SERIE DE DOCUMENTOS
DE TRABAJO FEIPU

ISSNe: 2745-2085

Nº. 6

Elusive Urban - Regional Governance: The Sustainable Development Challenge of Megacities in Latin America

Patricia Acosta-Restrepo
Clara Isabel Gómez-García

Universidad del Rosario | Facultad de Estudios Internacionales, Políticos y Urbanos

Elusive urban - regional governance : the sustainable development challenge of megacities in Latin America / Patricia Acosta Restrepo, Clara Isabel Gómez García -- Bogotá: Universidad del Rosario. Facultad de Estudios Internacionales, Políticos y Urbanos, 2022.

47 páginas: ilustraciones, mapas y gráficas. -- (Documento de trabajo FEIPU ; 6)

Incluye referencias bibliográficas.

ISSNe: 2745-2085

1. Megaciudades – Latino America. 2. Desarrollo urbano sostenible. 3. Gobernabilidad. 4. Desarrollo económico y social. 5. Latino América – Desarrollo sostenible. 6. Bogotá. 7. Buenos Aires 8. Ciudad de México. 9. Rio de Janeiro 10. Sao Paulo 11. Lima. I. Acosta Restrepo, Patricia. II. Gómez García, Clara Isabel. III. Universidad del Rosario. Facultad de Estudios Internacionales, Políticos y Urbanos. V. Título. VI. Serie.

307.1216 SCDD 20

Catalogación en la fuente -- Universidad del Rosario. CRAI

DJGR diciembre 24 de 2022

Elusive Urban - Regional Governance: The Sustainable Development Challenge of Megacities in Latin America

Patricia Acosta-Restrepo
Clara Isabel Gómez-García

Universidad del Rosario
Facultad de Estudios Internacionales, Políticos y Urbanos
Editorial Universidad del Rosario
Bogotá, D.C.
Diciembre de 2022

Patricia Acosta-Restrepo
Clara Isabel Gómez-García

Editorial Universidad del Rosario
Facultad de Estudios Internacionales, Políticos y Urbanos

ISSN: 2745-2085
Doi: https://doi.org/10.12804/issne.2745-2085_10336.37999_feipu

Laura Rodríguez
Corrección de estilo

Fredy Johan Espitia B.
Diagramación

Primera edición: diciembre de 2022
Hecho en Colombia
Made in Colombia

Universidad del Rosario | Facultad de Estudios Internacionales, Políticos y Urbanos

Contenido

Elusive Urban - Regional Governance: The Sustainable Development Challenge of Megacities in Latin America*

Patricia Acosta-Restrepo**
Clara Isabel Gómez-García***

Abstract

Four of the world's megacities have consolidated in the Latin American (LatAm) region: Mexico City, Sao Paulo, Rio de Janeiro, and Buenos Aires, while there are two more in the process: Lima and Bogota. These big urban agglomerations are not only essential national economic engines of major demographic significance; but have extended into city-regions which embody the most acute development challenges: environmental degradation, resource inefficiency, social exclusion, income inequality, impoverishment, insecurity, violence, social and economic vulnerability to climate change, and corresponding liveability concerns. In brief, LatAm's megacities are dealing with the

* This Working paper is the detailed research dossier developed as the basis for our contribution to the summary report of the exploratory phase of the "Better Megacity Governance in the Global South" initiative, of the Idea Lab Program of the Fudan-Latin America University Consortium (FLAUC) published december 2022. The document is available at the following link: https://flauc.fudan.edu.cn/56/4f/c40136a480847/page.htm

Special Thanks to Nicolás Linares, student of the Urban Management Development Undergraduate Program and LabDTerritorios Research Assistant 2021-2022 for his contributions to the City Profiles.

** Author. Professor of the Practice. Urban -Studies and Planning. LabDTerritorios – Director. School of International, Political and Urban Studies. Universidad del Rosario.

*** Research Collaborator. School of International, Political and Urban Studies. Universidad del Rosario.

cumulative impacts and feedback loops of long-neglected mega-problems. This paper explores the strategies or institutional arrangements used to face these cities and city-regions' development issues and the governance practices implicit in different approaches used to manage key sectors. A review of existing comparative studies and cases, complemented by several interviews with local experts, suggests that specific political, administrative, and legal national contexts greatly define the options to formally approach these challenges at an appropriate geographic scale. However, our analysis highlights three issues for overcoming political and institutional hurdles, which hamper integrated planning, coordinated policies and investments at the megacity scale, and the limited implementation of formal, integrated management schemes, such as metropolitan areas, to address problems across and beyond metropolises effectively. The evaluation suggests both situations have promoted the emergence of alternate, sometimes informal, parallel network governance arrangements amongst a diversity of stakeholders.

Keywords: Megacity; Bogota; Buenos Aires; Mexico City; Rio de Janeiro; Sao Paulo; Lima; sustainable development; governance; megacity-region; metropolis; city-region.

Introduction

Four of the world's megacities have consolidated in the Latin American (LatAm) region: Mexico City, Sao Paulo, Rio de Janeiro, and Buenos Aires, while two more are considered megacities in progress: Lima and Bogota. Within their national urban systems, these urban agglomerations do not only concentrate a disproportionate demographic and economic share of the national populations and GDPs (Gilbert, 1995; Labbé et al., 2020) but have, over the last decades, continued to consolidate their national urban primacy. Similar to their Global North counterparts, LatAm urban giants have physically surpassed their local political-administrative boundaries, facing the natural management and governance challenges of fragmented local government over an otherwise geographical, functional, and territorial unit of greater scale (Labbé et al., 2020). However, in contrast with those *model* megacities, often used as institutional governance references to be followed (Lefevre, 2005), the interests of formal and informal drivers of urban development around these megacities of the Global South are best served by a perpetuation of biased local policies and political fragmentation, including the resulting opacity of public investments and land markets (Pradilla & Márquez, 2008). In other words, despite the obvious collective advantages of better governance arrangements, multiple common structural factors make similar institutional improvements in the Global South difficult.

LatAm mega-cities live with the cumulative impacts and feedback loops of long-neglected mega-problems. Since their rapid urbanization stages, which peaked between the 50s and the 70s, limited institutional capacity to provide infrastructure and manage urban service provision at the necessary pace and scale (Montoya, 2021), in tandem with the privatization of public goods and basic services in the 80s promoted chronic, unbalanced development between areas with payment capacity and those without (Pradilla & Márquez, 2008). This is evident in the uneven quality of the built environment, with infrastructure deficiencies and gaps which remain spatially imprinted in large portions of the territories that constitute them, despite progressive improvement. In the twenty-first century, the original metropolises have extended into city-regions, with stark contrasts between globally connected areas and substandard

peripheries of concentrated poverty and upper-class suburbs. This spatial configuration, reflecting engrained social inequalities, broad economic exclusion, and *laissez-faire* development, constitutes an integral part of the urban dynamics of LatAm cities, defined mainly by the interacting formal-informal land markets and economies driving their growth (Pradilla & Márquez, 2008).

It is difficult to fully understand, measure, and study these megacities as a geographic unit (Labbé et al., 2020). Their administrative and political fragmentation induces divisions between local governments with better revenues and those without, discourages cross subsidies and shared investments, and promotes localism for political gain. Therefore, integrated evaluation of the megacities' territorial and development challenges and planning for more effective management have faced strong opposition. The literature, as well as the interviews,[1] suggest that the narrow interests of a few stakeholders have prevailed at great social, environmental, and economic costs for the conglomerates and their surroundings, affecting the ability to deal with the challenges at the necessary scale (Magalhaes, 2010; Acosta, 2010). Nevertheless, in all cases, there have been policy reforms to establish formal political-administrative mechanisms to plan and manage these megacities. In the seven cases studied, there are at least two administrative units simultaneously in existence: one at the scale of the metropolis (core city) and another at the scale of the city-region. However, we found their *legal* existence does not imply they are fully functioning institutions.

The political economy underlying the adoption of those formal management-administrative entities, such as a diversity of types of metropolitan areas created legally, has hindered the implementation of integrated planning and coordination mechanisms for which they have been created. In several cases, engrained gaps are part of the problem, such as the absence of defined funding sources and incentives for supra-municipal projects and cooperation, as well as the weakened role of subnational entities as *multi-scalar brokers* (Magalhaes, 2010; Sigler et al., 2022). Despite a general absence of inter-municipal territorial planning and urban management mechanisms for LatAm megacities and adverse institutional conditions to shift from their urgencies to face their sustainable development priorities, it is also evident that some

1 We appreciate the contributions of the experts interviewed, especially: Fernanda Magalhaes, Professor at the Federal University of Rio de Janeiro, Fernando Paez, WRI Representative in Colombia, Manuela Lopez, Secretary of Transportation and Public Works, City of Buenos Aires, and Andrés Devoto, Associate Researcher from the Pontifical Catholic University of Peru. Their local knowledge and insights greatly enriched our work.

current practices explain improvements in several development imperatives, such as basic service provision and poverty alleviation. For that reason, this report explores two main questions: What strategies or arrangements have institutions used in LatAm megacities to impact key areas at the scale of the megacity, which could be useful for thinking about how to address their sustainable development challenges? And what governance practices are implicit in those different approaches?

To answer these questions, we reviewed a selection of comparative studies on metropolitan areas in Latin America and available specific city case studies of institutional and academic nature. We also conducted exploratory interviews with local experts about the general perceptions of practitioners and public servants on the implementation of existing formal governance arrangements and their impact. This report is organized into three sections. The first presents a conceptual governance framework developed to characterize some approaches, structures, and models associated with metropolitan and network governance. The second presents three key sustainable development challenges faced by LatAm megacities, where we highlight some practices that have been used to move forward with initiatives in sectors where megacities have desperately needed to resolve existing institutional impasses to deliver basic services. The third section highlights some insights from what these practices suggest about metropolitan and city-region governance as a sustainable development challenge for LatAm megacities.

Our institutional analysis highlights a shared difficulty in overcoming political and institutional hurdles, which hamper integrated planning. It also interferes with coordinated policies and investments at the megacity scale and the limited implementation of legally adopted, formal, integrated management schemes at different scales, affecting the capacity to effectively address problems across and beyond each megacity's core agglomeration. Finally, regarding political *stalemates* —formal agreements with implementation gaps, the evaluation suggests the emergence of isolated (sometimes informal), parallel network governance arrangements involving new groups of affected stakeholders, who depend on institutions' ability to move forward with transformative initiatives at the necessary scale.

1. Governance and Other Sustainable Development Challenges of LatAm Megacities

1.1. Formal Metropolitan Governance: A Common Aspiration amongst LatAm Megacities

Even though Sustainable Development Goal 11, Inclusive, Safe, Resilient and Sustainable Cities, involves specific territorial targets and indicators, it is no surprise that amongst those *ends*, two *means* are included as ends in themselves: i) *strengthening national and regional development planning* and ii) *integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and holistic risk management* (UN, 2022). Especially at the scale of the megacity, it is obvious that fragmented, discontinuous, and uncoordinated actions only exacerbate environmental, social, and economic challenges. Therefore, advancing toward forms of regional, integrated planning and management has become imperative, especially for those of the Global South. In other words, there is a dire need to overcome the political-economic factors hindering these megacities from necessary significant shifts in their development paths.

For several decades, academic and institutional literature showed great interest in the study of metropolitan areas in LatAm, in part to inform national dialogues and create the contexts to explore options for applicable metropolitan governance models for the different political and administrative contexts of the region. Table 1 summarizes the context for each megacity we have studied, illustrating the diverse political-administrative arrangements and identifying the entities created formally. We find that, for each observed megacity, there is an entity to integrate urban management at the scale of the *metropolis* and an entity formally adopted for encompassing it with the surrounding territories at the *city-region* scale. The maps in the megacity profiles (Annex 1) illustrate that the physical realities of the core metropolitan areas have broadly surpassed their administrative boundaries; that the definition of new ones at the scale

of their *city-regions*, in addition to multiple local level entities, in some cases involves numerous levels of subnational entities, adding to the complexity of horizontal integration and vertical coordination.[2]

In all cases, the political efforts behind the creation of these administrative entities have entailed special legal adaptations, even to the extent of Constitutional reforms. For example, in the case of *Bogota Capital District*, which was formerly explicitly excluded from becoming part of a metropolitan area, a Constitutional reform was necessary to allow the creation of the *Bogota-Cundinamarca Metropolitan Region* in 2021. Similarly, Mexico City, such a reform was necessary to elevate the Federal District to the status of State of the Mexican Federation in 2016. These and other variations of formal governance arrangements that we can observe in Table 1 have been adopted to enable the necessary institutions to integrate or negotiate land use policies, implement regional scale projects, and pool resources to face the greater development challenges. These political successes are, for the moment, primarily formal, according to local experts and some case studies.

2 Labbé and Sorensen (2020) refer to these two geographical entities as *megacity* and *megacity-region*. They emphasize boundaries are more difficult to define because megacities have no clear edges; they have defined them as two analysis scales of "*urban areas and polycentric functional regions that contain aggregate urban populations of over approximately 10 million*."

Table 1. Latin American Megacities – National Context

Metropolis	Country	Gov. Structure	Metropolis Pop.	Entity's Nature	Defined by	City -region	Regional Pop.	Nature	Created /Ruled by
Mexico City	Mexico	Federal	9209944	Federal entity (equal to a state)	Amendment to Federal Constitution in 2016	Metropolitan Area of the Valley of Mexico	22.804.515	Coordination among the municipalities	State constitutions (Mexico City, Mexico, and Hidalgo), Federal Constitution and Law on Human Settlements, Land Use Planning, and Urban Development
Sao Paulo	Brazil	Federal	12396372	State capital		Sao Paulo Metropolitan Region	21.600.000	Metropolitan region created by the State	Federal Law 14/1973
Rio de Janeiro	Brazil	Federal	6780000	State capital		Rio de Janeiro Metropolitan Region	11.902.701	Metropolitan region created by the State	Federal Law 20/1974; Law 184/2018

Metropolis	Country	Gov. Structure	Metropolis Pop.	Entity's Nature	Defined by	City -region	Regional Pop.	Nature	Created /Ruled by
Buenos Aires	Argentina	Federal	2890151	Autonomous city (federal entity)	Autonomy regime from 1994 defined by the Constitution	Buenos Aires Metropolitan Area	14.800.000	Not constituted as an administrative unit	
Bogota	Colombia	Unitary	7901653	Capital District	Decree 3640 of 1954, Annexation of 6 municipalities	Bogota – Cundinamarca Metropolitan Region	10.000.000	Metropolitan region created by the State	Organic Law 2199/2022
Lima	Peru	Unitary	7600000	Metropolitan Municipality (Province status)	Political Constitution (1993)	Lima Metropolitan Area (Lima and Callao Provinces) different from Metropolitan Municipality of Lima	9.110.000	Not constituted as an administrative unit	

Source: By authors.

1.2. Megacity Challenges from a Sustainable Development Perspective

From a sustainable development perspective, achieving territorial *quality, efficiency, and equity* implies transitioning from planning based on the management logic of service provision by sectors towards integrated approaches where actions articulate spatially balanced impacts (Camagni, 2007). Comparative studies about how LatAm megacities have dealt with their challenges highlight significant institutional achievements in service provision over the years (Gilbert, 1996; Trejo & Niño, 2022). From an urban management perspective, there is no doubt that the ability to provide water, energy, and transport for populations over ten million has been an enormous feat. Nonetheless, Latina America's relative success in raising urban living standards over the past 40 years has been achieved at significant environmental, social, and economic costs. Therefore, even though there is value in observing the institutional practices that explain these achievements, considering the megacities' sustainable development challenges, our interest focuses on recognizing the governance arrangements at play in specific sectors when actions at scale have become imperative.

The three challenges we have selected are all at the interface between basic services provision and interrelated environmental degradation mega-problems:

- Sustainable waste management for resource efficiency and environmental impact reduction
- Sustainable transport for socioeconomic inclusion and improved air quality
- Sustainable access to safe water for equitable quality of life and watershed protection

To do so, we developed a framework that explores three dimensions of governance that help us identify territorial management practices which have shaped megalopolises in LatAm and those emerging in relation to approaches to metropolitan governance, governance structures, and network governance configurations.

1.3. A Framework on Governance for an Analysis of Management Practices in Megacities

Providing basic services has been the greatest challenge for LatAm megacities since the 60s. Keeping up with rapid urbanization at a scale never seen before has been the focal point of institutional capacity building in the region. From a sustainable development perspective, however, we could argue that institutional strengthening has centered on coping mechanisms to deal with the scale of the demand and the financial constraints for producing public goods, deepened by the logic of privatization since the 80s. The prevalence of sectors, often coopted by economic interests and the shortcuts induced by political timelines, have not helped megacities fully address the implications of piecemeal approaches. Today, in practice, sectors resist the reduced autonomy a spatial integration of policies requires them to deal with the complexities of multi-scalar coordination. In the next section, we briefly discuss selected practices from three key development challenges, illustrating a variety of situations where in the absence of functional, formal metropolitan, or city-regional management mechanisms, some alternative approaches have been required to cope.

There is a consensus that adverse conditions to plan, manage, coordinate public and private actions, and finance urban-metropolitan and megalopolitan-region development persist despite the institutions formally adopted to do so. However, the common obstacles to implementing these institutions in favor of broader territorial benefits are not of a technical but of a political-economic nature (Pradilla, 2005; Pires & Gaeta, 2010; Acosta, 2010; Frey, 2014). For example, the Brazilian law for metropolitan areas, adopted in 2015, was sanctioned without financial incentives to promote municipal cooperation on regional projects, despite it being clear its potential effectiveness hinged on that component of the originally proposed policy design. Also, in the case of Bogota, after a complex and controversial process leading to the approval of the framework for the creation of the city-region, the Capital District's Municipal Council blocked its first adoption stage, paralyzing the process. Therefore, recognizing the difficulties of reconciling the obvious technical and operational advantages of integrated planning and management with the political-economic realities of each context, we chose to focus our overview on

potentially relevant existing practices from a governance perspective, hoping to unravel some features of emerging *metropolitan* and *city-region governance* approaches, structures, and configurations.

1.3.1. Governance Approaches, Structures and Configurations

Traditional concepts of public management have changed significantly in public policy analysis as they have been more recently revaluated in the light of evolving perspectives on governance. The core of developing literature on governance and the evolution of the concept lies in the relationships between governments, civil society, and the private sector while reassessing the actual limits of government action (Peci et al., 2008, cited by Costa & Lui, 2022). For Costa and Lui (2022), *governance*:

> [...] refers to how social actors, economic and political agents, State representatives, the market and society, organize, integrate and interact within a specific political-institutional context, in the process of design, implementation, monitoring and evaluation of actions and policy of public interest (p. 10).

This operational definition highlights the diversity of agents and their interactions along the multiple stages of policy and actions of public interest, underpinned by specificities of context.

Our observations from the analysis of comparative studies and case studies have led us to a diversity of approaches used in these megacities to solve specific implementation problems in key sectors. We argue this suggests the existence of parallel formal, multi-scalar institutionalized mechanisms with low effectiveness with alternate coping operating mechanisms. What kind of metropolitan governance approach do these arrangements resemble? What kind of interactions does their governance structure suggest? What decision-making configurations do they reflect? We characterize some examples of the approaches we found to begin exploring forms of governance megacities have been practicing—the conditions they *know*.

Our conceptual framework is thus based on three perspectives. First, Rosan's (2016) characterization of three approaches to metropolitan governance, based on findings from the evaluation of metropolitan areas in the United States with different models of engagement. It illustrates that specific

metropolitan areas may achieve some levels of integration through a diversity of interplays between the metropolitan entity, a metropolitan planning agency, and a metropolitan planning organization to address given challenges. This research suggests that achieving acceptable degrees of effectiveness despite underlying local government fragmentation is not solely restricted to fully formalized bureaucratic systems. The three approaches range from voluntary to fully institutionalized with state-mandated authority, involving variating levels of institutionalized integration and measures of power.

Second, Kim (2006) recognizes the increasing complexity of interactions and the diversity of actors involved in public administration and policy where traditional bureaucratic governance structures are dissipating while others, more network-driven, emerge. To that effect, his work allows us to distinguish between the interactions within pervasive *bureaucratic governance* structures—formalized by rules and procedures, centralized and unified, hierarchical relationship between state and other agents, and two types of network governance where transactions between relevant players, including inter-organizational coordination, are based on mutual benefits, trust, reciprocity, and interdependence. In *horizontal networks,* organizations are connected by resource dependencies, pooling resources, and joint decision-making (Benson, 1982, cited by Kim, 2006). In *vertical networks*, central agencies are needed to coordinate activities between upstream and downstream partners in the policy process (Park, 1996, cited by Kim, 2006).

Finally, Provan & Kenis (2007) characterize network governance configurations distinguishing between i) *participant-governed* or shared governance, where the collectivity of partners themselves make decisions and manage activities, thus distributing power in the network symmetrically, regardless of differences in organizational size, resource capabilities, or performance, ii) *lead organization governed networks*, where a more centralized, brokered approach may help achieve goals more efficiently, through a coordinating participant member, and iii) *network administrative organizations*, where a separate entity is established either through mandate or by members to coordinate and sustain the network. This entity acts as a facilitator or broker to externally govern the network's activities and ensure its goals, including, for example, regional economic development (Gebauer et al. 2005; Piore & Sabel, 1984; Saxenian, 1994, all cited by Kim, 2006).

Table 2. Governance Approaches,
Structures and Configurations – Conceptual Framework

Approaches to Metropolitan Governance (Rosan, 2016)	**Governance Structure** (Kim, 2006)	**Network Governance Configurations** (Provan & Kenis, 2007)
Primarily voluntary	Network governance (Horizontal networks)	Participant-governed networks
Inclusion of metropolitan planning organization powers (combined)	Network governance (Vertical networks)	Lead organization–governed networks
Addition of layer of state-mandated authority (fully integrated / institutionalized)	Bureaucratic Governance (Centralized, Top-Down)	Network administrative organization

Source: Based on Rosan (2016), Kim (2006), and Provan and Kenis (2007).

2. Learning about Governance in LatAm Megacities from Their Practices

LatAm megacities face common territorial challenges in somewhat unique geographical and socio-political national contexts, so it is difficult to generalize them (Gilbert,1995). They confront continued demographic growth and expansion even though national urban systems in the region are now experiencing accelerated urbanization in secondary cities (Montoya, 2021). They have been struggling for decades with the impacts of de-industrialization and the cumulative competitive disadvantages from dis-economies of scale, such as congestion and precarious infrastructure (Gilbert,1995). Even though service provision and quality of life standards have improved, global economic crises, recessions, and a general roll-back of the welfare state have further reduced income distribution, making urban Latin America more unequal (Pradilla & Márquez, 2008). The giant cities concentrate urban poverty, and their disparate conditions reinforce social exclusion. Even though policies to nurture inclusiveness have been implemented, megacities experience exacerbated impacts of inequality expressed in high crime rates, social unrest, and insecurity. Finally, each megacity faces extreme environmental problems as a result of the scale of waste and emissions, low industrial and infrastructural standards, and an absence of environmental management. Their size cannot fully explain larger cities face different challenges than smaller ones. Gilbert (1996), referring to White and Whitney (1992), points to their comparative analysis, which suggests size likely affects different variables associated with environmental conditions and impacts different income groups differentially.

Albeit, Gilbert (1996) argues LatAm's megacities do face special problems in three key areas: public administration, local democracy, as well as social equity and integration. Their scale increases the complexity and thus the importance of robust urban management mechanisms, yet they cope with most challenges with piecemeal approaches due partly to their administrative fragmentation and functional, overlapping, and competing jurisdictions (Frey, 2014; Frey & Eichenberger, 2001). Also, their size makes it very difficult to implement broad, plural citizen-participation mechanisms for decision-making. Finally, their sheer size and *laissez-faire* planning policies make it more likely for

income inequality to be reflected geographically, with deep spatial segregation between different income groups.

Therefore, a sustainable development agenda for LatAm megacities implicates exacerbated problems and planning practices derived from the *governance as performed* (Chatterjee, 2011) contexts, which Fawaz (2016) describes as "messy, circular, frequently failed projects that give in to corruption, sectarian and ideological tensions, and numerous other hurdles that preclude the possibilit[ies] of planning" (p.98), as much as the informalities operating outside the limited range of influence of such planning (Fawaz, 2016; Roy, 2011). These adverse conditions further the importance of quality urban management as an imperative to change megacities' current development paths, thus the relevance of learning from practices where some level of integration has been achieved. Therefore, the following examples aim to probe practices relevant to three key sustainable development challenges.

2.1. Sustainable Waste Management: A Resource Efficiency and Environmental Impact Reduction Challenge

2.1.1. Solid Waste

LatAm megacities produce massive amounts of unclassified solid waste. Poor solid waste recollection, particularly in underserved informal neighborhoods and more broadly in municipalities with limited local revenues and connectivity, reverts into inappropriate disposal practices that pollute creeks, water canals, and rivers, which in turn block waterways, leading to flooding risk. Furthermore, administrative fragmentation underlies the absence of fully integrated waste management at the scale of the metropolises and the city-regions, limiting cross-subsidies and deepening the gap between municipalities with high revenues and those incapable of maintaining autonomous, sustainable systems.

2.1.1.1. Cooperation for solid waste disposal – Economies of scale without redistribution

In Buenos Aires (BsAs), for example, the metropolis and 33 municipalities around it produce 17000 tons of daily waste, accounting for about 40 % of the waste generated in the entire country (Lanfranchi, 2022). A State Society between CABA (Ciudad Autonoma de BsAs) and the Province of BsAs was created in 1977 to supervise and coordinate the metropolitan waste recollection and final disposal system. CEAMSE (Metropolitan Ecological Belt State Society) has since then been responsible for metropolitan landfills and the oversight of municipal recollection services offered through decentralized, private third parties (Bataski & Narodowski, 2022). From a governance perspective, this arrangement displays a collaborative, multi-scalar relationship between the central city and the province, pooling resources to promote coordination between a network of autonomous municipalities in waste management. In this case, CEAMSE is a network administrative organization with additional environmental management mandates, including cleaning and maintenance of several rivers in the Province of BsAs (Lanfranchi, 2022). However, from a sustainable development perspective, the current operational integration has some significant limitations. CEAMSE's management model is mostly financed through the operation of the landfill, charging each municipality per ton of waste. Municipalities have uneven financial capacities; therefore, the privatized, decentralized, separate recollection system favors savings of higher income areas that can afford more sophisticated recollection systems and have developed recycling capacity. If reducing the amounts of waste sent to landfills were the metropolitan imperative, some cross-subsidies between more and less affluent municipalities would be integrated into a system where generalized, more efficient technologies and management would reduce overall waste and rationalize final disposal costs for all. This solid waste management model for BsAs is a long-standing network governance arrangement with greater potential still. Amongst the key elements we can highlight are the joint funding sources from the two formal entities of metropolitan and city-region scales, technical coordination, and some level of joint, yet sectoral, environmental management. Even though national and provincial legislations of 2004 and 2006 have more recently made municipalities responsible for their waste management (Bataski

& Narodowski, 2022), the existing cooperative arrangement has sustained a form of horizontal network metropolitan integration that may have the potential to further enhance local capacity to reduce and recycle, fundamental to face the sustainable development challenge.

2.1.2. Wastewater

In contrast with public concern with water supply, water treatment has generally been less prioritized, causing severe water pollution that affects regions far beyond the megalopolitan regions. Untreated sewage and toxic waste from industrial, residential, and other urban and peri-urban activities at the scale of the megacities have become one of their most evident regional environmental impacts. Giants, such as Bogota, Sao Paulo, and BsAs, have become environmental hazards for the regions downstream in their watersheds, affecting human settlements and productive rural areas. The functional gaps resulting from fragmented institutional arrangements to provide basic services for often scattered urban areas, and to implement regional environmental management efforts, have led to severe cumulative impacts, which only continue to grow as megacities continue to expand. The emphasis on developing the capacity to provide services has been a key factor in how institutions have been shaped in metropolises in the region (Costa & Liu, 2022; Trejo & Nino, 2022). Furthermore, structural adjustment policies and neoliberal guidelines to reform public services into leaner, feasible business models have further discouraged the water sectors and urban development agents from dealing with the end of their pipelines. When institutions have neglected their individual mandates, as well as the necessary coordination to address cumulative environmental impacts, there are cases where affected actors have deployed other governance mechanisms. For example, in Bogota and BsAs, affected actors have used the judicial system to appeal for immediate action and institutional accountability.

2.1.2.1. Bottom-up Reconfigurations in Bureaucratic governance – The role of the Judicial

In the case of the Bogota-Cundinamarca Metropolitan Region (MR), the Council of State ruled in 2014 in favor of a judicial order placed by citizen groups holding industries, environmental authorities, and municipal, regional, and

national institutions accountable for chronic neglect of regulations and their mandates, leading to an *environmental catastrophe* in the entire river basin of the Bogota River. A key affluent of the Magdalena River, Colombia's main waterway and essential source of water livelihood for thousands of communities downstream, implies this regional environmental mega-problem has indeed extended geographical, social, and economic implications. The ruling ordered a detailed list of coordinated planning and investment institutional commitments, indicating environmental management actions that should be prioritized and carried out within specific timelines to set into motion an integrated regional restoration process of the Bogota River basin along its 375 km.

For decades, the river received direct discharges from 46 municipalities of Cundinamarca, 12% with limited or no sewage systems and untreated sewage from Bogota's population of over 7 million. Despite a public regional environmental authority—the Corporacion Autonoma Regional (CAR)—funded by direct revenues from Cundinamarca and Bogota, severe institutional shortcomings as a policy maker[3] and regulator have restricted its influence on the matter. Despite its involvement in much-needed environmental management projects, including a municipal treatment plant program to reduce industrial pollution upstream, the absence of long overdue regional coordination to address the river basin's general prevention and environmental restoration required a deeper and urgent call for action.

From a governance perspective, we argue the judicial system's intervention to activate accountability mechanisms has forced a legally bound institutional design, aligning (vertical and horizontal) regional environmental management that has been chronically dysfunctional. In these cases, citizens' use of the judicial system has indirectly redefined a given *bureaucratic governance* arrangement by introducing an overarching *governance network* mechanism to oversee the implementation of a specific, regionally integrated watershed restoration process. This arrangement resembles a *lead organization-governed network* configuration in that it acts on behalf of citizens to monitor the cooperative process required of the agencies to achieve the goals of the vertical (and multiscalar) network needed to integrate actions functionally even if the judicial

3 The CAR also has regional environmental planning authority through POMCAS (watershed plans), as well as through their oversight role in municipal comprehensive plan approval processes, which is, in theory, established as a mechanism to broadly align municipal plans regionally from an environmental perspective.

system is not part of the network. While in tandem, holding each institution accountable for meeting the specific commitments delineated in the ruling.

Similarly, in BsAs in 2008, the Supreme Court declared the national government, the PBA, the CABA, 44 firms, and 14 municipalities directly responsible for the environmental degradation of the Matanza-Riachuelo watershed (Bataski & Narodowski, 2022; Lanfranchi, 2022). The judicial order followed the creation of ACUMAR, an autonomous inter-municipal entity created in 2006 to articulate the national, provincial, and city levels of BsAs' institutions through an inter-jurisdictional entity with overarching planning, regulatory, control, and management powers to integrate the urban and environmental management of the watershed. ACUMAR's institutional design included a multi-scalar Directive Council, a Council of Municipalities, a Participatory Commission, and a Strategic Planning Unit. Though well designed for complete agency over the problem, this integrated management mechanism with a formal, legally binding *bureaucratic governance* structure has not achieved its objectives (Lanfranchi, 2022). We would argue its original composition was challenged through the court ruling. Despite ACUMAR's clear mandate as an autonomous inter-agency *network administrative organization*, citizen organizations claimed effective action and external oversight by creating a panel of experts with good standing in civil society; and a monitored, periodic accountability process enforced through the judicial order. In this case, civil society's use of the judicial system redefined the original bureaucratic governance structure, introducing external, non-institutional agents into the equation, including judicial oversight of an updated Comprehensive Environmental Sanitation Plan (PISA) ordered in 2015 (Lanfranchi, 2022).

The involvement of civil society in metropolitan integration processes has also originated from the agency of organized interest groups. The Greater ABC region is a well-studied case of a bottom-up, inter-municipal, cooperative institutional arrangement. It was implemented during the 1990s between seven of the 39 municipalities of the broader metropolitan region of Sao Paulo. Lefevre (2005) denominates it as governance at the *infra-metropolitan* scale. Local authorities governing the areas where the Brazilian automobile industry concentrated in that region found themselves in an ideal setting for a partnership with large businesses, mobilized by the need to face the impacts of Brazil's general economic restructuring. The process led to the establishment a Chamber for Participatory Strategic Planning in 1997, which gave way to

the creation of a regional development agency (Agência de Desenvolvimento Econômico Grande ABC) in 1998, where an Administrative Council of representatives of the private sector (51 %) and an Inter-municipal Consortium (49 %) engaged in supra-municipal and inter-municipal, multisectoral planning for investments towards the implementation of regional economic development initiatives (Urani, 2010). This integration of public and private actors in a common regional development agenda originates in the ABC Paulista, according to Eghari (2011), from an initial interest in managing water resources, which led to the creation of the Alto Tamanduatei and Billings Watershed Consortium in 1990 to face severe water pollution.

Sao Paulo's successful experience with private-public metropolitan cooperation evolved into an emblematic example of regional economic development practices that emerged from interest groups as active agents, institutionalized as horizontal network governance arrangements. However, as case studies point out, in ABC Paulista, implementation was equally dependent on a favorable political context. Whilst conditions changed over time, the initial favorable traction became weaker and more fluctuant (Klink, 2010). In tandem, creating similar synergies around additional critical issues, such as transport and general environmental management, has not been equally successful in Sao Paulo. Nevertheless, examples of other notable inter-municipal coordination and institution-building experiences, such as the Guarapi river basin integrated-management program (Rojas, 2010), illustrate efforts to address metropolitan-scale environmental and social challenges as well.

2.2. Sustainable Transport: A Socioeconomic Inclusion and Improved Air Quality Challenge

Car ownership and other motor vehicles, such as motorcycles, have greatly increased private vehicle transport in LatAm megacities. However, low-income groups especially use public transport intensively, making it the predominant form of mobility. The extensive, highly segregated, speculative land markets of these megalopolises exile low-income populations far from employment centers, with the poorest in areas with deficient connectivity. This, in turn, reflects on long commutes and expensive transfers with the greatest impact on low-income families' well-being and job opportunities. The average commute

in each megacity varies, but in the most critical cases, it can be as long as three hours. In tandem, congestion and ineffective environmental regulation has led to critical air quality problems, to variant degrees in each megacity, directly related to their geographical specificities.

2.2.1. When Institutional Anarchy Promotes the Emergence of Stakeholder Networks

Mexico City (CDMX) is the LatAm megacity, perhaps most affected by air quality and mobility challenges; thus, transport is a strategic sector of regional concern. Furthermore, the population in the Zona Metropolitana del Valle de Mexico (ZMVM) is growing faster, further away from the metropolis and deeper into the megalopolitan-region. CDMX (the metropolis) has Metro, BRT (Metrobus), trolleybuses, light rail, the Passenger Transport Network (RTP), and minibus concessions, operating independently and under diverse public to private models. On the other hand, in the broader ZMVM, which includes municipalities of the State of Mexico and the State of Hidalgo, service is provided by over 70000 individual bus and mini-bus concessions— covering 61% of all rides— (Ciudadanos con Visión, 2016) and *Mexibus*—also integrated by private companies—with only a few areas connected to extensions of the city's BRT or Metro. In a nutshell, public transport at the regional scale involves federal, state, and local transport authorities, private national and international companies, as well as informal providers in the absence of operational integrated sector planning and horizontal coordination mechanisms (Trejo, 2022).

In fact, efforts to interconnect transport modes or even tariffs to reduce travel time and costs for low-income riders have been almost impracticable. According to interviews, the gaps in coordination have been so severe that civil society and NGOs—such as WRI—have become involved in favor of the integration of a sector currently fragmented by isolated management policies of multilevel institutions, each independently in charge of a transport mode[4] (Ciudadanos con Visión, 2016). From a governance perspective, we would

4 According to interviews, *Ciudadanos con Visión: Acuerdos para la Movilidad en la ZMVM* (Citizens with Vision: Agreements for Mobility in ZMVM) is a valuable civil society manifesto integrating key inputs resulting from a plural dialogue process involving multiple stakeholders and representative organizations such as the Sustainable Transport Center EMBARQ México, the Institute for Transport and Development Policies (ITDP), the Mexican Competitiveness Institute (IMCO), Consumers Organization (EPC) and Academia (UPIICSA).

argue the fragmentation of a sector so critical for the quality of life in ZMVM is inexplicable unless the privatization logics and the political implications they have are also fully considered. Even though the Federal government has stepped-in to finance and subsidize key components like the metro, in the absence of any overarching integrative bureaucratic governance structure, the emergence of a network of organized civil society into the equation is a significant milestone. It illustrates the progressive configuration of a para-institutional, informal, *participant governed, horizontal network* of stakeholders, which may progressively influence the transformation of ZMVM transport's governance.

2.2.2. Centralization by Default

Since 2012, the CABA (Autonomous City of BsAs) and the AMBA (BsAs Metropolitan Area) have formally adopted the BsAs Metropolitan Transport Agency (ATM). This consultancy body, integrated by the Federal, Provincial and CABA representatives, holds no executive power nor authority over the sector (Lanfranchi, 2022). In practice, each administrative level manages a different mode of transport, while each municipality regulates bus lines and tariffs independently within its jurisdiction. Furthermore, the sector's formalized inter-agency network was conceived separately from territorial planning systems. According to interviews with local experts, the Federal level informally exercises the most influence over the system through direct funding and project implementation. From our perspective, in practice, even though ATM was created as a *network administrative organization* in an arrangement hoping to articulate a metropolitan *horizontal network structure*, the Federal level has intermittently operated through direct *bureaucratic governance* mechanisms through direct project funding, though lacking integrative impact.

2.2.3. Deep Privatization as a Practice

The Metropolitan Region of Rio de Janeiro (MRRJ), on the other hand, has taken the opposite direction. Its history and traditional role as a key colonial national economic and political center created a singular context wherein global and Federal economic and political influences often overshadow local and regional interests in many essential areas—water management, transport, land development, coastal environmental management, amongst others (Nunes & Moura,

2013). In transportation, for instance, the State government is responsible for regulating intercity transport, including trains, subways, ferries, vans, and buses, while municipalities in the RMRJ regulate intra-municipal vans and buses.

Matela (2017) argues that in an effort to break away from fragmented, weak governance in this sector, the City of Rio de Janeiro sought to integrate its urban management through concessions of the bus system, which accounts for 77% of all rides. Since 2010, the bus, BRT and all public transport complementary services (such as RioCard) are thus controlled by private companies. This scheme has progressively merged into a corporate monopoly of public mobility in the city, negatively affecting metropolitan transport challenges. In tandem, Metro was acquired in 2009 by the Invepar consortium and trains in 2010 by Supervia, while new modes, such as the VLT Lightrail, have followed (Matela, 2017). At the regional scale, Silva (2017) underscores that while mobility in the peripheries has remained underserved, poorly managed motorized transport has also nearly consolidated into a monopoly under a single company. The current corporate structure, Matela (2017) argues, only renews old political and economic alliances while further deepening market logic into the mobility sector.

Situations such as the system's increasing operational opacity weaken transport governance, an essential component of inclusionary spatial planning strategies with the potential to address key social and economic development challenges at the scale of the city-region (Silva, 2017). Even though Brazilian metropolitan legislation allows States to create metropolitan organizations with defined administrative powers over issues of common interest, where participant autonomous cities are legally bound to their management structure to the responsibilities emanating from the decisions made on behalf of the greater regional common interest Correia and Sampaio (2017). Unfortunately, the resulting institutional arrangements from these privatization practices do not use this potential institutional framework for integrated planning. By opting for deep privatization of transport in the central city, the case of Rio de Janeiro in practice, as Klink (2010) more generally suggests, illustrates how the separate elites of the city and the peripheries may defer *common interest* to sustain a profitable fragmentation of this sector. In terms of governance, the MRRJ may have the legal framework for a bureaucratic governance structure with State mandated authority. In practice, as critics of this split management argue, it transfers through transport a significant

part of its powers to improve the territorial cohesion of the megacity and its broader region to market logic.

2.3. Sustainable Access to Safe Water: An Equitable Quality of Life and Watershed Protection Challenge

Providing water has been imperative for LatAm megacities since their initial stages of rapid urbanization. The capacity to provide universal and reliable service has been a key institutional development target where international cooperation has been involved for many decades and where Latin America has made visible impacts on urban quality of life. However, water provision is a determinant of urban form and a key driver of urban growth. Service provision-oriented water sectors may fundamentally diminish the potential economies of scale that make social redistribution of the costs of equitable infrastructure feasible, as well as the feasibility of any metropolitan or city-region integrated spatial planning intentions.

Urban life's dependency on sustainable, reliable sources of safe water requires megacities to shift their focus on service provision to a sustainable access perspective at scale. This is an issue where the absence of integrated planning is particularly harmful. The challenges of providing safe water are more acute under certain geographic conditions. For instance, CDMX's altitude, its need for long-distance surface water imports, and the current over-exploitation of its aquifers accentuate its vulnerability to water stress and cause it to sink (Martinez et al., 2015). Lima's desertic climate, in tandem with melting glaciers, on the other hand, define its own singular acute vulnerability factors. Even in city-regions with more favorable geographic conditions like the Bogota Sabana, the scale of the demand has called for inter-basin water transfers from the Orinoco Valley to the Rio Bogota Valley, affecting hinterlands far beyond the functional region.

2.3.1. Extended Growth and Water Stress in Lima

To provide water for the entire province of Lima and its conurbation with the port city of Callao, the national government of Peru created SEDAPAL in 1981 (Dammert-Guardia, 2022). The State-owned affiliate company of the National

Potable Water and Drainage Service, with autonomous technical, administrative, economic, and financial powers, has centralized service provision for Lima and its broader region ever since. At first glance, this institutional arrangement, directly under the Ministry of Housing, resembles an early *bureaucratic governance* mechanism to directly overview this strategic sector. At a closer look, SEDAPAL's market-oriented reform in the 1990s, in addition to the general weak influence of the Metropolitan Planning Institute (IMP) and the Watershed Council over its sector policies, suggest that in practice, it is a deeply fragmented system, particularly in the face of its critical sustainability challenge (ILPE, 2014). Case studies report there is no effective coordination between SEDAPAL and municipalities of the provinces integrating the city-region (Stiglich & Vásquez, 2022); thus, while possession certificates and layout plans are approved by local governments, further extending dispersed, precarious settlement, SEDAPAL struggles to fill the infrastructure access deficit. This institutional gap indirectly promotes irrational settlement patterns through a form of commercial, informal settlement, which Lambert (2021) characterizes as Lima's *land trafficking* practices.

Furthermore, approved tariffs—lower on average than those of other LatAm cities—are insufficient to cover the costs of existing deficits, restricting service in low-income peripheries, where the poorer segments of the population pay seven times the price to water tanker providers, who buy it in bulk from SEDAPAL. Sector logic urgently needs to be shifted to water-sensitive, integrated development policies for the region.

Table 3. Lima's Water Stress - Comparison with other Megacities

	Pop. (Mill.)	Water Production	Water Reserves (Mill m3)	Reserves per Capita (m3/inh.)	Precipitation (mm/yr)	Non/Revenue Water
Rio de Janeiro	9	52	*Abundance	0	1170	57
Sao Paulo	25	90	2073	83	1500	37
Santiago	5.9	24	900	153	384	29
Bogota	6.5	25	800	123	800	35
Lima	8.6	20	282	33	9	35

Source: LIWA (2014).

From a governance perspective, the Metropolitan Municipality of Lima has regional government faculties over the Lima District (city) and the Province of Lima (city-region). Thus, the IMP has a substantial coordination role in the planning decisions of the municipalities of the megacity, except for Callao, which is part of a different Province. This highly centralized institutional arrangement has a singular overlap between regional and municipal functions, resembling a *fully integrated metropolitan governance approach with a State mandate* over most of the megacity area. However, as the seat of the National government, Lima is also under the direct influence of independent, national-level decisions (ILPE, 2014). SEDAPAL's sector logic is no exception. This mismatch deeply affects the possibility of integrated territorial management of this megacity's most critical development challenge.

Similarly, safe and reliable water provision is a critical issue for the CDMX metropolis and city-region. However, this megacity and its city-region, it is as fragmented as its complex administrative composition. Three supply systems are present: decentralized public bodies, direct local provision, and mixed (state, municipal, or communal), as well as non-governmental provision from historical authorizations extended by the federal government to communities. The management involves the Federal level through the national water commission (CONAGUA) regulating the bulk of the water imports; centralized management and operation for CDMX by a public agency (SACMEX) to serve 16 boroughs; the State of Mexico Water Commission (CAEM), the Federal Agency for the Mexico Valley Basin, 59 municipal governments, and their decentralized public bodies, as well as community organizations and private companies (Trejo & Nino 2022).

In contrast with Lima, this complex web of multilevel administrative powers, management agencies, authorities, and types of organizations involved has made it impossible to establish an integrated coordination scheme to optimize and coordinate planning, provision, and service and shift to sustainable water management for water. Furthermore, the fragmentation is reflected in the stark differences in the reliability and quality of the access to water across the territories of the megacity and in the broader transformations required for the system to serve the purpose of a more equitable distribution of conditions for improved quality of life across the whole megacity-region.

3. Some Insights from a General Review of the Latin American Megacities

As global population growth and urbanization trends stabilize over the next 50 years, open-ended urban growth, as Sorenssen & Labbé (2020) underscore, we argue that coping with a focus on service delivery is no longer the key challenge for megacities and their city-regions. Rather, the redefinition of their problems from an integrated perspective is required to be able to address the environmental and social gaps in sector policies. This implies shifting to territorial strategies, which of course, defines the practice of integrated spatial planning at the scale of the whole, which currently seems unattainable.

In each context, we have found specific legal and political conditions that have historically defined singular institutional constraints which have been hampering integration, such as the superposition of levels of government and the creation of competing governance arrangements. For instance, even though in Latin America, megacities like CDMX and Bogota have just recently adapted their political-administrative contexts, there are still immense implementation challenges to grapple with (Montero, 2020). The area of the metropolis of CDMX has acquired the status of State, endowing it with institutional arrangements that further its autonomy and re-defines relationships among its municipalities. Yet while the prosperous metropolis has stunted, real growth and development challenges are taking place in the megacity-region (ZMVM). On the other hand, the legal framework for the creation of the Bogota Cundinamarca Metropolitan Region, legally adopted in 2022, establishes an experimental, fully voluntary, horizontal network governance arrangement with a still undefined spatial configuration and an unclear future in terms of implementation (Hoshino & Catano, 2020).

Nonetheless, Sorensen and Labbé (2020) argue that none of the world's megacities has a single government with governance over its entire functional urban region while underscoring Schafran's (2015) argument that this feature may well define them, as much as the fact that megacity-regions in particular "*may always exceed attempts to politically unify them.*" Despite unfavorable political-economic contexts to integrate planning and management, our exploration confirms LatAm megacities have overcome significant administrative

and legal hurdles to adopt formal mechanisms, at least at two scales, to attempt to face the challenge of administrative fragmentation (Table 1). However, in practice, none seem fully operational, and there is strong resistance to relinquishing municipal autonomies despite the need for more balanced land use and regional economic development strategies. Still, the coordination of key sector investments and projects at the scale of the region as a whole is not only necessary but a practice that resembles more what has been happening in specific sectors. Our exploration of examples of arrangements in LatAm megacities *vis a vis* three key sustainable development challenges suggests that integration has emerged mostly through sectors in different ways.

Table 4. Sector Practices and their Resemblance to Governance Approaches, Structures and Configurations

Case	**Practice**	**Approaches to Metropolitan Governance**	**Governance Structure**	**Network Governance Configurations**
Bs As	Solid Waste Sector CEAMSE	Voluntary – Sector Agreement	Horizontal Network governance	Network administrative organization
Bogota	Water Env. Management Judicial Order	Broken Vertical Environmental Management and Planning System. With regional mandated authority	Bureaucratic governance	Emergence of Lead organization Governed network
Bs As	Water Env. Management Judicial Order ACUMAR	Non-Functioning Sector Planning and Management With regional mandated authority	Bureaucratic governance	Ad hoc Network administrative organization
Sao Paulo	ABC Paulista Econ. development	Inclusion of Metropolitan Planning Organization powers	Horizontal Network governance	Network administrative organization
Mexico City	Transport Sector Integration	Voluntary – Multi-scalar Sector Agreements. Fragmented, multilevel sector planning and management responsibilities.	Fragmented Bureaucratic governance	Emerging Participant-governed network

Case	Practice	Approaches to Metropolitan Governance	Governance Structure	Network Governance Configurations
Bs As	Bs As Transport	Voluntary – Sector Agreement	Vertical network w/ Ad-hoc Bureaucratic gov.	ATM - Network administrative organization
Rio de Janeiro	MRRJ Transport Private Concessions	Non-Functioning Sector Planning and Management With regional mandated authority	Vertical network	Network administrative organization
Lima	Water provision SEDAPAL	Sector planning with layer of national-mandated authority separated from Municipal Planning (Centralized - Vertical Fragmentation)	Bureaucratic governance	Network administrative organization

Source: By autors.

The urban management practices we found in our review have been, for the most part, implemented to cope with service provision challenges, but there is an emerging social demand for integrated approaches. Having understood the general absence of functionally integrated planning systems in all the megacities and megacity-regions in Latin America, we used a probing strategy to explore their practices from a governance perspective. The cases illustrate examples suggesting that in strategic sectors such as waste, transport, and water provision, coordination has mostly relied on national-level direct intervention to centralize or directly manage and that subnational entities have a role in coordinating local governments but cannot always establish networks to promote horizontal sector coordination. However, through bureaucratic governance structures, some have been able to establish a network of administrative organizations to integrate a specific key sector. The examples suggest fragmented sector logics predominantly shape megacities, while the operational integration of territorial planning focused on *the whole* is currently either non-existent or non-functional. Our exploratory interviews suggest municipalism of most Latin American territorial planning systems challenges the broader governance arrangements needed to fully understand the problems and address with appropriate solutions the challenges of *megacities* and their *megacity-regions*.

References

Acosta, P. (2010). The Bogota-Sabana region: The political economy behind the struggle to implement a sustainable urban development model. *Documentos de investigación de Ekística*. https://doi.org/10.48713/10336_3817

Batakis, S., & Narodowski, P. (2022) Argentina: las dificultades para avanzar en la agenda metropolitana. In M. Costa, L. Lui, & S. Rebello (Eds.), *Gobernanza metropolitana en América Latina: un panorama de las experiencias contemporáneas desde una perspectiva comparada* (pp. 25-48). Comisión Económica para América Latina y el Caribe (CEPAL).

Camagni, R. (2007). Territorial development policies in the European model of society. In A. Faludi (Ed), *Territorial cohesion and the European model of society* (pp.129-144). Lincoln Institute of Land Policy.

Chatterjee, I. (2011). Governance as 'performed,' governance as 'inscribed': New urban politics in Ahmedabad. *Urban Studies, 48*(12), 2571-2590.

Ciudadanos con Visión. (2016). *Acuerdos para la movilidad en la zona metropolitana del valle de México*. https://wriciudades.org/research/publication/acuerdos-para-la-movilidad-en-la-zona-metropolitana-del-valle-de-m%C3%A9xico

Correia, A. F., & Sampaio, R. (2017). The emergence of metropolitan areas as a new form of interfederative governance: A comparative study of Aix-Marseille-Provence and the metropolitan region of Rio de Janeiro. *Journal of Comparative Urban Law and Policy*, *2*(1).

Costa, M., & Lui, L. (2022). Áreas metropolitanas en Latinoamérica: condiciones de gobernanza y sus retos. In M. Costa, L. Lui, & S. Rebello (Eds.), *Gobernanza metropolitana en América Latina: un panorama de las experiencias contemporáneas desde una perspectiva comparada* (pp. 9-24). CEPAL.

Dammert-Guardia, M. (2022). Lima metropolitana: competencia, coordinación y fragmentación institucional. In: M. Costa, L. Lui, & S. Rebello (Eds.), *Gobernanza metropolitana en América Latina: un panorama de las experiencias contemporáneas desde una perspectiva comparada* (pp. 243-280). CEPAL.

Eghrari, S. (2011). Metropolitan Regions in Brazil: Institutional Arrangements and Innovative Experiences. Conference Paper. Third World Planning Schools Congress, Universidade de Brasília(UnB), Brasília, Brazil. https://www.researchgate.net/publication/271328399_Metropolitan_Regions_in_Brazil_Institutional_Arrangements_and_Innovative_Experiences_Metropolitan_Regions_in_Brazil_Institutional_Arrangements_and_Innovative_Experiences

Fawaz, M. (2016). Informality as a exception: Case studies from Beirut. In A. Deboulet (Ed.), *Rethinking precarious neighborhoods* (pp. 87-104). Agence Française de Développement.

Frey, B. S., & Eichenberger, R. (2001). Metropolitan governance for the future: Functional overlapping competing jurisdictions. *Swiss Political Science Review*, *7*, 124-130.

Frey, K. (2014). Regional governance in Latin America. A comparative perspective. Presented in *IPSA 23rd World Congress of Political Scienc*, July, Quebec, Canada.

Gilbert, A. (1995). *The Latin American mega-city: An introduction.* United Nations University. https://archive.unu.edu/unupress/unupbooks/uu23me/uu23me03.htm#what%20is%20a%20mega%20city

Gilbert, A., & United Nations University. (1996). *The mega-city in Latin America*. United Nations University Press. https://archive.unu.edu/unupress/unupbooks/uu23me/uu23me00.htm

Hoshino, C., & Catano, E. (2020). *Documento ejecutivo. La Gobernanza de la Región Metropolitana Bogotá-Cundinamarca en un marco de gobernanza multi-nivel y planificación multi-escalar* [Unpublished institutional document].

Institute of Landscape Planning and Ecology [ILPE]. (2014) Lima ecological infrastructure strategy. Integrated urban planning and design tools for a water scarce city. University of Stuttgart. https://issuu.com/ilpe/docs/lima_ecological_infrastructure_stra_9c435aba38df2f

Kim, J. (2006). Networks, network governance, and networked networks. *International Review of Public Administration, 11*(1), 19-34. https://www.alnap.org/system/files/content/resource/files/main/02-kim-junki.pdf

Klink, J. (2010). A construção de novas governanças para as áreas metropolitanas: o cenário brasileiro. In Magalhaes, F. (Ed), *Regiões Metropolitanas no Brasil: um paradoxo de desafios e oportunidades* (pp. 99-122). Interamerican Development Bank.

Labbé, D., & Sorensen, A. (2020). *Handbook on megacities and megacity-regions. Research handbooks in urban studies*. Edward Elgar Publishing.

Lambert, R. (2021). Land trafficking and the fertile spaces of legality. *International Journal of Urban and Regional Research, 45*(1), 21-38. https://doi.org/10.1111/1468-2427.12975

Lanfranchi, G. (2022). The challenging evolution of integrated governance in metropolitan Buenos Aires. In A. Trejo, & J. Niño (Eds), *Metropolitan governance in Latin America* (pp. 121-144). Regional Studies Association – Routledge.

Lefevre, C. (2005). Gobernabilidad democrática de las áreas metropolitanas. Experiencias y lecciones internacionales para las ciudades latinoamericanas. In E. Rojas, J. Cuadrado-Roura & J. Fernández (Eds.), *Gobernar las metrópolis* (pp. 195-263). Banco Interamericano de Desarrollo.

LiWa. (2014). *Sustainable water and wastewater management in urban growth centres coping with climate change - concepts for Lima metropolitana (Peru) - (LiWa)*. https://www.lima-water.de/en/index.html

Magalhaes, F. (2010). Introdução. Regiões metropolitanas no Brasil: um paradoxo de desafios e oportunidades. In Magalhaes, F. (Ed), *Regiões Metropolitanas no Brasil: um paradoxo de desafios e oportunidades* (pp. XI-XIXX). Interamerican Development Bank.

Martinez, S., Kralish, S., Escolero, O., & Perecochicova, M. (2015). Vulnerability of Mexico City's water supply sources in the context of climate change. *Journal of Water and Climate Change*, *6*(3), 518-533. https://doi.org/10.2166/wcc.2015.083

Nunes, B., & Moura, H. (2013) Imaginário urbano e conjuntura no Rio de Janeiro. *Urbe. Revista Brasileira de Gestão Urbana*, *5*(1), 91-105.

Matela, I. P. (2017). Transport management: The renovation of the Road Pact. In L. de Queiroz Ribeiro (Eds.), *Urban transformations in Rio de Janeiro. The Latin American studies book series*. Springer, Cham.

Montero,S. (2020) Documento ejecutivo. Hechos Regionales, Hechos Metropolitanos, Hechos Sub-regionales Bogotá-Cundinamarca. Non published Institutional document.

Montoya, J. (2021). Sistemas urbanos y globalización, el estado actual de la red de ciudades en América Latina y el Caribe. In F. Maturana, & J. Montoya (Eds.), *Sistemas urbanos en América Latina, el Caribe y Estados Unidos* (pp. 27-60). Universidad Alberto Hurtado & Universidad Nacional de Colombia.

Pires, V., & Gaeta, A. (2010). El gobierno de las megalopolis, el caso de Brasil – Sao Paulo: gestión metropolitana, descentralización y participación como desafíos simultáneos. *Política y Sociedad, 47*(3), 187-205.

Pradilla, E. (2005). Metropolitan area un the Mexico Valley: Megacity without planning. *Ciudades, 9*, 83-104.

Pradilla, E., & Márquez, L. (2008). Presente y futuro de las metrópolis de América Latina. *Territorios, 18-19*, 147-181.

Provan, K., & Kenis,P. (2007). Modes of network governance: Structure, management, and effectiveness. *Journal of Public Administration Research and Theory, 18*(2), 229-252.

Rojas, E. (2010). Governança de regiões metropolitanas da América Latina. In F. Magalhaes (Ed), *Regiões metropolitanas no Brasil: um paradoxo de desafios e oportunidades* (pp. 99-122). Interamerican Development Bank.

Rosan, C. (2016). *Governing the fragmented metropolis. Planning for regional sustainability*. University of Pennsylvania Press.

Roy, A. (2011). Rethinking subaltern urbanism. *International Journal of Urban and Regional Research, 35(*2), 223-238.

Schafran, A. (2015). Beyond globalization: a historical urban development approach to understanding megaregions. In M. Hoyler & J. Harrison (Eds.), *Megaregions: Globalization's new urban form?* (pp. 75-96). Edward Elgar Publishing.

Sigler, T., Neal, Z., & Martinus, K. (2022). Brokerage as an urban and regional process between systems and scales. *Regional Studies,* 2-6.

da Silva, A. C. P. (2017). Governanças cooperativas sustentáveis na gestão metropolitana fluminense: desafios geográficos. *Geo UERJ*. https://doi.org/10.12957/geouerj.2017.32065

Stiglich, M., & Vásquez, M. (2022). Governance structures ant the unequal provision of services in metropolitan Lima. In A. Trejo, & J. Niño (Eds), *Metropolitan governance in Latin America* (pp. 71-94). Regional Studies Association – Routledge.

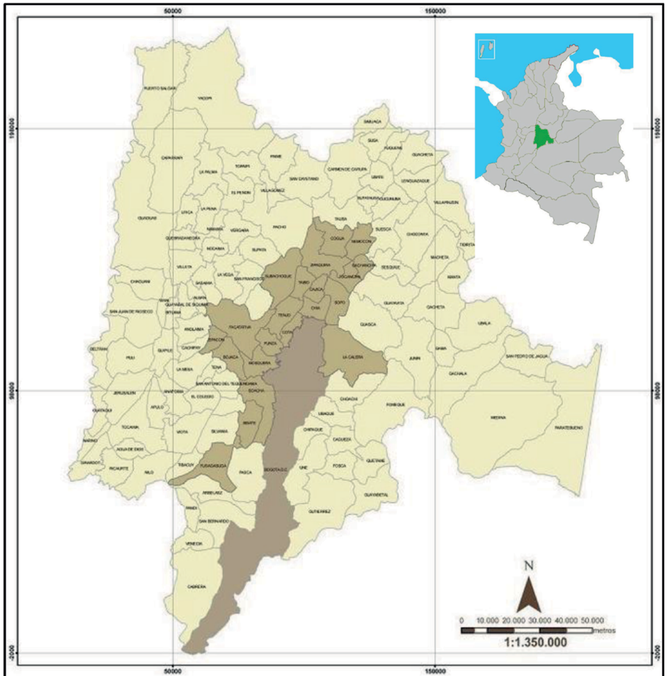
Trejo, A. (2022). Fragmented governance, service provision and inequality in Mexico City Metropolitan Area. In A. Trejo, & J. Niño (Eds), *Metropolitan governance in Latin America* (pp. 95-120). Regional Studies Association – Routledge.

Trejo, A., Niño, J. (2022). Introduction. In Authors, *Metropolitan governance in Latin America* (pp. 3-2). Regional Studies Association – Routledge.

United Nations. (2022). *Goals 11. Make cities and human settlements inclusive, safe, resilient and sustainable*. https://sdgs.un.org/goals/goal11

Urani, A. (2010). O papel do setor privado e da sociedade civil nas novas governanças metropolitanas brasileiras. In Magalhaes, F. (Ed), *Regiões Metropolitanas no Brasil: um paradoxo de desafios e oportunidades* (pp. 123-168). Interamerican Development Bank.

BOGOTA – CUNDINAMARCA METROPOLITAN REGION
(Colombia)

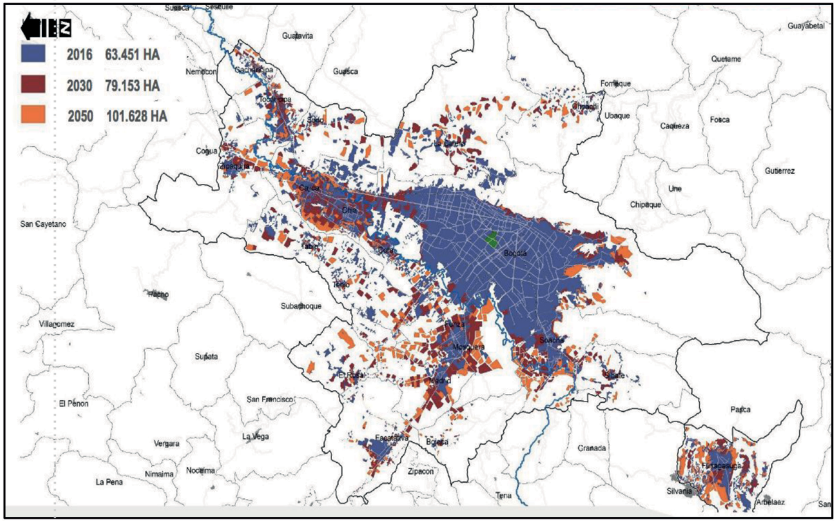


Source: Somos Cundinamarca (sf) disponible en http://somoscundinamarca.weebly.com/aacuterea-metropolitana-de-bogotaacute.html

Sources:

1. Departamento Nacional de Planeación (2022) *Ficha territorial Bogotá*. Terridata. https://terridata.dnp.gov.co/index-app.html#/perfiles/11001
2. Región Metropolitana Bogotá-Cundinamarca (2022) *Cartilla de la Región Metropolitana Bogotá-Cundinamarca*. Región Metropolitana Bogotá – Cundinamarca. https://www.regionmetropolitana.com/cartilla-region-metropolitana
3. Departamento Administrativo Nacional de Estadística (2022) *Producto Interno Bruto de Bogotá*. DANE. https://www.dane.gov.co/index.php/107-boletines/comercio-interno/2733-
4. Observatorio de la Región Bogotá Cundinamarca (2021). *Bogotá registró una reducción del coeficiente de Gini. La desigualdad es elevada*. Cámara de Comercio de Bogotá. https://www.ccb.org.co/observatorio/Analisis-Social/Analisis-Social/Poblacion-pobreza-y-desigualdad/Bogota-registro-una-reduccion-del-coeficiente-de-Gini.-La-desigualdad-es-elevada

Metropolis: Bogota D.C - Megalopolitan Urban Footprint



Source: IDOM (2017). ANÁLISIS HISTÓRICO Y EVOLUCION DE LA HUELLA URBANA. ESTUDIO DE CRECIMIENTO Y EVOLUCIÓN DE LA HUELLA URBANA PARA LOS MUNICIPIOS QUE CONFORMAN EL ÁREA BOGOTÁ REGIÓN. BOGOTÁ. IDOM.

Megalopolis Profile :

Metropolis – Bogota D.C

- **Population :** 7.901.653°
- **Urban Area** : 307,36 KM2

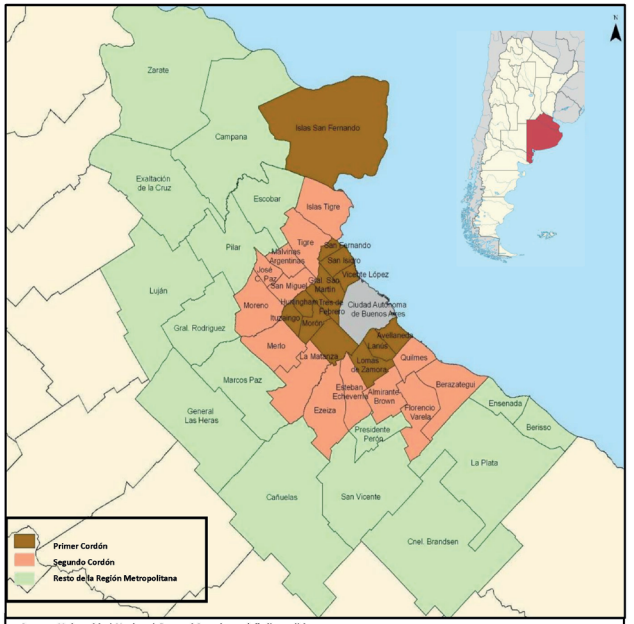
Metropolitan Region:

- **Pop.** 10.000.000[1] **20.34% of the national population**
- **Integrates** Bogotá D.C (Metropolis) , Cundinamarca (Subnational Entity - Departamento), and as many of the Cundinamarca municipalities (115) who voluntarily decide to join the RMBC
- **Area.** 25.985 Km2

Economics:

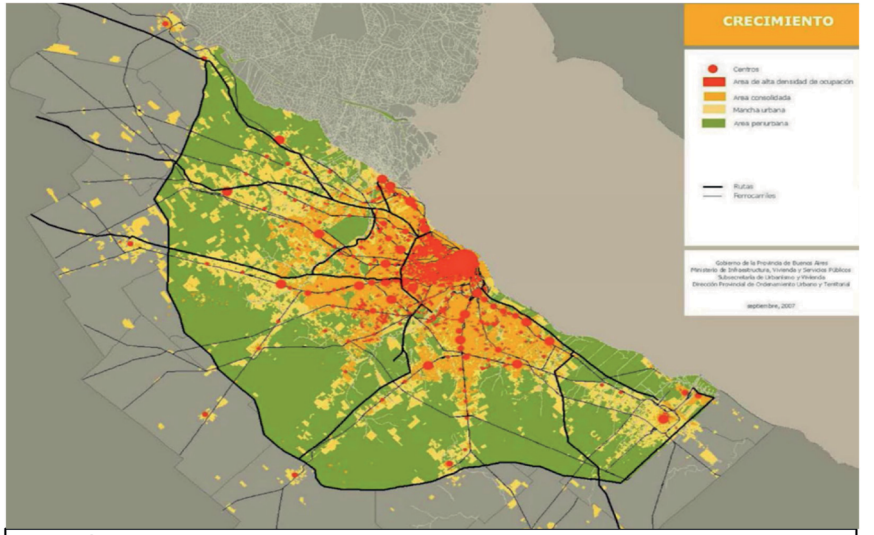
- **Metropolitan Region -** 31.5% [2] **of the National GDP**
- **GINI (Bogota):** 0,528[3]

BUENOS AIRES METROPOLITAN REGION (Argentina)



Source: Universidad Nacional General Sarmiento (sf) disponible en https://www.ungs.edu.ar/wp-content/uploads/2012/02/Informe-sobre-Regi%C3%B3n-Metropolitana-de-Buenos-Aires.-ICO-UNGS.pdf

Metropolis: Ciudad de Buenos Aires - Megalopolitan Urban Footprint



Source: Lineamientos Estratégicos para la RMBA

Composed by. Ciudad de Buenos Aires, Municipalities: Almirante Brown, Avellaneda, Berazategui, Berisso, Brandsen, Campana, Cañuelas, Ensenada, Escobar, Esteban Echeverría, Exaltación de la Cruz, Ezeiza, Florencio Varela, General Las Heras, General Rodríguez, General San Martín, Hurlingham, Ituzaingó, José C. Paz, La Matanza, La Plata, Lanús, Luján, Lomas de Zamora, Malvinas Argentinas, Marcos Paz, Merlo, Moreno, Morón, Pilar, Presidente Perón, Quilmes, San Fernando, San Isidro, San Miguel, San Vicente, Tigre, Tres de Febrero, Vicente López, Zárate

Megalopolis Profile:

Metropolis – C.A Buenos Aires
- **Population:** 2.890.151 °
- **Area.** 203 Km2

Metropolitan Area:
- **Pop.** 14.800.000 [1] **35% of the national population**
- **Area:** 13.947 km2

Economics:
- **Metropolitan Region -** 48% [2] **of the National GDP**
- **GINI (Buenos Aires):** 0,425[3]

Sources:
1. Ciudad Autónoma de Buenos Aires (2010) *Ciudad Autónoma de Buenos Aires*. Argentina.Gob.ar. https://www.argentina.gob.ar/caba#:~:text=Poblaci%C3%B3n%3A%202.890.151%20habitantes.,14.450%2C8%20hab%2FKm%C2%B2.
2. Unidad de Proyectos Especiales para el Área Metropolitana de Buenos Aires (2010) *¿Qué es AMBA? Área Metropolitana de Buenos Aires*. Buenos Aires Ciudad. https://www.buenosaires.gob.ar/gobierno/unidades%20de%20proyectos%20especiales%20y%20puerto/que-es-amba#:~:text=Se%20trata%20de%20una%20megaciudad,los%20habitantes%20de%20la%20Argentina.
3. Instituto Nacional de Estadística y Censos (2022). *Cuentas Nacionales*. Instituto Nacional de Estadística y Censos. https://www.indec.gob.ar/indec/web/Nivel3-Tema-3-9
4. Consejo Nacional de Coordinación de Políticas Sociales (2020). Boletín de Desigualdad N.1. https://www.argentina.gob.ar/sites/default/files/boletin_de_desigualdad_no1_s1_2020.pdf

METROPOLITAN AREA OF THE VALLEY OF MEXICO
(Mexico)

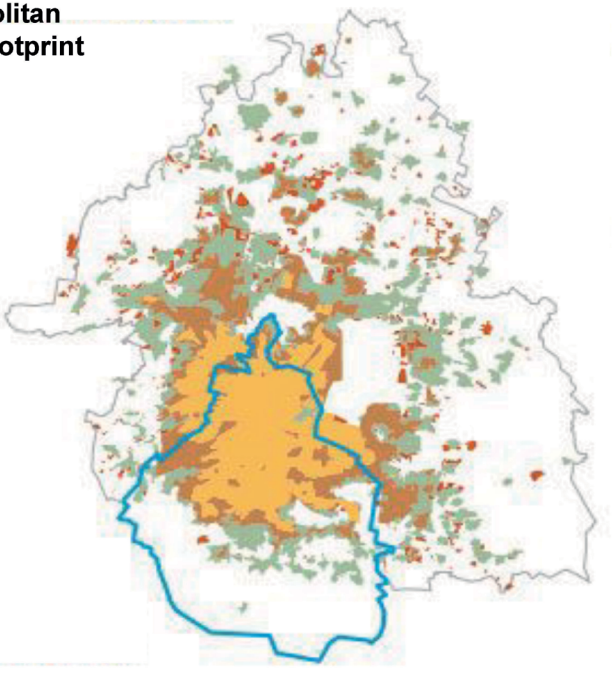
Source: Salinas L. (sf) disponible en https://www.redalyc.org/jatsRepo/112/11250327011/movil/?lang=fr

Composed by. Mexico City. Municipalities: Tizayuca Acolman Amecameca Apaxco Atenco Atizapán de Zaragoza Atlautla Axapusco Ayapango Coacalco de Berriozábal Cocotitlán Coyotepec Cuautitlán Chalco Chiautla Chicoloapan Chiconcuac Chimalhuacán Ecatepec de Morelos Ecatzingo Huehuetoca Hueypoxtla Huixquilucan Isidro Fabela Ixtapaluca Jaltenco Jilotzingo Juchitepec Melchor Ocampo Naucalpan de Juárez Nezahualcóyotl Nextlalpan Nicolás Romero Nopaltepec Tizayuca Acolman Amecameca Apaxco Atenco Atizapán de Zaragoza Atlautla Axapusco Ayapango Coacalco de Berriozábal Cocotitlán Coyotepec Cuautitlán Chalco Chiautla Chicoloapan Chiconcuac Chimalhuacán Ecatepec de Morelos Ecatzingo Huehuetoca Hueypoxtla Huixquilucan Isidro Fabela Ixtapaluca Jaltenco Jilotzingo Juchitepec Melchor Ocampo Naucalpan de Juárez Nezahualcóyotl Nextlalpan Nicolás Romero Nopaltepec Otumba Ozumba Papalotla La Paz San Martín de las Pirámides Tecámac Temamatla Temascalapa Tenango del Aire Teoloyucan Teotihuacán Tepetlaoxtoc Tepetlixpa Tepotzotlán Tequixquiac Texcoco Tezoyuca Tlalmanalco Tlalnepantla de Baz Tultepec Tultitlán Villa del Carbón Zumpango Cuautitlán Izcalli Valle de Chalco Solidaridad Tonanitla.

Sources:

1. INEGI (2020) Número de habitantes Ciudad de México. Información para niños. https://cuentame.inegi.org.mx/monografias/informacion/df/poblacion/
2. INEGI (2015) Principales resultados de la Encuesta Intercensal 2015 Estados Unidos Mexicanos. http://internet.contenidos.inegi.org.mx/contenidos/productos//prod_serv/contenidos/espanol/bvinegi/productos/nueva_estruc/702825078966.pdf
3. Zona Metropolitana del Valle de México (August 31, 2022) In *Wikipedia*. https://es.wikipedia.org/wiki/Zona_metropolitana_del_valle_de_M%C3%A9xico
4. Anexo:Entidades federativas de México por Coeficiente de Gini (February 10, 2022) In *Wikipedia*. https://es.wikipedia.org/wiki/Anexo:Entidades_federativas_de_M%C3%A9xico_por_Coeficiente_de_Gini

Metropolis: Estado de Ciudad de Mexico
Megalopolitan
Urban Footprint



Source: LA Network Disponible en:
https://la.network/crecimiento-urbano-de-ciudad-de-mexico-es-tres-veces-superior-al-de-su-poblacion/cdmx-huella-urbana-grafica/

Megalopolis Profile:

Metropolis – Mexico City

- **Population:** 9.209.944°
- **Area. 1495** Km^2

Metropolitan Region:

- **Pop.:** 22.804.515[1] **17% of the national population**
- **Area.** 5.954 Km2

Economic information[2]:

- **Metropolitan Region GDP compared to the nation: 23%[2]**
- **GINI (Mexico City):** 0,532[3]

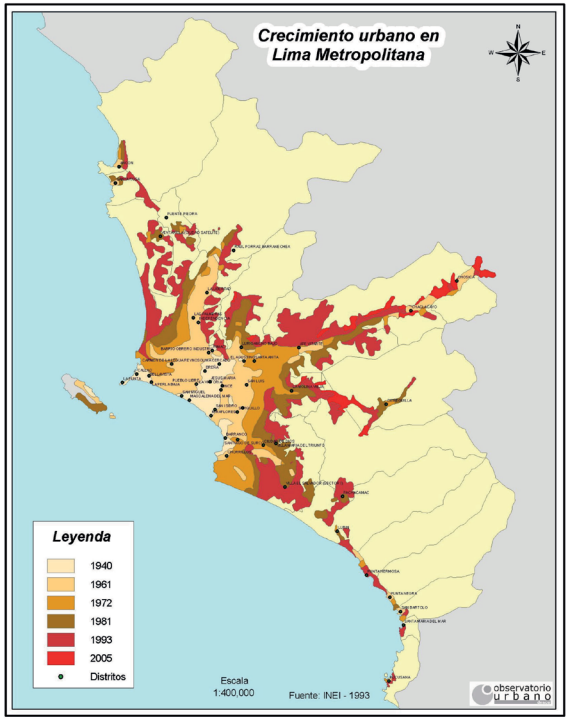
LIMA METROPOLITAN AREA
(Peru)

Source: Lesniewski, R. (s.f.). Alamy. El área metropolitana de Lima mapa politico y administrativo en idioma español. Recuperado de https://www.alamy.es/el-area-metropolitana-de-lima-mapa-politico-y-administrativo-en-idioma-espanol-image248747396.html

Composed by. 2 Provinces (Lima and Callao). Municipalities: Lima, Ancon, Ate, Barranco, Breña, Carabyllo, Chaclacayo, Chorrillos, Cieneguilla, Comas, El Agustino, Independencia, Jesus María, La Molina, La Victoria, Lince, Los Olivos, Lurigancho, Lurin, Magdalena del Mar, Pueblo Libre, Miraflores, Pachacamac, Pucusana, Puente Piedra, Punta Hermosa, Punta Negra, Rimac, San Bartolo, San Borja, San Isidro, San Juan de Lurigancho, San Juan de Miraflores, San Luis, San Martin de Porres, San Miguel, Santa Anita, Santa Maria del Mar, Santa Rosa, Santiago de Surco, Surquillo, Villa El Salvador, Villa María del Triunfo, Callao, Bellavista, Carmen de la Legua-Reynoso, La Perla, La Punta, Ventanilla, Mi Perú

Sources:
1. Municipalidad de Lima (2007) Lima. Municipalidad de Lima http://www.transparencia.munlima.gob.pe/component/k2/2-portal/lima
2. Instituto Nacional de Estadística e Informática (2018) Evolución de la pobreza monetaria. https://www.inei.gob.pe/media/cifras_de_pobreza/informe_tecnico_pobreza_monetaria_2007-2017.pdf

Metropolis: Lima - Megalopolitan Urban Footprint



Source: Observatorio Urbano. (s.f.) Crecimiento de la Lima Metropolitana.

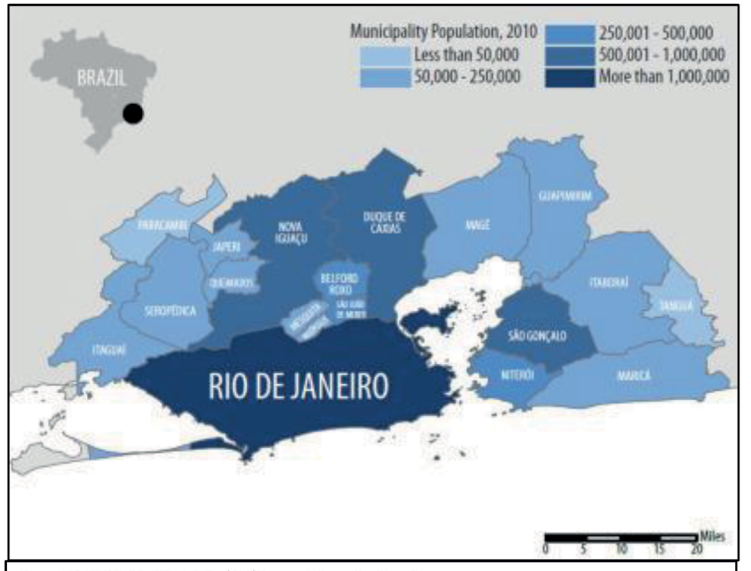
Megalopolis Profile :

Metropolis – Lima
- **Population :** 7.600.000[1]
- **Urban Area :** 2672 Km 2

Metropolitan Area:
- **Pop.** 9.100.000 27.9% of **the national population**
- **Area:** 2.819 km2

Economics [2]:
- **Metropolitan Region -** 43,13% **of the National GDP**
- **GINI (Metropolitan Lima):** 0,28[2]

RIO DE JANEIRO METROPOLITAN REGION (Brasil)



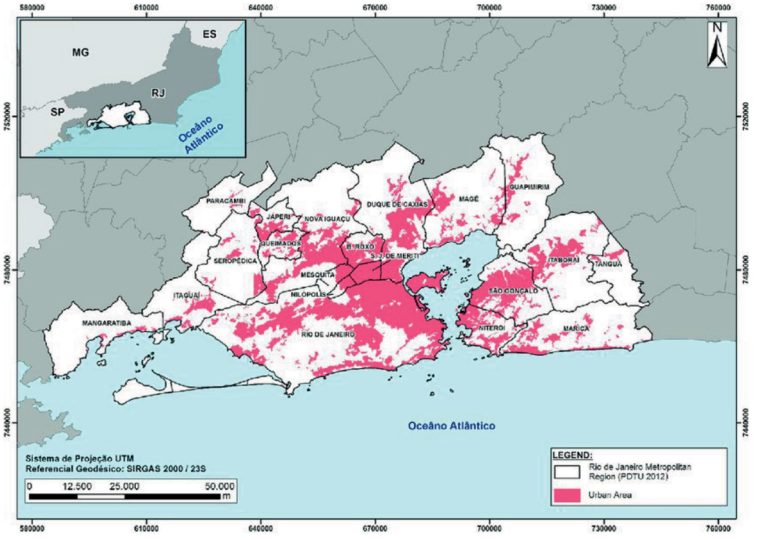
Source: BROOOKINGS Global Cities Initiative (2012) Recuperado de www.brookings.edu

Composed by. Rio de Janeiro. Municipalities. Belford Roxo, Cachoeiras de Macacu, Duque de Caxias, Guapimirim, Taboraí, Itaguaí,Japeri, Magé, Maricá, Mesquita, Nilópolis, Niterói, Nova Iguaçu, Paracambi, Queimados, Rio Bonito, São Gonçalo, São João de Meriti, Seropédica, Tanguá.

Sources:

1. Statista (2021) *Ciudades con la mayor cantidad de habitantes en Brasil 2021*. Demografía. https://es.statista.com/estadisticas/599077/ciudades-mas-grandes-en-brasil-en/
2. **Región Metropolitana de Río de Janeiro (April 22, 2022).** In *Wikipedia*. https://es.wikipedia.org/wiki/Regi%C3%B3n_metropolitana_de_R%C3%ADo_de_Janeiro
3. CEIC (2017). *Brazil Gini Coefficient: Household Income: per Capita: Southeast: Rio de Janeiro*. CEIC. https://www.ceicdata.com/en/brazil/gini-coefficient-household-income-by-region/gini-coefficient-household-income-per-capita-southeast-rio-de-janeiro

Metropolis: Rio de Janeiro – Megalopolitan Urban footprint



Source: Girao, R., Pereira, W., Fernandes, P. (2017) Accesibility Index elaboration by by network geospatial analysis. *Mercator*, 16, 1-20. DOI: : https://doi.org/10.4215/rm2017.e16011

Megalopolis Profile :

Metropolis – Rio de Janeiro

- **Population :** 6.780.000°
- **Area.** 1.200,3 km²

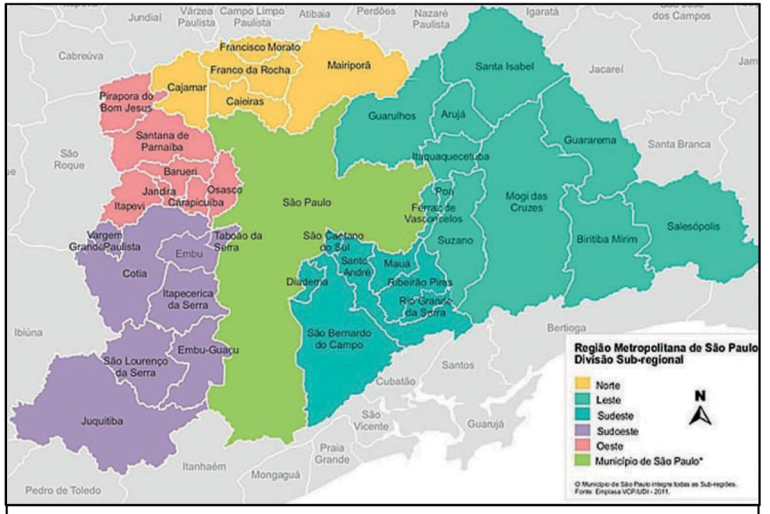
Metropolitan Region:

- **Pop.** 11.902.701[1] **5.8% of the national population**
- **Area.** 5.645 Km2

Economic information:

- **Metropolitan Region GDP compared to the nation:** 48,21%[1]
- **GINI (Rio de Janeiro):** 0,521[3]

SAO PAULO METROPOLITAN REGION (Brasil)



Source: Balacci, L. (2020). Grande SP é dividida em seis regiões para avaliar 'retomada consciente'. Recuperado de https://www.metroworldnews.com.br/foco/2020/05/29/grande-sao-paulo-divisao-retomada-consciente.html

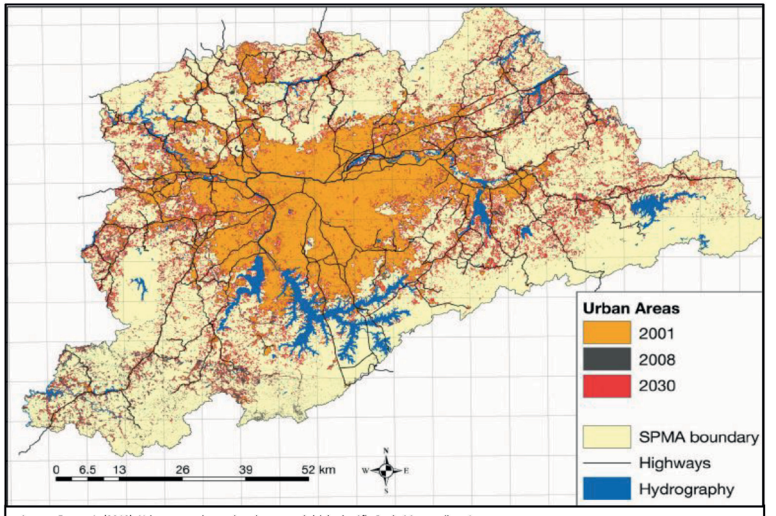
Composed by. Sao Paulo.

Municipalities: Arujá, Barueri, Biritiba-Mirim, Caierias, Cajamar, Carapicuíba, Cotia, Diadema, Embu, Embu-Guacu, Ferraz de Vasconcelos, Francisco Morato, Franco da Rocha, Guararema, Guarulhos, Itapevi, Itaperica da Serra, Itaqu aquecetuba, Jandira, Juquitiba, Mairipora, Maua, Mogi das Cruzes,
Osasco, Pirapora do Bom Jesus, Poá, Riberiao Pires, Rio Grande da Serra, Salesópolis, Santa Isabel, Santana de Paraniba, Santo André,
Sao Bernardo do Campo, Sao Caetano do Sul, Sao Lourenco da Serra, Suzano, Taboao da Serra, VargemGrande Paulista.

Sources:

1.Sao Paulo (September 4, 2022) In *Wikipedia*. https://es.wikipedia.org/wiki/S%C3%A3o_Paulo
2.Cideu (n.d) Sao Paulo. Cideu. https://www.cideu.org/miembro/sao-paulo/
3.CEIC (2017) Brazil Gini Coefficient: Household Income: per Capita: Southeast: São Paulo. CEIC. https://www.ceicdata.com/en/brazil/gini-coefficient-household-income-by-region/gini-coefficient-household-income-per-capita-southeast-so-paulo

Metropolis: Sao Paulo – Megalopolitan Urban footprint



Source: Ferraz, A. (2013). Urban expansion and environmental risk in the São Paulo Metropolitan Area.

Megalopolis Profile:

Metropolis – Sao Paulo

- **Population**: 12.396.372[1]
- **Area.** 1522 Km2

Metropolitan Region:

- **Pop.** 21.600.000[2] **9.8% of the national population**
- **Area:** 7.943 km²

Economic information[2]:

- **Metropolitan Region GDP compared to the nation:** 17.63%[1]
- **GINI (Sao Paulo):** 0,534