to analyze all the quotes in the 7 code groups following the sub-variables in the conceptual framework independently of frequency.

While frequency is an indicator to facilitate the analysis process, quantity does not always indicate quality of responses and therefore the researcher was careful to follow the two steps mentioned above to combine a frequency criterion and a theoretical approach independent of frequency.

The following sections discuss the findings per variables and sub-variables.

4.3. Independent variable: Leading factors

This section presents and discusses the main findings on leading factors. The section is divided in sub-sections following the sub-variables and using the indicators as the main explanatory elements.

Overall, the findings show that the sub-variable stakeholders characteristics presents differences at the indicator level. Municipal features and management capacity are an important factor to generate economic and pairing incentives for IMC in both sub-cases. However, the practice of patronage in political leadership could be a stronger factor for blocking cooperation even in the presence of economic incentives. Similarly, horizontal types of leadership such as facilitative and connective types have a strong connection in allowing network management which might lead to IMC.

The indicators stakeholder sectors, cultural and political history, common network arenas and shared interest, threats, incentives and agendas all point to similar responses which relate to the differential community-based participation through the *Cabildos* or *Mingas* in Cañar province. Since these indicators connect different sub-variables in the independent variable, it is one of the most relevant findings of the thesis in terms of leading factors which is explained in chapter 5.

4.3.1. Stakeholder characteristics

The main findings regarding stakeholder characteristics are that municipality size and income generating capacity for SWM services have an effect on the incentives to enter IMC projects in both sub-cases. Smaller municipalities with low capacity to collect high SWM fees have a higher incentive to cooperate than bigger ones to increase their pool of resources. In regards to stakeholder sectors, municipalities, SWM public companies and the MAE are the main stakeholders interacting with citizens, civil society organizations, private sector and academia. The main difference between the sub-cases in this regard is that in Cañar the communitarian CSOs (*organizaciones sociales de base*) play a stronger role than in Azuay where national or international CSOs are more common. In terms of cultural and political history, Cañar shows a stronger history of communitarian civic participation and a stronger influence of indigenous heritage than Azuay in regards to factors influencing IMC.

The following table summarizes the main findings regarding stakeholders' characteristics:

Table 11:Stakeholders characteristics summary of results. Source: Author

Sub-variable	Indicator	Azuay	Cañar	Comparison
Stakeholders characteristics	Municipality features and independent management capacity	Smaller municipalities with low capacity to collect high SWM fees have a higher incentive to cooperate than bigger ones to increase their pool of resources.	Smaller municipalities with low capacity to collect high SWM fees have a higher incentive to cooperate than bigger ones to increase their pool of resources	Similar
	Stakeholders sectors	Weaker presence of community-based organizations in the network	Stronger presence of community-based organizations in the network	Different
	Cultural and political history	Weak history of communitarian participation and little previous experiences of joint ventures.	Strong history of communitarian participation and previous experiences of joint ventures.	Different

In regards to the indicator Municipality features and independent management capacity, the sample questions that led the interviews and document analysis were the following:

Does the municipality size, wealth, fiscal health and similar features affect the capacity to manage SWM services on their own? To what extent the municipalities features affect their reliance on IMC to provide SWM services?

In regards to municipality features and independent management capacity, both interviews and document analysis indicate that population size is linked to possibilities to collect more funds for SWM services. Therefore, the higher the population the municipality serves, the wealthier the municipality is, which is also linked to fiscal health. This finding is confirmed by the fact that Cuenca and Azogues are both the ones with the highest population and overall financial capacity in their respective provinces and in the region (INEC, 2018).

Another aspect related to municipal features is the wealth of citizens. The wealthier the citizens, the higher the chances municipalities have to charge a higher fee for SWM services. Document analysis and interviews reveal that Cuenca is the city with the highest income per capita (INEC, 2018), the highest service fee and also is the only municipality that does not subsidize the SWM service in the entire region.

On the other hand, smaller municipalities serving a smaller pool of citizens, have a higher cost per capita of service delivery. This situation obliges them to either increase the SWM fee or subsidize the service through other municipal funds to prevent it from collapsing. In general, small municipalities opt for the latter because they often do not congregate the wealthier households and increasing the SWM fee would lead to social tensions and loosing political support from constituents. However, that would imply redirecting funds from other basic services such as water provision or more "politically tangible" results such us inaugurating a new paved road which might not always be feasible. The following quote is from a respondent from Paute municipality which illustrate the findings:

"We do not have a clear economic study to establish a rate. It (the waste management fee) is charged through drinking water. The municipality has drinking water management only in three water treatment plants. There are almost 60 drinking water plants that operate independently. Then we cannot collect the service in those places. But only where the municipality manages (the water). The fee charged for the integral management that includes the collection, sweeping and final disposal do not cover the amount that should be. For the system to work we should be charging from 5 dollars to all users. However, 30% of users are charged $ 1. So, we are subsidizing more than 90% of the service" ***R5.***

These differences explain why smaller and poorer municipalities with low-income residents have a higher incentive to find alternatives such as IMC to increase their resources pool for SWM. Of the three experiences of *mancomunidades* found in the region, the biggest municipalities in each province do not belong to any. This is due to their own decision rather than exclusion from their smaller counterparts. In fact, this research found that smaller municipalities, in general, have a high incentive to enter into IMC with bigger ones because of the perceived idea that they have more resources to add to the table. In contrast, bigger ones perceive that smaller and poorer municipalities could add little to joint ventures and thus they would benefit more by cooperating on a transactional basis. The following quote from an EMAC representative illustrates the findings:

"Is Cuenca planning to form a mancomunidad (joint venture)? Is there any interest right now? We have not made progress on that idea but let´s say that in practice we are doing it receiving waste from other cantons. In practical terms, yes but we have not really brought that topic to the mayor's attention." ***R4***

However, despite the apparent economic advantages, not all small and economically disadvantaged municipalities have high incentives to cooperate. There are political and leadership aspects that also affect the willingness to cooperate. These findings are not easily perceived since "cooperation" is becoming a buzz word (promoted by MAE and CSOs) in the region and it could be argued that most representatives from different municipalities would find it more politically correct to talk in favor of some form of cooperation. However, one of the respondents from a small municipality mentioned that the reason why his mayor is not interested in IMC for SWM, despite knowing the economic advantages, is political. The respondent argued that with the current subsidized SWM service, politicians can gain political support communicating to potential voters that thanks to their management the SWM fee is lower than it should really be. The respondent argued that this type of transaction based on patronage is possible in municipalities with low levels of education and income where keeping the SWM fee low is more likely to be politically rewarded than providing an ISWM service. Although this comment came after the semi-structured interview during informal conversations (not in the transcripts), the finding was included in the discussion and

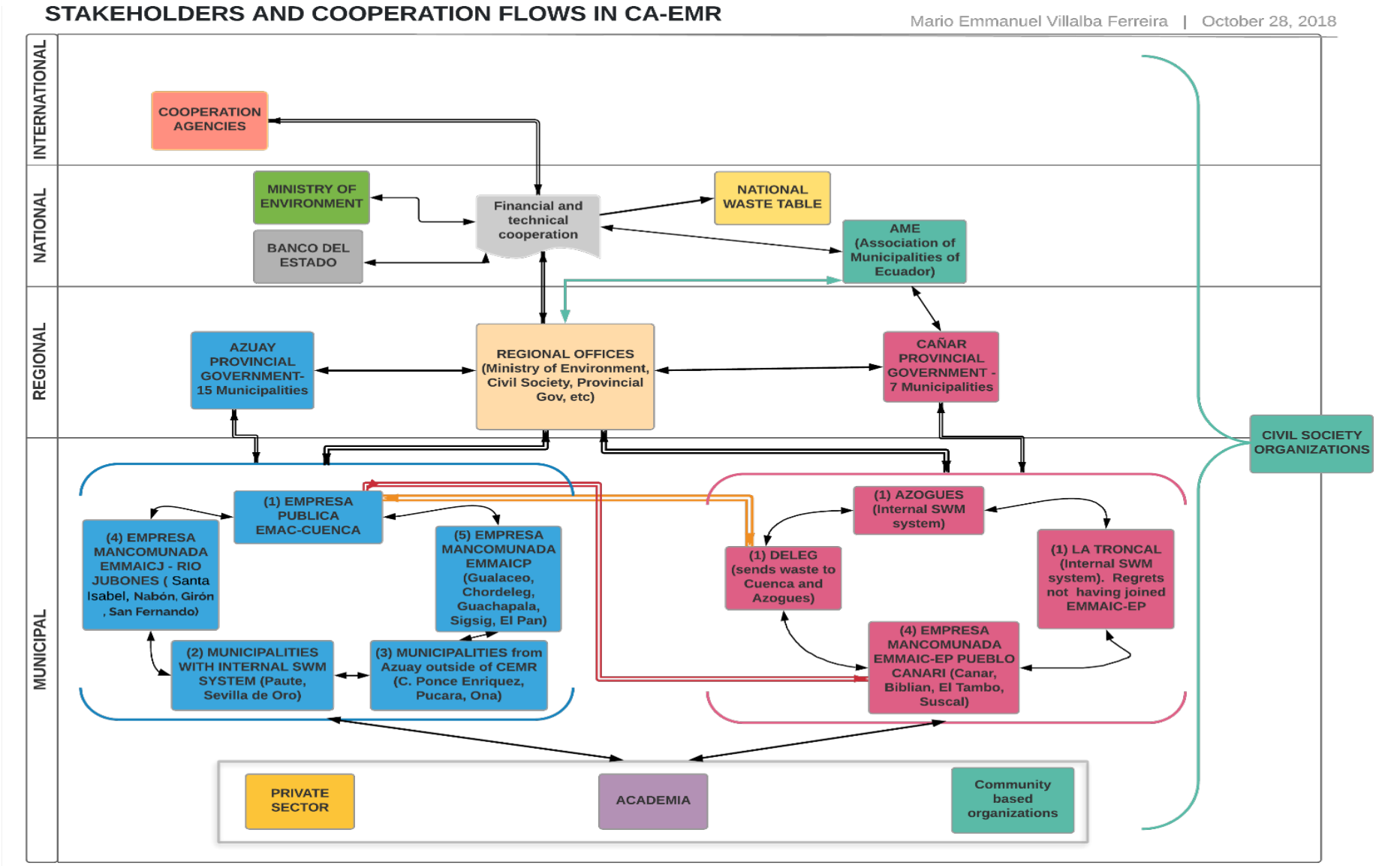
it was confirmed relevant through conversations with local experts and representatives from other municipalities.

In regards to the indicator stakeholder sectors, the main questions were the following:

> *Who are the main stakeholders and which sectors they represent? Are there differences in stakeholders between sub-cases that might influence different levels of IMC?*

The findings indicate that municipalities, SWM public companies and the MAE are the main stakeholders interacting with other public institutions, citizens, civil society organizations, private sector, international cooperation agencies and academia in both provinces. The main difference between the sub-cases in this regard is that in Cañar the communitarian CSOs (*organizaciones sociales de base*) play a stronger role than in Azuay.

Figure 5: CA-EMR Stakeholders flows. Source: Author



The following chart summarizes who are the main stakeholders and their relations within the SWM network.

Figure 5 shows four vertical levels ranging from Municipal, Regional, Nacional and International. From a general perspective, most interactions happen at the municipal level and both the international and national stakeholders from public, private, academia and civil society sectors interact with the municipal level through regional (provincial) offices. The cooperation across levels is in the form of technical and financial assistance. The following quote illustrate the findings:

> *"So, you have at the national level the Ministry of the Environment, at provincial level you have the provincial government, at the cantonal level, the municipality and at the level of the parish, the parochial meeting. These levels should be articulated to respond well to a public policy." R1*

At the international level, cooperation agencies give financial support through projects and also by facilitating and providing technical support in national solid waste tables. There are projects municipalities directly implement while there are also projects implemented by the Association of Municipalities of Ecuador (AME) or the solid waste tables such as PNGIDS. A similar type of support comes from international and national CSOs.

At the national level, the main stakeholder is the MAE, which is in charge of ensuring the policy of closing all open-air dumps takes effect. They also provide technical training and connect municipalities with international and national institutions for financial support and for exploring new project such as inclusive recycling. MAE has provincial offices that have been active in assessing, controlling and sanctioning municipalities in their SWM processes. The Banco del Estado is another key national stakeholder that provides financial support to SWM projects.

At the regional level, while there are provincial governments, only two respondents did attribute them a specific role within the SWM network. At this level, the regional offices of national ministries and international organizations are the main stakeholders.

The same types of stakeholders interact both in Azuay and Cañar. Municipalities are also the most relevant actors in both provinces independent of the type of institutional arrangement for the SWM. The main difference found between the two sub-cases is that Cañar shows higher levels of involvement of community organizations. In Azuay, Cuenca shows evidence of high levels of interaction with citizens and community organization; however, it is the exception rather than the rule in the province. In Cañar, the main example of this is the *mancomunidad* Pueblo Cañari, which includes 4 municipalities, that follows its own Participatory and Intercultural Management Model or *Modelo de Gestión Participativa e Intercultural* that includes four thematic tables of mixed management where citizens and local authorities work together. One of these thematic tables is the Environmental Management Table where SWM projects are coordinated.

In terms of cultural and political history, the main question was the following:

Are there any cultural or political differences/similarities among actors that might hinder or help IMC?

Based on information from the interviews, there are two characteristics that respondents attribute as leading factors regarding IMC: history of communitarian civic participation and indigenous and rural heritage. Cañar shows a stronger history of communitarian civic participation and a stronger influence of indigenous heritage than Azuay in regards to factors influencing IMC.

Respondents explain that the history of communitarian civic participation allows leaders and the community to practice and incorporate skills required for cooperation such as respect of different opinions and commitment to collective decisions. In the case of Cañar, respondents mentioned that while *mancomunidades* for SWM are new, there have been previous experiences regarding IMC for water and tourism services in the province which showed positive results that motivated new joint ventures in other fields such as SWM.

The indigenous heritage is explained as a positive cultural factor that helps the communities show a strong respect for the environment and also a communitarian approach to decision making in public affairs. Respondents also mention that even in situations of political heterogeneity (different political parties) the indigenous heritage of most mayors in the Cañar province plays a stronger bonding role that allows them to cooperate more easily. The following quote illustrate the findings:

> *"How did the empresa mancomunada started? When we entered into this it was 2010. The administration changed and for the first time in 184 years an indigenous mayor was elected. He is a peasant from a community where there were a lot of open-air dumps. Then, he called me [name], you have to help me to fix this issue."* ***R10***

However, other respondents also argued that "mingas" or community-based forms of participation are also present in Azuay and go beyond the indigenous heritage. However, they are more a heritage of rural practices based on common history of social resistance that exist in particular neighborhoods but are somehow more hidden in the cities. The following quote illustrate the findings:

> *'The mingas exist, but just like the mingas there are many other practices. The community has weight. It is historically achieved by communities based on self-organization, to autonomy, to capacity of decision, confrontation also. The stages from the colony onwards are super unfair scenarios and where they have had to protect, self-defend, mobilize, move to other territories, are all strategies but that without a doubt is verifiable. The community has strength and is something that transcends simply the indigenous, in the mestizo culture there is also. Maybe the cities are where these things are least seen but in certain neighborhoods, doing a minga does not sound strange to anyone. There is a potentiality, there is a reality. Not only in the future but it exists and therefore they are explanatory elements. They have a potentiality that others do not have it.'* ***R12***

The findings show the relevance of stakeholders' characteristics as leading factors for IMC. Differences in municipality features regarding size and wealth play a role. However, it is also important to consider whether the economic incentives for the municipality are aligned with the political incentives, vision and approach of the leaders. It could be argued that the finding regarding history of community participation and indigenous heritage could minimize the effects of patronage type leadership and increase the opportunities for other types leaderships that are more favorable to IMC. The next section explores leadership options more in detail.

4.3.2. Leadership and Network Management

In the previous section, the researcher explained a patronage type of political leadership as a factor that could hinder IMC. It was explained in the context of stakeholder's characteristics to indicate the limits of the mentioned sub-variable. This finding highlights the relevance of

understanding who are the leaders what type of leadership is more prevalent in the region and how is leadership affecting IMC.

In this section, the researcher analyzes the findings based on the Leadership and Network Management indicators. The main finding here is that there are differences in leadership styles between the sub-cases when analyzing through provincial lenses. In the case of Azuay, the lack of previous experiences of the leaders on the joint ventures might have played a role in the lack of financial planning and proper leadership that led to the eventual collapse. On the other hand, the previous experience and skills of leaders of *mancomunidad Pueblo Cañari* was mentioned as a key factor in the creation and success of the joint venture. Finally, the type of leadership exercised in Cañar incorporates aspects of network management while the transactional type in Azuay does not. The following table summarizes the main findings**.**

Table 12:Leadership and network management summary of findings

	Indicator	**Azuay**	**Cañar**	**Comparison**
Leadership and network management	Characteristics of leaders	Focus on financial and technical achievements. Middle focus on stakeholder engagement. No previous experiences on similar joint ventures.	Stronger Community Participation Approach. Strong focus on stakeholder engagement. Previous experiences/skills on water joint ventures.	Different
	Type of leadership	Low facilitative, BSL or connective leadership skills.	High facilitative, BSL and connective leadership skills.	Different
	Relevance to network management	Leadership does not result in network management	Leadership focuses network management	Different

In regards to the indicator characteristics of leaders, the main question is the following:

Who are the leaders? What are their main skills and characteristics?

Here is important to indicate that the researcher looked for both institutions and people as potential leaders. Most of the respondents mentioned institutions such as the municipalities, SWM public companies and the MAE as the key leaders within the SWM network. However, other respondents also mentioned the leadership role of CSOs such Avina, IPADE and community-based organizations in Cañar; Regional Offices of MAE; and the coordinating role of the European Union in the PNGIDS.

From the responses, it could be argued that leadership is somehow distributed among few institutions influencing each other and the SWM network. However, almost all respondents

argued that leadership starts from municipalities because they have the direct legal responsibility of SWM and are closer to the people. The rest of stakeholders have leadership roles but more in terms of support, connection and coordination at regional and national levels. The following quotes illustrate some of the findings:

> *"That National Board, who is the one that coordinates? The European Union. Exactly the delegate is from the European Union. They work with the Ministry of the Environment and directly with the Municipalities. There is a recycling project, there are funds to work in recycling, and a representative of the U. European surname Graciani is the one who always coordinates with Pedro de la Torre who is also from the European Union. They work together on issues of solid waste management. They try to strengthen solid waste management and recycling in Ecuador."* ***R8.***

> *"Totally. Our role is to articulate, to take the potential of each of the actors and set a table to build collective agendas and help these agendas build a road map, a work plan and follow the steps. We put ourselves at the disposition of that process. Sometimes, with financial resources, technical assistance, training, exchange of experiences, information, linking experiences to see that it is possible to make changes in this topic. [CSO name] is an articulator, linker and also supports with resources in this process."* ***R1.***

When analyzing the main leaders in each sub-case, it was unanimous that EMAC, the SWM company of Cuenca is the main leader in Azuay (and in Ecuador) in terms of demonstrated ISWM at the municipal level. In the CA-EMR, almost all municipalities try to emulate EMAC and benefit from their experience. However, this influence has led only to indirect forms of cooperation such as ad-hoc trainings or transactional types where EMAC receives solid waste from other municipalities in exchange for a service fee.

EMAC representatives argue that they had many proposals for cooperation but tensions arise because smaller municipalities often believe that such cooperation should be free of cost. EMAC is open to expand cooperation opportunities but it should not mean that their time and expertise should not be properly compensated. EMAC faces the dilemma of either focusing on improving their own SWM municipal services or playing a regional role as leader in terms of IMC. So far, the tendency is that Cuenca will continue focusing on improving their SWM services unless they see a better alignment of incentives to IMC. The following quote illustrates this idea:

> *'The Association of Municipalities of Ecuador (AME) asked us for advice to all the municipalities at the national level. They just wanted us to do it for free. And I cannot leave the service devoid of the technicians to the EMAC and send them to work with other municipalities. It is impossible. If we receive the fair price of that advice or consultancy, then I can hire other people who might be meeting those needs while the specialists are elsewhere. So, that was also a limitation. Always that paternalism of believing that we in the public sector must give everything for free.'* ***R8***

In the sub-case of Cañar, while Azogues is the main reference point as capital of the province and the one with historically the best infrastructure for SWM services, a new stakeholder has recently taken a strong leadership role in the SWM network: EMMAIC-EP. This joint venture (*empresa mancomunada*) started in 2011 and has been responsible for leading a transition from traditional SWM to an ISWM model through a collaborative process involving municipalities of Cañar, Biblian, Suscal and El Tambo.

In terms of characteristics of leaders, respondents mentioned that it varies from municipality to municipality and context to context. However, when analyzing the main leaders in each sub-case, the researcher found more specific characteristics. In the case of Azuay, EMAC has a more technical approach in the sense that the discourse of their representatives and corporate communications is centered on the technological and managerial innovations they achieve and how others should follow their lead. On the other hand, the discourse of EMMAIC-EP managers is more focused on the participatory processes between the company and the community and how this connection leads to successful results.

Another difference regarding the profile of managers and leaders is related to the professional background of leaders. While both have high technical and professional training, the ones in Cañar explicitly mentioned having previously led successful collaborative joint venture projects in the water sector.

The following quote from an EMMAIC-EP representative illustrate some of the findings:

> *'The success factor was a high level of social management. What is that? Reach the community and tell the truth to the peasants. Tell them: "comrades, garbage is dangerous if we keep like this but if we dedicate ourselves to doing technical work, this is going to be a benefit." And when they gave us the first possibility of making the landfill…We were taking the leaders of the community to understand how the garbage was processed. That for me is socially responsible work because people were empowered with the whole idea'* ***R10***

In regards to type of leadership, the main questions are the following:

What type of leadership do leaders exercise? Facilitative, boundary spanning, connecting?
What type of activities do leaders do to improve IMC?

The findings regarding this indicator indicate that facilitative, boundary spanning and connecting leadership are present in the sub-case Cañar more prominently than in Azuay from an inter-municipal perspective.

While EMAC plays different types of leadership roles in Cuenca, its predominantly transactional interaction with other municipalities in the region prevents the exercise of network management-related leadership styles at the provincial level.

Attempts of facilitative, boundary spanning and connecting types of leadership previously existed in Azuay through the development of two joint ventures: *mancomunidad* Rio Jubones and EMMAICP. However, respondents argue that lack of financial planning and facilitative and visionary leadership led to the eventual collapse of both efforts.

In the case of Cañar, most stakeholders refer to the *mancomunidad* Pueblo Cañari as an example of successful leadership. Among the characteristics of this type of leadership, respondents highlight the role of the mayor of Cañar municipality and the manager of the public company in leading a participatory process which includes synthetizing information, connecting, empowering and motivating stakeholders.

Some respondents also expressed that boundary spanning leadership, expressed in the form of people who for instance had worked in civil society and private sector and later moved to the public sector or someone who originally worked at one municipality but then moves to another, facilitates cooperation within the network. The following quote illustrates these ideas:

> *"I believe that an actor, a neutral third party, but that has legitimacy, whose voice can be heard. Someone who has legitimacy is absolutely indispensable to connect sectors or actors that are perceived as antagonistic. You need third parties that have legitimacy, technical management and other competences. Facilitators of dialogue for example. Not everyone can facilitate such a complex dialogue, you need experience, known methodologies. It is very important. Sometimes that role, we from the Ministry ask for that support. And we ask actors of the civil society to help us"* ***R9****.*

Another activity or characteristic connected to the role of leaders that this research did not find in literature but was mentioned by the respondents is the ability to ensure citizen commitment. This ability goes beyond facilitating and connecting but requires a skill to ensure that people go to meetings, actively participate and follow-up on their commitments. Cañar representatives call this process: *educación y cultura ciudadana responsable* which in English translates as education and responsible citizenship culture. The following quote from Cañar highlights this finding:

> *"How long did it take to close the open-air dumps? It was fast. We started with a very sustainable technical management…Since 2013 we did many activities with the community. Going house to house inviting people. We made them sign a proof that we invited them. Then we checked who came [to the activities] and who did not. That way when someone said 'I was not informed' we could ask them for their address and tell them, look Mario Villalba, in this date and at this time and in that place, you received an invitation to participate."* ***R10***

These characteristics of leadership and network management need further research and theorization. However, the findings reveal that the term could be coined along the lines of co-responsible leadership because it focuses in skills and activities aiming to achieve citizen co-responsibility in the projects.

Finally, in terms of relevance to network management, the main questions are the following:

> *What is the main contribution of leaders? Do they play a key role in the initiation, maintenance and creation of networks? In what ways do they contribute to better network interaction or new forms of IMC arrangements, if so?*

The findings reveal that leadership and network management are connected in the context of SWM in CA-EMR and that they play an important role at different levels of IMC between sub-cases. While leadership styles in Azuay do not focus on network management, in the case of Cañar the *mancomunidad Pueblo Cañari* was possible and is showing successful results thanks to the relevance of the type of facilitative and connective leadership that includes network management.

Also, all respondents who mentioned the role of the National Government argued that the current leadership from the National Government allows the inclusion of new topics in the agenda, such as inclusive recycling, and promotes dialogue among stakeholders, which is part of network management. However, various respondents indicated that the topics and debates generated in the national tables are still superficial and need to improve considerably to become more relevant to the SWM sector in CA-EMR.

Further, while most respondents argued that municipalities/municipal SWM companies play the role of leaders and network managers, support from a variety of stakeholders helps in strengthening the network processes. The following quote is an example that describes this idea:

> *"This kind of experiences (mancomunidades), who started the idea? It was the leadership of some municipality in specific? There was international cooperation support? Was the Ministry of the Environment? Was it the AME? How was the initial initiative to work on the whole? I do not know where it is born from. I could not tell you that. But I know that all that you point out is also the success factor (institutional support). That's not just the mayors' work. In fact, they do it with the support of the institutions and the MAE (Ministry of Environment) has played an important role. That's why I said it would be important to talk to the provincial director of the MAE in the territory. Because it is a process that has taken its time...The fact of convening several institutional actors, public, and private, this cooperation, non-governmental organizations and such, I think that have made the difference."* ***R9.***

The overall conclusion of the findings is that while similar key stakeholders play some type of leadership role in the network, there are leadership differences in all indicators among the sub-cases that might explain differences in the success and failure of *mancomunidades* in both regions.

4.3.3. Common ground and network processes

After looking at stakeholder characteristics and leadership and network management in previous sections, this section presents the findings regarding common ground presence in each of the sub-cases as factors that explain IMC. The main findings reveal the new environmental policy "get rid of open-air dumps" gave municipalities a common urgency which initiated interactions and collaborative projects in both sub-cases. However, while Azuay has few common network arenas, the *Cabildos/Mingas* in Cañar play a strong role as common network arena where this common urgency could evolve into shared agendas and successful collaborative joint ventures.

Table 13:Common ground summary of findings. Source: Author

	Indicator	Azuay	Cañar	Comparison
Common ground	Common network arenas	Low. Occasional trainings and events through AME or SWM tables.	High. *Cabildos*/citizen assemblies on a regular basis.	Different
	Shared interests, incentives and agendas	The environmental policy "get rid of open-air dumps" and threat of sanctions motivated shared agendas. However, due to Cuenca´s individual success and recent bad experiences of joint ventures, there are few incentives to transition from transactional to cooperative IMC in the near future.	The environmental policy "get rid of open-air dumps" and threat of sanctions motivated shared agendas. The success of EMMAIC-EP motivates expansion and consolidation of collaborative IMC in the near future.	Similar/Different

In regards to the indicator common network arenas, the main questions are the following:

In the network, do the different stakeholders share common arenas where they can share interests, goals, and understanding? Are there any spaces where stakeholders meet on a regular basis and build a common vision?

The responses on this indicator mention that common training events organized by AME, national SWM tables such as PNGIDS, local SWM tables such as the *Mesa de Reciclaje* are the main common network arenas where most stakeholders gather. However, the *Cabildos*, which are a more constant, local type of community participation arena, is only strongly present in Cañar and not in Azuay.

All municipalities in the network are members of AME, which provides technical assistance to the members through workshops and training programs. There is potential that current training activities promoted by AME become spaces for designing new IMC projects. However, respondents from small municipalities give more relevance to AME´s role while respondents from municipalities such as Cuenca and Azogues argue that AME´s leadership is still weak to generate incentives for municipalities to cooperate. Both types of respondents argue that there are no enough opportunities for building together common projects within the AME structure. The following quotes illustrate some of the findings:

"Currently we do not have any project to improve the collection of rates.
But the Association of Municipalities of Ecuador (AME), they are planning

to do training related to the collection of fees. With the help of them we can start the programs that are necessary to modify the current system." ***R5***

"The AME has a department, a specific area related to the issue of waste management. In this space, the vision that is still maintained is a linear vision in terms of solving the problems of garbage, but the issue of use, recycling, energy exploitation with the part of the organic fraction is still not seen with force. So, there is potential but the vision that they have, in my opinion, perhaps very personal, is an anachronistic vision." ***R1.***

At the national level, the *Mesa Nacional de Reciclaje* and PNGIDS are spaces where stakeholders of the network meet occasionally but have yet to develop as places for the development of common ground. High level representatives of the municipalities mentioned that often the people who participate in these spaces are technical people but not the decision makers, which, according to them is an indicator that solid waste is not a top priority for the national government.

Similar to the previous finding, local inter-institutional tables also have potential to be common arenas where SWM cooperation can be institutionalized and processes strengthened to the point that they could cross boundaries and become IMC projects. Various respondents highlight the experience in Cuenca of the *Mesa Cantonal de Reciclaje* (Cantonal Recycling Board) as a place for building common ground and institutionalizing network processes.

Finally, *cabildos* and *mingas* are examples of common arenas that explain the success of Mancomunidad del Pueblo Cañari and the lack of them could be a factor of unsuccessful experiences of mancomunidades in Azuay. These spaces are historical experiences of community interaction where citizens and local leaders discuss common issues, share values and project a common future for the communities. When this topic was explored in the interviews, all respondents attributed *cabildos and mingas* a great importance for building common ground and strengthening the network. Answers reveal that the bottom-up arenas in Cañar have a special added value that other participation arenas do not have which could explain the success of EMMAIC-EP.

"The citizen assemblies here of Cuenca, which are created by the law of citizen participation. It is created by decree and the municipality has to implement the assemblies. It is top-down and recently beginning to run. However, in Cañar is their organization since always. So, as you have this discussion process, you really have a social cohesion. The cohesion of the representatives. And that for me is linked to the success of the mancomunidad. Because there is a social construction that gives support to the perspective of the mancomunidad. So that's something that I think does not have the mancomunidad of Santa Isabel or Rio Jubones." ***R11.***

In regards to the indicator shared interests, incentives and agendas, the main questions are the following:

In the network, do the stakeholders share interest, incentives and agendas? Do they face common threats or urgencies that require cooperation?

The findings indicate that almost all stakeholders view the importance of sharing interests, incentives and agendas to achieve better results. The following quote is an example of the general opinions:

"For me, the permanent challenge is this. That we can work among the different ones, different actors: public, private, academia, civil society to paddle in the same way because we are all absolutely important in this regard. That is a big challenge in the world in general and our country has without a doubt. I think that is the main challenge and also that it has to be seen as a process that will have phases, which will have milestones, but which has no end" ***R9***

Another similarity in the sub-cases is that the environmental mandate "get rid of open-air dumps provided a common urgency to most municipalities on both provinces. This is mentioned as the catalyzer effect to exploring IMC solutions such as *mancomunidade*s. Once municipalities find common ground through common SWM challenges, they can be more open to innovate their processes through more collaborative arrangements such as *mancomunidad*es. The following quote illustrate this finding:

"In 2010 we started the joint venture. And in all the municipalities had garbage dumps without any treatment. Some more complicated than others but Cañar was the one that was more complicated. Here, there were many dumps. In Suscal there were two dumps, El Tambo the same, in Biblian there were also two dumps. It was complicated. Dumps served 40,000 inhabitants. Now they serve 110,000 inhabitants. It is a huge jump because the urban centers reached 80% more or less. And in rural communities there was not a single community receiving the service. The situation was very complicated but today we are talking about something else." ***R10.***

However, the lack of effective network arenas from where these common challenges can be transformed in common ground and joint projects obtaining positive results can be hard to achieve. One of the advantages that EMMAIC-EP of the Pueblo Cañari had in comparison to other *empresas mancomunadas* in the region was that common ground existed among the different members. It was not the first time that the Pueblo Cañari institutionalized their network processes through an *empresa mancomunada*. Previously, they organized the water and tourist services in a similar way. When a new challenge came, the one of SWM, then their processes of common ground building exercised in the *Cabildos* gave them an advantage to succeed.

4.4. Intermediate Variable: Inter-Municipal Cooperation

This section starts presenting the qualitative findings from the current level of IMC in CA-EMR. All answers are based on interviews responses and support from document analysis related to two sub-variables: institutional arrangements and process outcomes.

The main findings regarding this variable is that institutional arrangements present similarities in type of arrangements in both sub-cases but differences in the level of cooperation. In connection with level of cooperation, research also shows there are differences in terms of process outcomes between sub-cases.

4.4.1. Institutional arrangements

Institutional arrangements include two indicators: type of arrangement and level of cooperation.

In regards to the indicator, type of arrangement, the main question is:

What are the types of institutional arrangements for IMC? a. Joint service provision, b. Contract it to one of the members (inter-local contracting), c. Contract to an outside party. D. Other?

In regards to level of cooperation, the main question is:

Based on the most predominant arrangements, how can the level of cooperation in the sub-case be categorized? Indirect? Transactional? Collaborative?

The findings reveal that the answers to these questions are related and deserve a combined analysis. However, the research shows that similar type of arrangement does not necessarily imply similar levels of cooperation.

A first step in the analysis of these two indicators shows the existing SWM arrangements and levels of IMC in all municipalities.

At the municipal level is where most collaboration occurs. The findings show that there four types of SWM arrangements municipalities choose. These are: a. Municipal SWM Public Company, b. SWM system within municipal structure, c. External SWM provider, and d. Joint venture. The researcher found that the type of SWM arrangement of each municipality affect the type and level of IMC required. The researcher classified the types and levels of IMC required based on the form of stakeholder's involvement into a. indirect (low), b. transactional (middle) and c. collaborative (high). The following table summarizes the type of SWM arrangements, the type and level of IMC and the municipalities involved.

Table 14:Type of SWM arrangements and Type and Level of IMC. Source: Author

Type of SWM arrangement	**Municipalities**	**Type of IMC**	**Level of IMC required**
1.Municipal Public Company	Cuenca (Azuay)	**Transactional:** Shares expertise with other municipalities and sells service of reception and treatment of SW to them.	**Middle**
2.SWM system within municipal structure.	Azogues (Cañar)	**Transactional:** Reception and treatment of SW from smaller municipalities.	**Middle**
	Paute (Azuay), Sevilla de Oro (Azuay), La Troncal	**Indirect:** Benefit from knowledge exchange through AME and other trainings.	**Low**
3. External SWM provider	Deleg (Cañar)	**Transactional:** Buys the service from Cuenca and Azogues.	**Middle**
4.Joint venture (*empresa mancomundada*)	EMMAIC-EP Pueblo Cañari (Cañar, Biblian, Suscal, El Tambo). Cañar province.	**Collaborative:** municipalities create a public company to share management, costs and benefits. Leader: Cañar.	**High**
	EMMAICJ-Rio Jubones (Santa Isabel, Nabon, Giron, San	**Collaborative:** municipalities create a public company to share management, costs and	**High**

	Fernando). Azuay province.	benefits. Leader: Santa Isabel.	
	EMMAICP (Gualaceo, Chordeleg, Guachapala, Sigsig, El Pan). Azuay province.	**Collaborative:** municipalities create a public company to share management, costs and benefits. Leader: Gualaceo.	**High**

Cuenca was the pioneer in creating a municipal SWM company (EMAC). This structure gave EMAC independence to directly collect the tariffs through an agreement with the energy company and work on making EMAC financially self-sustainable. Cuenca now is a best practice case because of their environmental, technological and managerial achievements. One example is that Cuenca is the only municipality in the region (and one of the few in LAC) whose SWM system transforms landfill material into electricity.

Various municipalities from CA-EMR constantly request some type of assistance from EMAC. When two *empresas mancomunadas* in Azuay failed, Cuenca agreed to receive and treat their solid waste in exchange for a service fee while these municipalities sought ways to restructure their SWM systems. While both Cuenca and other municipalities want to cooperate to transfer knowledge and expertise to the entire region, the main challenge of this type of SWM arrangement is finding a transaction price that would make the cooperation beneficial to all parties.

A second type of arrangement is that of SWM system within municipal structure. Here is important to differentiate Azogues, which has enough economies of scale to build and maintain a modern landfill while other municipalities such as Paute have to subsidize the service to keep a basic landfill site. Azogues also cooperates with other municipalities in a transactional manner by offering the service of treatment of hazardous waste to the entire province. Here the IMC is also based on transactional relationships in the case of Azogues. However, in the case of other municipalities the IMC is indirect and mainly through knowledge sharing in trainings and events organized by AME or other actors.

A third type of SWM arrangement is an alternative particularly for municipalities with low levels of SW production such as Deleg, which instead of creating their own SWM system, through alliances with Cuenca and Azogues, disposes its waste at their landfill sites in exchange for a service fee. This type of IMC is transactional and the main risk for small municipalities that rely on external providers is that they have no control over service prices or other decisions other than leave or remain in the IMC arrangement where decisions are made by the service providers.

A fourth type of arrangement are the joint ventures, which are associations of 4-5 municipalities that decide to create a public company to manage their waste together. Here the type of IMC is collaborative because all members have a share and decision power in regard to the joint management of the *empresa mancomunada*. Once the *empresa mancomunada* is created, the managers have more freedom and less bureaucratic processes to coordinate projects with the public, private, academia and citizen sectors. Having more municipalities involved also increases the number off stakeholders and interactions.

There are three of these experiences in CA-EMR. Two failed because of, according to respondents, bad administrative management and lack of political will and leadership to sustain the initial cooperation. However, the EMMAIC-EP from the Pueblo Cañari was a total success, is now considered a best practice case for Ecuador and even obtained recognition in other countries of Latin America. Respondents argue that because of the work of EMMAIC-EP, Cañar was the first province free of open-air dumps and got a certification from the Ministry of Environment in June, 2018.

> *"In fact, **mancomunidades** have been formed and the idea is that small municipalities that are in a geographical area, in a province, they can come together and solve the problem that is common to them" **R9***

A second step is to compare the findings per sub-case. The following table provides a summary of differences between sub-cases regarding institutional arrangements.

Table 15:Azuay and Cañar Institutional Arrangements. Source: Author

Sub-variable	Indicator	Azuay	Cañar	Comparison
Institutional arrangements	Type of arrangement	- Has two joint ventures. - Cuenca leads transactional IMC - Municipalities benefit from Indirect IMC	- Has one joint ventures - Azogues leads transactional IMC - Municipalities benefit from Indirect IMC	Similar
	Level of cooperation (based on the arrangements)	- The predominant type of IMC is transactional (middle).	- The predominant type of IMC is collaborative (high).	Different

The findings show that in terms of type of arrangement the two sub-cases reflect similarities. The provincial capitals Azogues and Cuenca manage SW on their own and lead transactional cooperation. Smaller municipalities benefit from knowledge sharing through trainings and open data which is a form of indirect cooperation because does not require much network interaction. Further, both sub-cases also have examples of joint ventures in the form of empresas mancomunadas. However, while in terms of quantity, Azuay has double the numbers of joint ventures, during the time of fieldwork all of their empresas mancomunadas were in the process of closing and transitioning towards transactional types of IMC. Therefore, this research classifies their level of cooperation as middle. On the other hand, while Cañar has only one joint venture, it is the most successful example of collaborative IMC in CA-EMR and includes 4 out of 7 municipalities in the region. Thus, the research classifies the level of cooperation as high.

4.4.2. Process outcomes

This sub-section focuses on discussing the findings related to process outcomes. The main findings regarding this sub-variable indicate differences in all the indicators.

In terms of conflict resolution and deadlocks and productive use of differences, Cañar has more positive outcomes because of their community-based approach, experiences and skills of leaders and the early inclusion of differences in the joint venture design.

In regards to contact frequency and support findings showed the differentiating factor among sub-cases was the active involvement of leaders and citizens in the Cabildos and Mingas in Cañar. On the one hand, the leadership and network management focus on community-based participation in Cañar showed high levels of stakeholder interaction between citizens and local authorities. This type of approach also works as a social engagement strategy that enhances levels of support from the actors who feel more closely connected to the collaborative project.

The following table summarizes the main findings:

Table 16:Process outcomes summary of findings. Source: Author.

Sub-variable	Indicator	Azuay	Cañar	Comparison
Process outcomes	Conflict resolution and deadlocks	Collaborative joint ventures failed to overcome deadlocks and resolve conflicts	Collaborative joint venture is a successful example of how to overcome deadlocks and resolve conflicts	Different
	Productive use of differences	Differences of commitment not properly included in financial design	Differences of commitment properly included in the financial design	Different
	Contact frequency	Transactional predominance of interactions leads to low frequency of government official-citizen interaction.	Cabildos allow high government official-citizen contact frequency	Different
	Support	Low support/interest from citizens in joint ventures	High citizen support to joint ventures	Different

In regards to the indicator conflict resolution and deadlocks, the main question is the following:

Do you think that conflicts and differences of opinion have been solved adequately during the project?

The research indicates that while IMC arrangements are similar and involve situations of tension based on opposing views on issues, there are differences in how each sub-case resolves these disagreements.

One of the main common sources of conflict is the disagreement regarding roles within the network between MAE, which is the national environmental regulator of SWM policies and the municipalities who are the local implementers. The following quote illustrates this point:

> *"So, you have at the national level the Ministry of the Environment, at provincial level you have the provincial government, at the cantonal level, the municipality and at the level of the parish, the parochial meeting. These levels should be articulated to respond well to a public policy. There are also tensions there. The Ministry says: I am the national governing body. I*

direct the policy on this issue. But it is not effective at the moment of reaching the municipalities so that the norm is complied with. The municipality instead says: the competition is mine, it belongs to me and I say what is done and not done." ***R1.***

There are deadlocks when the expectations of each actor do not meet. For instance, respondents from Cuenca argued that MAE should be leading more strongly the agenda of ISWM since they have the power to sanction municipalities and therefore their capacity to bring different stakeholders together is higher. On the other hand, MAE representatives argued on the grounds of decentralization that municipalities or AME should take the lead and MAE should play a role of supporter. When none of these actors take the leadership then stagnation on potential IMC is the outcome.

In both sub-cases municipalities took the lead to start joint ventures as a response to the policy "get rid of open-air dumps." However, evidence shows that while in Cañar stakeholders resolved conflicts and deadlocks, in Azuay the two experiences of collaborative joint ventures failed.

In regards to leadership and network management, respondents mentioned that the particular leaders (indigenous mayor and experienced public company manager) in Cañar who facilitated interactions made the difference in conflict resolution.

Other respondents argued that the high levels of common ground expressed through their network arenas as spaces for exercising conflict resolution made the difference between collaborative joint ventures.

This research could not measure which factor has a higher effect than the other since responses were split and also various respondents indicated equal weight to both sub-variables. However, the findings show there are interactions among both because high levels of common ground within the Cabildos allow the practice of facilitative leadership given the horizontal nature of this form of community-based participation. Similarly, facilitative, boundary spanning, connective and other types of horizontal leadership within the Cabildos helps increase the level of common ground through improving network management. However, respondents argued that both independent sub-variables have a direct connection with conflict resolution.

In terms of productive use of differences, the main question was the following:

Do you think that the involved actors have made use of the existing different perspectives and insights (among the actors) in an adequate way with regard to solutions and problems in the project?

The research revealed that this indicator is one of the most relevant regarding the design of the financial commitments as a way to avoid future conflicts that could jeopardize the collaborative efforts.

Almost all respondent attributed poor financial planning as the strongest explanation for the failure of mancomunidades in Azuay. Respondents argued that the main source of conflict in SWM collaborative endeavors lies in how much resources should each member contribute. The different perspectives and insights of actors are based on their intra-municipal interests. If the differences in terms of size, management capacity, wealth, SW produced and other indicators are not carefully analyzed, then the project is likely to fail. In this regard, mancomunidad Pueblo Cañari showed a clear understanding on addressing these differences from the beginning and planning accordingly. The following quote illustrates this finding:

'We made a scenario between three Cantons. Cañar obviously generates a lot of garbage. Cañar generated 15 tons. The Tambo generated 2.5 tons. Suscal had a ton. So Cañar had to put more. Doing this scenario, from the initial proposal Cañar had to put 2 million USD. With the three cantons 1,350,000 USD for Cañar. And with the 4 cantons, it was already 970,000 USD…We managed the scenarios, technical, environmental and everything. If it's going to be a bit like that, the economy of scale, then there are no longer 4 landfills, is a single landfill. There are no longer 4 teams but only one team. There are no longer 4 environmental problems, it's now just one problem. All that we analyzed¨ ***R10***

The research reveals that differences among sub-cases on this indicator relate to previous experiences of leaders on similar collaborative ventures in the water sector that helped them avoid these types of conflicts early on from the design phase.

In terms of contact frequency, the main question is the following:

Do you think that the involved actors had frequently contact with each other during the project?

In regards to support, the main question is the following:

Do you think that the results from the project can expect the support of the involved actors?

This research shows that the findings of these two indicators are directly related. The findings also show differences among sub-cases. On the one hand, the leadership and network management focus on community-based participation in Cañar showed high levels of stakeholder interaction between citizens and local authorities. This type of approach also works as a social engagement strategy that enhances levels of support from the actors who feel more closely connected to the collaborative project. On the other hand, the prevalence and rising leaning of transactional types of IMC in Azuay indicate lower authorities-citizens interaction which might have led to an unresisted closing of both mancomunidades. The following quote illustrate some ideas of these findings:

"Fernanda Achero did an investigation and took the case of Cañar. Specifically analyzing the processes of citizen participation in Cañar…She said that basically, the so-called Cabildos are still working there. The Cabildo is a level of organization where representatives of parishes and citizens get together and discuss things. The Cabildo is the one that tells the municipality what to do…And it is a space that has been running for a long time. The councils are really indigenous heritage" ***R11***

Overall, the findings show few similarities and clear differences between sub-cases in regards to institutional arrangements and process outcomes. The research found that these differences in the intermediate variable are the result of mainly two independent sub-variables which are leadership and network management and common ground. The next section explains how these differences in the intermediate variable affect the dependent variable impact outcomes.

4.5.Dependent variable: Impact outcomes

This section discusses the research findings regarding impact outcomes. It is organized presenting first the sub-variable proxy-closing open air dumps where the connections between the independent variable and the SWM policy implementation are analyzed. Then, the analysis goes beyond this explanation to assess through the sub-variable content outcomes how this research explains ISWM impacts.

The overall findings indicate differences in terms of policy implementation between sub-cases. On the one hand, Azuay despite outstanding results at the municipal level, did not achieve the goal of "getting rid of open-air dumps" by July 2018 at the provincial level. On the other hand, Cañar was the first province in Ecuador to fully implement the SWM policy at the provincial level showing a clear transformation towards ISWM.

4.5.1. Proxy: closing open-air dumps.

The sub-variable proxy-closing open-air dumps has one indicator which is policy implementation. This indicator refers to the ways the policy was implemented and answers the following question:

In what ways, if so, the particular process outcomes and institutional arrangements of IMC led to the implementation of the "closing open-air dumps" policy? No, Partially, Fully?

The researcher classified the ways of implementation into a. no, b. partially implemented and c. fully implemented based on the current process of certification by the MAE regarding provinces free of open-air dumps. The scope of analysis was the provincial level comparing sub-cases. The following table summarizes the findings:

Table 17:: Proxy-closing open-air dumps findings. Source: Author

Sub-variable	Indicator	Azuay	Cañar	Comparison
Proxy-closing open-air dumps	Policy implementation	Fully implemented in Cuenca and some progress in few other municipalities. However, policy goal not achieved at a regional level and risk of setbacks.	Fully implemented at a provincial level. Cañar only province certified as "free of open-air dumps" in Ecuador (July, 2018)	Different

Document analysis also provided some data regarding the status of the implementation of the policy in 2015 that was contrasted with fieldwork findings.

The following tables show the situation in Azuay

Table 18:Type of SWM disposal method in Azuay province (Source: Author based on data from Ministry of Environment, 2015)

Nr.	Municipality	Open-air dumps 2015	Open-air dumps 2018	Landfill 2015	Landfill 2018
1	OÑA	1	1	0	0
2	PAUTE	1	0	0	0
3	PUCARÁ	1	0	0	1
4	CAMILO PONCE ENRÍQUEZ	1	1	0	0
5	CUENCA	0	0	1	1
6	GIRÓN	1	0	0	1
7	GUACHAPALA	1	0	0	1
8	GUALACEO	1	0	0	1
9	NABÓN	1	0	0	1
10	SAN FERNANDO	2	0	0	1

11	SANTA ISABEL	0	0	1	1
12	SEVILLA DE ORO	2	0	0	1
13	SIGSIG	1	0	0	1
14	CHORDELEG	NO DATA	NO DATA	NO DATA	NO DATA
15	EL PAN	NO DATA	NO DATA	NO DATA	NO DATA
	TOTAL	**13**	**2**	**2**	**10**

In the case of Azuay, only Cuenca and Santa Isabel disposed their waste on landfills. Thirteen open-air dumps had only two years left to meet the 2017 deadline established by the new environmental regulation otherwise they would have had to face economic sanctions. Interviews during fieldwork confirmed that in 2018 the region made a great progress passing from 13 to 2 open-air dumps, however the province did not reach the target.

In the case of Cañar, the following table shows data from 2015 contrasted with findings of this research in 2018.

Table 19:Type of SWM disposal method in Cañar province (Source: Author based on data from Ministry of Environment, 2015 and author´s findings in 2018)

Nr.	Municipality	Open-air dumps 2015	Open-air dumps 2018	Landfill 2015	Landfill 2018
1	BIBLÍAN	1	0	0	1
2	CAÑAR	2	0	0	1
3	EL TAMBO	2	0	0	1
4	LA TRONCAL	1	0	0	0
5	SUSCAL	1	0	0	1
6	AZOGUES	1	0	1	1
7	DELEG	1	0	0	1
	TOTAL	**9**	**0**	**1**	**6**

In 2018, this research revealed that Cañar was the only province that completely eliminated the open-air dumps. They went from 9 open-air dumps in 2015 to none in 2018.

As stated above, the findings reveal that Azuay did reduce the open-air dumps from 13 to 2. However, the province did not achieve the goal of getting certified as a province free of open-air dumps. If the province had an on-going process to reach that goal with specific deadlines then it could have been classified as “partially implemented.” However, the recent unsuccessful collaborative projects show even a risk of transforming existing final waste disposition option into open-air dumps if no alternative SWM solutions are found in the short term. On the other hand, Cañar province has been certified by MAE as the only and first province in Ecuador free of open-air dumps.

The institutional arrangements measured as type of arrangement are similar in both sub-cases. Therefore, no difference was found in regards to this indicator. However, when analyzing the indicator level of cooperation, the stronger collaborative results show a clear connection with the way of implementation. In other words, this case shows that the higher the cooperation level, the stronger the implementation of the policy. However, if Azuay in the following years manages to turn the predominant transactional IMC model into a provincial certification “free of open-air dumps” then the conclusions will be different. That achievement is possible, however, part of the success of reducing dumps (from 13 to 2) in the

previous years is also connected to the management of the two *mancomunidades* in Azuay. After the closing of this *mancomunidades* in 2018, it is uncertain if the transactional model will continue this trend or worsen the situation. Since the current data from Azuay is close to also reaching the goal, then the measurement of content outcome is very relevant to show stronger links between IMC levels and impact outcomes.

4.5.2. Content outcomes

Table 20:Content outcomes summary. Source: Author

Sub-variable	Indicator	Azuay	Cañar	Comparison
Content outcomes	Innovative character	*Cuenca is highly innovative and sets regional standards. Other municipalities indirectly benefit from knowledge sharing and replication. * EMMAICJ-Rio Jubones and EMMAICP innovated in type of collaborative IMC arrangement but failed in both process and content outcomes.	*Azogues sees Cuenca as a regional competitor. This leads to constant innovation also from a transactional IMC perspective. * EMMAIC-EP is the only example CA-EMR that innovates both in type of collaborative IMC and impact success.	Similar/Different
	Integral nature of solution	Only in Cuenca. Not integral solutions at a provincial level.	Good individual achievements in Azogues at a municipal level and outstanding achievements at provincial level.	Similar/Different
	Effectiveness of solutions	Highly effective in Cuenca. Low effectiveness in other municipalities and at a provincial level.	Effective in Azogues and effective at a provincial level. Less effective in other municipalities that do not belong to EMMAIC-EP.	Similar/Different
	Effectiveness in the future	Transactional model has higher risk of low effectiveness in the future.	Good example of EMMAIC-EP might lead to expansion and consolidation of collaborative model in the province which	Different

			might lead to more effectiveness in results.	

This sub-section discusses the findings regarding the sub-variable content outcomes. It follows similar format of previous chapters where 4 indicators are analyzed. The four indicators are innovative character, integral nature of solutions, effectiveness of solutions and effectiveness in the future. The following table summarizes the findings:

The first indicator, asks the following question:

Do you think that innovative ideas are developed during the project?

The findings reveal that both technological, economic, social and environmental innovations were developed in Azuay and Cañar provinces. EMAC leading the way in Azuay and EMMAIC-EP in Cañar. Therefore, the type of arrangement does not seem to affect the possibilities for innovation.

One example of economic innovation is the fact that EMAC innovated in attaching the SWM fee to the electricity bill to increase collection amounts. This innovation was later replicated in Cañar. An example of social innovation developed by EMMAIC-EP was convincing once-informal recyclers to formalize their jobs through a community organization and work for EMMAIC-EP on a permanent basis. EMAC led a technological innovation in standardizing all SW pick-up points of households in Cuenca. Both Cuenca, Azogues and EMMAIC-EP innovated through the transformation of organic waste into socio-environmental products such as compost and related products for agricultural and landscape use. The following quote illustrates some of these findings:

> *"In Cuenca, we have managed to have a sanitary landfill with a natural anaerobic process that produces gases and electrical generation. We have managed to have separation at the source with selective collection. It has achieved an inclusive recycling plan, but always with limitations. Because this plan of inclusive recycling that until now we work with 600 base recyclers, people who do not have many resources, not even to live, rather survive on it. We want to reach a better balance that gives them a better quality of life."* **R8.**

> *"[EMMAIC-EP] The state was absent. Then I thought about a contract system with basic salary. They [recyclers] receive 335 dollars monthly. Fixed In total they earn about $ 480 per month. They no longer depend only on the material they put together. Everyone earns that amount and they in return work properly, they cannot miss, etc. But it works like a clock and they are happy. They do not have a dependency relationship because we contract directly with the recycler's association. The association is their boss. Through a system of public purchases from Ecuador. Now they are formal recyclers, legalized, in better conditions. They separate the waste in the Waste Management Center. In terms of recycled material, USD 85,000 goes into the year, they cost USD 115,000. So, what really costs is about 35,000 USD and there are 15 families living with dignity. That does not exist in another Canton."* ***R10***

EMMAICJ-Rio Jubones and EMMAICP also innovated in the type of collaborative IMC arrangement in Azuay but later failed to demonstrate both process and content outcomes. On the other hand, EMMAIC-EP showed innovations in both ends.

While the research did not find any explanatory connections between the type of IMC arrangements and innovation, respondents argued that the type of SWM arrangement might have a stronger effect on the possibilities for innovation than IMC levels. When comparing public SWM company versus other type of SWM arrangements there seem to be a stronger connection with innovation connected to the amount of freedom, less bureaucracy and incentives for managers to stand out separately from municipal authorities. This is independent of IMC. That connection is worth exploring in other research projects given that this research found that EMAC and EMMAIC-EP have shown the highest level of ISWM innovation and both share the characteristic of being public SWM companies. However, this comparison goes beyond the scope of this research.

The second indicator has the following main question:

Do you think that different environmental functions have been connected sufficiently? Is there evidence of solutions implemented that integrate public health, environmental and circular economy outcomes?

The findings on this indicator were analyzed investigating the integral nature of the solutions at the municipal and provincial level. The responses are connected to what has already been mentioned in the discussion about innovation. There is evidence of integrated solutions in different IMC arrangements and in both sub-cases. However, when analyzing the most crucial integrative solution which involves closing the open-air dumps, only Cañar has demonstrated results at the provincial level. Closing open-air dumps has public health, environmental and circular economy outcomes that if only achieved at the municipal level it becomes unsustainable because as one respondent from EMAC said: “we have only one environment” and if the neighboring canton is polluting the soil and rivers the environmental consequences eventually affect the entire province and beyond.

Even when comparing within Cañar the mancomunidad and the provincial capital Azogues, research shows that EMMAIC-EP has done more progress regarding integrative solutions. The following quotes illustrate some of these differences:

> *“[Azogues] But currently we are seeing the idea of building a treatment plant for recyclable materials. But a treatment plant is not profitable. Rather, what we are proposing are repurchase centers. Municipal places where the citizens classify and go to sell to the municipality. And the municipality pays for the waste. And with that, all the citizens are involved. Here there are many families who live by recycling garbage informally. But we want to dignify them. Identifying the recyclers and we are giving you our part.”* ***R7***

> *“We also have an environmental compensation plan. We generated an irrigation support system in different plots to improve the soil, the grass and increase the volume of milk that can be generated. We have supported productive projects. Through the garbage we are generating food. That's the difference you can see with any sanitary landfill here. This project has to prove that it has created life opportunities for the inhabitants of Cañar.”* ***R10.***

These differences again indicate the leading role that EMMAIC-EP had in the transition towards ISWM in CA-EMR.

The third and fourth indicator both relate to effectiveness and thus are analyzed together. One regarding the effectiveness itself and the other one regarding the lasting effects in the long time. They answer the following questions:

Do you think that the solutions that have been developed really deal with the problems at hand? Do you think that the developed solutions are durable solutions for the future?

The findings here are connected to the proxy closing open-air dumps. Their effectiveness of the solution was measured by investigating if the achievement of the policy had other positive effects and was not achieved at the expense of losing results in other sectors. For instance, the sub-cases could have presented excellent results in closing open-air dumps but at the expense of raising the service fee or the amount of subsidy to the SWM sector.

The research reveals that EMMAIC-EP, the main leader for implementing the policy in Cañar not only achieved outstanding environmental, social and technical results but was also able to reduce the overall cost and the amount of money each member of the *empresa mancomunada* had to pay. This also happened without considerably increasing the SWM fee. The following quote from a representative from EMMAIC-EP illustrates the findings:

> *"In all these years we have saved the municipalities about 4.200.000 USD. In 6 years. Super hyper well. In 6 years of life, we have had a leading role to improve the quality of life from the management of solid waste. They have made us recognitions not only in the country. We have been recognized by the Ministry of the Environment, we have won the USD 400,000 Green Award for the company. That doubled our patrimony. We bought a sweeper that is a very important thing for urban waste. We have a turner for the organic waste in the organic treatment plant. That accelerates the decomposition process. Very interesting."* ***R10***

In terms of financial self-sufficiency, EMAC is the only example that does not rely on subsidies or contributions from other municipal funds. Representatives from EMMAIC-EP argued that they are currently at a 60/40 relation in regards to income from SWM fee and from members (municipalities) contributions. They are aiming to reach a 75/25 relation but the wealth levels of the citizens of Cañar would hardly allow a 100% reliance on service fees as in Cuenca.

The other example of effectiveness of solution is Azogues which is able to continuously improve to reach to similar levels of efficiency as Cuenca even working from the municipal bureaucracy. The less effective examples are the other municipalities that do not belong to EMMAIC-EP in Cañar or the municipalities that once were organized in *mancomunidades* and now have to resort to improvised ineffective and costly solutions such as buying the service from neighboring municipalities.

However, in the sub-case of Cañar province, EMMAIC-EP has a stronger leadership role than Azogues which might lead to expansion and consolidation of the collaborative IMC model rather than the transactional one in the future. On the other hand, the recently failed collaborative IMC efforts in Azuay and the leading role of EMAC in the province indicates that transactional types of IMC might get strengthened. In alignment with this thesis findings, this will likely lead to effectiveness in the future in the sub-case Cañar and less positive results for Azuay.

4.6. A chain of effects: how the independent variable influences the intermediary variable and how these affect the dependent variable.

As indicated on the previous sections, there are particular sub-variables that have stronger influence on the independent, intermediate and dependent variables.

The findings indicate that in regards to the independent variable, leadership and network management and common ground have a stronger influence connected to the intermediate variable IMC. This is reflected by the fact that while Azuay and Cañar had similar stakeholder characteristics, particularly in the municipal features and management capacity, they had clear differences in regards to the other two sub-variables in almost all indicators.

Overall, the findings show that stakeholders characteristics are an important factor influencing IMC, particularly the indicators related to the community-based participation characteristics. Municipal features play a role in generating economic incentives to cooperate in both sub-cases. However, the practice of patronage in political leadership could be a stronger factor for blocking cooperation even in the presence of economic incentives. Similarly, other types of horizontal leadership might enhance IMC even despite the differences. Therefore, stakeholders' characteristics shows to be an important but not determinant factor leading to IMC. On the other hand, Azuay and Cañar show differences in common ground and leadership and network management that are directly linked to differences in IMC. These differences are also related to either community-based common arenas or community oriented horizontal leadership approaches which are more present in Cañar.

In relation to the IMC variable, there are no big differences among the cases in regards to type of arrangements. Both sub-cases had similar institutional arrangements such as joint ventures. However, there are differences in terms of process outcomes and level of cooperation. Cañar shows the most positive results in regards to these variables.

These differences in IMC are connected to the differences also found in the dependent variable impact outcomes. In simple words, Cañar had the most positive results in IMC sub-variables and impact outcomes sub-variables. In regards to impact outcomes, the proxy "closing open-air dumps" measured policy implementation which only Cañar showed full implementation at the provincial level. However, since the quantitative results are too close, content outcomes show stronger differences. While innovative and integral solutions happened in both sub-cases at the municipal level, Cañar was able to combine process and content outcomes at a provincial level. For instance, Cañar did not only show an innovation in being the only *empresa mancomunada* (type of arrangement) that fully implemented the SWM policy at the provincial level but was also able to save costs for each of the members of the joint venture, produce integral and innovate solutions and expand the effectiveness and incentives for future IMC projects in the region.

Overall, the value-added of active community-based organizations in the form of Cabildos present in Cañar (linked to common ground) and the difference in leadership skills and approaches are the stronger leading factors explaining differences in process outcomes.

The outstanding success of EMMAIC-EP in Azuay and the failure of EMMAICJ-Rio Jubones and EMMAICP to continue their joint venture explain the main differences related to both process outcomes and content outcomes.

These empirical differences among the sub-cases provide a strong base to answer the research questions. Chapter 5 presents the research conclusions, limitations and recommendations.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1.Research purpose

Waste can pollute our oceans or illuminate our cities. It can generate diseases or fertilize urban gardens. It can be the source of many of our problems or the resource for a plethora of solutions. The difference lies in how societies manage waste. In most societies, municipalities are in charge of managing waste. However, while waste has no borders, municipalities do.

Previous research has shown that municipalities can benefit from cooperating with other municipalities to provide services more efficiently. One of these services is SWM, which can be a complex and costly endeavor; particularly in intermediate and small cities from emerging economies. However, most of the research on IMC so far has been focusing on European and USA contexts and without particular attention to neighboring small and intermediate cities which is where half of the world´s urban dwellers reside.

This thesis expands the knowledge on IMC, SWM and the interconnections between them in the context of CA-EMR in Ecuador and using ISWM lenses. This thesis followed Agranoff and McGuire (2003) definition that conceives IMC as a process involving joint agreements and co-production among municipalities as a means to gain economies of scale, improve service quality, and promote regional service coordination.

The objective of this thesis was twofold. First, it focused on identifying and explaining the factors leading to the current IMC levels in CA-EMR. Secondly, it provided an explanation on which IMC levels lead to different ISWM outcomes. Through a nested case study comparing two provinces (Azuay and Cañar) within CA-EMR as sub-cases both parts of the objective were achieved. In addition to achieving the research objective, the extensive in-depth data shows other important empirical findings that could spark new research projects and policy action.

The researcher developed a tailor-made conceptual framework based on a literature review of 6 main concepts: emerging metropolitan regions, secondary cities, solid waste management, inter-municipal cooperation, network outcomes and leading factors of IMC.

The following sub-sections answer the research questions and explain the main conclusions.

5.2. Conclusions

This section answers sub-questions 1, 2, 3 and 4 to conclude to the answer to the main research question.

5.2.1. Sub-question 1: Which are the factors that explain inter-municipal cooperation according to literature?

As part of the literature review (see chapter 2), the factors that explain IMC were phrased as leading factors. For purposes of focus, relevance to existing literature and exploration of new approaches to analyze IMC, the researcher classified them in three general categories: a. stakeholder characteristics, b. leadership and network management and c. common ground.

Two theoretical frameworks influenced this classification. A conceptual framework on collaborative governance (Ansell and Gash, 2007) and a framework for analyzing inter-municipal cooperation within the environmental sector (Lintz, 2016). Both frameworks while having variations, follow a similar three-step process. First, there are the initial conditions or problem characteristics, which influence a particular collaboration or negotiation process that leads to certain outcomes. In these two frameworks leadership (facilitative) and stakeholder characteristics are included as leading factors of collaborative inter-municipal interactions.

A recent extensive analysis of factors leading to IMC by Bel and Warner (2015) argue that the main theoretical contributions can be classified into two major groups: a. cost and fiscal factors and b. organizational and governance characteristics.

Regarding cost and fiscal factors, the discussions focus on geographic scale and density required to reach optimal levels for economies of scale with variables such as volume of service, size of population, and dispersion of population (Ladd 1992). Most empirical findings conclude that rather than amalgamation (integrating municipalities into one administrative unit) an alternative to address suboptimal jurisdictional functionality and reduce costs is IMC (Bel and Warner, 2015). In relation to governance and institutional factors, the main problem addressed in literature is the fragmentation of local government systems in service delivery (Bel and Warner 2015). Among the governance factors of IMC, authors found that a. homogeneity of interests and institutional structures (Feiock 2007), b. longer tenure and network management (Brown and Potoski 2003; Hefetz, Warner, and Vigoda-Gadot 2015) as well as c. regional governance bodies (Thurmaier and Wood 2004; Wood 2006; Bel, Fageda, and Mur 2013) could lead to better IMC levels.

While Bel and Warner (2015) classify the limited available literature into economic and governance characteristics, this thesis include them in a combined sub-variable (stakeholders characteristic) that also includes some elements of starting conditions (Ansell and Gash, 2007)

Within this framework (Ansell and Gash, 2007), previous history of conflict or cooperation and values, knowledge and power asymmetries are preconditions of the collaborative process. This thesis understands this precondition as presence or absence of common ground which is an influential factor or condition for collaboration (Innes and Booher, 1999; Edelenbos and van Meerkerk, 2017).

In sum, this thesis found that exiting literature on leadership, common ground and stakeholders characteristics serves for theorizing and operationalizing leading factors of IMC (see chapter 2).

5.2.2. Sub-question 2: What are the current levels of IMC within the solid waste management network in Cuenca-Azogues Emerging Metropolitan Region (CA-EMR)?

The findings (see chapter 4) revealed that while there are various forms of SWM arrangement, the current levels of IMC can be categorized into a. indirect, b. transactional and c. collaborative with their corresponding low, medium and high levels of IMC.

Comparing sub-cases, the findings indicate that Azuay and Cañar have similar IMC arrangements including a. joint ventures, b. municipal public companies, b. SWM system within municipal structure and d. external contracting within the region. However, the difference exist on which particular arrangement has a stronger leading role in the province. In Azuay the most predominant form of IMC is transactional IMC based on the leading role of EMAC in Cuenca. On the other hand, Cañar presents high levels of collaborative IMC through the leadership of the joint venture EMMAIC-EP. The relevance of a particular level of IMC in the province also has effects on process outcomes and vice-versa.

5.2.3. Sub-question 3: What factors of IMC provided by literature explain the current levels of IMC within the solid waste management network in CA-EMR?

As mentioned above, the leading factors of IMC provided by literature are (a) stakeholders characteristics, (b) leadership and network management and (c) common ground.

The findings reveal that leadership and network management have a higher influence than stakeholders characteristics for explaining current IMC levels in both sub-cases. Comparing leadership and network management and common ground, this research could not measure which factor has a higher effect than the other since responses were split and also various respondents indicated equal weight to both sub-variables. However, the findings show there are interactions among both because high levels of common ground within the Cabildos allow the practice of facilitative leadership given the horizontal nature of this form of community-based participation. Similarly, facilitative, boundary spanning, connective and other types of horizontal leadership within the Cabildos helps increase the level of common ground through improving network management and increasing citizen commitment.

5.2.4. Sub-question 4: What IMC level led to the implementation of ISWM policy in CA-EMR?

The findings showed that high levels of collaborative IMC lead to better ISWM impact outcomes measured both by policy implementation and content outcomes. However, since the policy implementation numbers are close to each other, content outcomes show the most differences between sub-cases in terms of impact outcomes.

While there are policy implementation and ISWM impact outcomes at the municipal level in both sub-cases, the difference exists when analyzing the outcomes from a provincial perspective.

In other words, Cañar, which had high collaborative levels of IMC also demonstrated better policy implementation and impact outcomes at a provincial level.

5.2.5. Main research question: Which factors explain the current inter-municipal cooperation levels within the solid waste management

network in Cuenca-Azogues Emerging Metropolitan Region and what IMC level enhanced Integrated Sustainable Waste Management?

Previous research that treated IMC as an independent variable operationalize it as a dummy variable making no differences regarding the type of IMC arrangement (see Bel and Warner, 2015). Other relevant literature treats IMC as a dependent variable and explores the leading factors or conditions that explain why certain municipalities choose IMC while others do not (see Bel and Warner, 2015). This research treated IMC as an intermediate variable that has leading factors and also generates impact outcomes.

Overall, the findings are aligned with existing literature on common ground and leadership and network management as leading factors of IMC. However, it provides new insights on the limits of stakeholder's characteristics when confronted with particular types of leadership styles and community-based civic culture.

Further, the differences in the independent variable between subcases did not lead to differences in the type of cooperation arrangements. However, findings reveled differences in the level of cooperation showing transactional level in Azuay and collaborative level in Cañar.

In terms of process outcomes, there are clear differences in all the indicators which is linked to clear differences in all indicators regarding leadership between subcases. The clear difference in terms of network arenas among cases is also linked to this results in process outcomes. All these findings are aligned with literature on collaborative governance, leadership and common ground that indicate that higher level of these variables lead to high levels of process outcomes.

These differences in process outcomes also explain the differences in content outcomes. The main differences in regards to content found in the research is related to the integrative and effectiveness in the future indicators. Research shows that the better the result in process outcomes, the higher the chances of collective success and effectiveness in time of the project which is also connected to high levels of support (indicator of process outcome).

Bottom-up community participation or communitarian civic culture related topics showed differences in all sub-variables when comparing at the indicator level. In the case of stakeholder characteristics, the indicators stakeholders' sectors and cultural and political history showed these types of differences. Similarly, in terms of IMC levels, all process outcomes indicators show that Cañar has more positive outcomes because of their community-based approach. This effect of the community-based approach, horizontal leadership and related features however would not have direct effects if a collaborative process was not materialized, as in this case with the work of *empresa mancomunada* EMMAIC-EP in Cañar.

5.3.Limitations, recommendations and suggestions for further research

These findings while exhaustive had limitations that could be improved through further research.

In terms of theory, more research similar to the meta-analysis on factors of IMC (Bel and Warner, 2015) but focused on analyzing studies IMC outcomes could improve future approaches to the theoretical framework. Similarly, a more in-depth review comparing different leadership approaches with particular focus on the ones facilitating collaborative governance could allow more detailed research in the field. Along these lines, the concepts of patronage leadership and co-responsibility leadership found empirically could be further

analyzed and explored. Finally, a third theoretical work comparing community-based organizations and more structured types of civic participation could provide new insights regarding the findings associated with the relevance of *Cabildos and Mingas* in this study.

In terms of methodology, longitudinal research could explain if the findings of this research hold true in a longer time span. Also, the findings of this work provide some basis to elaborate more structured types of data collection that could also take the form of quantitative and mix method research approach comparing cases. This could help improve the external validity of future work and making findings more comparable.

Going further, this research could be replicated in other emerging metropolitan regions with similar characteristics in other parts of Ecuador, LAC and beyond. This could lead to strengthening the literature on the fields and promoting policy changes that could transform traditional ways of solid waste management into new ways of integrative, inclusive and sustainable governance.

Nevertheless, besides the methodological and logistical limitations and the long research agenda on IMC and ISWM, this thesis has succeeded in expanding the IMC and ISWM debate beyond European and USA contexts. The researcher hopes this work inspire others to join the conversation.

Let´s invest time on waste and let's prevent emerging metropolitan cities from wasting their valuable management time.

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ANNEX 1: Interview guide

Interview guide for selected respondents / Manual de entrevista para participantes seleccionados.

This was the initial guide for all interviews. However, based on the answers and type of respondent, the language and approach were adapted. Also, most respondents would prefer to start with a general introduction that often would answer already some questions. Therefore, to avoid repetition, the researcher had skip certain questions.

Tema de investigación: Mejoramiento de la cooperación inter-municipal entre actores clave en la red de gestión de residuos sólidos de la Región Metropolitana Emergente de Cuenca.

Research topic: Improving inter-municipal cooperation among stakeholders in the solid waste management network of Cuenca´s Emerging Metropolitan Region.

Spanish	**English**
Parte I: Introducción Hola, mi nombre es Mario Villalba, soy investigador-estudiante del Instituto Internacional de Gestión Urbana de la Universidad Erasmus de Rotterdam, Países Bajos. Antes que nada, muchas gracias por acceder a esta entrevista, por su interés y su tiempo. El objetivo de esta investigación es explicar qué factores (y cómo estos) ayudan a una mejor cooperación entre distintos actores en la red de residuos sólidos de CA-EMR. Para ello voy a hacerle preguntas relacionas a entender quiénes son los principales actores de la red, cuales son los principales desafíos en materia de residuos sólidos y cuál es el nivel actual de cooperación. Seguidamente, le haré preguntas relacionadas a cómo mejorar dicha cooperación entre distintos municipios de CA-EMR Esta entrevista tiene objetivos netamente académicos. Las respuestas de esta entrevista serán codificadas de manera anónima. ¿Está de acuerdo en que yo pueda grabar esta entrevista para facilitarme el análisis posterior? Muchas gracias. P1: ¿Hace cuánto tiempo Usted vive en Cuenca? P2: ¿Cómo empezó a relacionarse al sector de residuos sólidos?	**Part I: Introduction** Hi, my name is Mario Villalba, student-researcher from IHS, Erasmus University Rotterdam. Before we start, I would like to thank you for taking the time for this interview. The objective of this research is to explain how specific factors lead to better inter-municipal cooperation among different stakeholders in the solid waste management network of CA-EMR. For this, I will ask you questions related to understanding the main actors in the SWM network, which are the main SWM challenges and the existing level of cooperation. After that, I will make questions regarding how to improve the cooperation among different municipalities in CA-EMR. This interview has purely academic purposes. The answers of this interview will be coded anonymously. Do you agree that I record this interview to facilitate my analysis later? Thank you very much. P1: For how long have you been living in Cuenca? P2: What is your connection to the SWM sector?
Parte II: Actores clave, principales desafíos y avances en gestión de RSU. P3: ¿Quiénes son los principales actores del sector de residuos sólidos en Cuenca y su región metropolitana emergente?	**Part II: Key stakeholders, main challenges and highlights in SWM.** Q3: Who are the main stakeholders in SWM in CA-EMR and its emerging metropolitan region? Q4: Which are the main issues regarding SWM in

P4: ¿Cuáles son los principales desafíos en relación a los residuos sólidos urbanos en Cuenca y su región metropolitana emergente? ¿Hay desafíos compartidos entre varios municipios/cantones? P5: ¿Quiénes son los principales actores/instituciones involucradas o afectadas por estos desafíos? P6: ¿Quiénes son los actores que pueden generar las soluciones a estos problemas? ¿Cuáles son sus principales características? P7: ¿Como las diferencias entre actores explica diferencias en IMC y en resultados en la región?	CA-EMRC? Are these issues common to various municipalities in the region? Q5: Who are the main stakeholders affected by the issues? Q6: Who are the main stakeholders from the SWM sector that could bring solutions to the issues? Which are their main characteristics? Q7: How do differences in stakeholders , if so, affect the IMC levels and outcomes?
Parte III: Colaboración multi-actores P8: ¿Hay algún proceso activo de colaboración entre más de dos municipalidades? ¿Colaboran de manera permanente? ¿De manera ad-hoc?	**Part III: Multi-stakeholder collaboration** Q8: Is there an active process between more than two municipalities? To what extent do they collaborate on common projects on a permanent basis? In which ways, if so, do stakeholders collaborate on an ad-hoc basis?

Parte IV: Gestión de la red y liderazgo P9: ¿Cómo inician las interacciones entre los actores clave? ¿Quién las inicia? P10: ¿Cuando hay conflictos, como los actores resuelven sus disputas? P11: ¿Hay líderes que conectan a los distintos sectores? ¿Si es así, de qué manera? ¿Cuáles son sus principales características? P12: ¿Cuál es la principal contribución de estos líderes? ¿En qué manera estos líderes contribuyen a una mejor interacción en la red de residuos sólidos?	**Part IV: Network management and leadership** P9: How do interactions among stakeholders' initiate? Who starts them? P10: When there are conflicts, how do stakeholders resolve their disagreements? Q11: Are there any leaders connecting different sectors? If so, who are they? What are their main skills and characteristics? Q12: What is the main contribution of leaders? In what ways do they contribute to better network interaction, if so?

Parte V: Institucionalización de procesos y campo compartido. P13: ¿Cuáles son los procesos naturales de la red? ¿Cuáles son los canales de participación? ¿Es una red inclusiva o exclusiva? P14: ¿Cuáles son los valores, normas y reglas institucionales de la red? P15: ¿Hasta qué punto, estas características institucionales de la red facilitan la interacción? P16: ¿Cuáles son los intereses, incentivos y agendas de los principales actores? P17: ¿En la red, los distintos actores comparten espacios comunes en donde pueden intercambiar opiniones, intereses y objetivos? P18: ¿En la red, los actores tienen intereses, incentivos y agendas compartidas?	**Part V: IMC arrangements and common ground** Q13: What are the natural processes of the network? Are there any participation channels and tools available to stakeholders/citizens? Are they inclusive or exclusive? Q14: What are the values, norms and institutional rules of the network? Q15: To what extent do these institutional features facilitate interactions? Q16: What are the interest, incentives and agendas of the main stakeholders? Q17: In the network, do the different stakeholders share common arenas where they can share interests, goals, and understanding? Q18: In the network, do the stakeholders share interest, incentives and agendas?
Parte VI: Conclusión Ya para ir terminando la entrevista, y de nuevo agradeciéndole por su tiempo…voy a hacerle dos preguntas. P19: ¿Cómo Usted ve el presente y futuro de CA-EMR y su región metropolitana emergente en relación a la cooperación intermunicipal en residuos sólidos urbanos? P20: Por último, ¿podría recomendarme a algún actor clave que Usted crea importante entrevistar para investigación? Muchas gracias. Toda esta información será muy valiosa.	**Part VI: Conclusion** Just about to finish the interview, I would like to thank you again for your time…and ask two more questions. P19: How do you see the present and future of CA-EMR and its emerging metropolitan region in regards to inter-municipal cooperation on solid waste management? P20: Finally, could you recommend me a key stakeholder you think I should interview for the purposes of this research? Thank you very much. All this information is very valuable.

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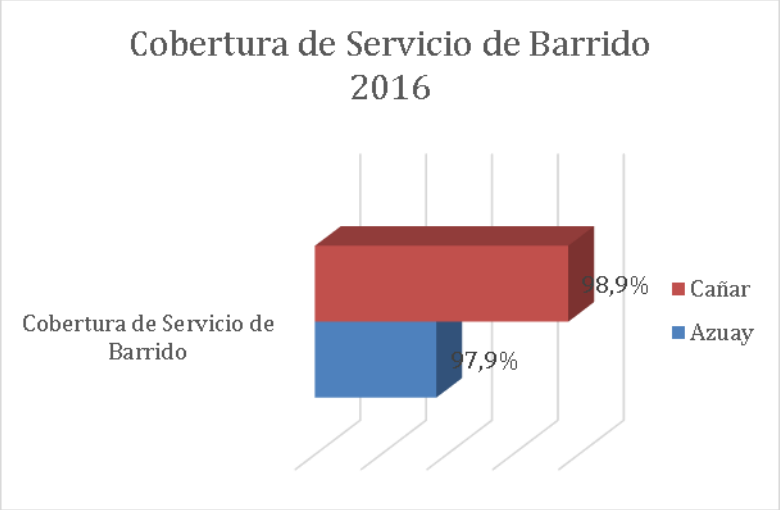
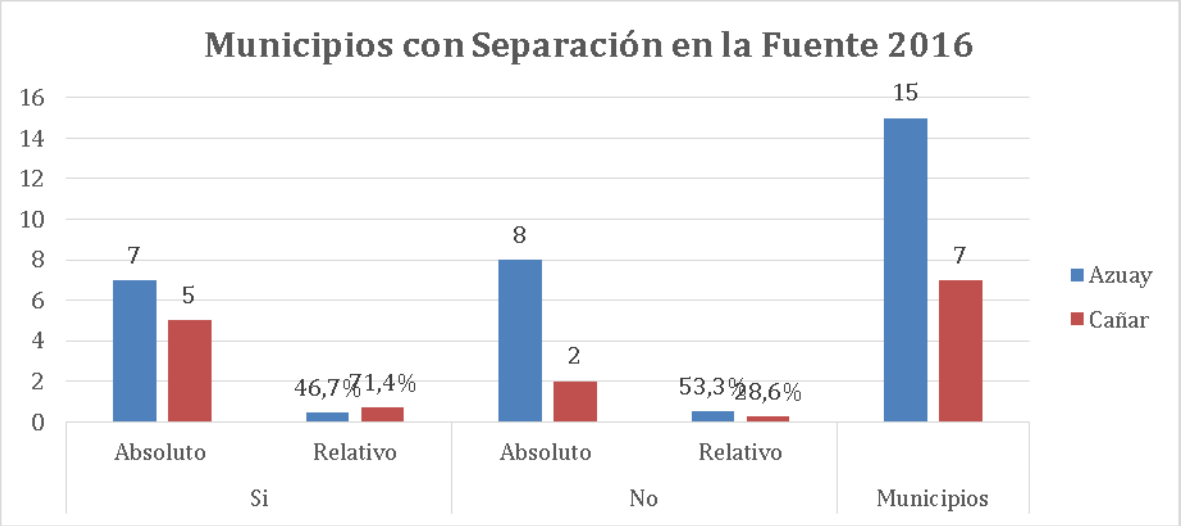
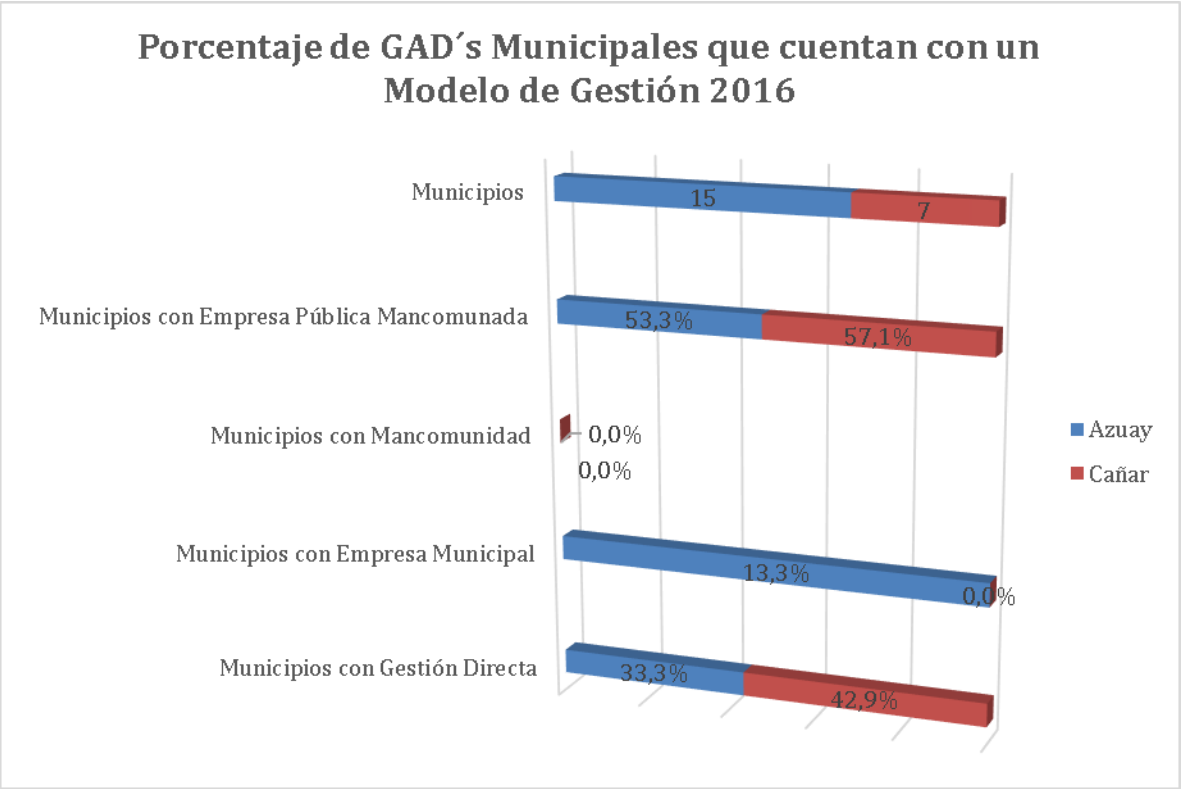
ANNEX 3 : COMPLEMENTARY COMPARATIVE QUANTITATIVE DATA BETWEEN SUB-CASES



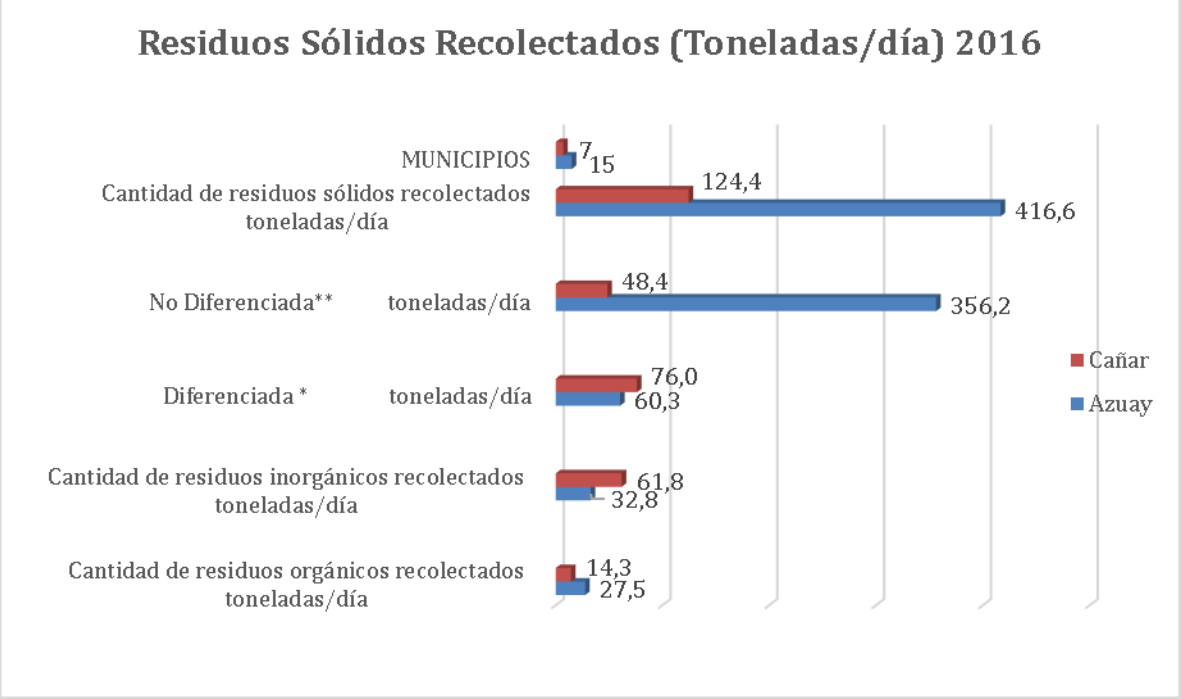
Graph 1: Coverage of sweep 2016. Source:INEC,Ecuador



Graph 2: Municipalities with separation at source 2016. Source: INEC, Ecuador

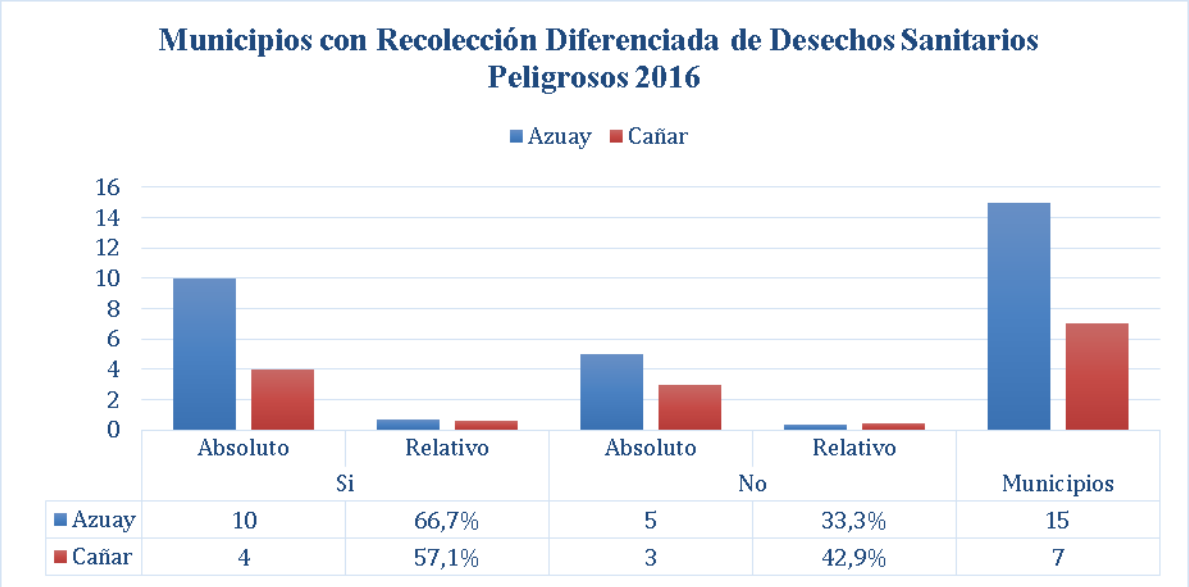


Graph 3: Percentage of autonomous decentralized municipal governments that have a management model 2016. Source: INEC, Ecuador

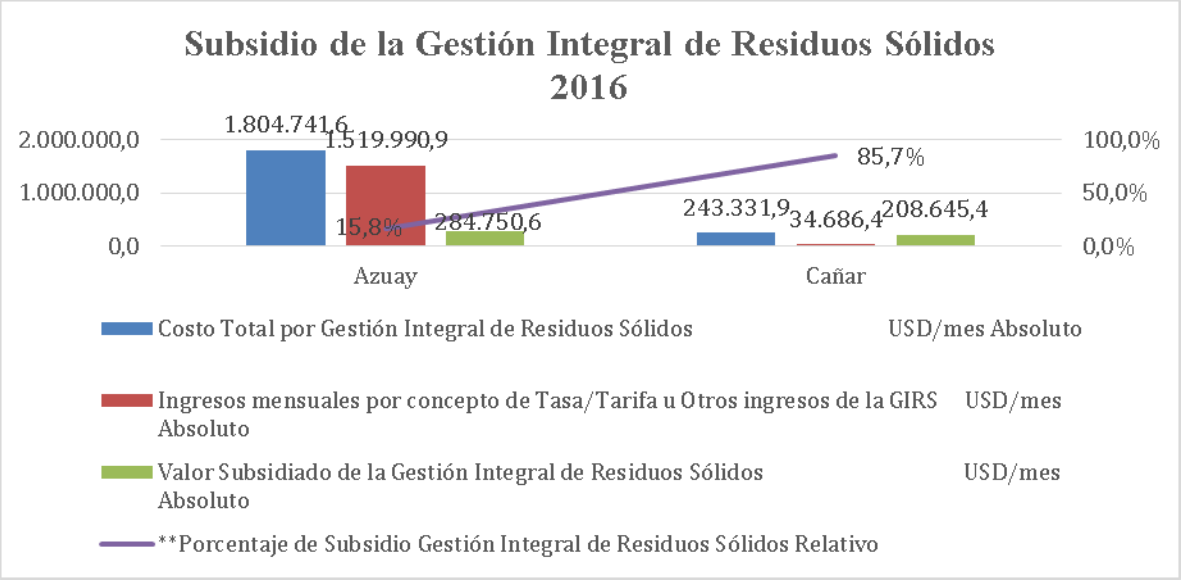


Graph 4: Waste solids collected (Ton/day)2016. Source: INEC, Ecuador

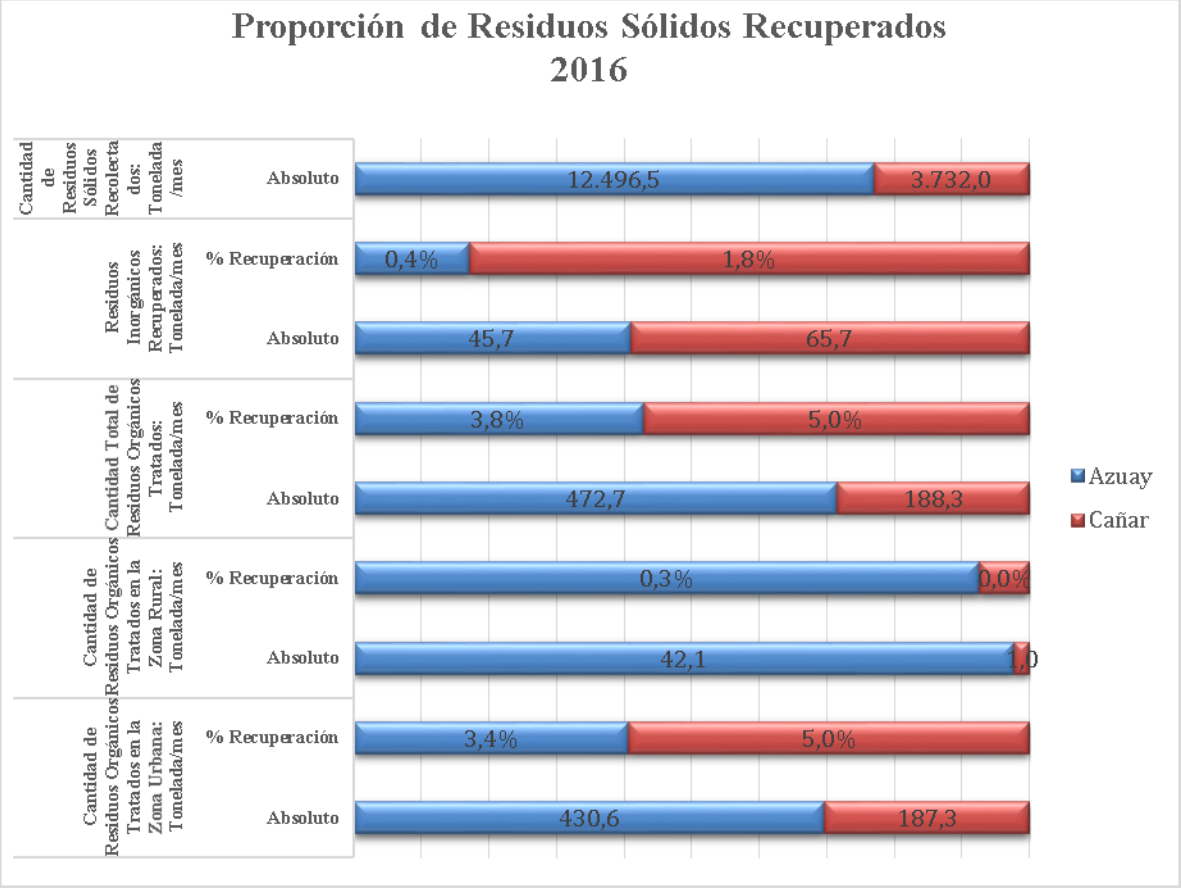
Graph 5: Type of final disposal of solid waste by municipality 2016. Source: INEC, Ecuador



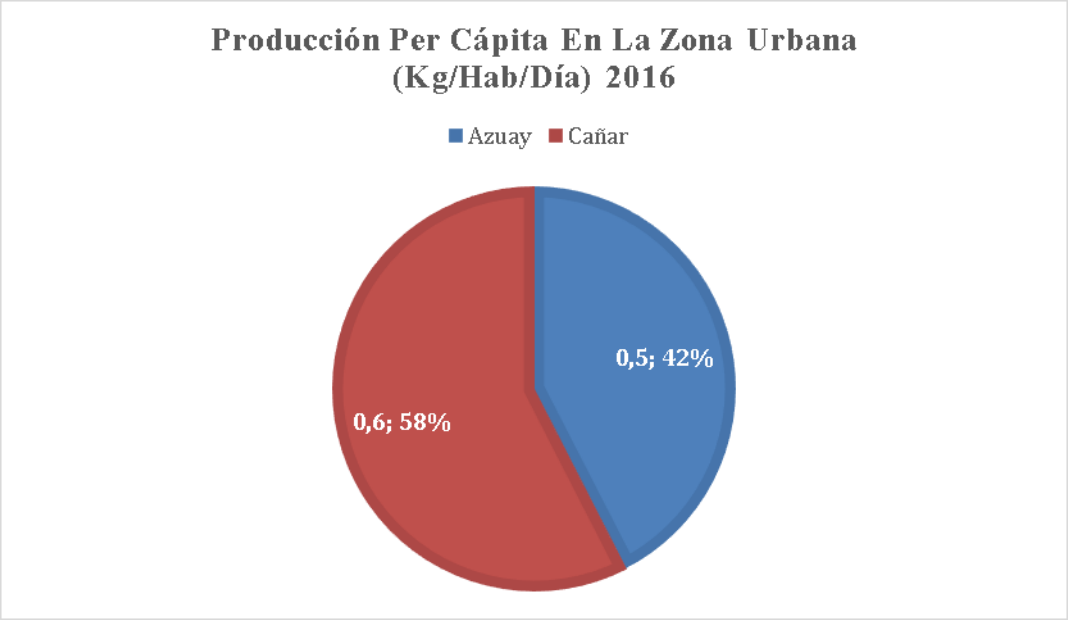
Graph 6: Municipalities with recycling of hazardous medical waste 2016. Source: INEC, Ecuador



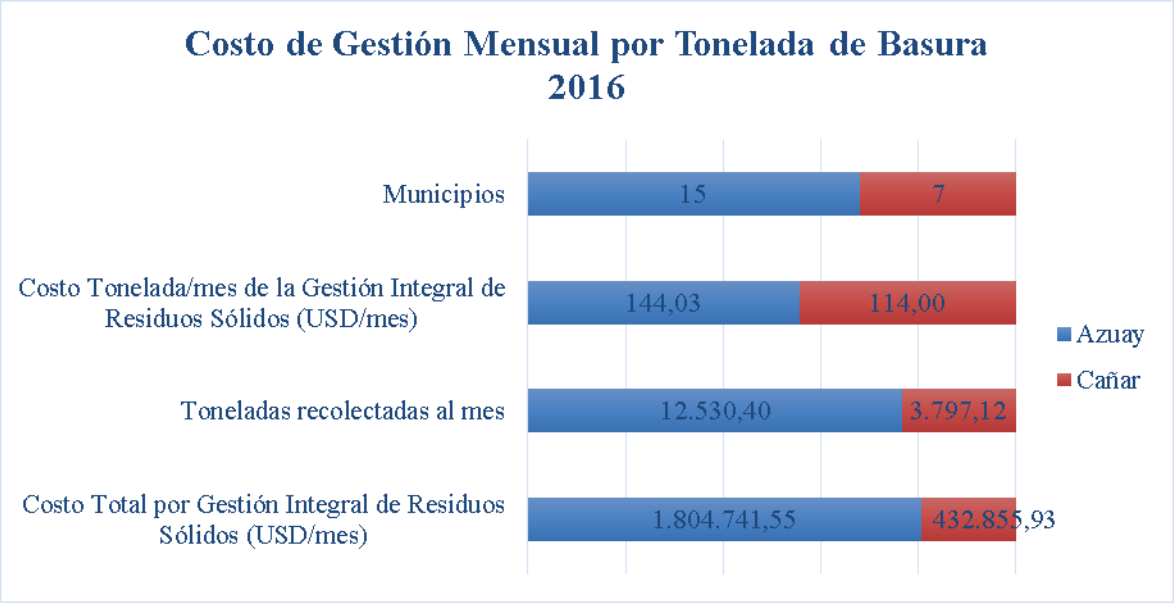
Graph 7: The Integral solid waste management grant 2016. Source: INEC, Ecuador



Graph 8: Proportion of recovered waste 2016. Source: INEC, Ecuador



Graph 9: Production per capita in the urban area (Kg/inhabitant/day)2016. Source: INEC, Ecuador



Graph 10: Cost of management monthly per ton of garbage, 2016. Source: INEC, Ecuador