

# **Urban Transport, Urban Expansion and Institutions and Governance in Santiago, Chile**

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**Case study prepared for**

**Global Report on Human Settlements 2013**

Available from <http://www.unhabitat.org/grhs/2013>

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Nairobi, 2011

# Urban Transport, Urban Expansion and Institutions and Governance in Santiago, Chile

*Oscar Figueroa and Claudia Rodríguez*

## Introduction

The relationship between urban development and transportation in Santiago has been characterised by some positive changes but also problems. The city has been through changes of forces in metropolitan extension, changes in public transport management and technologies to meet growing demand. Keeping up with rapidly growing need for mobility and coping with low-density metropolitan extension have been challenging.

Santiago displays a process of urban growth at rates of physical expansion much faster than population growth. This has been abetted by strong income growth and public policy decisions to locate subsidized social housing ever further into the outlying areas of the city.

Since the 1990s a wide-ranging approach to improvement of transportation included the introduction of a new regulation for the bus system, which experienced wide variations regarding levels of service and bus regulations in the previous years. Also, there was extensive construction of urban and suburban highways via public-private partnerships. The use of public-private partnerships to build highways has been quite common in Chile. Most recently the citywide Transantiago project, introduced bus rapid transit as a centrepiece of transit system integration.

In spite of the fact that Santiago de Chile has development patterns comparable to other Latin American metropolitan areas, it can be differentiated by the profound political, economic and regulatory changes in national governance since the 1970s. Many of these have no precedent elsewhere in Latin America. Early liberalization and privatization during the late 1970s, limiting the role of government in urban services through selling of public enterprises, deregulation of public transport, abolition of urban boundaries and resettlement of poor population in new cheaper areas, were some of the notable practices as will be seen further on.

Unfortunately, although the process of urban growth has been marked by strong technical and institutional capacity within involved organizations, the accumulated experience has nevertheless not resulted in completely successful implementation. This has been due to limitations within the continuing institutions and organizations involved and issues of governance relating to aspects of the management process. In part, there have been problems of coordination within the sector, to coordinate among the distinct entities involved in providing infrastructure and transport services. In spatial terms, there has been a lack of coherence between transport services provided and the urban context, resulting in operational repercussions in terms of service quality, and the creation of sometimes perverse incentives for inorganic urban development.

## Santiago: Background and Context

### Territorial organization

At the centre of the metropolitan area is the business centre, the 'comuna de Santiago' with a resident population of 200.972 inhabitants (2002) and a daily floating population of 1.8

million inhabitants.<sup>1</sup> The rest of the metropolitan population of 6,060,077 live in 34 different local jurisdictions in the Province of Santiago and two adjacent provinces<sup>2</sup> corresponding to a continuous urban area of 66,176.11 hectares. The 1994 master planning document for Santiago designated the entity of Santiago as the sum of 37 communes and groups them under the umbrella of a single urban regulation.

Nevertheless, the effective area of the city of Santiago is greater, extending beyond the defined urban limits and connecting other regional localities. This is referred to here as 'Nueva Área Metropolitana de Santiago (NAMS)'<sup>3</sup> (New Metropolitan Area of Santiago<sup>4</sup>). The NAMS extends across all the provinces in the region (the Provinces of Santiago, Maipo, Cordillera, Talagante and Chacabuco), connecting 48 communes,<sup>5</sup> with an urban area of 72,293.21 hectares<sup>6</sup> and a population of 6,780,518 inhabitants in 2010.

### **The transport system**

In 2006 it was estimated that a total of 17,330,585<sup>7</sup> daily trips were made in Greater Santiago (37 communes of the 1994 plan) with an average travel time of 24 minutes by car, 47 minutes by bus and 29 minutes by Metro (see Table 1).<sup>8</sup> The average number of trips per person has increased from 1.61 in 1991 to 2.8 trips in 2006.<sup>9</sup>

The number of metro trips (among public transport trips) has increased from 0.5 million in 1991, 0.75 million in 2001 and 0.86 in 2006. At the same time car ownership has increased from 90 to 137 vehicles per 1,000 inhabitants between 1991 and 2006. This translates to 0.48 vehicles per household.<sup>10</sup>

On 10 February 2007, Transantiago, a new urban public transport system, was introduced, although articulated buses in previously established routes started operation in 2005. There was a restructuring of the bus network on a trunk-feeder basis. The core of the system was structured around the Metro that currently has 5 lines, 108 stations and covers 102.5 kilometres,<sup>11</sup> almost two thirds of which was constructed in the last ten years. The Metro and buses account for 6,030,523 daily trips.<sup>12</sup>

According to the Ministry of Transport, urban transport is defined only as that which operates within the urban footprint of 34 communes. All other public transport services are defined as rural, in spite of their clearly suburban character. There are some 80 rural bus routes that originate or terminate in Greater Santiago without integration into Transantiago, and not allowed to operate within Greater Santiago itself.

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1. Population data refers to last Population Census (INE, 2002). Since then, there are only projections that may show well the overall population in the area, but fail to show intra-communal population change. According to INE projections, the 34 communes of Great Santiago have 6,060,077 inhabitants in 2010. Data show here will be that of the 2002 Census as heavy changes in intra-urban population are occurring that projections cannot show.

2. According to projections explained in note 1.

3. See Figueroa and Rodríguez, 2005.

4. As opposed to the 'AMS', the 'old' Metropolitan Area of Santiago.

5. This includes the communes of Curacaví, El Monte, Isla de Maipú, Melipilla, Talagante and Tiltil.

6. Surface area measured from satellite images Landsat 7 (2003), for localities of more than 15,000 inhabitants (<http://www.observatoriourbano.cl>, last accessed 14 June 2011).

7. EOD 2006 (Origin-Destination survey 2006).

8. OMU-CAF, 2009 (Urban Mobility Observatory – Corporación Andina de Fomento).

9. <http://www.sectra.cl>, last accessed 14 June 2011.

10. <http://www.sectra.cl>, last accessed 14 June 2011.

11. This includes the Maipú line, completed at the end of January 2011.

12. OMU-CAF, 2009.

**Table 1. Total daily motorized trips**

Year	Total trips <sup>1</sup>	Motorized trips <sup>2</sup>					
		Private transport <sup>3</sup>		Public transport <sup>4</sup>		Other <sup>5</sup>	
		No. of trips	%	No. of trips	%	No. of trips	%
1991	7,230,222	1,180,716	16	3,898,313	54	416,953	6
2001	15,585,633	3,465,063	22.2	5,205,006	33.4	622,1208	4
2006 <sup>6</sup>	17,333,023	3,822,034 <sup>7</sup>	22.1	5,697,790	32.9	922,896	5.3

Notes:

1. Total number of trips in private transport, public transport, walking and others, for a working day in normal season.

2. Combined trips between two different modes, i.e. car-bus, metro-bus, which represent less than 1% of total motorized trips, are counted double if they use public and private modes.

3. Private transport includes: car driver, car accompanying, taxi and radio taxi.

4. Public transport includes: urban and interurban buses, urban and interurban taxi-buses, collective taxi, metro, railway, and combinations.

5. Includes mainly school transport and institutional transport.

6. The Origin-Destination survey of 2006 created a data base with data obtained from several mobility surveys (2001–2006).

7. 4.1% of these trips are realized by taxi and radio taxi as direct trips, amounting 157,812 trips.

Source: [www.sectra.cl](http://www.sectra.cl).

One of the most important changes to the urban transport system over the last few years corresponds to the development of the privatized tollways system; six new highways privately operated through concessions totalling 215 kilometres. There are also five other interurban tollways under the same regime most of them having been inaugurated prior to major changes in public transport.

## Institutional Framework

### Urban planning

The urban plan of Santiago has three levels; the national level where executive power resides, the regional level governed by an *Intendente* (regional Lord Mayor) appointed by the national government, and the local level formed by the municipal councils headed by mayors elected by the community. All of these act as part of the NAMS simultaneously, but not in a co-ordinated manner.

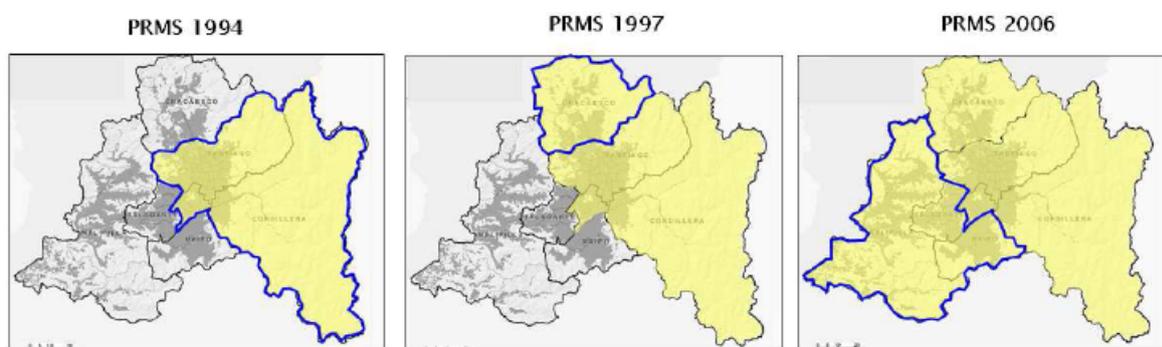
At the national level the relevant authorities are the Ministry of Housing and Urbanization (MINVU), the Ministry of Public Works, the Ministry of Transport and Telecommunications, the Ministry of Planning, the Ministry of Agriculture and the Ministry of the Environment. At the regional level the relevant authority is the Regional Government and at the local level, all the municipalities which make up the Metropolitan Region.

The General Law of Urbanization and Construction establishes 5 levels of planning reference, the most important being the Regional Plan for Urban Development, the Inter-communal Regulation Plan and the Local Regulation Plan. Additionally, there is the Environmentally Sustainable Land Use Programme, managed by the Metropolitan Regional government, which unlike the others mentioned, is solely a guide with no legal weight (Zegras and Gakenheimer, 2000).

It was during the 1970s that the **Plan Regulador Intercomunal de Santiago, PRIS** (Intercommunal Regulation Plan of Santiago) came into effect. It defined the size of the city (SEREMI (Regional Ministerial Secretary) MINVU, 2008), as it imposed regulation on the local communes which made up the metropolitan entity of Greater Santiago. However, in 1979 (Decree Number 420) this defining line was abandoned, allowing the extension of the urban limit under the logic of free market, and initiating the concept of the demarcation between the *urbanized* and *urbanizable*, the latter being land that would allow for the future growth of the metropolitan area (SEREMI MINVU, 2008).

The 1990s saw approval of the **Plan Regulador Metropolitano de Santiago, PRMS (1994)** (Metropolitan Regulation Plan of Santiago). This was to define the 32 communes of the Province of Santiago as lying within the metropolitan boundaries, plus five communes within other provinces, making a total of 37 communes (see Figure 1).

**Figure 1. Territories included in the Metropolitan regulation plans (1994–2006)**



Source: SEREMI MINVU, 2008.

The plan specified a new area for the expansion, by contracting the defined urban limit, and delimiting the specified metropolitan urban area (meaning urbanized + urbanizable areas) to approximately 72,000 hectares, with the idea of promoting higher density living (SEREMI MINVU, 2008).

In 1997, the PRMS was amended. A new concept in terms of land classification was created, called *zonas urbanas de desarrollo condicionado* (urban zones of conditional development) or ZUDC. These permitted the urbanization of rural areas under special conditions, as defined by the relevant authorities. Together with the incorporation of the Province of Chacabuco, this sought to better manage the pressure for rural housing in the outer suburban areas of the province.

2003 heralded the acceptance of the idea of the creation of new urban nuclei developed by the private sector subject to approval and conditions imposed by the public sector. A new body was created called *Proyectos de Desarrollo Urbano Condicionado* (Conditional Urban Development Projects or PDUC), following the principles of ZUDC.

In 2006 SEREMI increased the jurisdiction of the PRMS to cover all of the regional territories, defining land uses and zoning and key urban roads for the 12 communes that had not been covered by the modifications of 1997 (SEREMI MINVU, 2008).

### Urban transportation

Urban transportation is managed through a disparate and fragmented institutional framework, distributed among public institutions of distinct levels with distinct areas of responsibility.

The administration of urban transport in Santiago is, like urban planning, structured across the three same levels of government.

At the national level, the relevant authorities are the Ministry of Transport and Telecommunications (MTT), the Ministry of Housing and Urbanization, the Ministry of Public Works, the Ministry of Planning and the Ministry of the Environment.

The national transportation policy since the late 1970s has imposed deregulation of the activity, and only after 1991 were some criteria for the public urban transport in Santiago modified, stating that regulations will be introduced where market failures occurred. Thus began a process of bidding for services and concession granting.

Regarding traffic, the responsibilities lie on every one of the communes, but there is a national level agency in charge of metropolitan coordination, particularly in the management of traffic lights.

Road safety is a matter of national inter-ministerial commission, while environmental aspects are monitored by the Ministry of Environment. Planning is handled by Secretaría Interministerial de Transporte, nowadays transferred to the Ministry of Transport.

However, there exists an overlapping of responsibilities and functions between the distinct ministries, creating friction over roles and poor co-ordination between the entities. This weakens the effectiveness of the policies that are implemented.

## **Physical Size and Transport Characteristics**

### **Growth of the city: patterns and trends**

The 1970s marked the beginning of important transformations in the political and economic spheres, with radical effects on Greater Santiago and its regional surrounds.

The modification of the Urban Law in 1975 that permitted the construction of dwellings outside of the city of Santiago, created greater incentives for suburban expansion.

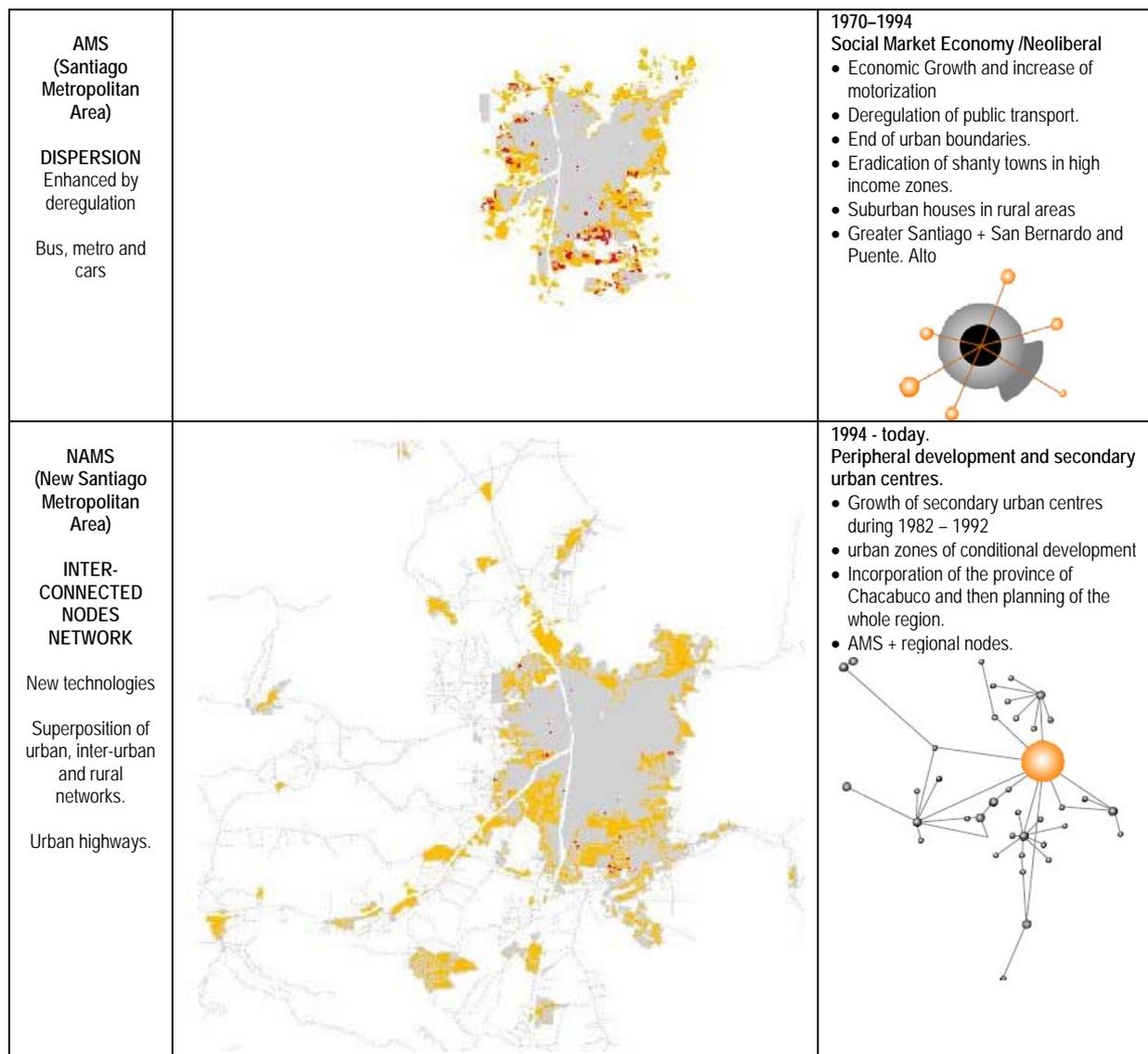
Furthermore, the scope of the legal framework permitted the subdivision of agricultural lots for suburban dwellings without the necessity of complying with urban subdivision requirements. Additionally, the policy of eradication of shanty towns (1979) relocated lower socioeconomic groups, freeing up space in areas with high land prices for new real estate development (Figueroa, 2004). Urban transportation however was not a problem as public transport deregulation rapidly allowed services to reach new lower income urbanized zones.

Since the 1980s, a process of liberalization and deregulation in urban planning eliminated the urban limit (Decree 420), making available additional land for development. The urban area grew from 36,000 to 62,000 hectares in order to accommodate the future growth generated by increases in population and income. Nevertheless, the principle upon which this decree was established was the aim of maintaining low urban land prices.

In economic terms, after the initial period of radical restructuring, the new policies created an environment of strong economic growth, with rates averaging 7 per cent per year over the 1986–1995 period (De Mattos, 1999).

This growth flowed through to an increased demand for urban land and an increase in the rate of motor vehicle ownership, especially from the late 1980s onwards. While the population of Greater Santiago grew during the period between the censuses of 1992 and 2002 at a rate of 14 per cent, the urban footprint of Santiago grew 30.2 per cent in the same period (Poduje, 2006).

**Figure 2. Evolution of Santiago's growth**

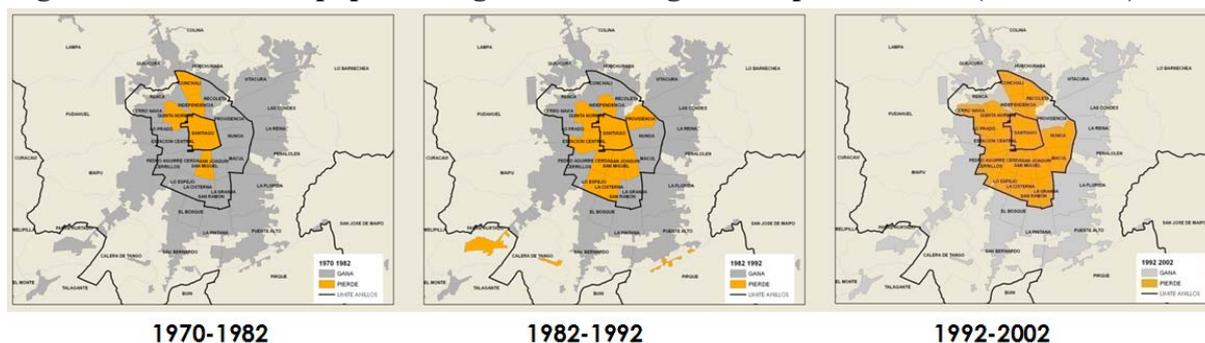


Source: Rodríguez, 2008.

The urban expansion, induced and made possible mainly by the increase in incomes, was seen to take place through the aggregation of peripheral areas into the urban metropolis and in the development of dispersed population centres throughout the metropolitan region. The policies of deregulation that occurred simultaneously in urban planning and in public transportation formed part of the coherent urban development strategy of the time.

Access to and use of the automobile for daily trips created scope for locating urban areas further out for motorized families, and land prices in the outskirts consequently increased. But social housing programmes required cheap land which was to be found ever further from the centre of the city, giving further stimulus to the growth in the size of the city's urban footprint (Figuroa and Rodríguez, 2005). This mode of development led to inequalities in terms of transport mobility, and increased journey times for poor population. Currently, there are no remaining areas of land within Greater Santiago at an available price for the construction of new social housing projects. These developments are now taking place in locations outside of and separated from the city, in the south, southeast, and northeast.

**Figure 3. Evolution of population growth Santiago Metropolitan Area (1970–2002)**



Source: Contreras and Figueroa, 2008.

The processes of densification, expansion and dispersion are occurring simultaneously, configuring a new administrative and territorial map of the Metropolitan Region of Santiago (Figueroa and Rodríguez, 2005).

The communes located close to the centre loose populations in favour of the peripheral areas; the highest rates of growth are being registered in the outlying areas of Greater Santiago and nearby rural areas, associated as much with the growth of secondary population centres (see Table 2).

**Table 2. Santiago. Population growth in groups of communes**

Group of communes	Population		% growth
	1992	2002	
Interior (1)	2,532,672	2,353,526	-7.1
Border	2,223,991	3,054,624	37.3
External (2)	501,274	653,035	30.3
Total Metropolitan Region	5,257,937	6,061,185	15.3

Notes: 1. Interior to Americo Vespucio ring; 2. External to Greater Santiago.

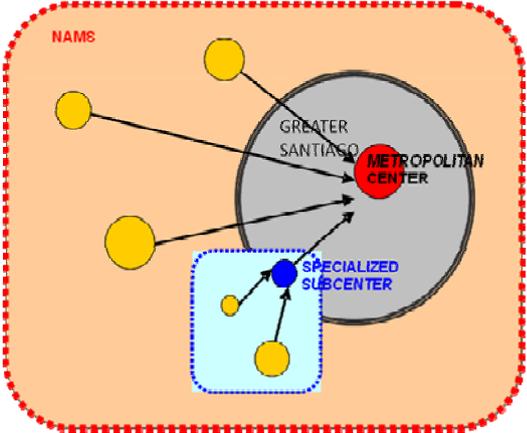
Source: INE, 1992; INE 2002.

The centre of the city has seen populations falling at a significant rate since the 1970s, when population stood at almost 296,000 inhabitants, to not more than 201,000 in 2002. Between 1992 and 2002, the population declined by some 30,000 people.

Notwithstanding this, these statistics also show that in the same central area between 1992 and 2002 the number of families actually increased from 68,000 to more than 72,000, correlating with a fall in the average family size from 3.4 inhabitants to 2.8 in the same period. Downtown Santiago attracted a new kind of population: young people, middle income people and public transport users.

Details available about the flows of commuting trips allow some insight into urban-regional hierarchies and movement patterns. The spatial configuration of the workplace, according to the 2002 Census, revealed that the primary destination in all the communes is located within the same commune. This could indicate a certain independence and autonomy of the communes located outside the Santiago centre. However, it is observed that a significant number of residents of communes outside the centre have as their secondary destination Greater Santiago principally the centre city and in some cases specialized sub centres located in peripheral communes.

**Figure 4. Metropolitan Centralities Scheme**



Source: by authors.

For the communes of Greater Santiago, the principal work travel destinations after those within the same commune, are to neighbouring communes or downtown. All communes, including those on the periphery, include the metropolitan centre amongst the four primary destinations, with a heavier weighting attached to the city centre than the peripheral specialized sub centres, as shown in Table 3 and Figure 5.

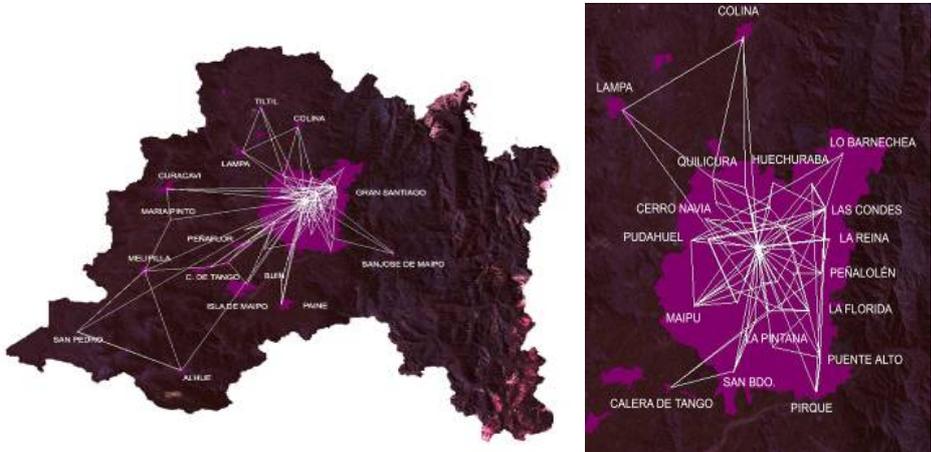
**Table 3. Origin – Destination of commuting travels by rings**

Origin Ring	Commuting destination					
	Interior <sup>1</sup>		Border <sup>2</sup>		Exterior <sup>3</sup>	
Interior <sup>1</sup>	1°	75.6 %	2°	22.8%	3°	1.6%
Border <sup>2</sup>	2°	46.6%	1°	51.3%	3°	2.1%
Exterior <sup>3</sup>	2°	16.9%	3°	10.8%	1°	72.3%

Notes: 1. Communes inside Américo Vespucio ring; 2. Peripheral communes; 3. Communes outside Greater Santiago.

Source: Rodríguez, 2008.

**Figure 5. Patterns of the four principal destinations of commuting trips for work (Census 2002) and for work + studies (EOD 2001)**



Source: Rodríguez, 2008.

## Urban transportation: patterns and trends

The structure of trips within the NAMS suggests a configuration that does not appear coherent with the institutional organization of the metropolis. The diverse hierarchies of authority over the same metropolitan space makes it difficult to organize and to co-ordinate transport activity.

The following map (Figure 6) demonstrates the way in which the urban transport system is fractured due to jurisdictional limitations. On the left we can see the coverage and field of authority of Transantiago, whilst on the right is shown the origin and destination of trips within the NAMS is shown. One can see that many trips are outside the reach of the Transantiago network and therefore these zones lack integration into the Transantiago ticketing system and modal integration.

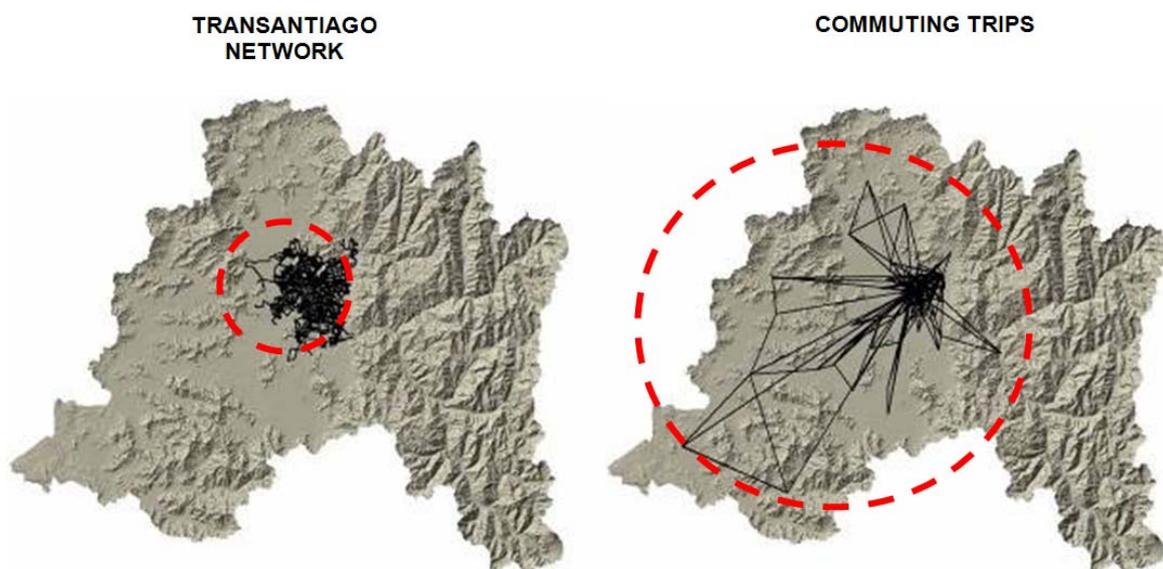
The suburban and interurban networks penetrate the urban system, as their terminals are located within the city and often sections of their routes overlap with the urban network.

These forms of urban development re-enforce the trend towards development of an atomized transportation system that ends up playing a functional role in the expansion of the city (Figueroa, 2004).

The capacity of an urban highway network to generate greater access, or to travel greater distances in the same travel time, constitute a definitive factor that has assisted the growth of the urban footprint and the occupation of new areas located further out. Even before the freeways were established, important urban developments were already materializing outside of the city limits, experiencing increases in their populations, revealing the importance of future connectivity.

The construction of highways has been possible because of the prior existence of a sufficient number of drivers ready to pay the cost of the tolls. According to the Chilean management model, construction of road infrastructure is not allowed if it has not been verified that there is sufficient demand, and that therefore the project will be financially viable and potentially privately run. This is the way roads have been built in Chile during the last years.

**Figure 6. Comparison between Transantiago network and commuting trips for work**



*Source: Rodríguez, 2008.*

Highway construction subsequently provides benefits for businesses such as real estate developers, road building and public works companies, land owners, and car dealerships. However, not everyone benefits equally; while in the wealthy areas rates of car ownership are around 329 automobiles per 1000 inhabitants, in the lower income areas the figure is around 123 cars per 1000 inhabitants (Figueroa and Orellana, 2007).

With respect to public transport, by the beginning of the 1990s, the fully deregulated public transport was coming to an end, due to the negative impacts experienced (Cruz, 2001). In 1992, policies were modified, and a new system was put in place that granted concessions for each route, which had the effect of substantially reducing the number of buses on the roads. Additionally, more stringent environmental regulation and new technologies were introduced. This process continued through the 1990s (Figueroa, 2010b).

Towards the end of the 1990s, although significant progress had been made, further improvements were required. The reduction in the size of the fleet, and the upgrading of buses, together with the use of cleaner technologies had been realized without much alteration to the organization of the private operators, and with almost no investment or support from the authorities (Cruz, 2001).

In order to further improve the system, fundamental structural change was required. In particular, the system of ‘yellow buses’<sup>13</sup> had reached its limit in terms of further improvement, partly due to a lack of investment, and partly because the fragmented structure of the industry was such that the entrepreneur’s organization was unable to guarantee improvements in quality and efficiency.

A lack of institutional coordination and a lack of clarity about the work to be carried out failed to reach changes in 1995 (Figueroa and Orellana, 2007). The 2000–2010 *Plan de Transporte Urbano de Santiago* or PTUS (Santiago Urban Transport Plan) arose in response to this situation. Then, the new plan clearly acknowledged the need for institutional change in order to achieve the hoped-for outcomes.

The original plan contained 12 programmes, including key elements such as the modernization of the public transport system and the coordination and integration of the decisions relating to urban development and transport. Also specified was the development of a new institutional, operational and legal framework, including the creation of executive management and technical teams, to be provided with adequate resources to achieve the desired outcomes.

Institutions involved were all at the national level, and there was no participation from regional and local authorities that were involved on the ground.

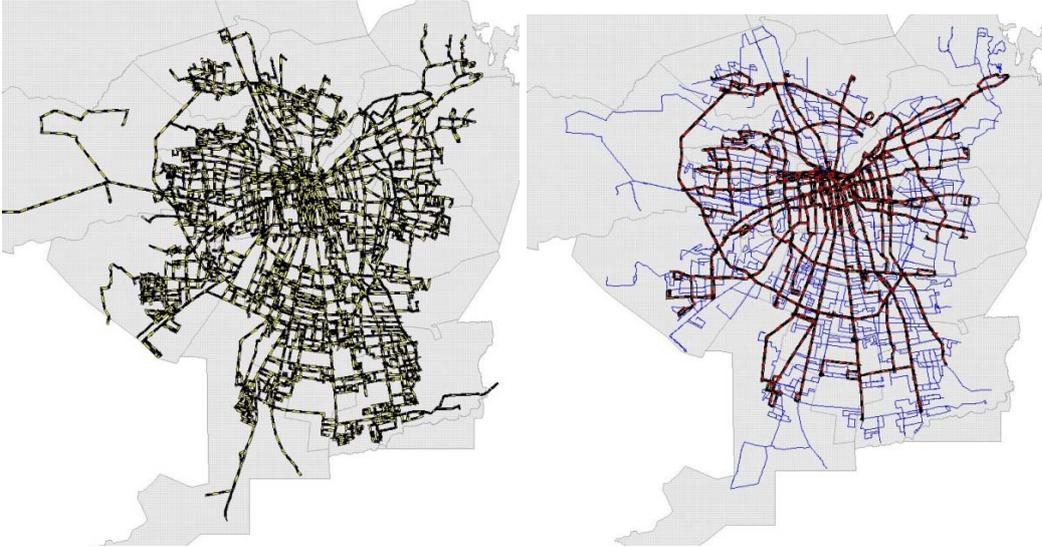
The PTUS proposed two major interventions with respect to the public transport network: the restructuring of the bus service and the extension of the metro network. This was to be oriented around three key concepts: prioritizing the delivery of public transportation, promoting rational use of the automobile, and the development of non-motorized transport.

However, the actual design and implementation of the PTUS did not resolve the situation. In part, the plan was somewhat dissociated from the creation of Transantiago, which corresponded to just one of the 12 programmes. Also, the institutional framework that was actually implemented bore little relation to the original proposals in the plan (Figueroa and Orellana, 2007).

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13. The bus system existing during the 1990s, as all buses were painted yellow.

**Figure 7. Comparison between networks of the previous ‘yellow buses’ and Transantiago\***



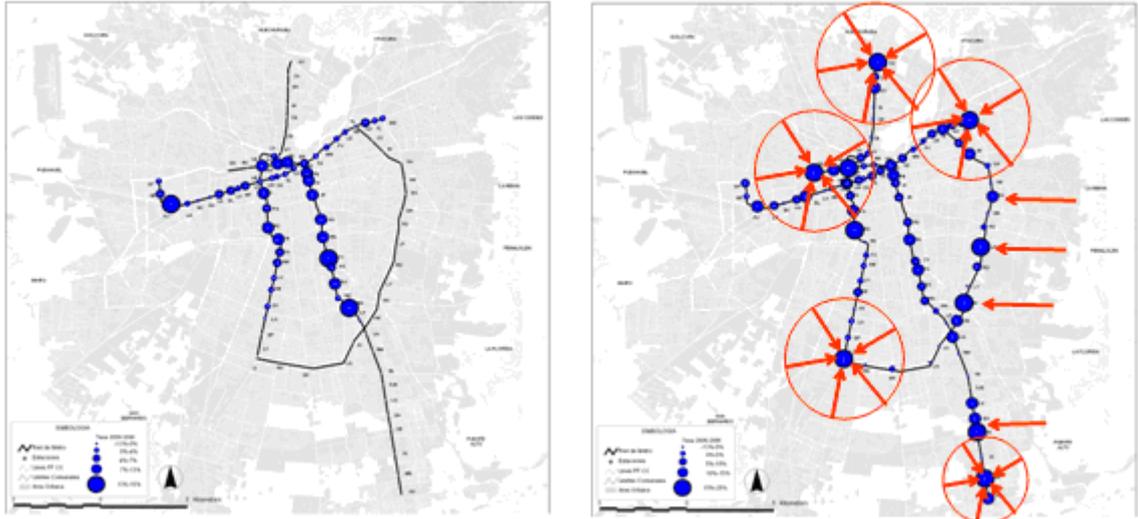
\* Transantiago network as defined originally 10 February 2007.

Source: [www.transantiago.cl](http://www.transantiago.cl)

Transantiago proposed a hierarchical system integrated in the operative, physical and ticketing areas. Additionally it proposed reducing the size of the fleet, investing in the renewal and progressive upgrade of equipment and introducing articulated buses. Also of importance was the reduction in the number of transport operators, removing competition between buses for passengers in the city, introducing risk contracts for operators, card system for payment of fares, and a new management and regulatory structure.

One of the most notable consequences of the restructuring was the shift in demand toward metro services, which for its reliability and frequency was favoured by users as bus services could not respect punctuality and match trip times.

**Figure 8. Average access to metro stations before and after Transantiago**



Source: SEREX, 2009.

The implementation of Transantiago has resulted in longer trip times for the majority of users, notably with respect to the increased time required to access bus stops and additional time spent waiting for services. Although this situation has improved, it is still not equivalent or better than travel times previous to Transantiago.

The ticketing system was able to integrate and differentiate multiple stages of a user's trip, allowing for transfers between services with the use of a contactless smart 'swipe' card. This system has been well accepted by users. However, installation of only one single payment point through the front door on buses has caused delays in access to buses, affecting punctuality. It also has resulted in an increase in fare evasion (in April 2010 it reached up to 17.8 per cent<sup>14</sup>) when users access buses via the doors without payment devices.

Much of the investment associated with the infrastructure program (60 per cent) came from the private sector, by way of tender contracts, then repaid/recouped via taking a percentage of the value of the fares received.

The underlying objectives of reducing the fleet, and to improve it whilst maintaining low ticket prices strongly affected the project and promoted a reduction in the amount of public funds invested. Whilst the state leveraged private investment in highways to the amount of \$US2,000 million and in the Metro it invested a similar amount directly, the public funding for Transantiago did not reach \$US100 million and total investment in the project did not surpass the \$US800 million mark. The lack of initial investment imposed an additional burden on travellers through a fall in service quality (less comfort, less punctuality, increased trip times, etc.). All the subsequent measures to bolster the infrastructure and to solve these deficiencies caused onerous costs for the system. Transantiago has had to increase its tariffs by 30 per cent since its inauguration in 2007 and has still not managed to reverse annual losses of \$US700 million. This is an amount almost equivalent to total initial investment in the system, without including the additional costs to citizens who have been required to make greater effort and accept more uncertainty when making trips.

The management of payments to operators includes fines for not meeting service targets, and compensation if guaranteed minimum income from passengers is not received in a given period. But the result for a bad operator will depend on the amount of the fines and the value of the compensation received to guarantee minimum income. The income guarantees refer to global demand per concession, not per vehicle, while measurements of service targets are associated with the number of vehicles that operate and their frequency.

The errors that have dogged the system since the beginning can be summarized in three key points:

- The tendering process for operators was implemented with high risks for the applicants, as the call to tender was made before the design was finalized. In order to lessen the risk, the guarantee of an income system to operators was created. Future contracts encouraged substandard operation instead of good service.
- In order to counteract delays, the previous government decided to 'inaugurate' Transantiago with the introduction of articulated buses in 2005. These buses began their deterioration from this moment, circulating on non-adapted roads, and beginning Transantiago operational deficit.
- It was decided to give the Financial Administrator (AFT) the management responsibility for the operation of the buses, thus giving it two radically different functions that require specialities that are not related in any respect. This was the main

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14. La Nación, 2010.

cause of the failure, not only of the AFT, but also of the unsatisfactory management of the operation of the buses.

Other key aspects include deficiencies in road infrastructure and bus stops, lack of recognition of the need for a permanent policy of subsidies, the lack of ability of operators, and above all the persistence of certain aspects of a deregulated transport framework that were never compatible with this project.

## **Conclusions**

In the new metropolitan context, the processes of densification, expansion and dispersion happen simultaneously, with varying importance over time. In accordance with this phenomenon, in the first decade of this century, the rejuvenation of the centre has been evident (Figueroa, 2010a) with unofficial data produced by Atisba (2011) suggesting strong population growth in the central local communes, reversing the long term trend of depopulation seen until recently.

The transport and communications system is inserted into this new complex context of a city-region, and one in which diverse hierarchies of authority are overlaid making interaction and general organization difficult.

As far as the movement of population is concerned, the city shows growth with new residential establishments on the periphery and new poles of centralization, expressed in the form of office buildings, services and commercial activity. Nevertheless, the most dynamic growth is to be found in the city centre (Figueroa 2010a).

Residential mobility has encouraged the growth of the city's surface area through the extension of the outer ring and eventually in the future, with the conurbation of some of the outer localities.

The increasing demand for residential land generated by the growth of income, stimulate the location of other services and commercial activities thus promoting new sub centres in the city.

These new sub centres do not have to be seen as identical nor even comparable. For example, in areas with higher internal trips for labour activities of the sub centre, and with higher percentage of local inhabitants with respect to the total number of employees, sub centres are specialized in a functional and social sense, with high levels of social homogeneity. In comparison, in zones where workers come from longer distances there is a more heterogeneous composition in the population, thus reinforcing the existence of metropolitan centres, characterized by more varied activities with greater social diversity, as occurs in the metropolitan centre.

A glance at the institutional panorama shows a dispersion of functions, juxtapositions between different entities, or the lacking of functional relations between organizations. To this is added a management practice that tends to a virtual compartmentalization between organizations. In many cases authorities establish objectives and goals almost with complete autonomy from each other. This results in a capacity for management in the public domain that is dispersed and less effective, considering the diverse resources at stake (CIS Consultores, 2005).

In short, it can be said that within the institutional framework the logic of a reactive management approach (as opposed to proactive) has progressively taken hold, set in the context of a structure where decisions are predominantly taken by a national authority. This

reality is key, along with a regulatory framework which has favoured expansion and the dispersal of the population and promoted the use of modes of transport relative to the socioeconomic level of the inhabitants and in accordance with their residential localities. The lack of a single metropolitan authority has meant authorities at the national level have sustained Transantiago, since they are the only authorities with the capability to govern an area fragmented by local councils. At the same time, this approach is absolutely coherent with macroeconomic policies oriented towards the growth of markets and located in the domain where market forces are left to solve decisions surrounding issues relating to urbanization.

## References

- ATISBA (2011) ‘¿Se acabó la expansión en Santiago?’ *Actualización de la Población 2010 del Gran Santiago*, [Is Santiago Expansion finished? Actualization of 2010 Population in Greater Santiago], <http://www.atisba.cl>, last accessed 14 June 2011
- CIS Consultores (2005) ‘Una autoridad metropolitana de transporte urbano para Santiago’, [A Metropolitan Authority for Santiago Urban Transport], Report for the Transportation Ministry
- Contreras, Y. and O. Figueroa (2008) ‘Los patrones de movilidad residencial y cotidiana en la ciudad de Santiago’, [Residential and daily mobility patterns in the city of Santiago], X Seminar RII Red Ibero Americana, 23 May 2008, Querétaro
- Cruz, C. (2001) ‘Transporte urbano para un nuevo Santiago’, [Urban transport for a New Santiago], Cumsensu, Santiago
- De Mattos, C. (1999) ‘Santiago de Chile, globalización y expansión metropolitana: lo que existía sigue existiendo’ [‘Santiago Chile, Globalization and metropolitan expansion: what existed still exists’], *EURE (Santiago)* **25**(76): 29–56
- EOD (2006) ‘Origin-destination survey 2006’, Santiago
- Figueroa, O. (2004) ‘Infraestructura, servicios públicos y expansión urbana en Santiago’, [Infrastructure, public services and urban expansion in Santiago], in C. de Mattos, M. E. Ducci, A. Rodríguez and G. Yañez (eds) *Santiago en la globalización: ¿una nueva ciudad?* [Santiago in the Globalization: A New City?], Ediciones SUR-EURE Libros, Santiago
- Figueroa, O. and A. Orellana (2007) ‘Transantiago: Gobernabilidad e institucionalidad’, [Transantiago: Governance and institutionalization], *EURE (Santiago)* **33**(100): 165–171
- Figueroa, O. (2010a) ‘Centralidad, metropolización y transporte urbano en Santiago de Chile’, [Centrality, metropolization and urban transport in Santiago Chile], Article for evaluation in *Revista Centro – H*, Quito
- Figueroa, O. (2010b) ‘Evolución de las políticas de transporte urbano en Santiago, El largo camino al Transantiago’, [Evolution of urban transport policies in Santiago, The long road to Transantiago], First Seminar on Public Policies, 24 January 2010, Santiago
- Figueroa, O. and C. Rodríguez (2005) ‘Redes e infraestructura de transporte en la conformación de la nueva área metropolitana de Santiago’, [‘Transport networks and infrastructure in the configuration of new metropolitan area of Santiago’], XIII Latin American Congress on Public and Urban Transportation (CLATPU), October, Lima
- INE (National Institute of Statistic of Chile) (1992) Population Census, Santiago
- INE (2002) Population Census, Santiago
- La Nación (2010) ‘Evasión Transantiago: A más de \$180 mil llegarían multas’ (Transantiago fare evasion: more than \$CLP180,000 in fines), *La Nación*, 15 April

- OMU-CAF (Observatory of Urban Mobility – Andean Development Corporation) (2009) ‘Urban mobility observatory’, Corporacion Andina de Fomento, Bogotá
- Poduje, I. (2006) *¿Quién es Santiago?* [Who is Santiago], In A. Galetovic (ed) *Santiago, Dónde estamos y hacia dónde vamos* [Santiago, Where are we and where are we going], Center for Public Studies, Santiago
- Rodríguez, C. (2008) ‘El METROTREN, oportunidad y herramienta para generar desarrollo urbano en la ciudad de Santiago de Chile’ [Metrotren, opportunity and tool to generate urban development in Santiago Chile], Master Thesis, Catholic University of Chile
- SEREMI MINVU (Secretaría Regional Ministerial de Vivienda y Urbanismo, Región Metropolitana de Santiago) (2008) ‘Memoria explicativa actualización plan regulador metropolitano de Santiago’ [Memoir of the Actualization of Metropolitan Master Plan of Santiago]
- SEREX – Catholic University of Chile (2009) ‘Informe final estudio evaluación territorial de alternativas de metro’ [Final Report for Metro: Territorial Appraisal for Alternatives of Line Construction]
- Zegras, C. and R. Gakenheimer (2000) ‘Urban growth management for mobility: The case of the Santiago, Chile metropolitan region’, Working Paper 00-12-1, Department of Urban Studies and Planning, Center for Technology, Policy and Industrial Development, Massachusetts Institute of Technology