‘COUNTERING URBAN SOCIO ECONOMIC SEGREGATION THROUGH PLANNING INSTRUMENTS: THE CASE OF SANTIAGO DE CHILE’.

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ABSTRACT

This thesis reviews the effectiveness of Chilean Regulatory Plans (Regional, Metropolitan and Municipal) to counteract Santiago’s socio-economic segregation patterns. Particular types of segregation, country’s housing policy, Santiago’s land market dynamics and transport & infrastructure investments are analyzed to allow identifying what is necessary to be achieved to counteract city’s segregation problems and which role regulatory plans can have in the solution.

A first requisite for a regulatory plan to be effective in reducing Santiago’s segregation patterns is to have a clear goal regarding what is wanted to be achieved. Santiago segregation patterns involves all socio-economic groups, but as the negative consequences of these patterns are been suffered by lower income groups, regulatory plans efforts should be directed on improving their situation. Therefore the goals of any proposal should be directed on counteract ‘low income group’s socially homogeneized segregated areas (south and north-west)’ and ‘new low income inhabitants exclusion from city’s urban area’.

Chilean urban development and lower income groups dwellings production is organized under a system where Governmental bodies sets urbanistic norms (in the case of urban development) or financial resources (in the case of social dwellings production) and private parties take development’s responsibility. After 30 year of ‘market’ functioning, city’s segregation problems have been consolidated and in some cases have worsened. An ‘effective’ proposal to counteract segregation problems cannot be based on market functioning because low income groups do not represent an ‘attractive market’ for private developers and also because market ‘free functioning’ have not allowed Governmental bodies to control urban developments quality (for instance the consolidation of low income segregated areas). Therefore an effective proposal to counteract segregation patterns requires an active involvement of the Government bodies with incidence over the urban space regarding social dwellings location and quality, to see short term results and to allow ensuring minimum standards of quality for those inhabitants who cannot make effective their residential choices (low income groups).

Each public institution that has to be involved in a solution for segregation problems counts with their own instruments. Metropolitan Regulatory plans are defined by MINVU’s SEREMI Region Metropolitana and Municipal Regulatory Plans per each municipality. Thinking about an ‘isolated’ regulatory plan’s solution for segregation problems is not possible as these phenomena are the consequences of many factors that regulatory plans do not have the attributions to control. Regulatory plans role inside before indentified segregation pattern’s solutions are according to the challenges that each one represents:

1) ‘Low income group’s socially homogeneized segregated areas (south and north-west)’ requires urban regeneration projects. Low income segregated areas social homogeneity hampers the arrival of private investments due to limited acquisition capacity of its inhabitants. An urban regeneration project should be aimed to break down this ‘residential monofunctionality’. MINVU’s Urban Development Division (DDU) can manage regeneration processes through the public call to tender for the design of an ‘Urban Regeneration Project’ (URP). Metropolitan and Municipal Regulatory Plans role in this solution is to allow URP implementation as they can provide the required ‘spatial territorial organization’ (densities, land uses, coefficients, etc) that the proposal requires to achieve its goals. Also Housing Policy subsidies, transport & infrastructure potential and the incidence of ‘Municipal Common Fund’ have to be considered.

2) ‘New low income inhabitant’s exclusion from city’s urban area’ requires a land generation policy. Due to city’s land values currently is not possible to develop social dwellings inside city’s urban area. The objective of ‘urban land generation’ is to allow well located social dwellings inside city’s urban areas with sufficient provision of facilities and services. Following the French model of a compulsory percentage of social dwellings per municipality, it is considered that this type of policy could have an effective impact on the demands of new
lower income inhabitants of being located inside city’s urban area. Regulatory plans are considered as the suitable instrument for the application of this kind of measurements in the Chilean context. Regulatory plans allow to respond to local demands and to distinguish among the different urban centers according to their own characteristics. Situation that is not possible from policies (like housing policy) that rules country’s complete territory. Metropolitan regulatory plan could establish a ‘banwidth’ of the required surface per municipality that should be destined for social dwellings; and also a criteria to determine per municipality the exact percentage of residential surface that should be considered (this criteria could be according municipalities’ infrastructure and facilities capacity). Each municipality (trough municipal regulatory plan) defines their percentage of social dwellings that could also be adapted according to the local demands that municipality management is able to detect. Also Housing Policy subsidies, transport & infrastructure connectivity and regulations to control land speculations could contribute to land generation policy implementation.

KEY WORDS

Spatial socio economic segregation, Chilean regulatory plans, Effectivennes, Chilean housing policy, Santiago’s land market, Santiago’s transport & infrastructure.
TABLE OF CONTENTS

ABSTRACT 3

TABLE OF CONTENTS 5

CHAPTER 1: INTRODUCTION 8

1.1 Scientific Relevance 8
1.2 Societal Relevance 8
1.3 Utilization Potential 8
1.4 Personal Motivation 9
1.5 Problem Analysis 9
1.6 Research Question 10
1.7 Research Sub Questions 10
1.8 Objectives and End Product 11
1.9 Target Group 11
1.10 Research Design 12

1.10.1 Why case’s study method 13
1.10.2 Case study definition 13
1.10.3 Case study structure 14
1.10.4 Types of case study 15
1.10.5 Research Design 17
1.10.6 Data Collection 19

CHAPTER 2: SOURCE STUDY 23

2.1 Urban segregation in the international discussion 23
2.2 Urban segregation in the Latin American context 24
2.3 Latin American socio economic segregation characteristics 25
2.4 Latin American socio economic segregation causes 25
2.5 Latin American socio economic segregation effects 26
2.6 Santiago de Chile socio economic segregation characteristics 27
2.7 Santiago de Chile socio economic segregation patterns rupture 28
2.8 Theoretical propositions 32

CHAPTER 3: SANTIAGO’S REGULATORY PLANS EVALUATION 34

3.1 Regulatory Plans Legal Framework 34

3.1.1 General provisions 34
3.1.2 Types of Regulatory Plans 35

3.1.2.1 Regional Regulatory Plans 35
3.1.2.2 Metropolitan Regulatory Plans 36
3.1.2.3 Municipal Regulatory Plans 37
3.1.2.4 Sectional Plans 39
3.1.2.5 Urban Limit 39

3.1.3 Summary 40
3.2 Governmental Institutions involved in Regulatory Plan’s elaboration & approval 41
3.3 Santiago de Chile Regulatory Plans 43

3.3.1 Santiago’s Regional Regulatory Plan 43
3.3.2 Santiago’s Metropolitan Regulatory Plans 47
3.3.3 Municipal Regulatory Plans
3.3.3.1 San Joaquin’s Municipal Regulatory Plan 58
3.3.3.2 Pudahuel’s Municipal Regulatory Plan 58
3.4 Regulatory Plans objectives and norms regarding segregation 59
3.4.1 PRMS 1994 59
3.4.2 Chacabuco – ADUP – ZODUC 1997 61
3.4.3 PDUC 2003 61
3.4.4 PRMS 100 2008 62
3.4.5 San Joaquin’s Municipal Regulatory Plan 63
3.4.6 Pudahuel’s Municipal Regulatory Plan 63
3.4.7 Objectives and norms regarding segregation overview 66
3.5 Regulatory Plan’s ‘internal’ and ‘external’ effectiveness 68
3.5.1 PRMS 1994 ‘internal’ and ‘external’ effectiveness 68
3.5.2 Chacabuco – ADUP – ZODUC 1997 ‘internal’ and ‘external’ effectiveness 80
3.5.3 PDUC 2003 ‘internal’ and ‘external’ effectiveness 81
3.5.4 PRMS100 2008 ‘internal’ and ‘external’ effectiveness 84
3.5.5 San Joaquin’s Municipal Regulatory Plan ‘internal’ and ‘external’ effectiveness 87
3.5.6 Pudahuel’s Municipal Regulatory Plan ‘internal’ and ‘external’ effectiveness 89
3.5.7 Regulatory Plans ‘internal’ and ‘external’ effectiveness overview 92

CHAPTER 4: OTHER PLANNING INSTRUMENTS/URBAN DYNAMICS WITH INCIDENCE OVER SEGREGATION 97

4.1 Land Market 97
4.1.1 Santiago’s land market description 97
4.1.2 Santiago’s land market – Santiago’s segregation patterns 102
4.2 Housing Policy 107
4.2.1 Housing Policy description 107
4.2.2 Housing Policy - Santiago’s segregation patterns 112
4.3 Transport & Infrastructure 114
4.3.1 Santiago’s transport & infrastructure description 114
4.3.2 Santiago’s transport & infrastructure and Santiago’s segregation patterns 118
4.3.2.1 Urban highways 118
4.3.2.2 Transantiago 118
4.3.2.3 Santiago’s subway 119
4.4 Other planning instruments with incidence over segregation overview 120

CHAPTER 5: CONCLUSIONS 123

5.1 Conclusions 123
5.1.1 Theoretical propositions 123
5.1.2 Regulatory plans effectiveness and potentials 125
5.1.3 Other planning instruments/urban dynamics 127
5.1.4 Proposal 130
5.2 Recommendations & planning instruments feasibility 136
5.2.1 Recommendations 136
5.2.2 Planning instruments feasibility 140
5.3 Reflections 142

REFERENCES 147
<table>
<thead>
<tr>
<th>APPENDIXES</th>
<th>154</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1 Santiago’s shopping malls</td>
<td>154</td>
</tr>
<tr>
<td>7.2 Santiago’s inhabitants travel origin and destiny</td>
<td>155</td>
</tr>
<tr>
<td>7.3 Santiago’s land values</td>
<td>156</td>
</tr>
<tr>
<td>7.4 Santiago’s primary schools distribution</td>
<td>157</td>
</tr>
<tr>
<td>7.5 Santiago’s hospitals distribution</td>
<td>158</td>
</tr>
<tr>
<td>7.6 Santiago’s cultural centers distribution</td>
<td>159</td>
</tr>
<tr>
<td>7.7 Santiago’s social housing developments distribution</td>
<td>160</td>
</tr>
<tr>
<td>7.8 Transantiago map (surface public transport system)</td>
<td>161</td>
</tr>
<tr>
<td>7.9 Santiago’s subway map</td>
<td>162</td>
</tr>
</tbody>
</table>
CHAPTER 1: INTRODUCTION

1.1 Scientific Relevance

Urban segregation is a problem that affects cities all around the globe. Soja (1998) in his work about socio spatial dialectics, states that segregation can be understood as a socio spatial phenomenon and as a factor in marginality and inequality. Castells (1983), in ‘The City and the Grass Roots’ states that ‘Space is not a “reflection of society”, it is society [...] Therefore, spatial forms, at least in our planet, will be produced, as all other objects are, by human action. They will express and perform the interests of the dominant class according to a given mode of production and to a specific mode of development. They will express and implement the power relationships of the state in a historically defined society’. Society creates a certain urban structure that reflects its values and power relations. However once the urban structure has been created it influences the lives of its inhabitants, either benefiting them or limiting their opportunities, thereby perpetuating the social structure which created it in the first place (Schoonrad, 2004).

According to authors like Smets & Salman (2008), Harvey, Hidalgo and Kaminer (Kaminer, et al., 2011), common global trends about segregation can be explained by the assimilation of neo-liberal systems and government’s retrenchment from Welfare state. However, urban segregation differs among countries and cities, each place has specific factors and variables that determine particular segregation patterns (Sabatini, et al., 2011) (CEPAL, 2011) (Martori & Hoberg, 2004). The scientific relevance of the research is given by the identification of Santiago de Chile particular segregation patterns and the evaluation of the different planning instruments that are considered to address the problem. The results are expected to be a contribution to the international debate about segregation and the elaboration of strategies to counteract it.

1.2 Societal Relevance

One of the biggest problems of Chilean society is the income distribution. While the highest quintile of the population accumulates the 51.03% of country’s total income, the lower quintile of the population only receives a 5.38% (INE, 2010). Achieve a better income distribution is a primordial task of Chilean society in their intentions of continuing country’s growth trends of the last three decades. Among the different factors that could allow a better distribution is an improvement in the way low income groups dwellings are being located inside cities. Well located social dwelling can improve the accessibility of low income inhabitants to the opportunities that a city may offer (infrastructure, equipment, job opportunities) (Sabatini, et al., 2001) (Hidalgo, 2011) (Schoonrad, 2004) (CEPAL, 20xx) (da Fonseca & Wissmann, 2006) (Smets & Salman, 2008).

1.3 Utilization Potential

The results of the research could be used by governmental bodies and researchers in the field of urban planning. Chilean governmental bodies can use research’s results as a manner to evaluate the effectiveness of the new regulatory plan regarding urban segregation. Also the review of Chilean planning instruments could offer an insight for governmental bodies from different countries about the suitability of these measurements according to their own context.

For researchers in the field of urban planning, the research will offer an overview of the theoretical work related to urban segregation. Types of segregation, ways to measure it and segregation factors will be identified and could serve as basis knowledge for future researches on the topic.

From a personal perspective, the research is considered as an instrument to develop skills in the construction industry field. As an architect designer the required knowledge will be gained to develop projects in Santiago de Chile related to city’s societal and economical context.
1.4 Personal Motivation

The motivation for choosing the research subject of Santiago de Chile’s socio economic segregation is influenced by two aspects. First, I’m affording my studies in TU Delft with a scholarship from my country’s (Chile) Government. Choosing this research subject is a good way to cooperate in the discussion about Chilean urban problems that require urgent solution. Second, I have learnt, by studying here at the Real Estate & Housing department, that the field of urban area development is not only related to new developments. The re-development of existing urban areas represents an important subject of the discipline, as valuable benefits for the city and their inhabitants can be obtained from the revitalization of deprived areas. However, re-development processes are not a simple task as many actors and interest are involved. ‘Urban area development (or re-development) may be described as the sum of a large number of complex processes performed by many individual actors and organizations with their own interests and claims…’ (Franzen, et al., 2011). Particular managerial approaches are required to deal with re-developments complex processes and structures. Santiago de Chile socio economic segregation is hampering the progress of important areas of the city. A review of the factors explaining this situation, the actors involved and an analysis of the opportunities to solve them are topics that motivate the research proposal.

Personal vision about the research subject

Santiago de Chile’s socio economic segregation is the consequence of many factors combined throughout city’s history. According to Rodrigo Hidalgo, country’s economic model (neo-liberal) and Government’s role in urban area developments (no interference, the Government set the norms (land policy) and private parties takes development responsibility) are some of the factors with more incidence in the consolidation of city’s segregation patterns (Hidalgo, 2011). The proposal could be orientated to an ‘idealistic’ situation ignoring city’s context (economic model and city policy) to propose solutions for socio economic segregation. However, to contribute to the discussion the context cannot be ignored, as segregation is the context’s consequence. The research vision is to have a realistic approach in order to give a possible solution for today’s problems

1.5 Problem Analysis

Since year 1979 Chile has adopted a neoliberal economy that has shaped current urban policies. The capital of the country (Santiago de Chile) has developed in the past three decades under a free market model where government has established a set of norms and regulations, and private parties have taken city development responsibility. This city planning model has allowed city center consolidation and the development of some areas, generally attached to the central district, as they benefit from infrastructure, economical dynamics and social networks generated by the city. However, in the peripheral lands (mostly in the south and east) large residential areas are not receiving these benefits as they are located far away from the opportunities that the city may offer, and a deficient infrastructure (roads, schools, hospitals) does not facilitate minimum standards of living.

Santiago’s spatial socio economic segregation represents one of the country’s biggest challenges for the future: a better income distribution among society. According to Pablo Trivelli (2009) the land value market is the principal element of cities’ socio economic structure. Land prices determine in which places of the city households can live according to their incomes.

The problem in Santiago is that low income dwellings are not been developed any more in the peripheral lands of the city. Rather, low income dwellings are been located outside Santiago in distant districts with land values according to low income housing developments’ budget.
Regarding this problem, during year 2010 Chilean Government has proposed an extension of Santiago’s urban area. Under a new modification of the Metropolitan Regulatory Plan called ‘Metropolitan Regulatory Plan Modification 100: urban areas extension and re-conversion’, 9.500ha of new urban land and 790.000ha of reconverted industrial land into residential land are proposed to be incorporated to city’s surface (SEREMI, 2010). The aim of this plan is to achieve an increment of city’s green areas, reduce city’s spatial socio economic segregation and to foster a better connectivity between periphery and city center.

The effectiveness of the new plan’s second aim (reduce city’s spatial socio economic segregation) is currently under discussion. From the new added lands, 6.500ha can be developed with residential purposes. The new policy mechanism towards social integration is the obligation to consider an 8% of plot’s total surface for social housing as a condition for their development. Considering Chilean social housing standards, the new policy will allow to build 29,340 social dwellings in ‘consolidated’ urban areas (Trivelli, 2009). This amount of potential new social dwellings is extremely low to solve current Santiago’s metropolitan area social housing deficit (197,919 dwellings (Mideplan-Casen, 2009)) and far away from being an urban plan that deals with Santiago’s future growth of population (growth of 1.6 million inhabitants for year 2030 (SEREMI, 2010)).

The proposed new metropolitan plan appears as ineffective regarding the aims of solving Santiago’s problems of spatial socio economic segregation. Also, the way the policy is elaborated allows only to ‘achieve’ social integration in the peripheral lands of the city forgetting the existing urban area where the problems of spatial segregation are higher. A review of the proposed Metropolitan Regulatory Plan modification and the other regulatory plans with incidence over the issue (Regional and Municipal) is required if the aim is to contribute in the reduction of Santiago’s spatial socio economic segregation.

1.6 Research Question

How can regulatory plans (Regional, Metropolitan or Municipal) in relation to other planning instruments (i.e. housing policy, transport & infrastructure planning) effectively reduce Santiago de Chile socio economic segregation patterns?

1.7 Research Sub Questions

How can the effectiveness of a regulatory plan regarding spatial socio economic segregation be judge?

Which regulatory plans can be founded regarding spatial socio economic segregation? How are their visions and implementation policies affecting Santiago’s spatial socio economic segregation?

Which other planning instruments or external factors have to be considered in the efforts to counter Santiago’s spatial socio economic segregation?

In which way planning instruments (i.e. regulatory plans, normative, housing policies, etc.) should be applied in order to reduce Santiago’s spatial socio economic segregation? And how is this related to implementation policies?
1.8 Objectives and End Product

The research objectives can be summarized in the following three:

1) Understand spatial socio economic segregation patterns in Santiago de Chile.
2) Identify the potentials and limitations of Chilean Regulatory Plans to counteract Santiago’s socio economic segregation.
3) Insight in the different ‘urban dynamics’ with incidence over segregation patterns.

The end products of the research will be (1) a methodology to evaluate the effectiveness of regulatory plans towards city’s socio economic segregation, (2) an evaluation of the different planning instruments (regulatory plans, housing policy, transport & infrastructure planning) and urban dynamics (land market) with incidence over socio economic segregation, (3) and suggestions that could be introduced to the different Chilean regulatory plans (Regional, Metropolitan and Municipal) towards countering urban socio economic segregation.

1.9 Target Group

The research is focused in Santiago de Chile’s socio economic segregation patterns. Last urban regulatory plan modification (Metropolitan Regulatory Plan Modification 100: urban areas extension and re-conversion) have focused planning efforts in the social inclusion of the most deprived social groups into the opportunities that the city may offer.

To identify Santiago de Chile’s deprived social groups the ABC1 or NRS system will be used. The NRS-ABC1 demographics profiling system, often called ‘social grade definitions’, is well established and widely used. These social grade definitions have been in use for decades, mainly for audience profiling and targeting by the media, publishing and advertising sectors, and have become established as a generic reference series for classifying and describing social classes, especially for consumer targeting and consumer market research (IPA, 2011).

The NRS-ABC1 has been used massively by different Chilean society sectors. Besides media, publishing and advertising sectors; urban planners, sociologist and other sector have been using this demographic system to analyze social patterns in the city. Relevant information for research’s proposal is available under these terms. In Chile the system started to been used in the 70’s, classifying the social groups according to nine variables.
with seven categories each of them. All variables have different scores that allow classifying population according to a point system. The measured variables are: neighborhood classification, street classification, dwelling, household education, household activity, electro domestics (first category), electro domestics (second category), vehicles and domestic service. Using this framework a recent study from Market Research and Public Opinion Center (Skopus, 2010) allows the classify Santiago’s socio economic groups as follows:

ABC1
The ABC1 group represents 10% of Santiago’s population. This group is composed by professionals with high executive jobs. This group of people lives in the best and most exclusive neighborhoods of the city. Their salaries start from 2.500 Euros per month, up to 11.500 Euros and more per month. The ‘AB’ group is placed together with the ‘C1’ because they only represent the 2, 5% of the population.

C2
The C2 group represents the Chilean middle income class with a 20% approx. of the city’s population. Households are often professionals with careers of first and second order prestige. Their salaries fluctuate between 950 Euros per month and 2.500 Euros per month.

C3
This group is called the low middle income class and represents the 30% of Santiago’s population. Although the members of this group do not have higher education studies it also includes teachers and technicians due to their income. Retail workers, administrative employees, taxi drivers and construction workers are the characteristic components of the group. Their salaries fluctuate between 630 Euros per month and 950 Euros per month.

D
This group is identified as Santiago’s low income class and represents the 33% of city’s population. The members of the group have incomplete basic education and no profession. Their works are sporadic, and are related to services. They have contracts, nor social laws benefits. Their salaries fluctuate between 350 Euros per month and 630 Euros per month.

E
This group that represents 7% of Santiago’s population is considered to live in extreme poverty. Their location choice is limited so they concentrate in unsecure neighborhoods with deficient infrastructure and equipment. Their dwellings consist of light constructions of two rooms that functions as bedrooms, kitchen and dining room. Household’s average education is about five years, so they work in occasional jobs. Their average income is of 170 Euros per month.

The target groups of the research are D and E socio economic groups that together represent 40% of Santiago’s total population (Skopus, 2010). The aim after stating these groups as the target groups of the research is to review, analyze and propose solutions about the different planning instruments with potential to contribute to their inclusion to the dynamics and benefit that an ‘integrated’ city could offer.

1.10 Research Design

‘A research design is the logic that links the data to be collected (and the conclusions to be drawn) to the initial questions of study’. (Yin, 1994)

To allow answering the proposal’s research question the research is planned under case study’s research method. This method is well explained by Robert Yin in his book ‘Case Study Research’ (1994); designs and methods exposed there will be used as guidelines to define proposal’s research design.
1.10.1 Why case’s study method?

According to Yin (1994), case studies are suitable for researchers who have to deal with some of the following conditions: (a) little control over research’s events, (b) when focus is on contemporary phenomena with a real life context, (c) when there is a variety of evidence to process (documents, artifacts, interviews and observation), and (d) depending on the type of research questions.

As shown in Table 1, the different strategies to obtain research information (experiments, surveys, archival analysis, history or case study) are more suitable to specific kind of research questions. However, all strategies can be used for explanatory, exploratory and descriptive researches (Yin, 1994).

<table>
<thead>
<tr>
<th>STRATEGY</th>
<th>FORM OF RESEARCH QUESTION</th>
<th>REQUIRES CONTROL OF BEHAVIORAL EVENTS?</th>
<th>FOCUSES ON CONTEMPORARY EVENTS?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>How, why?</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Survey</td>
<td>Who, what, where?</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Archival Analysis</td>
<td>Who, what, where?</td>
<td>No</td>
<td>Yes/No</td>
</tr>
<tr>
<td>History</td>
<td>How, why?</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Case Study</td>
<td>How, why?</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 1. Relevant situations for different research questions. Source: Cosmos Corporation (1983)

The research question of the proposal (How regulatory plans in relation to other planning instruments can effectively reduce spatial socio economic segregation patterns in Santiago de Chile?) implies a ‘how’ type of question that is more related to an explanatory researcher, leading to the use of case studies, histories and experiments as the appropriate research strategy (Yin, 1984). As the research is intended to give an answer about the effectiveness of a policy over a specific context it has no need of controlling behavioral events. The research is more related to identify the effects of that policy more than modifying the events or factors that compose the ‘context’. Also, the research is focused on contemporary events as the research question is aiming to state current effects of Chilean regulatory plans (appendix 1) over Santiago’s spatial socio economic segregation.

Summing the type of research question (how), the non-required control over behavioral events and the focus on contemporary events, a case study research strategy is considered as the method to link the collection of data to the research questions.

1.10.2 Case study definition

In the previous section it was stated why a case study is appropriate to conduct the research. However, a case study implies an investigation of an empirical topic by following a set of pre-specified procedures:

‘A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident. Because phenomenon and context are not always distinguishable in real-life situations, a whole set of other technical characteristics, including data collection and data analysis strategies now become the second part of our technical definition...

...The case study inquiry copes with the technically distinctive situation in which will be many more variables of interest than data points, and as one result relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another result benefits from the prior development of theoretical propositions to guide data collection and analysis’ (Yin, 1984).
1.10.3 Case study structure

According to Yin (1984) five components are important to consider in the design of a case study research:

1) A study’s questions: as stated in the previous section the form of the question (what, how, why, where, which) defines the research strategy to use.

2) Study’s propositions: propositions imply important theoretical definitions, allowing research’s boundaries that contribute to lead the process in the right direction.

3) Unit(s) of analysis: deals with the fundamental problem of defining what the case is. The units of analysis depend on the research question and propositions stated before. Without them there is a danger of having a research proposal out of ‘feasible limits’. A unit of analysis definition is a constant process during research. According to new relevant findings the units of analysis can be changed.

4) The logic linking the data to the propositions: according to Yin (1984) this step and the following one have been the less developed in case study researches. ‘These components foreshadow the data analysis steps in case study research, and a research design should lay a solid foundation for this analysis’ (Yin, 1984).

5) The criteria for interpreting the findings: there is no precise way of defining criteria for interpreting research findings. Some researches states ‘patterns’ contrasting enough so the findings can be interpreted in terms of comparison (Yin, 1984).

The research design embodies the construction of a theory: theoretical propositions about why acts, events and thoughts occur. The goal of this theory is to serve as guideline for the study. For this reason the development of a theory previous to data collection is a fundamental step in case study methods, as the findings of the research will be compared to the initial propositions (via logical linking and interpretation criteria) (Yin, 1984).

Considering before mentioned steps, Table 2 states proposal’s case study structure:

<table>
<thead>
<tr>
<th>Study’s question</th>
<th>How can regulatory plans in relation to other planning instruments effectively reduce Santiago de Chile socio economic segregation patterns?</th>
</tr>
</thead>
</table>
| Study’s propositions | Theoretical propositions from Chapter 2: Source Study:  
(1) Regulatory plans can facilitate segregated low income group’s spatial integration. Social integration of these groups implies the integral proposal with other planning instruments (i.e. housing policy, transport & infrastructure planning). 
(2) Current high income group’s dispersion trend should be fostered. However, gated communities should be of free access (security can still be ensured by maintaining walls, guards and controlling points of access) 
(3) Extensive socially homogenized areas (low income) in the South and Northwest areas of the city have to allow the location of higher income groups. Mix of functions and sub centers consolidation are relevant issues to achieve it. 
(4) Supply of low income dwellings (social housing) inside Santiago’s consolidated areas. Land market (speculation) regulation is required. |
<p>| Unit(s) of analysis | To able to answer the research question the following units will be reviewed: |</p>
<table>
<thead>
<tr>
<th>Regional regulatory plan</th>
<th>Metropolitan regulatory plan</th>
<th>Municipal regulatory plan</th>
<th>Chilean Housing policy</th>
<th>Santiago’s land market</th>
<th>Santiago’s transport &amp; infrastructure planning</th>
</tr>
</thead>
</table>

Logic linking data and propositions

Theoretical propositions state what it is necessary to counter act Santiago de Chile particular socio economic segregation trends. The three Chilean planning instruments (regulatory plans) will be evaluated according to their ‘internal effectiveness’ (documents goals regarding segregation) and ‘external effectiveness’ (achieved improvements regarding socio economic current situation). The accomplishments and voids between theoretical propositions and ‘plans effectiveness’ analysis will allow to identify the areas were regulatory plans should concentrate to reduce segregation patterns of the city (see section 1.10.5 Research Design, phases 1-4).

Criteria for interpreting findings

As many sources of information will be reviewed a cross case pattern methodology will be used for the interpretation of findings (Yin, 1984):
- The different units of analysis will be analyzed from different perspectives
- Selection of categories or dimensions (theoretical propositions) to facilitate multi perspective analysis
- Similarities and differences between units of analysis constitute proposal’s research findings.

1.10.4 Types of case study

Figure 2. Basic Types of Case Study Design Source: Cosmos (1983)  
Figure 3. Research Case Study

Figure 2 illustrate the different types of case studies. The different types are influenced by two dimensions: first, single or multiple case studies and second, which can occur in combination with either of the first pair, is based on the unit or units of analysis to be covered, and distinguishes between holistic and embedded designs.
(Yin, 1984). Single case studies are suitable when one or more of the following conditions are present. (a) ‘When it represents the ‘critical’ case in testing a well formulated theory. (b) When the case represents an extreme case or a unique case, (c) conversely, a third rationale for a single case is the representative or typical. The case study may represent a typical project among many different projects. (d) A fourth rationale for a single case study is the revelatory case. This situation exists when an investigator has an opportunity to observe and analyze a phenomenon previously inaccessible to scientific investigation. (e) The longitudinal case: studying the same single case at two or more different points in time’ (Yin, 1984)

Considering the research question is focused in Santiago de Chile’s segregation patterns and the different potentials of the existing planning instruments to counter it, the case study as shown in Figure 3 is defined as single case (Santiago) considering five embedded units of analysis (regional regulatory plan, metropolitan regulatory plan, municipal regulatory plan, Chilean housing policy and Santiago’s land market).

1.10.5 Research Design

As the research question is aimed to state how Chilean regulatory plans can effectively reduce Santiago de Chile segregation patterns, it is necessary to identify which goals regarding city’s segregation were stated in each planning instruments, to evaluate in which degree these goals have been accomplished and to state why the goals regarding urban segregation have not been achieved (if it is the case). Once these steps are reviewed, the research will propose suggestions to each planning instrument (regional, metropolitan and municipal regulatory plans) to effectively counter act the specific segregation patterns of Santiago de Chile.

In her master thesis Claire Van Enk (2011) reflected about this issue proposing an interpretation of Mintzberg & Waters (1985) studies about deliberate and emergent strategies to configure research design’s proposal. Normally strategies are been conceived as an analytic process for establishing long range goals and action plans for an organization; meaning a formulation followed by implementation (Mintzberg & Waters, 1985). The relation between formulation and implementation can be ‘operationalized’ identifying leader’s plans and intentions (intended strategy) and what the organizations actually did (realized strategy). By comparing intended strategy with realized strategy (Figure 4), Mintzberg and Waters distinguish deliberate strategies (realized as intended) from emergent strategies (patterns or consistencies realized despite, or in the absence of intentions) (Mintzberg & Waters, 1985).

‘For a strategy to be perfectly deliberate, that is, for the realized strategy to form exactly as intended, at least three conditions would seem to have to be satisfied. First, there must have existed precise intentions in the organization, articulated in a relatively concrete level of detail, so that there can be no doubt about what was desired before any actions were taken. Secondly, because organizations means collective action, to dispel any possible doubt about whether or not the intentions were organizational, they must have been common to virtually all the actors...Thirdly, these collective intentions must have been realized exactly as intended, which means that no external force (market, technological, political, etc) could have interfered with them. The environment, in other words, must have been either perfectly predictable, totally benign, or else under the full control of the organization’ (Mintzberg & Waters, 1985).

![Figure 4. Types of Strategy. Source: Mintzberg & Waters (1985)](image-url)
'For a strategy to be perfectly emergent, there must be order (consistency in action over time) in the absence of intention about it' (Mintzberg & Waters, 1985).

A perfect deliberate or emergent strategy are extremely hard to achieve as the required steps for a deliberate strategy constitute a ‘tall order’, and a perfect deliberate strategy implies a total absence of intention during actions that constitute a ‘rare’ or particular situation as a purely deliberate one (Mintzberg & Waters, 1985). Strategies are more about tendencies in the direction of deliberate and emergent strategies rather than perfect forms of them. This tendencies are covered by Mintzberg & Waters (1985) introducing eleven types of strategy (Appendix 2) that begins with the closest to the deliberate pole and ending with those most reflective of the characteristics of emergent strategy.

Chilean planning instruments can be considered in this range between deliberate and emergent strategies as the intended strategies regarding Santiago’s socio economic segregation have been planned as deliberate strategies that because of relevant external factors have been modified or adapted in the efforts to accomplish different planning instruments objectives. For instance, Santiago’s Metropolitan regulatory plan has been modified four times since his implementation in 1994 (SEREMI, 2010) with different policies and regulations which have had an impact in current city’s segregation patterns. The research design is planned as a framework to allow identifying regulatory plans intended strategies regarding urban segregation, and how these strategies have been or should be modified according to external factors to contribute to the reduction of the city’s socio economic segregation. As that, the research design presented in Figure 5 provides the framework to analyze the different Chilean regulatory plans (regional, metropolitan, municipal) and external factors or another planning instruments with incidence in city’s segregation (Santiago’s land market, Chilean housing policy, Santiago’s Transport & Infrastructure planning); to organize the research according to theoretical propositions, data collection and data analysis; and to identify specific policies or recommendations to improve the effectiveness of Chilean planning instruments regarding urban socio economic segregation. The different phases of the research design are related to the sub-questions stated in section 1.7 of this report.

**Figure 5. Research Design**

**PHASE 1**

**How to judge the effectiveness of a regulatory plan regarding spatial socio economic segregation?**

‘Effectiveness is the extent to which an activity fulfils its intended purpose or function’ (Harvey, 2004)

The objective of this phase is to state when Chilean regulatory plans can be considered as ‘effective’ in reducing Santiago de Chile socio economic segregation. This will be defined by two subsections regarding ‘internal effectiveness’ and ‘external effectiveness’.

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17
The ‘internal effectiveness’ of regulatory plans is considered as the degree in which the goals stated in each planning instrument have been achieved. Inside each regulatory plan ‘explicit’ goals (clearly expressed goals or readily observable) and ‘implicit’ goals (implied or expressed indirectly) could be found; a clear identification of them will allow to state if regulatory plans goals achievement is been ‘effective’ according to Santiago’s current socio economic segregation patterns. ‘Critical Discourse Analysis’ book from Norman Fairclough (1995) is a relevant source that will contribute to define when regulatory plans contents can be identified as ‘explicit’ or ‘implicit’ objectives regarding segregation.

The ‘external effectiveness’ of regulatory plans is related to the extent in which these planning instruments are responding to the challenges that Santiago’s urban socio economic segregation patterns are demanding. To be able to determine this match, a ‘diagnosis’ of Santiago’s urban socio economic segregation will be elaborated considering the international debate around the topic (Andersson (2008), Bolt, et al.(2007), de Fonseca, et al. (2006), Janchez, et al. (2009), Martori, et al. (2004), Schoonrad (2004), Smets (2008)) and the particular works of scholars (Consulting Comitee (2010), Hidalgo (2011), Kaminer, et al. (2011), Sabatini (2001, 2008)), consultants (Triveli (2010)) and public institutions (CEPAL (2010), MIDEPLAN CASEN (2009), SEREMI (2010)) who have reflected over this particular issue in the case of Santiago de Chile. Santiago’s urban socio economic segregation diagnosis will serve as the basis for the elaboration of ‘theoretical propositions’: required measurements concluded from the literature study to counter act city’s segregation patterns. The suitability of these propositions to solve segregation problems and their feasibility to be included in the different regulatory plans will be tested during phase 4 of the research.

**PHASE 2**

**Which regulatory plans can be found regarding spatial socio economic segregation? How their visions and implemented policies are affecting Santiago’s spatial socio economic segregation?**

This phase consists on the identification of Chilean regulatory plans (regional regulatory plan, metropolitan regulatory plan and municipal regulatory plan) as research units of analysis. First a description of what implies each of the regulatory plans will be provided. Second, an analysis of the visions, goals, norms, regulations or policies contained in the plans regarding urban socio economic segregation will be presented. As stated in the previous phase the goals can be explicit texts or also implicit concepts in the different measurements stipulated in the instruments. Third an evaluation of the different plans implementation regarding urban socio economic segregation will be realized: the ‘internal effectiveness’ and ‘external effectiveness’ of plans will be determined.

The description, analysis and evaluation of each regulatory plan regarding urban socio economic segregation will be conducted through interviews with relevant actors regarding the elaboration of the different policies, and scholars or consultants with studies and relevant experience over the problem of analysis (see section 1.10.6). Also documents and suitable literature (papers, essays, articles, and newspapers) will be reviewed.

**PHASE 3**

**Which other planning instruments or external factors have to be considered in the efforts to counter Santiago’s spatial socio economic segregation?**

The approach of the research is to investigate about the potential of Chilean planning instruments to counter act Santiago de Chile urban socio economic patterns. However, socio economic segregation phenomenon is a complex problem with the influence of diverse urban processes. Trying to address the problem of urban segregation solely from regulatory plans will not allow providing an answer that deals with the contemporary city dynamics that are shaping current segregation patterns of the city. In this phase of the research external factors or other planning instruments that have an incidence over the issue will be identified and analyzed according to their relation to regulatory plans.
The identification of the ‘external factors’ or other planning instruments will be determined by literature reviewed of phase 1 about Santiago’s current segregation patterns, and will also be identified through interviews to be conducted during phase 2 with relevant actors in regulatory plans elaboration, and with scholars and consultants with studies or relevant experience in the topic of city’s socio economic segmentation (see section 1.10.6). From the literature study on phase 1, three relevant factors have been identified: Santiago’s land market, Chilean housing policy and Santiago’s transport & infrastructure investments. Together with regulatory plans these factors constitute research’s units of analysis.

The analysis of the ‘external factors’ will consist on determining the incidence of each factor in the urban socio economic segmentation problem of the city. ‘External factor’s’ identification and analysis will contribute to the elaboration of regulatory plan’s recommendations during phase 4 based on the current needs that Santiago’s socio economic urban segregation is demanding.

**PHASE 4**

*In which way planning instruments (i.e. regulatory plans, normative, housing policies, etc.) should be applied in order to reduce Santiago’s spatial socio economic segregation? And how is this related to implementation policies?*

To be able to answer in which way planning instruments should be applied to reduce Santiago’s spatial socio economic segregation the following steps will be realized: first, the theoretical propositions from the literature study on phase 1 will be evaluated in order to determine if they represent appropriate solutions for counter act Santiago’s spatial socio economic segregation (analytical generalization). Also, these propositions will be analyzed according to their feasibility to be adapted as part of the different Chilean regulatory plans. Second, according to Santiago’s segregation patterns (stated in phase 1), regulatory plans ‘effectiveness’ (stated in phase 2) and ‘external factors’ (stated in phase 3) the ‘contents’ of the plans that are not being effective in reducing socio economic segmentation problems (because of policies lack or implementation problems) will be identified as the ‘areas’ where the recommendations of the proposal to improve city's spatial socio economic segregation problems will be addressed. And third, specific recommendations for each regulatory plan will be given considering the before mentioned steps, opinion of experts interviewed on phase 2 and 3, and relevant experiences in the international context to counter act segregation patterns.

1.10.6 Data Collection

Research’s data collection is organized under four main sources of information. The first one are the official regulatory plans (regional, metropolitan and municipal) documents published by the Chilean public institutions which elaborate them. The second sources of information are relevant literature that will allow to define the theoretical propositions of the research, regulatory plans evaluation criteria and international context review of policies regarding urban socio economic segmentation (see Chapter 6: References). The third source of information is a planimetric analysis to understand the spatial organization of the city and his different functions. The fourth and final sources of information are interviews with relevant actors in the elaboration of regulatory plans, and also with scholars or consultants who have reflected about the issue of Santiago’s spatial socio economic segregation. The output of these interviews is fundamental information to conduct phases 2 and 3 of the proposal’s research design. In the following paragraphs interview’s proposal will be elaborated according to the structure proposed by B. Emans (2002) in his book ‘Interviewen. Theory teckniek en training’.

According to Emans (2002) before conducting interviews it is important to develop an ‘interview schedule’ to clearly identify the type of information that the interviews should yield. A common mistake is to confuse interview questions with research questions of the proposal. Research questions are a relevant start of the interview schedule but they determine the information requirements that define the final interview questions. To conduct an interview schedule, Emans (2002) propose five steps that later on are shown in Table 3.
A first step is to define ‘theoretical variables’ from the research questions. ‘The term variable applies to a set of persons or objects. The persons or the objects are referred to as the elements of that set...a variable can be defined as a characteristic that is shared by each single person or object within a particular set’ (Emans, 2002). A second step is to define ‘values’ of the theoretical variables: ‘set of ways in which the people or objects from theoretical variables can have this characteristic’ (Emans, 2002). The nature of the sets also varies considerably. Some sets involve people who can be asked individually about a relevant characteristic, while others concern people or objects about which information needs to be obtained from third parties or informants. A third step is related to the identification of ‘indicators’ from theoretical variables. Indicators are a list of variables (from theoretical variables) that lend themselves to immediate collection of data. These variables are called ‘raw variables’, because they only form the basis for the theoretical variables that are the ultimate goal of conducting interviews. They are called indicators because they indicate the theoretical variables. Methods like self description, facts, behavioral intention and elaboration are considered as suitable for the identification of theoretical variables indicators. A fourth and final step is the inclusion of the ‘technical variables’ to ensure interviews success. Technical variables are needed for the interview results to be processed; the relevant variables depend on the context in which the interviews are conducted. Some of the technical variables that could be considered: time of interview, location of interview, age and gender of the interviewer, the name and identification number of interviewer, the name and identification number of interviewee, a case number, etc. (Emans, 2002).

From proposal’s research questions (Sections 1.6 & 1.7) it is possible to identify four ‘theoretical variables’ where relevant research’s information should be yielded by the interviews: regulatory plans effectiveness, Santiago’s land market incidence (over city’s spatial socio economic segregation), Chilean housing policy incidence (over city’s spatial socio economic segregation), Santiago’s transport & infrastructure incidence and theoretical propositions evaluation. For each of the theoretical variables raw variables, a set objects and a set values has been determined (Table 3). With the interview schedule it is possible to propose the following questions to conduct research’s interviews (these questions will be constantly reviewed according to new findings during research):

<table>
<thead>
<tr>
<th>Theoretical variable</th>
<th>Raw variable</th>
<th>Set A Person or Objects</th>
<th>Set B Set of Values</th>
<th>Answer System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulatory plans effectiveness</td>
<td>Regulatory plans goals (explicit and implicit) achievement</td>
<td>a) Regional Regulatory Plan b) Metropolitan Regulatory Plan c) Municipal Regulatory Plan (information to be obtained from third parties)</td>
<td>All possible plan’s evaluation regarding spatial socio economic segregation: a) Internal effectiveness b) External effectiveness (see section 1.10.5 Phase 1)</td>
<td>Open question</td>
</tr>
<tr>
<td>Santiago’s land market incidence</td>
<td>Extent to which land market affect’s city’s spatial socio economic segregation</td>
<td>Santiago’s land market (information to be obtained from third parties)</td>
<td>All possible evaluations regarding: a) Land value b) Land price speculation c) Lower income groups affordability (see section 1.9 Target group)</td>
<td>Open question</td>
</tr>
<tr>
<td>Chilean housing policy incidence</td>
<td>Extent to which Chilean housing policy affect’s city’s spatial socio economic segregation</td>
<td>Chilean housing policy (information to be obtained from third)</td>
<td>All possible policy evaluation regarding spatial socio economic segregation:</td>
<td>Open question</td>
</tr>
</tbody>
</table>
1) According to Sabatini and Arriagada, Santiago’s segregation patterns can be summarized in the following points: (a) high income group’s segregation in city’s eastern ‘cone’, (b) extensive areas of low income group’s homogeneity in city’s south and north-west areas, (c) new low income inhabitant’s exclusion towards lands outside city’s urban area. Do you agree with this diagnosis?

2) PRMS100 proposal obliges to consider an 8% of land surface to social housing in any residential project developed inside the proposed areas of urban extension. Besides allowing new low income inhabitants to have a dwelling inside Santiago’s urban area, do you identify any other objectives regarding city’s segregation patterns?

3) Through ZODUC’s modification (1997), Chilean Ministry of Urbanism & Housing (MINVU) introduced, beside other conditions, a required percentage of social dwellings per project. Until the present day no one has been built. With PDUCs (2003), MINVU ‘solves’ the problem of social dwelling’s implementation by specifications regarding their use, price and compulsory construction on every project’s phase. Which measures have been considered to ensure PRMS100’s 8% of social dwellings?

4) According to PRMS100 proposal, Santiago’s consolidated urban area will continue to be ruled by PRMS1994. Regarding socio economic segregation, this plan did not consider an explicit objective over the issue only an implicit one considering a rise in city’s density (from 100 to 150 inhabitants/ha). At the present year (2012) socio economic segregation problems have been exacerbated (Sabatini, Hidalgo). Which capability regulatory plans have to reduce city’s segregation patterns? In which status is the proposal of considering a compulsory percentage of social dwellings (5%) per municipality?

5) Chilean Housing policy have considered low income groups localization subsidy, integration subsidy for new dwellings considering social mix, renovation subsidies for existing social dwellings and deteriorated neighborhoods. In your opinion, can regulatory plans facilitate these processes? Are these subjects related to regulatory plans’ attributions?

6) According to Trivelli and Sabatini, land prices are the principal reason of city’s segregation as they determine where families can be located according to their income level. In your opinion, have regulatory plans the attributions to regulate land price speculations? Can regulatory plans include land value capturing policies? For instance Sao Paulo experience linking constructability and taxes?

7) Which international experiences you consider relevant in planning instrument’s design towards countering socio economic segregation?

The above mentioned questions were conducted to relevant actors with expertise in the following topics: regulatory plans elaboration and implementation, municipal regulatory plans elaboration and implementation, land market, housing policy and transport & infrastructure. The following ‘actors’ were interviewed:
Metropolitan Regulatory Plans elaboration and implementation:

(1) Luis Eduardo Bresciani; academic at P.Universidad Catolica de Chile. Between 2000 and 2003 worked as MINVU’s (Urbanism & Housing Ministry) Region Metropolitana Regional Secretary, between 2003 and 2010 worked as MINVU’s Urban Development Division General Manager.

(2) Roberto Moris; academic at P. Universidad Católica de Chile. Between 2000 and 2010 worked as MINVU’s Minister Consultant and also as MINVU’s Urban Projects Division Manager (DPU)

(3) Andres Iacobelli; private consultant. Former MINVU’s Housing Division Sub-Secretary between 2010 and 2012.

(4) Ivan Poduje; Atisba Consultants Director. Atisba elaborated PRMS100 Regulatory Plan modification proposal.

Municipal Regulatory Plans elaboration and implementation:

(5) Juan Ignacio Cerda; architect at ELEMENTAL architectural office.

(6) Claudia Campodonico; Pudahuel’s Municipality urbanism consultant.

(7) Jimena Thayer; San Joaquin’s Municipality urbanism consultant.

Land Market:

(8) Pablo Trivelli, Trivelli Consultants Director.

(9) Francisco Sabatini; academic at P.Universidad Catolica de Chile. Former Urbanism & Housing Minister Consultant.

Housing Policy:

(10) Alfredo Rodriguez; SUR Consultants Director.

(11) Ana Sugranyes; Habitat International (ONG) Director.

Transport & Infrastructure:

(12) Felipe Delgado; transport and infrastructure academic at P. Universidad Catolica de Chile.

(13) Pablo Allard; Universidad del Desarrollo Architecture Faculty Dean. Former MINVU’s Urban Reconstruction Project manager.
CHAPTER 2: SOURCE STUDY

To be able to answer the question about how regulatory plans can effectively contribute to reduce Santiago’s spatial socio economic segregation it is necessary to realize a ‘diagnosis’ of city’s current segregation patterns. With the ‘diagnosis’ of the current situation it will be possible to evaluate in further phases of the research in which degree the different regulatory plans are responding to the demands that city’s segregation problems are generating. As explained in proposal’s research design (section 1.10.5) the different regulatory plan’s goals will be analyzed in their ‘internal’ and ‘external’ effectiveness compared to the diagnosis stated in this section. This section will be concluded with ‘theoretical propositions’ as a matter of research’s hypothesis of what it is required to be achieved by regulatory plans in the efforts to counter act city’s socio economic segregation trends. At the same time, theoretical propositions will allow to conduct the research under case study methodology.

2.1 Urban segregation in the international discussion

From the international discussion it can inferred that urban segregation is related to a spatial phenomena. Societies manifest with physical distance the differences among individuals or social groups. These physical distances exist within many different areas such as the labor market, education systems, recreation, health care, transport systems as well as within the housing market. However, the concept is related to a spatial differentiation where housing (residential) is the main component that encompasses the other areas as well (Westin, 1999). Jhonston et al (1986) in their work ‘The Dictionary of Human Geography’ provide the following definition of spatial segregation: ‘Spatial segregation can be seen as the residential separation of groups within a broader population. A group is said to be completely mixed in a spatial sense when its member are distributed uniformly throughout the population. The greater the deviation from dispersal, the greater the degree of segregation’. About the subject Ozuekren and Van Kempen (1997) adds: ‘Spatial segregation may exist between cities and their surrounding areas, between urban neighborhoods, or even between housing estates within neighborhoods. Segregation at one spatial level does not automatically imply segregation at another spatial level’.

Considering the work of Marcuse and Van Kempen (1999), Marcuse (2001) and Smets et al (2008) socio spatial segregation can be divided in three forms:

Cultural/ethnic/racial segregation: related to cultural divisions according to ethnicity, religion, place of origin or lifestyle and is the result of manipulation of free choice of association. This is the most polemic form of segregation and is closely related to racism (Schoonraad, 2004).

Socio economic/status segregation: is related to hierarchical status differences between high and low income groups of a society and also can be observed among people who occupy different status levels. The types of segregation differ among countries: in the UK it is class, in India it is caste, in most countries it is wealth, in the US it is race and in Eastern Europe it was political power. Extreme examples are security guarded residences near CBD’s in the US or African Townships in South Africa (Marcuse & Van Kempen, 1999).

Functional segregation: it is associated with spatial segregations because of the existence of different functions in different areas of the city. These differences are not related to cultural differences and do not denote relations of superiority or inferiority to other functions, simply differences (Schoonraad, 2004). Functional segregation is criticized by supporters of sustainable developments as the rational division of functions throughout the city it is not according to the demands of lively neighborhoods at a human scale.
2.2 Urban segregation in the Latin American context

According to Sabatini (2003) socio economic segregation is the main type of urban spatial segregation in Latin American cities. However, it is possible to identify other types of spatial segregation like social class, race and age group with some incidence over the urban space. Unfortunately, these forms of urban spatial segregation have not been addressed so often by social sciences researches. The few available empirical studies show that segregation according to social classes usually match with socio economic segregation patterns (Brazilian case, Telles, 1992). Another study about Spanish immigration in the city of Buenos Aires (Argentina) during 1850-1930 discards that ‘ethnic enclaves’ have formed in the city (Moya, 1998) (Sabatini, 2003). The relevance of socioeconomic segregation as one of the main urban problems of Latin American cities is given by countries’ income distribution where a small percentage of population concentrates big part of countries wealth, while an important part of countries’ population lives under poverty conditions (Figure 6). In some extent this socio economic differences among social groups are determining segregation patterns with specific characteristics according to countries and cities (spatial dimension).

Besides the different countries segregation patterns, Sabatini (2001) propose a definition of residential segregation according to his observations of the Latin American context: Social proximity or territorial agglomeration degree of families that belongs from a same social group defined by ethничal, age, religion or socio economic terms. In more specific terms, residential segregation has three main dimensions: (a) social groups trend to concentrate in a particular area of the city, (b) consolidation of socially homogeneous neighborhoods, (c) and the subjective perception that resident have about the objective segregation (points a and b)(Sabatini, 2001).

From the above mentioned definition of segregation and about the specific socio economic segregation patterns on the region it could be assumed a linear relation between residential segregation and social differences. However, this relation cannot be established as both factors are social phenomena with different implications. Residential segregation implies spatial phenomena (distance in space among groups) and social differences are more related to social phenomena. In the linear relation a city with high socio economic differences among social groups could be expected to have a high residential segregation with high and low income groups completely separated about their location in the city. Nevertheless, the empirical data shows that this relation is only one of the many relations that can be produced between these two phenomena. Favelas (informal settlements) in Brazil are located close by the residences of higher income groups, and in India (one of the most hierarchical class systems in the world) the different social classes share the urban space (Sabatini et al, 2008). The relation between the ‘spatial’ and the ‘social’ is not a direct relation of social differences with spatial segregations. Furthermore, is a complex relation between processes of social differentiation and residential options.
2.3 Latin American socio-economic segregation characteristics

Besides it is not possible to assume a linear consequence between urban segregation and social group’s income difference, Sabatini (2001) recognize two patterns of socio-economic segregation that are common in Latin American cities. First, higher income elites concentrate in a specific area of the city with low segregation indexes as other social groups are also located. These areas are known as ‘high income group’s cone’ as they usually cover an area from the historical center to the periphery of the city with high quality infrastructure and services (Figure 7). According to Robles-Durán (Kaminer et al, 2011) this ‘cones’ respond to efforts of countries’ elites to configure ‘green zones’: safe and open environments for direct foreign investment. To consolidate these areas, urban development strategies have adopted international standards in a kind of mimicry of infrastructure and services that could be founded in different developed cities of the world. The ‘cones’ appear to be detached from the rest of the city reality and they seem to respond more to globalization dynamics and spaces of flow (Castells, 1996). Second, extensive socially homogenized areas of low income groups with high indexes of segregation can be founded in the cities. Usually these areas have a deficient infrastructure and services, and are characterized by a residential mono function that hampers the possibilities of their inhabitants to interact with people of different social groups and to get inserted in the different networks and job opportunities that a city may offer. The negative effects of urban socio-economic segregation are mostly concentrated in these areas of the city, and they are becoming even more critical as in the last years segregation’s scale and malignity is increasing.

2.4 Latin American socio-economic segregation causes

As stated before, Latin American socio-economic segregation patterns cannot be assumed as the direct consequence of countries’ social groups distances. Segregation is a complex process with multiple causes that affect location dynamics of all social groups of a society (Machado, 2001). Many authors ((CEPAL, 2006) (Sabatini, 2001, 2008)(Kaminer et al, 2011)) agree on identifying land market procedures as one of the principal factors to explain socio-economic segregations patterns on the region. Land market operations like supply restriction, land price levels, speculation, commercial and residential logics of location posibilitates premium locations in the city for higher income groups and the expulsion of lower income groups to the worst equipped and disconnected areas of the city (Lungo et al, 2001). Despite land’s market incidence on region’s socio economic segregation, the Economic Commission for Latin America of the United Nations (CEPAL) in their document ‘About direct determinants of socioeconomic residential segregation’ (2006) determined six factors that operating together with land market dynamics can generate or attenuate socio-economic segregation effects:

(a) **Housing policies**, many countries of the region have shaped their housing policies in order to cover social dwellings stock deficit. As that, the common operation is to build massive numbers of social dwellings in peripheral land of the cities were the land value is lower (Arriagada, 2002).

(b) **Infrastructure and public services**, roads and urban highways investment plus the distribution of quality public services facilitate the dispersion of middle and high income groups over the city. Their absence or concentration in particular areas of the city could configure the scenario for segregation (Arriagada, 2002).
(c) **Ideological**, governments can have an impact over segregation according to their urban visions. For instance, Chilean governments during XIX century were focused in the construction of a city according to the standards of developed countries to satisfy demands of growing elite and to allow secure international investments. In the other hand, during XX century social democratic and socialistic ideologies shaped urban policies directed to allow deprived social groups to benefit from the services that the city may offer (CEPAL, 2006).

(d) **Budget and local services**, if municipal budgets depends only on territorial sources (taxes, contributions, real estate payments) high socio economic segregation patterns could be expected as municipalities will offer different quality of public services.

(e) **Demographics** have an influence over socio economic segregation according to (1) social group’s population growth differences, determining the way they distribute over the urban space and affecting segregation’s form and intensity. (2) Metropolitan intra and extra migrations, implying movements of social groups to areas that are mainly used by other social groups. (3) Socio economic group’s internal changes, higher or lower incomes modify their location patterns (CEPAL, 2006).

(f) **Planning Instruments** can have incidence over socio economic segregation according to planning excesses or voids. (1) Planning instruments excesses are related to conventional zoning systems that promotes social and functional segregation of land use. (2) Planning voids can be considered as insufficient requirements or regulations in urban area extensions or to the possession of empty plots in consolidated areas of the city (CEPAL, 2006).

2.5 Latin American socio economic segregation effects

The effects of socio economic segregation differ according to the different countries. However, in an effort to expose the effects of this urban problem, the Economic Commission for Latin America of the United Nations (CEPAL, 2006) enumerate a number of effects that have been observed in cities of the region. Also, Sabatini in his work ‘Social segregation of the space in Latin American cities’ (2003) indentifies a number of effects that are common in Latin American cities with socio economic segregation.

Socio economic segregations implies extended areas of the city with social homogeneity where their inhabitants have to travel long distances to find something different than residential areas of their own group. One of the biggest threats of socio economic segregation is that represents an obstacle in the efforts to solve income distribution problems of Latin American societies and at the same time it hampers the social mobility of their inhabitants. Socio economic segregation represents negative effects over the human capital as inhabitants of deprived neighborhood have problems to access the labor market and also they receive lower salaries due to the ‘residential stigma’ of living in areas considered as places of crime by the rest of the society (Sabatini, 2003). The problems of segregated areas inhabitants to access the labor market and the different social networks is given by the long travel times to potential work places, the lack of information about job opportunities (neighborhood isolation) and the insufficient access to the infrastructure and services that the city may offer. Also inhabitants of segregated areas cultivate feelings of exclusion and to do not have a role inside society. These feelings are observable in the high indexes of school dropout, youth unemployment, teenage pregnancy, crime and drug addiction (Sabatini, 2001) (Sabatini, 2003) (CEPAL, 2006).
2.6 Santiago de Chile socio economic segregation characteristics

To understand the particular characteristics of Santiago de Chile socio economic segregation it is required to review city’s segregation patterns throughout recent history. Francisco Sabatini in his work ‘Chilean main cities residential segregation: last three decades trends and possible future measurements’ (2001) realized an analysis of this issue according to a methodology of ‘scales measurement’. Figure 8 exemplifies this method showing four types of spatial segregation for a social group. From this, option A appears as the less segregated and option D as the most segregated. To define which of the other two options (B or C) is the most segregated it is required to precise the spatial scale of analysis. In the small scale (the smaller grid) the group is more segregated in option C. If the large scale is analyzed (larger grid) the group is more segregated in option B.

An important milestone to understand Santiago’s socio economic segregation in the recent history is the ‘economic reform’ of 1979 where the country changed towards a neoliberal system of planning. Before the reform, Santiago’s segregation patterns were according to what was described before as Latin American socio economic segregation characteristics: a ‘large scale’ segregation characterized by extensive areas occupied by low income groups and a clearly identifiable area linking city’s center with the periphery (cone) where high income groups were located. However, at a ‘smaller scale’ it was possible to identify socially homogenized neighborhoods of small scale dispersed over the city. For instance low income enclaves located in the ‘cone’ of high income groups.

The economic reform of 1979 implied a reform of Chilean regulatory plans under the name of ‘Urban Development National Plan’ (PNUD). The main features of this plan were the abolition of city’s urban limit (all the region of Santiago was considered as an urban area without urban-rural division (SEREMI, 2010)), privatization of space implying state property offered to the market, private concessions for the construction and management of public spaces and urban infrastructure (Kaminer, et al, 2011) and government retreatment of social housing provision (the supply of social dwelling was transferred to private parties and the government starts providing subsidies for inhabitant’s demand). Miguel Robles-Durán in his studies of urban asymmetries for Latin America (Kaminer, et al, 2011) identifies six consequences of the economic reform for the city Santiago:

(1) Expansion of informal settlements in the periphery of the city.

(2) Forced displacement of poor dwellers (informal settlements) from central areas of the city towards the periphery, causing extensive areas of ‘affordable housing’ districts and the enclosing of middle high class neighborhoods (Figure 9)

(3) Creation of ‘green zones’ for safe direct foreign investment and tourism (in high income’s cone)
(4) Building of Central Business Districts to concentrate in ‘green zones’ administrative, commercial and financial operations of the capital injection from privatizations (in high income’s cone)

(5) Introduction of poly centrality as the main planning concept of the city.

(6) Expansion of the main streets and avenues of the poly centre network and the construction of new roads to reinforce the importance of the newly determined centralities.

From industrialization period and the functional planning that typically accompanied it, the city had already produced deep class divisions. The neoliberal economic reform of 1979 multiplied these effects generating a city with socio economical residential segregation in large and small scales. The implications of this residential segregation were increased by an unequal provision of infrastructure and equipment. The spatial concentration of groups with different tax and payment capacities for public services increased intra urban differences among social groups. The economic reform of 1979 reinforced city’s differentiation between well equipped areas who concentrates higher income groups, and poor areas with deficient services, infrastructure and public spaces (Wassmer, 2001) (Arriagada et al, 2001).

2.7 Santiago de Chile socio economic segregation patterns and trends

Since the ‘economical reform’ there are different evaluations about Santiago’s socio economic segregation current status. Some scholars and consultants argue that segregation and differences between higher and lower income groups are increasing (Atisba, 2010) (Rodriguez, 2012), configuring a dual and fragmented city. Among research’s interviewees there is a consensus about three main socio-economic segregation patterns that are affecting Santiago de Chile: (1) Higher income group’s concentration in the ‘eastern cone’, (2) Low income group’s socially homogeneized segregated areas in south and north-west areas of the city, and (3) New low income inhabitant’s exclusion from city’s urban area (Allard, 2012) (Moris, 2012) (Poduje, 2012) (Sabatini, 2012).

(1) Higher income group’s concentration in the ‘eastern cone’: Eastern cone is defined as city’s urban area starting from city centre until eastern urban limit (mountains urban limit, according to LGUC (Urbanism & Construction General Law) all country’s urban developments cannot be located in heights over 1.000 meters). This ‘cone’ is divided between the areas close to the center with high densities and a mix of functions; and ‘peripheral areas’ with residential low density developments. In this area high and middle high income groups are located configuring an area of ‘richness concentration’ where city’s main economic activities (except industrial functions), best facilities, infrastructure and services can be found. According to Miguel Robles Duran (Kaminer, et al. 2011) high income group’s concentration is related to a common trend in South American cities.
called ‘green areas’, meaning safe districts for international investment that seems to be more related to international global networks than to the dynamics of the city where they are located.

(2) Low income group’s socially homogenized segregated areas in south and north-west areas of the city: Two extensive areas inside Santiago are characterized by lower income group’s social homogeneity. First area is Santiago South, composed mainly (as a schematic identification) by La Cisterna, San Ramón, La Pintana, El Bosque, La Granja, San Joaquin, San Bernardo and Puente Alto municipalities. The second one is Santiago north-west area composed by Quilicura, Renca, Cerro Navia, Pudahuel and Lo Prado municipalities (Figures 1 and 11). These areas are mainly composed by C and D socio economics groups (section 1.9) dwellers that arrived in a big number from 1979’s economic reform eradication processes (Figure 9) and from massive social housing development during 80’s and 90’s. Sabatini in his work about ‘Chilean main cities residential segregation’ (2001) states after empirical data analysis, that there is a relation between the scale of socio homogeneity and social problems: at a bigger homogeneity scale bigger social and urban problems. These problems are related to longer times of traveling to find something different than low income dwellings, to reach their places of work and to access city’s services and infrastructure. Also at a higher scale of social homogeneity higher is the unemployment rate for instance 53.8% of women on these areas do not work (Sabatini, 2008). Other social problems are the high indexes of crime and drug addiction that increase inhabitant’s fear to circulate and to raise their children in the places where they live. For instance according to Paz Ciudadana Foundation survey (2012) city’s highest increase of robbery victims during the period of December 2010 and June 2011 was in Santiago South. An important subject to consider in these areas is inhabitant’s dissatisfaction with the place where they live. As stated before many of them arrived from informal settlements eradication process to social dwellings in these areas, 50% of them declares that they would prefer to live in their previous informal dwelling and that their intentions to stay in their current dwelling diminishes according time pass by (MINVU/INVI, 2002). More than housing solution inhabitants of these areas are looking for a location in the city that allows them to be inserted in the networks and opportunities that the city may offer (Sabatini et al, 2008).

(3) New low income inhabitant’s exclusion from city’s urban area: For new low income households who are trying to find a social dwelling in Santiago there is no chance of find it inside city’s consolidated areas. This is because of city’s high land values and real estate industry logics of operations to be able to offer an affordable dwelling. In Chile social dwellings construction is in the hands of private developers, the government support inhabitant’s demands with a subsidy that helps them to pay dwelling’s total cost. As the aim of a social dwelling is to provide affordable prices, the profitable model of business for real estate operators is related to the amount of dwellings sold taking advantages of economies of scale. For this an extensive land is required and at a low price; a high land value will not allow to offer affordable dwellings for low income inhabitants. The problem is that plot lands with those characteristics are not available anymore inside Santiago’s consolidated areas. Big empty plots currently are rare objects and the industry to be able to achieve low price dwellings can pay at most €13 per square meter, since 1998 Santiago’s lower land value is €32 (Trivelli, 2008). Plot’s required size and value can only be founded in the surrounding areas of the city completely detached from city’s infrastructure and network. New low income families more than segregated are being excluded from city’s social configuration.

On the other hand Sabatini (2001) argues that Chilean cities after economic reform initial effects have been developing new socio economic segregation ‘trends’ because of reasons that later on will be explained. According to Sabatini higher income groups are tending to move from segregation type B (Figure 8) towards a segregation type like option C (meaning a dispersion of them over the space). Whereas low income groups are showing two tendencies: already established in the city low income groups are moving from segregation type D towards a segregation type like B, and new poor families are establishing in the city with a segregation type like D.
Sabatini’s theory is that these trends could allow a ‘rupture’ in Santiago’s socio economic segregation patterns. Segregation’s geographic scale is decreasing in the most dynamic areas of the real estate market, and it is increasing in the areas were new poor families are locating (Sabatini, 2001). Land market liberalization and private real estate industry strong growth in the last decades are relevant factors to understand the three main modification trends of Santiago’s socio economic segregations patterns stated before (Sabatini, 2001) (CEPAL, 2006). In the following section reasons and effects of the main alteration trends of city’s socio economic segregation will be stated.

(1) **High income group’s moving to isolated areas** (ABC1 socio economic group (see section 1.9)): the dispersion of high income groups to peripheral areas of the city were lower income groups used to be located has a reason behind profits for real estate promoters. Peripheral areas were lower income groups are located have lower land values than the areas where high income groups are usually located. Real estate promoters have developed a business model were residential complexes are offered for middle high and high income groups paying low prices for land acquisition and at the same time allowing them to sell dwellings cheaper than the residential offer in traditional high income groups areas. Therefore, real state promoters are able to capitalize the land rents (Sabatini et al, 2008).

This operation of offering dwellings for high income groups in peripheral areas that used to be considered as ‘dangerous’ because of the majority presences of lower income groups is realized without the displacement of the original inhabitants. This issue is of particular sensitivity as wealthy families usually don not locate their dwellings close to lower income families as it is assumed that this could depreciate the value of their properties (Sabatini et al, 2008). The answer of the real estate sector to deal with this situation was the development of ‘gated’ communities: residential complexes with walls and security guards that isolate them from the environment (Sabatini, 2001) (Sabatini et al, 2008) (CEPAL, 2006) (Forray, 2011). Gated communities could never be possible without hi speed highways and shopping malls developed in the last decades that allow inhabitants of this complexes to access in a relatively fast way to their places of work and to satisfy their basic and daily needs without having to travel long distances (Sabatini, 2001) (Sabatini et al, 2008) (Forray, 2011). However, this proximity between different income groups is not related to closer interaction between them. As mentioned before gated communities are designed with walls and security measurements that stop city’s roads grid and does not allow the free access of people inside the complexes. Gated communities implies a reduction of spatial segregation but social integration is an issue that is not been achieved under this model (CEPAL, 2006) (Kaminer et al, 2011) (Forray et al, 2011).
Low income groups that were established in peripheral areas of city are benefiting from the arrival of higher income groups inhabitants. Some of the negative effects that used to be associated to their location are now reversed as the homogeneity of their areas are being modified and higher chances of been part of social networks, information and job opportunities can be possible with the proximity of a higher income groups (Sabatini, 2001). Another benefit from the arrival of higher income groups is that they make higher contributions to the municipality’s funds where they live, as their properties because of dimensions and quality have a higher ‘fiscal evaluation’ (Chilean term for property taxation). Higher municipality’s resources imply more investments in equipment and local services.

(2) **Middle income groups moving to ‘low income areas’** (C2 + C3 socio economic groups moving to D + E low income groups areas (see section 1.9)): While in the previous trend it was stated the movement of higher income groups to peripheral areas of the city traditionally used by lower income groups; middle income groups last location trend is to use traditionally low income areas inside city’s urban area (Moris, 2012) (Allard, 2012). This middle income group’s ‘displacement’ is facilitated by city’s transport and infrastructure investments that allow increasing the connectivity of areas that before were detached from city’s transport network. Middle income group’s arrival to these areas is not according to the model of higher income groups moving to peripheral areas of the city in ‘isolated’ developments (gated communities), middle income group’s developments are located continuing city’s urban grid (roads continuity and shared public spaces). However this does not mean that there is social interaction with original low income dwellers, as most of these kinds of developments are located over main infrastructure lines facilitating to satisfy new middle income dwellers ‘needs’ (work, leisure, shopping, etc) in other areas of the city.

(3) **Transport & Infrastructure effect**: In the before reviewed trend (number 2) it was stated the incidence of transport & infrastructure in the displacement of inhabitants to other areas of the city. However, transport & infrastructure trends are not only affecting Santiago’s segregation patterns by its capability of allowing socio economic groups ‘displacement’, also as a ‘new location’; middle income groups have been located over city’s main infrastructure lines configuring ‘linear’ socio economic concentrations (see Figure 1).

(4) Former low income inhabitant’s economic growth: Segregation patterns are not only been modified by socio economic groups displacement. There are two relevant cases in Santiago that shows that the economical growth of low income inhabitant’s can modify the socio economic structure of their neighborhoods. This situation can be observed in La Florida and Maipu municipalities that since the 70’s have changed their socio economic structure from low income inhabitants to middle – middle high socio economic groups (Figure 10).

From a liberal economic point of view, segregation is the natural result of land market’s logics articulated by location’s preferences and choices of thousands of actors. This phenomena can have a ‘spontaneous’ root but on average exceed segregation preferences of people who locate in the city, making questionable that it should be treated as an unavoidable phenomena (Sabatini et al, 2008). Thomas Schelling in his work ‘Micro motives & Micro behavior’ (1978) demonstrate that the convergence of thousands and

Figure 11. Schematic representation of low income group’s segregated areas in city’s south and north-west districts.
thousands inhabitants’ location decisions produce more segregated cities than the average preferences of those deciders. Socio economic segregation affects people’s choice about were to live inside (or outside) the city. In Santiago de Chile low income groups cannot make effective their preferences of location and are being relegated to city’s most disadvantages areas.

As stated before there is a high dissatisfaction of deprived areas inhabitants. However, their chances moving away are limited by what Forray (et al 2011) call an ‘unequivocal positive relation’ between mobility and income. While there is a high percentage of mobility on higher income groups, the opposite situation can be observed for lower income groups where social housing ownership in many cases tend to be related to immobility and increased residential settlement. The Economic Commission for Latin America of the United Nations (CEPAL, 20xx) also reflects about the issue of mobility proposing a linear relation between inhabitant’s educational level and segregation. A common characteristic is that the people who moves out from a neighborhood usually have a higher educational level than people who stay, it can be stated that people when improve their educational level intend to move to ‘better’ areas of the city. Intra metropolitan migrations tend to increase city’s segregation patterns as municipalities with higher educational indexes and infrastructure attracts higher flows of human capital migrations (CEPAL, 2006). According to Forray (et al, 2011) urban policies and planning instruments have a fundamental role in city’s segregation patterns and mobility processes of the last three decades.

2.8 Theoretical propositions

Santiago de Chile socio economic segregation requires a multisectoral view in the elaboration of public policies to counter act the phenomena. Socio economic residential segregation has to be to affronted from an integral perspective including direct and indirect measurements, related to causes and effects, capable enough of proposing strategies that link the social and urban dimensions of the problem (CEPAL, 2006). Deprived areas inhabitant’s conditions can be better if the segregation of their neighborhoods is reduced. However, that will not eliminate the barriers that hamper their integration at other levels. Furthermore, conditions may deteriorate if policies that promote social integration are applied without interventions in other integration dimensions (Goschel, 2001).

From the literature reviewed in this section it is possible to stay that socio economic segregation it is composed by dual and completely different factors: income differences among social groups composing a social phenomena, and residential segregation of social groups configuring spatial phenomena (Sabatini et al, 2001). The recognition of socio economic segregation’s socio-spatial implications can allow providing assertive answer to the demands of segregated inhabitants in the city as different public policies instruments can be identified according to their social or spatial fields of action.

From a multidisciplinary approach the social dimension approach that socio economic segregation requires can be addressed from ‘welfare’ policies; it has been shown that welfare policies are important instruments to control social polarization’s spatial expressions (CEPAL, 2006). Welfare policies have avoided, to some extent, increases on segregation because of structural processes of income distribution inequality. In fact, the case of Oslo (Norway) shows trends that income concentrations related to country’s model opening to market and globalization dynamics, didn’t imply increases in socio economic segregation patterns (Wessel, 2000). Welfare policies can imply the following dimensions: (1) Economic redistribution (progressive taxation, salaries policy, unemployment, disability and retirement insurances). These mechanisms improve low income groups acquisition capacity allowing them to satisfy their housing demands in well integrated neighborhoods. (2) Housing market interventions (Housing policy) through middle-low and low income subsidies and the regulation of social dwellings price and rent. (3) Contemporary planning systems: through them welfare policies can be implemented shaping city’s physical configuration and allowing better conditions for social and urban integration of housing complexes.
As stated above, planning instruments have the potential to counteract socio-economic segregation through the spatial dimension. Chilean regulatory plans (planning instruments) have an important incidence in city’s current segregation patterns as their regulations and policies determine their spatial organization. Regional regulatory plans have incidence over city’s region determining urban centers areas of influence and the relations among them. Metropolitan regulatory plans contain norms to rule and orientate urban areas physical developments through zoning plans, infrastructure and facilities definition, urban-rural areas definition and space intensity of use (density). Municipal regulatory plans have influence over public spaces and buildings definition, functional relations definition among residential, work, equipment and leisure areas. Land uses and zoning plans for specific areas are also included in these plans.

As that, theoretical propositions for counteract Santiago de Chile current trends of socio-economic segregation are elaborated according to Chilean regulatory plans spatial potentials. The focus of the research is in the effectiveness of these planning instruments in the efforts to reduce city’s segregation problems. However, their implementation should be considered as part of an integral approach that includes the social dimension of problem.

Theoretical propositions about what should be reached by regulatory plans to improve Santiago’s socio-economic segregation:

1. Regulatory plans can facilitate segregated low income group’s spatial integration. Social integration of these groups implies the integral proposal with other planning instruments (i.e. housing policy, transport & infrastructure planning).

2. Current high income group’s dispersion trend should be fostered. However, gated communities should be of free access (security can still be ensured by maintaining walls, guards and controlling points of access)

3. Extensive socially homogenized areas (low income) in the South and Northwest areas of the city have to allow the location of higher income groups. Mix of functions and sub centers consolidation are relevant issues to achieve it.

4. Supply of low income dwellings (social housing) inside Santiago’s consolidated areas. Land market (speculation) regulation is required.

Figure. High income dwelling in Santiago’s ‘eastern cone’ and deteriorated social housing development in Santiago’s low income groups segregated areas (south part). Source: Plataforma Urbana (2012).
CHAPTER 3: SANTIAGO’S REGULATORY PLANS EVALUATION

This chapter is about the identification and evaluation of Santiago’s regulatory plans as research’s main units of analysis. Regulatory plan’s identification will be conducted through three sequential steps. First, a review of the legal framework that norm plan’s content, validity, elaboration and implementation. Second, an analysis of the different institutions or actors that are involved in their elaboration and implementation. And third, a description of the regulatory plans that currently norm Santiago’s urban area.

Regulatory plan’s evaluation will be according to city’s socio economic segregation patterns (research subject). This evaluation will be addressed by the following steps: First regulatory plan’s review looking for visions, goals, objectives, norms or regulations regarding city’s socio economic segregation. As stated in Chapter 1.10.5 (Research Design) the different goals or norms regarding segregation can be explicitly or implicitly stated in the documents. Also in this part of the evaluation, the different measures that currently policy makers are discussing regarding city’s socio economic segregation will be presented. The second part of regulatory plans evaluation will be plan’s ‘internal and external effectiveness’. As stated in Chapter 1.10.5, plan’s ‘internal effectiveness’ is related to which degree the different objectives regarding segregation stated in the documents have been achieved applying the different norms stated in the plans for their implementation (Chapter 2.6 – 2.8). The ‘external effectiveness’ of regulatory plans is related to the extent in which these planning instruments are responding to the challenges that Santiago’s urban socio economic segregation patterns are demanding (Chapter 2.8).

The description, analysis and evaluation of each regulatory plan regarding urban socio economic segregation was conducted through interviews with relevant actors regarding the elaboration of the different policies, and scholars or consultants with studies and relevant experience over the problem of analysis (see section 1.10.6). Also documents and suitable literature (papers, essays, articles, and newspapers) were reviewed.

3.1 Regulatory plan’s legal framework

Chilean Regulatory plans have a legal framework defined by the ‘Ley General de Urbanismo y Construcciones’ (LGUC) (Urbanism & Constructions General Law). This law, according to Chilean Housing & Urbanism Ministry (MINVU), ‘is the legal body that embodies principles, attributions, powers, responsibilities, functions, sanctions and other rules that govern the agencies, officials, professionals and individuals regarding national territory planning, development and construction’ (Articles 1 & 2, LGUC (MINVU, 2012). LGUC’s implementation is regulated by the ‘Ordenanza General de Urbanismo y Construcciones’ (OGUC) (Urbanism & Constructions General Norms). According to MINVU, ‘OGUC is the ‘Urbanism & Constructions General Law’ regulation that states the laws governing administrative procedures, urban planning processes, land urbanization and design & construction technical standards’ (Article 2, LGUC (MINVU, 2009).

Regulatory plans elaboration are defined in OGUC’s Title 2 (About planning), Chapter 1 (About urban planning and instruments). In here, planning instruments definition, requirements, purposes and implementation are defined through (a) general provisions and (b) types of regulatory plans.

3.1.1 General Provisions

Through four OGUC’s articles (2.1.1. – 2.1.4.), regulatory plan’s field of action is stated. The most relevant concepts are the article’s summaries presented below:
Article 2.1.1. Urban planning processes are aimed to orientate or regulate, according to the case, urban centers development through territorial planning instruments. LGUC’s and OGUC’s norms have hierarchy over territorial planning instruments that address similar issues (MINVU, 2009a).

Article 2.1.2. Territorial planning instruments, ordered according to their field of action, are the ones presented below:

- Regional Regulatory Plan
- Metropolitan Regulatory Plan
- Municipal Regulatory Plan
- Sectional Plan
- Urban Limit (MINVU, 2009a)

3.1.2 Types of regulatory plans

3.1.2.1 Regional Regulatory Plans

Regional Regulatory Plans have to be elaborated for each of the fifteen regions of the country. OGUC’s articles 2.1.5. and 2.1.6 determine their elaboration requirements.

Article 2.1.5. Regional Regulatory Plans will orientate regional urban centers development through a urban development regional plan. This plan will be constituted by the following documents:

1) A regional ‘vision’ that should include:
   a) Conceptual and technical aspects that justifies the plan. Fundaments, objectives and methodology should be included. Also ‘Environment General Law’ information requirements have to be considered.
   b) Studies and technical background used for diagnosis’ elaboration.
   c) Territorial structures alternatives’ strengths and weaknesses. Considering territorial habitability degrees, urban centers hierarchy, and their influence area and ‘gravitational’ relations.
   d) Structure alternatives analysis.
   e) Time planning and investments requirements schedule.
   f) Main projects or investment projects that require public investment.
   g) Main private sector investment projects that already had approved ‘environmental impact’ studies.

2) Regional urban development guidelines, considering:
   a) Urban centers structure, connectivity and spatial and functional relations.
   b) Definition of settlements that may require priority treatment.
   c) Roads definitions: national roads, express highways, train lines, airports, maritime ports and international immigration points.
   d) Provision and requirements of sanitary, energy, telecommunications, equipment and productive structures.
   e) Definition of regulatory plans elaboration priority for Regional Regulatory Plan implementation.
   f) Urban centers estimated growth.

3) Plans (graphic) that illustrate the proposal (MINVU, 2009a).

Article 2.1.6 Regional Regulatory Plans will be elaborated by the ‘Secretaría Regional del Ministerio de Vivienda y Urbanismo’ (SEREMI) (Urbanism & Housing Ministry Regional Secretary) of each region. The plan has to
approve an ‘environmental impact evaluation’. The plan will be approved by the ‘Consejo Regional’ (CORE) (Regional Government Council) and will be enacted by a resolution of region’s ‘general mayor’. Regional Regulatory Plans provisions must be incorporated in Metropolitan and Municipal regulatory plans (MINVU, 2009a).

### 3.1.2.2 Metropolitan Regulatory Plans

Metropolitan Regulatory Plans will be elaborated for all cities with more than 500,000 inhabitants. OGUC’s articles (2.1.7. – 2.1.9.), determine their elaboration requirements

**Article 2.1.7** Metropolitan urban planning will regulate urban and rural areas physical development that because of their relations can be integrated in one urban unit under the regulations of a ‘Metropolitan Regulatory Plan’. When this unit has over than 500,000 inhabitants a ‘Metropolitan’ character will be considered for planning. Metropolitan Regulatory Plans field of action implies the following points:

1. Land limits definition of the areas that will be subject to Metropolitan Regulatory Plan norms.
2. In the urban area:
   a) Urban and rural areas limit definition.
   b) Public roads definition and the distinction of them between express roads and ‘trunk’ roads.
   c) Land expropriations definition for the construction of express roads, ‘trunk’ roads and green areas of a metropolitan scale.
   d) Edifications’ and infrastructures’ urbanistic norms for those projects with ‘Metropolitan impact’.
   e) Urbanistic norms that should be accomplished by productive activities with ‘Metropolitan impact’.
   f) Average and maximum densities that should be accomplished by the different Municipal Regulatory Plans included in the ‘Metropolitan area’. Preferably, average and maximum densities should be defined per municipality or area.
   g) Metropolitan green areas definition.
   h) Risk or unbuildable areas definition.
   i) Protection areas definition (natural, heritage and cultural value).
3. In the rural area:
   a) Risk or unbuildable areas definition
   b) Protection areas definition (natural, heritage and cultural value).
   c) Minimum plot size definition (for Santiago, Valparaíso and Concepción Metropolitan Regulatory Plans).
   d) Land use definition to determine the areas where LGUC’s article 55 can be applied.

**Article 2.1.8.** Metropolitan Regulatory Plans will be composed by the following documents:

1. Explanatory Report considering conceptual and technical aspects that justify planning decisions. Objectives, goals and methodology (including studies and technical background) that were used in diagnosis elaboration should be included.
2. Norms considering the required measures for Metropolitan Regulatory Plan implementation.
3. Plans (graphic) that illustrate the proposal (MINVU, 2009a).

**Article 2.1.9.** Metropolitan Regulatory Plans will be elaborated by the ‘Secretaría Regional del Ministerio de Vivienda y Urbanismo’ (SEREMI) (Urbanism & Housing Ministry Regional Secretary). The proposal should be delivered to Government Administrative Institutions for their feedback. Proposal’s approval should consider the following procedure:

1. Consultations to those municipalities whose territory is inside or next to the area considered in the Metropolitan Regulatory Plan. The municipalities have 60 days to react to the proposal. At the same time the plan should approve an ‘environmental impact’ evaluation.
2) Once the previous step is accomplished, the regional SEREMI will submit the proposal to Regional Government for their approval.

3) The proposal will be approved by the ‘Consejo Regional’ (CORE) (Regional Council) of the Regional Government; and will be enacted by ‘Regional Major’ resolution.

Metropolitan Regulatory Plans’ contents will automatically be considered as included in the different Municipal Regulatory Plans (MINVU, 2009a).

3.1.2.3 Municipal Regulatory Plans

Each Municipality in Chilean territory will elaborate their Municipal Regulatory Plan. OGUC’ articles (2.1.10. – 2.1.14) determine their elaboration requirements.

Article 2.1.10 Municipal Regulatory Plans will be elaborated exclusively by the Municipality of the area and it will be composed by the following documents:

1) Explanatory Report, including a diagnosis of the complete municipal territory and an identification of:
   a) Municipal urban centers, stating population size and estimated population growth.
   b) Main roads, especially ‘service’ and ‘collector’ roads. The relation of this roads with national roads, ‘express’ roads and ‘trunk’ roads (stated in Regional and Metropolitan Regulatory Plans) should be stated.
   c) Municipality’s main urban activities, with an analysis of their potentials.
   d) Municipal Regulatory Plan goals, objectives and background that justifies the proposal. Regarding this point, the following studies should be considered:
      • Traffic capacity study of existent and proposed roads to satisfy urban growth in the following ten years.
      • Municipal facilities study that allows defining required areas of development and expansion. Municipal facilities should accomplish minimum urban communal surfaces stated by the Metropolitan Regulatory Plan.
      • Risk and Environmental studies with their respective exclusion areas.
   e) Properties that have been declared as National Monument and areas declared as ‘Typical Zone’.
   f) Properties or areas that have been declared as subject of ‘Historic Conservation’.

2) Feasibility study to provide of water, sewerage and grey waters collectors to existing and projected urban areas.

3) Local Norm that state urbanistic norms related to:
   a) Urban centers urban limit.
   b) Municipality main roads and their relation to ‘collector’ and ‘service’ roads. Also, road’s minimum width, edificatory lines and expropriation areas should be defined. If Metropolitan Regulatory Plans consider ‘express’ and ‘trunk’ roads in the municipality, their widths should also be stated.
   c) Zoning according to the following urbanistic norms: land uses, building’s ‘grouping’ system, constructability coefficients, land occupation coefficients, maximum building heights, buildings percentage of attachment, building’s minimum distance to plot limit, front yards, eightths and slopes, minimum subdivision plot size, maximum densities, fences height, parking requirements according to building use, risk or protection areas.
   d) Buildings and areas that are subject of ‘Historic Conservation’, ‘Typical Zone’ or ‘National Monument’. Each of them should be declared with their respective special urbanistic norms.
   e) Required works (greenery and cleaning) in areas stated as ‘public utility’.

4) Plans that graphically express ‘Local Norm’ contents. These plans should also precise municipal public spaces and intended expropriation areas limits.
Besides all before mentioned content, Municipal Regulatory Plans should include all regulations from Metropolitan Regulatory Plans that affect Municipal territory. Municipal Regulatory Plans can make more precise the different measures from Metropolitan Regulatory Plans (MINVU, 2009a).

Article 2.1.11 Municipal Regulatory Plans elaboration and approval procedure will be ruled by the following points. The Municipal Regulatory Plan will be elaborated by the respective Municipality. Once elaborated, the ‘Municipal Council’ before starting his discussion will have to:

1) Inform the neighbors, especially those directly affected, about Municipal Regulatory Plan main characteristics and potential effects. This information should be provided to all civil organizations legally constituted in the area via post mail. Also newspapers or media advisory should be considered to inform all the community. This advice should include Municipal Regulatory Plan’s Explanatory Report and the dates of ‘public hearings’ for the discussion of the proposal.

2) Conduct one or more ‘public hearings’ for the discussion of Municipal Regulatory Plan content. ‘Public hearings’ number will be according to Municipality policies of community participation.

3) Consult the opinion of Municipal ‘Economic and Social Council’.

4) Beginning of Municipal Regulatory Plan approval process including all documents of Article 2.1.10. and environmental impact evaluation. All parties interested can request for the documents during 30 days.

5) After the 30 days of consultation a new meeting have to be conducted with the community and the Municipal ‘Economic and Social Council’. From that meeting a report has to be elaborated summarizing observations.

6) Different parties can formulate written observations regarding Municipal Regulatory Plan proposal. These observations can be addressed until 15 days after of the meeting mentioned in the point above.

Once all the above mentioned points are accomplished, Municipality’s Mayor will present the Regulatory Plan (with the observations) to the ‘Municipal Council’ within a period not less than 15 days and not longer than 30 days, since point 5 meeting.

With the ‘Municipal Council’ approval, the Municipal Regulatory Plan must be sent to the respective ‘Secretaria Regional Ministerial de Vivienda y Urbanismo’ (SEREMI). This institution will have 60 days to review the Municipal Regulatory Plan concordance with Metropolitan Regulatory Plan (if it is the case) and the OGUC. If the Municipal Regulatory Plan is not matching the two before mentioned documents, the plan will be returned to the Municipality for his re elaboration until the complete match.

If ‘SEREMI’ has a positive resolution about the Municipal Regulatory Plan, this one will be sent to the ‘Consejo Regional’ (CORE) (Regional Council) that will approve it based in SEREMI’s positive advice. With the positive advice of the three revision instances (Municipal Council, SEREMI and Regional Council) the Regulatory Plan is enacted by the Regional Governor (MINVU, 2009a).

Article 2.1.13 Municipalities, with the approval of the ‘Municipal Council’, can approve modifications to the Municipal Regulatory Plan. These modifications do not need to be approved neither by SEREMI or ‘Regional Council’ if they are inside the following extents:

a) Increase or decrease heights and densities until a 20%.
b) Increase or decrease constructability coefficients, land use coefficient and plot size until a 30 %.c) For facilities’ educational land use, land use coefficient can be reduced until 0,2. For facilities’ commerce land use, land use coefficient can be increased until 1.d) Front yards can be decreased until 100%.e) Fix fences heights of properties facing public spaces or decrease their heights until 50%.f) Decrease eighths according to OGUC Article 2.5.4.g) Increase or decrease slopes according to OGUC Article 2.6.3.h) Diminish building’s minimum distance to plot limits, according to OGUC Article 2.6.3.
i) Increase or decrease parking per use until a 30%.

j) State regulations about building’s volumes trespassing edificatory lines, according to OGUC Article 2.7.1. (MINVU, 2009a)

3.1.2.4 Sectional Plans

Article 2.1.14. For those areas that require a deeper level of detail to determine paths and roads widths, zoning, land use, expropriations and another measures with incidence over the public space, sectional plans will be considered. Sectional plan’s approval process will be as follow:

1) Municipality’s mayor will announce date and time when the sectional plan will be exposed to the community. This announcement has to be done in two newspapers of high circulation. Also, in the announcement has to be stated exposure’s length and the date until when observation will be received.

2) Sectional Plan’s exposure to the community for a period not less than 30 days.

3) Any person can formulate observations until 15 days after the end of sectional plan’s exposure.

4) Considering community’s observations and ‘urbanism consultant’ remarks, the ‘Municipal Council’ will approve or reject Sectional Plan proposal.

5) With ‘Municipal Council’ approval, the Sectional Plan has to be published in an official newspaper between 15 days (MINVU, 2009a).

Article 2.1.15. In those cases where no Municipal Regulatory Plan has been enacted, a Sectional Plan can be elaborated considering the same elaboration and approval processes of Municipal Regulatory Plans.

Sectional Plans described in this article will consist on an explanatory report, a local norm that state land use, edification and road design minimum conditions, and plans as graphic representation of the before mentioned elements.

According to LGUC Article 72, Sectional Plans will also be elaborated in case of ‘re-development areas’. This Re-development Sectional Plans will consist of:

1) Selected area current status cadastre. A plan should be elaborated to graphically represent the following points:
   a) Roads, official properties lines and existing edificatory lines.
   b) Existing buildings characteristics: volumetric, coefficients and densities.
   c) Existing land uses.

2) Explanatory report including proposal’s goals and objectives.

3) Local Norm where the following points should be stated: re-development area characteristics, land uses, roads definition, densities, edificatory lines, building’s attachment system, coefficients and building’s heights.

4) Plans that graphically illustrate re-development area’s new conditions (MINVU, 2009a).

3.1.2.5 Urban Limits

Article 2.1.16 For those Municipalities who do not have an urban limit or they wish to modify their existing urban limit, the following documents have to be presented:

1) Explanatory Report including the technical elements that were considered for their elaboration.

2) Description of the points and sections that compose the new urban limit ‘polygon’.

3) Plan that graphically represent the before mentioned points.

New urban limits proposal will have to follow the same procedure than Municipal Regulatory Plans approval.
### 3.1.3 Summary

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Main concepts</th>
<th>Elaboration entity</th>
<th>Approval bodies</th>
</tr>
</thead>
<tbody>
<tr>
<td>LGUC (Urbanism &amp; Constructions General Law)</td>
<td>1</td>
<td>Legal body for national planning, development and construction.</td>
<td>(a) Chilean Government (b) MINVU (Urbanism &amp; Housing Ministry)</td>
</tr>
<tr>
<td>OGUC (Urbanism &amp; Constructions General Norm)</td>
<td>1</td>
<td>Set of laws governing administrative procedures, urban planning processes, land urbanization and design &amp; construction technical standards.</td>
<td>(a) Chilean Government (b) MINVU (Urbanism &amp; Housing Ministry)</td>
</tr>
<tr>
<td>Regional Regulatory Plans</td>
<td>2</td>
<td>(a) Relations among urban centers (b) Regional Infrastructure (c) Productive and infrastructure requirements</td>
<td>SEREMI (Urbanism &amp; Housing Ministry Regional Secretary)</td>
</tr>
<tr>
<td>Metropolitan Regulatory Plans</td>
<td>3</td>
<td>(a) For cities over 500,000 inhab. (b) Urban – rural limit. (c) City’s roads &amp; infrastructure definition. (d) Maximum densities.</td>
<td>SEREMI (Urbanism &amp; Housing Ministry Regional Secretary)</td>
</tr>
<tr>
<td>Municipal Regulatory Plans</td>
<td>4</td>
<td>(a) Roads (service &amp; collectors) and infrastructure definition. (b) Traffic capacity &amp; required facilities. (c) Feasibility studies (water, sewerage, etc). (d) Urban limit. (e) Zoning &amp; Land uses. (f) Edification norms (coefficients, heights, distances, etc) (g) Densities</td>
<td>Municipality (Urban division)</td>
</tr>
</tbody>
</table>

Table 4. Chilean planning instruments summary

As shown in Table 1, LGUC (Urbanism & Constructions General Law) and OGUC (Urbanism & Constructions General Norms) are the legal framework that defines content, attributions, capacities and procedures of Chilean Regulatory Plans. Also in these documents are established the different norms and procedures stating their hierarchy over the different regulatory plans. About hierarchy among regulatory plans, in the OGUC is stated that Regional Regulatory Plans have hierarchy over Metropolitan Regulatory Plans, and the last ones have hierarchy over Municipal Regulatory plans.

Regarding the main concepts of each regulatory plan, it must be clarified that in Table 4 are mentioned those concepts that, according to the author, are the most representative. For a full understanding of the concepts involved in each regulatory, section 3.1.2.1 – 3.1.2.2 should be reviewed. Regional Regulatory Plans are characterized by their attributions for establishing urban centers relations, regional infrastructure (national roads, express highways, train lines, airports, and maritime ports) and to plan the different spatial demands from productive activities and infrastructure developments. Metropolitan Regulatory Plans have the attribution to define city’s urban – rural limit, city’s roads (‘express’ and ‘trunk’ roads) & infrastructure and the definition of city’s maximum densities. Density’s definition can be as a general factor for the complete city or detailed
according to city’s different areas. Municipal Regulatory Plans main concepts are about municipality’s city roads type definition (among service, ‘collector’ or regular roads), road’s traffic capacity studies, definition of the required facilities per each area of the municipality, feasibility studies of water, sewerage and grey waters collectors to existing and projected urban areas, urban – rural limit definition (in case of non Metropolitan Regulatory Plan in the area), zoning according to land uses definition, a set of edificatory norms (building’s ‘grouping’ system, constructability coefficients, land occupation coefficients, maximum building heights, buildings percentage of attachment, building’s minimum distance to plot limit, front yards, eighths and slopes, minimum subdivision plot size, fences height, parking requirements according to building use, etc.) and maximum densities per municipality’s areas. From the review of LGUC and OGUC documents it was possible to identify the different institutions that are responsible for regulatory plan’s elaboration and those institutions that have part in regulatory plan’s approval processes. The analysis of the institutions involved in regulatory plans elaboration and approval will be presented in the following section 3.2.

3.2 Governmental institutions involved in Regulatory Plan’s elaboration & approval

Figure 12. Institutions involved in Regulatory Plans elaboration, approval & implementation.

LGUC (Urbanism & Construction General Laws) and OGUC (Urbanism & Construction General Norm) define the legal framework of the governmental institutions involved in regulatory plans elaboration and approval. From them it can be stated that regulatory plans have top–down and bottom–up procedures according to the regulatory plan in question. Figure 12 graphically represent the different ‘scales’ of the governmental institutions involved in regulatory plan processes. National scale (‘top part’) is related to Chilean Central Government and the different Ministries (22) that compose country’s executive power. The regional scale (‘middle part’) is composed by government institutions that ‘regionally’ represent Central Government and Ministries. The Central Government is directly represented by the ‘Intendencia’ (Regional Government) and the different Ministries are represented in the region by the respective ‘SEREMI’ (Ministerial Regional Secretary). The local scale (‘bottom part’) is composed by all municipalities in the country (345 municipalities).
Municipalities do not depend of the Central Government as their Mayors are elected in independent electoral processes.

Regional Regulatory Plans have a ‘top-down’ procedure in their elaboration. MINVU’s SEREMI (Urbanism & Housing Ministry Regional Secretary) are responsible for the elaboration of Regional Regulatory Plan per each region. Once the plan is completed it should be sent to CONAMA’s SEREMI (Environment Ministry Regional Secretary) for environmental impact approval. With a positive advice from CONAMA’s SEREMI, the plan is discussed in the ‘CORE’ (Regional Council) that is composed by Regional Government Mayor and a variable number of councilors (between 10 and 14) depending on region’s size and population. With a positive CORE’s advice, Regional Government’s Mayor is able to enable the plan that will have hierarchy over Metropolitan and Municipal Regulatory Plans in the region (MINVU, 2009a).

Metropolitan Regulatory also have a ‘top-down’ procedure in their elaboration. MINVU’s SEREMI (Urbanism & Housing Ministry Regional Secretary) are responsible for the elaboration of Metropolitan Regulatory Plans per each region. Once the plan is completed it should be sent to CONAMA’s SEREMI (Environment Ministry Regional Secretary) for environmental impact approval. With a positive advice from CONAMA’s SEREMI, the plan is sent to all Municipalities affected. Municipalities have 60 days to react to the proposal and submit objections and proposals. Once Municipalities remarks are processed, the plan is discussed in the ‘CORE’ (Regional Council) that is composed by Regional Government Mayor and a variable number of councilors (between 10 and 14) depending on region’s size and population. With a positive CORE’s advice, Regional Government’s Mayor is able to enact the plan that will have hierarchy over Municipal Regulatory Plans in the region (MINVU, 2009a).

Municipal Regulatory Plan has a ‘bottom-up’ procedure in their elaboration. Municipality’s Urban Department is responsible of their elaboration. Once the plan is completed it should be exposed to the community (neighbors) by local media and also through two ‘public hearings’ where neighbors can express their proposal’s remarks. Once ‘community participation’ ends, the plan is sent to Municipality’s ‘Socio-economic council’ where experts discuss about proposal’s feasibility. With a positive advice from ‘Socio-economic council’ the plan is now discussed by the ‘Municipal Council’ that is composed by Municipality’s Mayor and a variable number of counsils according to Municipality’s size and population. Between 15 and 30 days the Municipal Council has to decide between proposal’s positive or negative advice. If the plan has a positive advice from the Municipal Council it goes to the ‘middle scale’: CORAMA’s SEREMI for environmental impact approval and MINVU’s SEREMI to check Municipal Regulatory Plan concordance with already existent Regional or Metropolitan Regulatory Plans. If the proposal is consistent with regulatory plans of higher hierarchy and a positive advice regarding environmental impact, the plan is discussed in the ‘CORE’ (Regional Council) that is composed by Regional Government Mayor and a variable number of councilors (between 10 and 14) depending on region’s size and population. With a positive CORE’s advice, Municipal Regulatory Plan is enacted by Regional Government’s Mayor (MINVU, 2009a).

The main actors in the elaboration of the different regulatory plans can be defined as the ‘Intendencia’ (Regional Government), MINVU’s SEREMI (Urbanism & Housing Ministry Regional Secretary) and Municipalities. In Figure 12 there is a grey area called b* that identify them among country’s different levels of governance.
3.3 Santiago de Chile regulatory plans

As stated before by LGUC and OGUC documents, each region of the country should have a Regional Regulatory Plan, every city with more than 500,000 inhabitants should have a Metropolitan Regulatory Plan and every Municipality should have their own Municipal Regulatory Plan. Chile has 15 regions and Santiago de Chile is located in the number 13 called ‘Region Metropolitana’. The city has an estimated population of 6.5 million inhabitants (CEPAL, 2012) and is composed by 37 municipalities. Therefore, the city is subject of all regulatory plans.

3.3.1 Santiago’s Regional Regulatory Plan

Since 2008, ‘Transparency Law’ is in force in Chile. This law oblige s to every public institution to provide citizens free access to public information. As regulatory plans are subject of this law, MINVU (Urbanism & Housing Ministry) has published all country’s regulatory plans in its web portal ‘Urban Observatory’ (ObservatorioUrbano, 2012). However, in the case of Santiago Regional Regulatory Plan there is no official document. This situation is explained due to the relevance, attributions and area of influence of Santiago’s Metropolitan Regulatory Plan (from 1994 - 2006 Santiago’s Metropolitan Regulatory Plan expanded his area of influence until covering the complete area of the region (Section 3.3.2)) . Despite of having no official Regional Regulatory Plan, Region Metropolitana MINVU’s SEREMI has published in the same web portal ‘Region MetropolitanaUrban Development Regional Plan: diagnosis and analysis’ document (MINVU’s SEREMI Region Metropolitana, et al. 2005) where an analysis about the (a) relations among urban centers and (b) region’s connectivity is exposed.

(a) About relations among urban centers.

Region Metropolitana is composed by six provinces: Chacabuco, Melipilla, Talagante, Maipo, Cordillera and Santiago (Figure 13) that together have a total surface of 1.540.230 Há. Besides urban areas predominance in population concentration, settlements are not only about urban centers. Activities related to rural areas and mostly about natural resources extraction (agriculture, livestock farming, mining, etc) also concentrate population. Considering all areas with some degree of intervention, the region has 343.838 Há of used surface that represents a 22% of region’s total surface (MINVU’s SEREMI Region Metropolitana, et al. 2005). Most of the used surfaces are concentrated in the ‘Valley of Santiago’ and attached areas.

Region Metropolitana has 19 urban centers and one metropolitan area (Santiago)
functions and productive activities. According to last official national census of 2002, Santiago’s Metropolitan areas has 5.3 million inhabitants, while the rest of region’s urban areas concentrates 400.000 inhabitants. Despite Santiago, the most important centers (in demographic terms) are Penaflor (60.000 inhabitants), Colina (58.000 inhabitants), Melipilla (53.000 inhabitants), Talagante (49.000 inhabitants) and Buin (40.000 inhabitants).

Region Metropolitana MINVU’s SEREMI uses a classification of region’s urban centers according to a criteria stated by the ‘Statistics National Institute’ (INE). Under this criterion the different urban settlements are classified according to their demographic size. As that, urban centers with populations between 2.000 – 5.000 inhabitants are classified as ‘towns’, urban centers with more than 5.000 inhabitants are classified as ‘cities’, and urban centers that concentrates more than 500.000 inhabitants are called ‘metropolis’. Figure 15 shows a graphic summary of Region Metropolitana urban centers’ type. Besides population size classification, MINVU’s SEREMI conducted another study to determine the hierarchy among Region Metropolitana’s urban centers. Metropolitan Area (Santiago) role and hierarchy are out of the question; city’s population size, activities development & size (commerce, services and industry) make them the most important city at national level and a relevant city in the South American context. However, hierarchy among the other region’s urban centers is not that clear. Through an analysis of urban center’s performance according to different variables (residential sqm, industry’s employment, industry’s sqm, commerce employment, commerce sqm, financial sector employment, services sqm, educational sqm, health sqm and total employment) (Figure 16) it is possible to state that after Santiago the most important urban centers are Melipilla, Talagante and Buin (SEREMI Region Metropolitana, et al. 2005).
Figure 15. Region Metropolitana’s urban centers classification
Source: SIG Urbano MINVU’s SEREMI – Serex PUC

Figure 16. Region Metropolitana’s urban centers – Matrix of indicators according to hierarchy
Source: SIG Urbano MINVU’s SEREMI – Serex PUC / Database: INE and SII

(b) About Region Metropolitana connectivity

Region Metropolitana urban center’s connectivity is structured under a ‘radial’ system. From Metropolitan Area Center (Santiago) towards the peripheral urban centers (Figure 17). ‘Panamerican Highway’ crosses the complete region from north to south allowing national and international connectivity (Figure 18). To the north, Panamericana Highway allows the splice of urban center’s internal connection roads. To the south, Panamerican Highway crosses tangentially Paine and Buin urban centers. The rail network has two operative lines in the
One goes from Metropolitan Area center (Santiago) to the south, and the other one from the same origin to the west.

Region’s urban centers structure has been determined by traditional communication roads. Highway G78 connects Santiago city with San Antonio’s Port (5th region). This highway has posibilitated the connection of urban centers like Talagante and Melipilla to regional and national infrastructure networks. Highway G68 that connects Santiago with Valparaiso (5th region) has allowed the connection of Curacaví. Panamericana Highway to the south has allowed the connection of Paine and Buin. Different is the case of locations like Alhué, Maria Pinto or San Pedro that are detached from regional and national infrastructure network; situation that has hampered the growth of these locations (Figures 15 and 16).

According to MINVU’s SEREMI Region Metropolitana, in terms of connectivity the region is highly centralized and ‘strongly’ attracted to Santiago in operative ways. Centralities and interactions among other urban centers are far away from Santiago’s interactions and dependencies (MINVU’s SEREMI Region Metropolitana, et al. 2005).

Figure 17. Region Metropolitana urban center’s inter-regional connectivity.
Source: SIG Urbano MINVU’s SEREMI – Serex PUC
3.3.2 Santiago’s Metropolitan Regulatory Plan (PRMS)

As stated before, Santiago has a population over 500,000 inhabitants so is subject of a Metropolitan Regulatory Plan. (a) The existing plan dates from 1994 and throughout time has experienced four modifications with impact over the covered territory and city’s urban area definition among other subjects. (b) First modification was on 1997 considering the inclusion of Chacabuco Province to the Metropolitan Area, and the creation of a new mechanisms for adding urban land: ADUP and ZODUC (Conditioned Development Urban Areas). (c) Second modification was on 2003 considering a new mechanism for adding urban land: PDUC (Conditioned Development Urban Projects). (d) Third modification was on 2006 considering the inclusion of Melipilla Province to Santiago’s Metropolitan Area. With this, the complete region was subject of Santiago’s Metropolitan Regulatory Plan. (e) Fourth and last modification was proposed last year (2011) and still is under legal discussion. The main feature is a mechanism for adding urban land called PUC (Conditioned Urban Project) (Figure 19 and Figure 20).

In the following sections the Metropolitan Regulatory Plan of 1994 and the fourth before mentioned modifications will be reviewed. The purpose of this review is to gain knowledge about regulatory plan and modifications main concepts.
(a) Santiago’s Metropolitan Regulatory Plan 1994 (PRMS 1994)

Santiago’s Metropolitan Regulatory Plan 1994 (Figure 21) description will be conducted according to the document of Alberto Carvacho: ‘Plan ReguladorMetropolitano de Santiago, SEREMI 1994’ (CA, 1995) and the official ‘Santiago’s Metropolitan Regulatory Plan Norm’ (1994) published by MINVU’s SEREMI Region Metropolitana in ‘Urban Observatory’ web portal (ObservatorioUrbano, 2012). The description will be divided in two sections: (a1) proposal’s arguments, and (a2) proposal’s main concepts.

(a1) Proposal’s arguments

Due to the serious ‘urban pathologies’ that were affecting the city, the plan was elaborated starting from the point that it was an urgent need. Diverse socio-political issues like governmental decentralization with the creation of Regional Governments, municipalities strengthening, professionals and experts participation and relevant economic actors’ involvement allowed a proposal orientated to solve city’s biggest challenges. The
proposal took some of his objectives from the obsolete ‘Regional Development Strategy’ from 1990. These objectives were ‘integral growth with equity’ to solve city’s problems of segregation and urban marginality; ‘harmonious and balanced territorial development’, ‘environment quality improvement’ and ‘agricultural sector protection’ to solve city’s and region problems of contamination and deficient standards of living (CA, 1995).

Technically the plan was based on MINVU’s (Urbanism & Housing Ministry) studies, origin – destination survey (commissioned by planning commission), 1992 national census statistics from INE (Statistics National Institute), Chilean Air Force aerial survey and different ‘risk’ studies. As mentioned before, proposal’s methodology also allowed including relevant experiences from different government bodies and private parties.

(a2) Proposal’s main concepts

Santiago’s Metropolitan Regulatory Plan Norm is structured in eight chapters:

‘Chapter 1 – General Disposals’: Is an introductory chapter to state what will be included in the plan (content, scope and attributions). The content is related to the definition of urban-rural limit, zoning, land use, metropolitan and regional facilities, determination of noise exclusive areas, restrictive areas, metropolitan infrastructure protection areas and the different land coefficients. About scope and attributions, this chapter explains the concepts regarding regulatory plans hierarchy (chapter 3.1.3).
Chapter 2 – ‘Metropolitan Plan Territorial Scope’: As a first point states the municipalities that are included in Metropolitan Regulatory Plan area (51 municipalities). Also the plan determines that two conditions of territory will be recognized: metropolitan urban areas, considering existing urban areas and those who are subject of become urban areas; and restricted areas to urban development (rural areas, risk areas, environmental areas) (Figure 22).

Chapter 3 – ‘Metropolitan Urban Area’: This chapter is divided in three subsections. (1) Zoning, Santiago’s Metropolitan area will be divided in the following areas: Residential areas, metropolitan facilities areas, inter-municipal facilities areas, metropolitan areas of interest, productive areas, industrial areas and green areas. (2) Residential and other land uses relations, the main concept is the inclusion of minimum distances and buffer works to protect residential areas from non compatible activities. (3) General Norms, regarding sloping lands, channels modifications, metropolitan areas of interest and green areas.

Chapter 4 – ‘Metropolitan land use intensity’: refers to population size and urban activities size that can be located in Santiago’s Metropolitan Urban Area. This permission should be guided by technical standards that ensure a harmonic and balanced urban development.

As a general standard, the complete city should have a minimum density of 150 inhabitants / hectare, and a maximum determined by each Municipal Regulatory Plan. The instrument defines minimum densities per each municipality in the city according to a classification of high density, medium density and low density.

High density: a minimum of 200 inhabitants / hectare. High density municipalities: Santiago center, Conchali, Estacion Central, Independencia, La Cisterna, Lo Espejo, Pedro Aguirre Cerda, Providencia, Quinta Normal, San Joaquin and San Miguel.


Low density: a minimum of 100 inhabitants / hectare. Low density municipalities: Cerrillos, Huechuraba, La Reina, Penalolen, Quilicura, Vitacura, Melipilla, Penaflor, Talagante, Padre Hurtado, Curacavi, Paine and Buín.

Minimum densities per municipality have to be accomplished as an average. Municipalities are free to determine different densities over their territory as long as they achieve the required average density. Also each municipality must determine land use coefficients and edificatory coefficients for their territory.

Chapter 5 – ‘Metropolitan Facilities’: The most relevant point in this chapter is the identification of 11 ‘sub centers’ as metropolitan facilities inside the city (Figure 23). Sub center’s objectives respond to different
interest but some of the most significant is that allows to focalize Government’s facilities, services and infrastructure investments, allows the consolidation of attractive areas for private investments and that allows to decrease population’s travels to city’s center (CA, 1995). The rest of the chapter is divided in regulations regarding green areas, metropolitan parks, inter communal parks, historic & cultural areas of interest and ecological & cultural areas of interest. Also in this chapter, Municipalities can find ‘facilities requirements’ related to health, education, security, green areas, sports facilities and services, according to their population. These requirements are mainly related to square meters to build according to number of inhabitants in the area.

Chapter 6 – ‘Productive and Service Activities’: the main feature regarding productive and service activities is the zoning that exclude all this activities from the internal area of ‘Americo de Vespucio ring’.

The rest of the chapter is related to industrial activities classification, industrial activities zoning, forbidden land uses, projects approval process and natural resources extraction.

Chapter 7 – ‘Metropolitan Infrastructure’: is related to city’s accessibility. The main feature is a road network design where city’s connectivity to other urban center is considered (Figure 24). Another important issue is the inclusion of ‘traffic impact’ studies to those projects that could have an impact over city’s road network (saturation or damage). The rest of the chapter is divided in (a) transport infrastructure (metropolitan roads, inter communal roads, parking), (b) sanitary infrastructure (drinkable water, sewerage) and (c) rain waters treatments (city’s division in five areas: north, north center, east, center and south).

Chapter 8 – ‘Restricted areas for urban development’: This chapter regulates non urban or rural areas with a strong effort on defending region’s agricultural lands. A set of general norms is stated defining risk areas for human settlements (due to natural origin or risky activities) and natural value and agro-forestry areas (ecological preservation, ecologic protected areas with controlled developments, areas for ecological rehabilitation, protection areas and wetland areas). Also norms are stated regarding metropolitan infrastructure safeguarding areas, mainly related to transport & telecommunications safeguarding areas, sanitary infrastructure safeguarding areas, energetic infrastructure safeguarding areas and mining infrastructure safeguarding areas.

Transitory articles: These articles allows the gradual replacement of previous regulatory plan disposals (PRMS 1979), to ensure a smooth urban process. For instance one of the most relevant features of PRMS 1994 are
(b) Chacabuco Province addition to PRMS and ADUP - ZODUC instruments (1997).

Chacabuco Province addition to PRMS and ADUP - ZODUC instruments will be described using as a basis the ‘Explanatory Report PRMS Modification: Colina, TiTil and Lampa (Chacabuco) incorporation’ from MINVU’s SEREMI Region Metropolitana (SEREMI Region Metropolitana, 1997) published on ‘Cities Observatory’ web portal (ObservatorioUrbano, 2012); and an evaluation of Santiago’s Land Policy conducted by Alberto Hurtado’s University Social Observatory (Observatorio Social, 2006).

After a long debate Metropolitan Regulatory Plan 1994 was modified adding Chacabuco Province (Figure 20). Chacabuco Province has a total surface of 206,620 hectares, from them 187,988 hectares were classified as ‘Restricted areas to urban development’ (91% of total) and 18,622 hectares were classified as urban areas. Some of the main objectives are to coordinate ‘north inter-communal urban system’ with ‘Santiago’s urban development strategy’, to generate the required conditions for productive activities, to have balanced relation between residential areas and work centers, to preserve agro – forestry valuable areas and to establish sanitary, energetic, roads and transport infrastructure criteria for their implementation (Observatorio Social, 2006).

Regarding urban areas the modification considers two conditions: AUDP (Urban Development Priority Areas) and ZODUC (Conditioned Urban Development Areas). ADUP (Figure 25) are those areas that at the time of
modification’s implementation already had some degree of urbanization. The modification states that these areas have to be developed first than surrounding rural areas. As before modification’s implementation these areas were not connected to Santiago’s different networks, the plan states several requirements to solve their problems regarding facilities and services deficit, and norms to ensure their connection to regional and inter-communal systems (SEREMI Region Metropolitana, 1997). ADUP’s areas will have an average density of 85 inhabitants / hectare, with a minimum density of 70 inhabitants / hectare, and a maximum density of 150 inhabitants / hectare. Social housing projects with plots not bigger than 5 hectares will be allowed to reach a density of 300 inhabitants / hectare. If there is no valid Municipal Regulatory Plan in the area, those projects pretending to urbanize lands in these territories will have to present ‘traffic impact’ studies (already reviewed by SEREMI Metropolitana). Projects with surfaces bigger than 5 hectares should consider a 2% of their surface with densities between 300 – 400 inhabitants / hectare, and a 3% of their surface with densities between 401 – 500 inhabitants / hectare. To ensure that roads, accessibility, facilities and zoning requirements will be respected, each municipality should state which ones are the specific works to be constructed, how they will be financed and a time schedule for their implementation (SEREMI Region Metropolitana, 1997).

ZODUC’s areas (Figure 25) are able to be developed in Chacabuco Province non urban areas. In these areas, residential projects, park cemeteries, macro infrastructures (sanitary, energetic and tele-communications) are allowed. Agro-forestry activities are considered as compatible with any of the before mentioned uses. ZODUC’s areas will have a low density of 10 inhabitants / hectare, and a minimum surface for non residential projects of 4.000 m². However, big residential urban projects are allowed to be developed in these areas. The conditions are to have a density of 85 inhabitants / hectare and an edificatory coefficient of 1.2, a minimum plot surface of 300 hectares, to have SEREMI’s Region Metropolitana positive advice, to conduct ‘traffic impact’ studies, to have a proposal of risk’s mitigations, to conduct studies regarding roads and transport feasibility, to consider minimum facilities according to PRMS 1994, to conduct studies regarding clean water, sewerage and rain water collection feasibility, to check concordance of the proposed uses with those stated in PRMS 1994, to consider at least a 2% of total surface for densities between 300 – 400 inhabitants per hectare, a 3% of total surface for densities between 401 – 500 inhabitants / hectare and to consider a 5% of total surface for inoffensive productive activities or service activities with the capacity of employment generation (SEREMI Region Metropolitana, 1997).

(c) PDUC: Conditioned Development Urban Projects, 2003.

Figure 25. PRMS 1994 Modification: Chacabuco Province addition and ZODUC – ADUP urban developments. Source: AmbitoConsultores (2005)
Conditioned Development Urban Projects (Pduc) modification to PRMS 1994 will be described using as a basis the ‘PRMS Norm Article 8.3.2.4’ from MINVU’s SEREMI Region Metropolitana (MINVU’s SEREMI Region Metropolitana, 2003) published on ‘Cities Observatory’ web portal (Observatorio Urbano, 2012); an evaluation of Santiago’s Land Policy conducted by Alberto Hurtado’s University Social Observatory (Observatorio Social, 2006) and Pablo Contrucci’s article ‘Santiago’s growth: trends and future scenarios’ (2006).

In 2003 a new modification to Santiago’s Metropolitan Regulatory Plan was included. Conditioned Development Urban Projects (Pduc) are similar to ZODUC instrument but with the main difference that is not an instrument applicable to a particular province (Chacabuco in the case of ZODUC). Pduc’s are applicable to all Metropolitan areas excluded from urban development. Both instruments (Pduc and ZODUC) share a conceptual basis, but they differ in procedures and some technical aspects. Their similarities are related to the concept of ‘urbanization by conditions’, where private developers have to assume mitigation costs of the impacts generated by their developments. More than restrictive norms, in ZODUC and Pduc instruments private developers have to accomplish a set of conditions and an approval process to gain the right to urbanize a rural plot (Contrucci, 2008).

Pduc’s conditions for urbanization are related to zoning and facilities. Regarding zoning, all proposals have to consider a minimum plot area of 300 hectares, an average density of 85 inhabitants / hectare, a 30% of dwellings total number have to be subject of housing subsidies with a maximum density of 400 inhabitants / hectare, a 40% of the required 30% of dwellings total number subject to housing subsidies must be destined to ‘FondoSolidario de Viviendas 1’ dwellings (Chilean housing policy will be explained in Chapter 4), and a 5% of plots total surface must be considered for inoffensive productive or service activities and commerce. Regarding facilities, all proposals have to accomplish the required facilities (health, education, security, green areas, sport facilities and services) stated in PRMS 1994. The minimum size of project’s phases is 3.000 inhabitants (MINVU’s SEREMI Region Metropolitana, 2003).

Pduc’s approval process consists on the following steps: (1) MINVU’s SEREMI Region Metropolitana ‘Preliminary Report’, where Pduc’s requirements related to zoning and facilities are checked, (2) Agriculture Ministry’s SEREMI ‘Positive Advice’, the proposed plan will be analyzed according to the use of valuable agricultural land and if the proposal consider ‘buffer works’ to protect surrounding agricultural lands. In the case that the proposal is using agricultural lands of high value, Agriculture Ministry’s SEREMI can propose a ‘repositioning plan’, (3) Municipality’s ‘Positive Advice’, the municipality where the proposal is located will check his relation to existent urban areas, concordance with Municipal Regulatory Plan and also an analysis of proposal’s financial implications, (4) ‘Environmental Impact’ studies considering risk studies, sanitary feasibility, transport strategic plan and ‘traffic impact’ studies. The different studies are reviewed by different Governmental bodies like Mining Ministry’s SEREMI, Public Works Ministry’s SEREMI, Transport Ministry’s SEREMI and Transport Planning Inter-Ministerial Secretary (SECTR), (5) ‘Environmental Impact’ positive advice

![Figure 26. PRMS 1994 + ZODUC + Pduc. Source: Figueroa, et al. 2011](image)
In working during mixed According following become urbanized (e) San instruments added (2008).

According from urbanized processes, so their duties regarding PDUC’s are not seen as priority. Contrucci also states a second reason for PDUC’s implementation failure: the initiative was generated by Urbanism & Housing Ministry and not as a National policy. Ministries like Transport and Public Work do not share PDUC’s concepts so they are not working actively for plan’s approval (Contrucci, 2006).

(d) Melipilla Province addition to PRMS(2006).

In 2006 a political-administrative decision was taken. Melipilla Province was included in Santiago’s Metropolitan Regulatory Plan (Figure 20). Melipilla Province is composed by 12 municipalities (Melipilla, Alhué, San Pedro, María Pinto, Curacaví, Talagante, Penalolén, El Monte, Isla de Maipo and Padre Hurtado) with a total surface of around 900.000 hectares. With this addition Santiago’s Metropolitan Regulatory Plan covers an estimated surface of 1.540.320 hectares. According to MINVU’s SEREMI this new added areas are subject to be urbanized under PDUC’s methodology.

(e) Modification PRMS100 – ZUC (Conditioned Urban Zones) instrument (2008)

PRMS100 Modification to Santiago’s Metropolitan Regulatory Plan is still under discussion. Legal problems during elaboration are hampering its implementation as a valid planning instrument. However, the plan will be exposed using as reference the ‘Explanatory Report’ published by MINVU’s SEREMI Region Metropolitana (2008) in their web portal (SEREMI13, 2012).

According to MINVU’s SEREMI Region Metropolitana a Metropolitan Regulatory Plan modification is necessary due to an expected growth of population (1.6 million inhabitants more for year 2030) and urban land demand that this will mean. To cope with this demand, the definition of a dense or extended model of urban growth is not enough. The relevant issue is to define requirements and standards to ensure a quality urban growth (SEREMI Region Metropolitana, 2008). As that, Metropolitan Regulatory Plan modification is based in the following three main objectives: (1) A more integrated city. The proposal looks to reverse city’s segregation patterns making possible for low income groups to have dwellings close to job opportunities areas, through mixed neighborhoods and facilities/services investments. (2) A greener city. The modification plans to significantly increase green areas and parks stock. At the same time a mechanism to ensure public and private funding is developed. (3) A better connected city. The modification propose to ‘update’ city’s structural road’s network, through new ‘ring roads’ and ‘radial roads’ that connect existing center and sub-centers with the proposed expansion areas without hampering existing flows normal functioning. Also the new urban lands will be located close to existing sub centers to reduce distance and travel times (MINVU’s SEREMI Region Metropolitana, 2008).

To achieve modification objectives, the proposal states three strategies. First ‘Conditions Planning’: to all new added urban areas will be demanded a set of requirements to ensure sustainable neighborhoods with capacity to receive projected population growth. This capacity will be assessed through infrastructure, services and green areas requirements. Second ‘Investments Planning’: according to modification’s proposal a planning instruments cannot be based only on regulations. Other Government body’s investments with impact over the territory will be considered (highways, parks, etc). At the same time the plan has to guarantee private investments to ensure proposal’s financial feasibility. Third ‘Conduct the conditions’: to facilitate urban areas feasibility and to avoid PDUC’s difficulties, the modification will determine the territories that are subject to become urban (MINVU’s SEREMI Region Metropolitana, 2008).
According to MINVU’s SEREMI Santiago has an urban land deficit of 7.100 hectares. The modification proposal will increase city’s urban land stock though ‘Conditioned expansion areas’ and ‘Industrial Areas Reconversion’. The first ones are lands that will be included into city’s urban area; the second ones are existing urban areas that their land use will be changed from industrial to residential. ‘Conditioned expansion areas’ and ‘Industrial Areas Reconversion’ are called ‘Conditioned Urban Areas’ (ZUC).

All ZUC areas will have a base density of 16 inhabitants / hectares. Under ‘Urbanization by Conditions’ concept, project developers can apply for densities of 150 inhabitants / hectares if their plot consider the following requirements: (a) ‘Trunk Roads’. Private developers have to invest in ‘trunk roads’ that solve internal connectivity and the connectivity of the new urban lands with existing city’s area. ‘Trunk roads’ are specified in plan’s norms and roads infrastructure proposal (Figure 27). (b) ‘Inter-communal Parks’. Each new urban area has to develop ‘Inter- communal Parks’ to ensure inhabitant’s access to green areas. (c) ‘Forested green areas’. These areas also refer to green areas but their use will not be public and they can also be used for facilities and services. Besides guarantee roads infrastructure and green areas, to apply for a higher density project developers have to consider an 8% of surface of each phase of their projects for social housing use (MINVU’s SEREMI Region Metropolitana, 2008).

The definition of the areas included in the proposal was according technical criteria. Four criteria or filters were applied over city’s cartography resulting in the proposed new urban areas. The ‘filters’ were: (1) ‘Environmental Sustainability’: ecological areas defined by PRMS 1994, none constructed Inter-communal parks, risk areas and inundation areas were left out of the proposal. (2) ‘Pleasure Plots Regulation’: these types of developments were left out of the proposal as MINVU is working in a new instrument to regulate them (SEREMI Region Metropolitana, 2008). (3) ‘Accessibility and Connectivity’: in this case all lands located outside Santiago’s ‘trunk roads’ area of influence are excluded from the proposal. (4) ‘Sub-centers proximity’: from city’s consolidated sub centers (including new shopping malls and historical centers like Maipú, San Bernardo, Puente Alto, and Quilicura), radius of 5 kilometers were projected. All lands outside this radius were left out of the proposal (MINVU’s SEREMI Region Metropolitana, 2008).

Combining green areas and new urban areas proposal, 9.551 hectares of urban land will be added to Santiago’s Metropolitan Area. From this number, 5.663 are from ‘Conditioned Urban Areas’ (ZUC), 3.888 hectares are from green areas (Inter-communal Parks and Forested green areas) and 873 hectares from re-converted industrial areas inside city’s consolidated area (MINVU’s SEREMI Region Metropolitana, 2008).
## Santiago’s Metropolitan Regulatory Plan + Modifications Summary

<table>
<thead>
<tr>
<th>PRMS</th>
<th>Surface</th>
<th>Density</th>
<th>Implementation</th>
<th>Main Concepts</th>
</tr>
</thead>
</table>
| PRMS 1994   | 18.000 ha*| -City’s average density of 150 in/ha.  
- High density municipalities: minimum density of 200 in/ha.  
- Medium density municipalities: minimum density of 150 in/ha.  
- Stop urban dispersion and foster city’s interior growth through higher density (from 96.5 to 150 in/ha).  
- Urban area expansion is seen as something negative.*  
- Land use regulation in rural areas. |
| CHACABUCO – ADUP-ZODUC 1997 | 15.000 ha*| -Average density of 85 in/ha (min 70 in/ha, max 150 in/ha).  
- 2% of total surface should have a density between 300-400 in/ha.  
- 3% of total surface should have a density between 401-500 in/ha. | Since 1997 | -Urban area growth is seen as something unavoidable and desirable.  
- ‘Conditioned Urbanism’ concept introduction: private parties are able to urbanize rural lands after conducting ‘impact’ evaluations, project definition, mitigation works and the definition of private contributions on public infrastructure (ZODUC).  
- Instrument only applicable to Chacabuco Province.  
- Different densities according to land plot size.  
- Projects minimum plot size of 300 ha. |
| PDUC 2003 + MELIPILLA 2006 | Variable (PDUC) 87.000 ha potential*| -Average density of 85 in/ha.  
- 30% of dwellings total number has to be subject of housing subsidies, allowed maximum density for those areas: 400 in/ha. | PDUC since 2003 Melipilla Province addition since 2006 | - ‘Conditioned Planning’ instrument. Similar to ZODUC but some differences in content and procedure. Private parties can urbanize rural lands after conducting impact studies, mitigation works and define all required infrastructure and facilities. The approval process depends on several Governmental bodies.  
- Instrument applicable to all Santiago’s Metropolitan Area, minimum size 300 ha.  
- 40% of dwelling’s total number have to be subject of housing subsidies, from that 40% a 30% have to be subject of ‘FondoSolidario 1’ dwellings. |
| PRMS100 – ZUC 2008 | Variable (ZUC) 87.000 ha potential*| -Base density of 16 in/ha.  
- Accomplishing conditions allowed density of 150 in/ha. | Legal discussion, not implemented yet. | - ‘Conditioned Planning’ instrument. Similar content and procedure than ZODUC or PDUC (Private parties can urbanize rural lands after conducting impact studies, mitigation works and define all required infrastructure and facilities. The approval process depends on several Governmental bodies). The main difference is that areas to be urbanized are defined and infrastructure works to be paid by private parties are designed from the beginning.  
- Instrument applicable to specific areas (contiguous to exiting urban area)  
- 8% of each project phase surface has to be considered for social dwellings. |
| TOTAL       | 120.000 ha potential* | --- | --- | --- |

Table 5. Metropolitan Regulatory Plan + Modifications Summary  
3.3.3 Municipal Regulatory Plans

Santiago city is composed by 37 municipalities. Each of them with a different Municipal Regulatory Plan (supposedly). As it is not possible to review all of them in the time frame of this research, two Municipalities have been selected to review their Municipal Regulatory Plans. Municipalities’ selection was according to have examples of city’s different urban realities. The first chosen Municipality is San Joaquin that is located in the central-south area of the capital. This Municipality is regulated by PRMS 1994 and it used to be characterized by a homogeneous low income population. Due to last decades infrastructure’s investment in the area, old industry’s reconversion and the arrival of higher income group’s to the east border (Vicuna Mackenna Street) municipality’s segregation patterns have been modified (Thayer, 2012) constituting an interesting research’s subject of study. The second chosen Municipality is Pudahuel that is located in city’s north-west area. The Municipality is regulated by PRMS 1994 but it will be subject of PRMS100 Modification (ZUC) as some of the intended new urban areas are located in its territory. Pudahuel is characterized by a low income group’s social homogeneity and the relevant presence of Santiago’s International Airport.

3.3.3.1 San Joaquin’s Municipal Regulatory Plan

San Joaquin Municipal Regulatory Plan (2011) will be described using as a basis the official document of the plan published by San Joaquin Municipality in their web portal (Municipalidad San Joaquin, 2012). Also Municipality’s ‘Communal Development Plan’ PLADECO (2006) will be analyzed to have insight in Municipality’s current situation, visions and goals.

3.3.3.2 Pudahuel’s Municipal Regulatory Plan

Pudahuel’s Municipal Regulatory Plan (1971) will be described using as a basis the official document of the plan published by Pudahuel’s Municipality in their web portal (MunicipalidadPudahuel, 2012). Also Municipality’s ‘Communal Development Plan’ PLADECO (2009) will be analyzed to have insight in Municipality’s current situation, vision and goals.
3.4 Regulatory Plans objectives and norms regarding segregation.

As the purpose of the research is to state how regulatory plans can effectively reduce city’s segregation patterns, the different before described regulatory plans were reviewed in search for objectives or norms related to segregation. According to Norman Fairclough in his book ‘Critical discourse analysis, the critical study of language’ (1995), textual analysis should mean analysis of text’s texture, their form and organization, not just commentaries about text ‘content’ which ignore texture (texture: socio cultural processes, relations and changes) (Fairclough, 1995). Texts are social spaces where two fundamental social processes occur: cognition and representation of social interaction’s words. Textual analysis demands diversity of focus not only with respect to functions but also with respect to levels of analysis, ‘Discourse is use of language seen as a form of social practice. And discourse analysis is analysis of how texts work with socio cultural practices’ (Fairclough, 1995).

Depending on social conditions pressures, texts will be relatively normative whereas others are relatively creative, expressing a varying degree of homogeneity and heterogeneity of textual forms and meanings. Homogeneous texts are those who are consistent semantically and formally; heterogeneous texts are those where text producer – audience relations are elaborated in diverse and contradictory ways (Fairclough, 1995). Analysis of text should not be isolated from analysis of institutional and discoursal practices within which texts are embedded. Textual analysis implies two complementary types of analysis: linguistic analysis (shows how texts selectively draw upon linguistic systems) and inter-textual analysis (show how texts selectively draw upon orders of choices (genres, discourses, regulations, etc)). Inter-textual analysis draws attention to the dependence of text upon society and history in the form of the resources made available within the order of discourse. ‘Inter-textual analysis crucially mediates the connection between language and social context, and facilitates more satisfactory bridging of the gap between texts and contents’ (Fairclough, 1995).

As stated by Fairclough, regulatory plans analysis in the search of goals or norms regarding segregation cannot be conducted exclusively considering regulatory plan’s official documents. From this documents valuable and unquestionable information regarding the subject can be obtained but from them it is not possible to distinguish their elaboration context, neither different goals or discussions that were not included explicitly in the text but where relevant in document’s content elaboration. The review of plan’s explanatory reports, articles from plan’s policy makers and interviews with actors involved in their elaboration and implementation is necessary to be able to state the content (goals or norms) of each plan regarding socio economic segregation. As a framework for goal’s & norm’s identification the research proposed a division between (a) ‘explicit’ objectives or norms in each regulatory plan official document; and (b) ‘implicit’ objectives from each regulatory plan regarding segregation according to ‘explanatory reports’ elaborated as plan’s explanation, policy makers articles where they state plan’s objectives and norms considered for their achievement and interviews with relevant actors in the elaboration of the different plans. Also the ‘implicit’ norms regarding segregation will be stated meaning those norms that besides not being formulated as an instrument to work over segregation their implementation (or non implementation) has an impact in city’s segregation patterns (internal and external effectiveness concepts are explained in section 1.10.5 Research Design Phase 1).

In the following paragraphs the different objectives and norms regarding segregation will be presented per each regulatory plan (Table 6). Also the documents that were used per each regulatory plan will be mentioned.

Metropolitan Regulatory Plans

3.4.1PRMS 1994: To state ‘explicit’ objectives and norms related to city’s segregation patterns the PRMS 1994 official document was reviewed (‘Santiago’s Metropolitan Regulatory Plan 1994 Norm’, (MINVU’s SEREMI Region Metropolitana, 1994)). From this document no explicit objectives or norms were found.

To state ‘implicit’ objectives the article from Alberto Carvacho ‘Santiago’s Metropolitan Regulatory Plan: SEREMI 1994’ (1995) was reviewed. Carvacho was part of MINVU’s team that elaborated PRMS 1994. In this
article he exposed plan’s main objectives and contents divided by official document chapters. Also interviews with Luis Eduardo Bresciani\(^1\) and Roberto Moris\(^2\) were conducted. Both of them worked at MINVU (Urbanism & Housing Ministry) with different responsibilities between 2000 -2010. Besides they were not involved in PRMS1994 elaboration, their knowledge of this proposal from their work at the Ministry provided valuable information to define which objectives were in some extent related to segregation. To indentify PRMS 1994 ‘implicit’ norms regarding segregation ‘Santiago’s Metropolitan Regulatory Plan 1994 Norm’ (MINVU’s SEREMI Region Metropolitana, 1994) was again used. The ‘implicit’ norms are those who were implemented to achieve the ‘implicit goals’ related to segregation.

Three ‘implicit’ goals related to counter act city’s socio economic segregation were identified (1-3 in Table 6). According to Carvacho (1995) some of the proposal’s objectives were (1) to have a city that grows with equity, meaning a de-centralization of activities to foster the development of city’s peripheral areas, (2) to solve city’s problems of segregation and urban marginality, (3) and to have ‘harmonious and balanced’ territorial developments (CA, 1995). These goals were planned to be achieved through different regulations stated in PRMS 1994 official document (MINVU’s SEREMI Region Metropolitana, 1994), however some of them have direct incidence over the issue and their implementation has meant the consolidation of some city’s segregation patterns\(^5\). Five ‘implicit’ norms were identified (4-8 in Table 6): (4) city’s urban-rural limit definition (the previous regulatory plan from 1979 had eliminated city’s urban limit considering that urban growth or expansion should be determined by market demands (Observatorio Social, 2006)), (5) the definition of 11 sub-centers distributed over the city (Figure 23), (6) increase of city’s average density from 100 to 150 inhabitants/hectare. Also minimum densities per municipalities were defined. High density municipalities (minimum density of 200 in/ha): Santiago center, Conchalí, Estación Central, Independencia, La Cisterna, Lo Espejo, Pedro Aguirre Cerda, Providencia, Quinta Normal, San Joaquín and San Miguel; medium density municipalities (minimum density of 150 in/ha): Cerro Navia, El Bosque, La Florida, La Granja, La Pintana, Las Condes, Lo Prado, Macul, Maipú, Nunoa, Puente Alto, Recoleta, San Bernardo y San Ramón; low density municipalities: Cerrillos, Huechuraba, La Reina, Penalolen, Quilicura, Vitacura, Melipilla, Penalflo, Talagante, Padre Hurtado, Curacavi, Paine and Buin.(7) Facilities requirements per municipality according to population size and type of street where is located. (8) Roads network design (Figure 24) to ensure city’s accessibility and connection with regional urban centers (MINVU’s SEREMI Region Metropolitana, 1994).

As stated in section 2.3 socio economic segregation is related to a spatial phenomena where inhabitants of the same socio economic group concentrate in a particular (extensive) area without the presence of other socio economic groups, ‘extensive socially homogenized areas of low income groups with high indexes of segregation can be found in the cities. Usually these areas have a deficient infrastructure and services, and are characterized by a residential mono function that hampers the possibilities of their inhabitants to interact with people of different social groups and to get inserted in the different networks and job opportunities that a city may offer. The negative effects of urban socio economic segregation are mostly concentrated in these areas of the city, and they are becoming even more critical as in the last years segregation’s scale and malignity is increasing\(^6\). PRMS 1994 ‘implicit’ goals and norms are aimed to generate a decentralized city (sub-centers), with a higher land use (densification) and planned urban area extensions that could allow to satisfy new inhabitants housing demands in a well connected (road infrastructure design) and independent (facilities) sub centrality. PRMS 1994 ‘implicit’ goals and norms achievement should improve city’s segregated areas condition and provide urban land for new inhabitant’s residential demand (urban area extension (Figure 22) and densification)\(^2\).

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\(^{1}\) Interview with Luis Eduardo Bresciani: Between 2000 and 2003 worked as MINVU’s Region Metropolitana Regional Secretary, between 2003 and 2010 worked as MINVU’s Urban Development Division General Manager. Conducted the 22th of March 2012, Santiago, Chile.

\(^{2}\) Interview with Roberto Moris: Between 2000 and 2010 worked as MINVU’s Minister Consultant and also as MINVU’s Urban Projects Division Manager (DPU). Conducted the 15th of March 2012, Santiago, Chile.
3.4.2 Chacabuco – Adup – ZODUC 1997: To state ‘explicit’ objectives and norms related to city’s segregation patterns the Chacabuco – ZODUC Modification official document was reviewed (Explanatory Report PRMS Modification: Colina, TiITil and Lampa (Chacabuco) incorporation, (MINVU’s SEREMI Region Metropolitana, 1997)). From this document no ‘explicit’ objectives were found. However there is an ‘explicit’ norm regarding segregation (number 9 in Table 6) in ADUP instrument: (9) Social housing projects with plots not bigger than 5 hectares will be allowed to reach a density of 300 inhabitants / hectare. This density is higher than the allowed densities for urban development. However the inclusion of social dwellings is not mandatory and depends on functions proposed by private developers.

To identify ‘implicit’ objectives the presentation of MINVU’s SEREMI Region Metropolitan Secretary Carlos Estévez for PRMS100 modification (MINVU’s SEREMI Region Metropolitana, 2008) was used. Besides this document was elaborated to explain PRMS100 modification in their introductory part the document review the different PRMS 1994’s modifications. Also valuable interviews with Luis Eduardo Bresciani\(^3\) (who was in charge of modification’s elaboration team), Roberto Moris\(^4\) (with experience inside Urbanism & Housing Ministry (MINVU)) and Pablo Allard\(^5\) (academic specialized in urban planning & transport) were considered. Is a common believe among architects and urban planners that ZODUC instrument have explicit goals regarding segregation as they supposedly consider a percentage of their surface for social dwellings (for instance in the presentation of Carlos Estévez (2008) it is stated that ZODUC failed in the constructions of social dwellings. Also during the interviews with Moris and Allard this comment regarding the failure of the plan about constructing social dwelling appeared). However, after conducting the interview with Luis Eduardo Bresciani (who was in charge of modification’s elaboration team) is possible to state that the instrument is not aimed for social dwellings construction. As Bresciani states, it was never part of the norm. Effectively after reviewing the Chacabuco – ADUP – ZODUC Norm there is no objective or norm related to social dwellings or segregation (except by the special density for social dwellings in ADUP developments explained before) what is possible to find are special densities per plot surface where high density developments are allowed. As that an ‘implicit’ objective of ZODUC instrument is (10) to generate urban land that makes possible to construct social dwellings (Number 10 in Table 6). Their construction is not mandatory and will depend on functions proposed by private developers.

The ‘implicit’ norms that allows to generate urban land that makes possible to construct social dwellings were identified reviewing ‘Explanatory Report PRMS Modification: Colina, TiITil and Lampa (Chacabuco) incorporation’ (MINVU’s SEREMI Region Metropolitana, 1997). Two ‘implicit’ norms were identified (11 and 12 in Table 6): (11) ZODUC’s developments have to consider a 2% of their total surface for densities between 300 - 400 in/ha, and a 3% of their total surface for densities between 401-500 in/ha; (12) ZODUC’s developments have to consider a 5% of their total surface for productive or services activities (employment generation and facilities accessibility) (MINVU’s SEREMI Region Metropolitana, 1997).

3.4.3 PDUC 2003: To state ‘explicit’ objectives and norms related to city’s segregation patterns the PDUC 2003 official document (PRMS Norm Article 8.3.2.4(MINVU’s SEREMI Region Metropolitana, 2003)) was reviewed. From this document no ‘explicit’ objectives were found. However there is an ‘explicit’ norm regarding segregation (number 13 in Table 6): (13) a 30% of dwellings total number have to be subject of housing subsidies with a maximum density of 400 inhabitants / hectare, a 40% of the required 30% of dwellings total number subject to housing subsidies must be destined to ‘Fondo Solidario de Viviendas 1’ dwellings (Chilean housing policy will be explained in Chapter 4). The required number of social dwellings is mandatory and should be considered by every development under PDUC’s figure.

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\(^3\)Interview with Luis Eduardo Bresciani: Between 2000 and 2003 worked as MINVU’s Region Metropolitana Regional Secretary, between 2003 and 2010 worked as MINVU’s Urban Development Division General Manager. Conducted the 22th of March 2012, Santiago, Chile.

\(^4\)Interview with Roberto Moris: Between 2000 and 2010 worked as MINVU’s Minister Consultant and also as MINVU’s Urban Projects Division Manager (DPU). Conducted the 15th of March 2012, Santiago, Chile.

\(^5\)Interview with Pablo Allard. Universidad del Desarrollo Architecture Faculty Dean, Harvard University PhD in Urban Planning & Transport. Conducted the 16th of March 2012, Santiago, Chile.
To identify ‘implicit’ objectives the interviews conducted to Luis Eduardo Bresciani\(^6\) (worked on MINVU when modification was elaborated) and Roberto Moris\(^7\) (with experience inside Urbanism & Housing Ministry (MINVU)) were considered. According to Bresciani, PDUC instrument allow low income groups to have access to urban land. About PDUC instrument Moris states that is an instrument that makes mandatory social dwellings in ‘mixed neighborhoods’. Considering the before mentioned PDUC ‘explicit’ norm regarding segregation and before mentioned interviewee’s reflections regarding PDUC instrument, the ‘implicit’ objective is considered as (14) urban land generation that allows the construction of social dwellings in mixed neighborhoods (number 14 in Table 6). The ‘implicit’ norms regarding segregation were identified reviewing PDUC 2003 official document (‘PRMS Norm Article 8.3.2.4’ (MINVU’s SEREMI Region Metropolitana, 2003)). From this review one ‘implicit’ norm was identified related to facilities to be constructed in the new added urban areas to ensure minimum standards of living (number 15 in Table 6): (15) ZODUC’s developments have to consider a 5% of their total surface for productive or services activities (employment generation and facilities accessibility). (MINVU’s SEREMI Region Metropolitana, 2003).

### 3.4.4 PRMS100 2008:

To state ‘explicit’ objectives and norms related to city’s segregation patterns PRMS100 ‘Explanatory Report’ (MINVU’s SEREMI Region Metropolitana, 2008) was reviewed. From this document one ‘explicit’ objective was identified (number 16 in Table 6): (16) ‘A more integrated city’. Reverse city’s segregation patterns making possible for low income groups to have dwellings close to city’s networks. (MINVU’s SEREMI Region Metropolitana, 2008). For identifying the ‘explicit’ norms that will allow to achieve the before mentioned ‘explicit’ objective, the same document was reviewed. From this analysis is possible to state one ‘explicit’ norm (number 17 in Table 6): (17) urban development’s who wants to apply for a density of 150 in/ha, have to consider a 8% of surface of each project phase for social dwellings. (MINVU’s SEREMI Region Metropolitana, 2008).

To identify PRMS 100 ‘implicit’ objectives regarding segregation the ‘Explanatory Report’ (MINVU’s SEREMI Region Metropolitana, 2008) and interviews with actors involved in their elaboration (Bresciani\(^6\), Iacobelli\(^8\)) and academics – private consultants with knowledge over PRMS100 content (Poduje\(^9\), Moris\(^7\), Rodriguez\(^10\), Sugranyes\(^11\), Trivelli\(^12\)) were considered. From the interviews it can be seen that there are different opinions regarding PRMS100 ‘explicit’ objective of counter act city’s segregation patterns. For some of them PRMS100 proposal cannot be justified as an instrument to solve segregation problems as their principal objectives are to settle down the required planning instrument for private investor’s real estate businesses (Sugranyes, 2012) (Rodriguez, 2012) (Moris, 2012) (Trivelli, 2012). However interview’s respondents related to PRMS100 elaboration consider this ‘explicit’ objective plausible and add another ‘implicit’ objective that were part of the discussion but were not considered in the redaction of PRMS100 official document:(18) besides minimum plot surface for social dwellings, due to local demands more social dwellings than the minimum should be constructed (Iacobelli, 2012) (Poduje, 2012). The ‘new urban areas’ proposed by PRMS100 modification are located close to low income group’s consolidated areas, the development of high income or middle income groups dwellings in these areas are seen complicated as other areas of the city are being developed for middle and higher income groups in urban lands with ‘better conditions’ than those present in PRMS100 extension areas. PRMS100 ‘new added urban lands’ have to compete in city’s residential market (Iacobelli, 2012). From PRMS100 ‘Explanatory Report’ (MINVU’s SEREMI Region Metropolitana, 2008) another ‘implicit’ objective was identified. This objective was clearly formulated as one of the proposal’s objective but its incidence over

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\(^6\) Interview with Luis Eduardo Bresciani: Between 2000 and 2003 worked as MINVU’s Region Metropolitana Regional Secretary, between 2003 and 2010 worked as MINVU’s Urban Development Division General Manager. Conducted the 22th of March 2012, Santiago, Chile.

\(^7\) Interview with Roberto Moris: Between 2000 and 2010 worked as MINVU’s Minister Consultant and also as MINVU’s Urban Projects Division Manager (DPU). Conducted the 15th of March 2012, Santiago, Chile.

\(^8\) Interview with Andres Iacobelli: Former MINVU’s Housing Division Sub-Secretary. Conducted the 28th of February 2012, Santiago, Chile.

\(^9\) Interview with Ivan Poduje: Atiba Consultants Director. Conducted the 20th of March 2012, Santiago, Chile.

\(^10\) Interview with Alfredo Rodriguez. SUR Consultants Director. Conducted the 14th of March 2012, Santiago, Chile.

\(^11\) Interview with Ana Sugranyes. Habitat International (ONG) Director. Conducted the 5th of March 2012, Santiago, Chile.

\(^12\) Interview with Pablo Trivelli. Trivelli Consultants Director. Conducted the 15th of March, 2012, Santiago, Chile.
segregation patterns is not direct, that is why it was considered as an ‘implicit’ objective (number 19 in Table 6): ‘A better connected city’. Ensure expansion areas connection with city’s consolidated sub-centers (MINVU’s SEREMI Region Metropolitana, 2008). As reviewed from section 2.3 (segregation patterns) one of the problems of segregated areas is that they usually are located far away from services and facilities. A good connection with city’s sub centers could reverse this condition.

The ‘implicit’ norms regarding segregation were identified reviewing PRMS100 official document (MINVU’s SEREMI Region Metropolitana, 2008). One ‘implicit norm’ was identified related to the implementation of the ‘implicit’ objective ‘A better connected city’: (20) New added urban areas design including roads infrastructure to construct and required green areas (number 20 in Table 6) (MINVU’s SEREMI Region Metropolitana, 2008). With new urban areas pre-design of road’s infrastructure it is expected to ensure the connectivity of these areas with city’s consolidated sub-centers.

Municipal Regulatory Plans

3.4.5 San Joaquin’s Municipal Regulatory Plan: To state ‘explicit’ objectives or norms regarding segregation San Joaquin’s Municipal Regulatory Plan official document (San Joaquin’s Municipality, 2011) was reviewed. From this document no explicit objectives or norms were found.

To state ‘implicit’ objectives San Joaquin’s ‘Communal Development Plan’ (PLADECO) (San Joaquin’s Municipality, 2006) was reviewed. PLADECO documents are the main municipal planning and management instruments. Their purpose is to contribute to municipalities’ efficient management and to promote studies related to inhabitant’s economic, social and cultural development. PLADECO have to represent municipality’s vision and the different strategies to achieve it. PLADECO’s legal framework is given by Municipalities Organic Law Number 18.695 (SUBDERE, 2009). Also an interview with Jimena Thayer13 was conducted to have an insight in the purposes behind the elaboration of San Joaquin’s Regulatory Plan. From San Joaquin’s PLADECO document it was possible to state that segregation is an issue in municipality’s vision and strategies. Two ‘implicit’ objectives regarding segregation were identified that in some extent influenced regulatory plan content13 (21-22 in Table 6): (21) Foster policies implementation regarding integration opportunities (Municipalidad San Joaquin, 2006). In the Municipality the social homogeneity is seen as a problem as it is hampering inhabitant’s insertion in the different opportunities networks that the city may offer. (22) Foster private real estate investments; housing stock re development (Municipalidad San Joaquin, 2006). San Joaquin’s Municipality is trying to attract middle or higher income groups to diversify Municipality’s socio economic composition. Also the existing housing stock requires re-developments due to low quality and to satisfy the demand on young inhabitants who live in their parents’ house and don not want to leave the municipality (possibility of a social dwelling only in Santiago’s peripheral urban centers)13.

The ‘implicit’ norms regarding segregation were identified reviewing San Joaquin’s Municipal Regulatory Plan official document (San Joaquin’s Municipality, 2011). One ‘implicit’ norm was identified related to the implementation of the ‘implicit’ objectives mentioned before. (23) Seventeen residential land use classifications with diverse densities (starting from a minimum density of 56 in/ha until the highest density of 2800 in/ha) and diverse minimum plot sizes (from 128 m² until 2000 m²) (San Joaquin’s Municipality, 2011). With this ‘flexible’ residential land use the Municipality tries to attract private real estate investments13.

3.4.6 Pudahuel’s Municipal Regulatory Plan: To state ‘explicit’ objectives or norms regarding segregation Pudahuel’s Municipal Regulatory Plan official document (Pudahuel’s Municipality, 1971) was reviewed. From this document no explicit objectives or norms were found.

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13 Interview with Jimena Thayer: San Joaquin’s Urbanistic Consultant. Conducted the 21th of March 2012, Santiago, Chile.
To state ‘implicit’ objectives Pudahuel’s ‘Communal Development Plan’ (PLADECO) (Pudahuel’s Municipality, 2009) was reviewed. From this document was possible to state an ‘implicit’ objective regarding segregation (24-25 in Table 6): (24) Foster municipality’s social integration. Pudahuel’s Municipality is part of Santiago’s north-west low incomes segregated areas (see section 2.7 Santiago de Chile socio economic segregation patterns and trends), municipality’s residential mono-functionality is seen as a problem for the development of their inhabitants (Pudahuel’s Municipality, 2009). From Pudahuel’s Municipal Regulatory Plan official document another ‘implicit’ objective was identified. The official regulatory plan was elaborated in 1971, so the contemporaneity of its content could be questionable. However, this ‘implicit’ objective work directly over segregation as fosters the creation of local productive activities, breaking the residential mono-functionality in the area (number 25 in Table 6): (25) ZCAE Areas: Concentration of productive activities (Pudahuel’s Municipality, 1971). By the date of Pudahuel’s Municipal Regulatory Plan elaboration, many of their inhabitants had small workshops inside their dwellings. The idea of ZCAE areas was to concentrate local workshops in specific areas to empower their production (Pudahuel’s Municipality, 1971).

The ‘implicit’ norms regarding segregation were identified reviewing Pudahuel’s Municipal Regulatory Plan (Pudahuel’s Municipality, 1971) and after conducting an interview with municipality’s urbanism consultant Claudia Campodonico⁴️. From Pudahuel’s Municipal Regulatory Plan was identified an ‘implicit’ norm related to high densities that in some extent allowed the development of massive social housing projects (number 26 in Table 6): (26) Municipality’s minimum density of 200 in/ha, in principal roads minimum density of 350 in/ha (Pudahuel’s Municipality, 1971). From Campodonico’s interview was possible to identify that municipality’s regulations on Municipal Regulatory Plan, in practice are completely flexible with the purpose of investment’s attraction. Densities, minimum plot size or building’s height are negotiable if the investments represent a benefit for the municipality. As that, another ‘implicit’ norm is (number 27 in Table 6): (27) in practice free regulation to attract investments⁴️.

<table>
<thead>
<tr>
<th>Regulatory Plans objectives / norms regarding segregation</th>
<th>Explicit</th>
<th>Implicit</th>
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<tr>
<td></td>
<td>Objective</td>
<td>Norm</td>
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<tr>
<td>Regional Regulatory Plan</td>
<td></td>
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</tr>
<tr>
<td>Not applicable</td>
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<tr>
<td>Metropolitan Regulatory Plan</td>
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⁴️ Interview with Claudia Campodonico. Pudahuel’s urbanism consultant. Conducted the 20th of March 2012, Santiago, Chile.
<table>
<thead>
<tr>
<th>Municipal Regulatory Plan</th>
<th></th>
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<th>requirements per municipality according to population size. ‘Santiago’s Metropolitan Regulatory Plan Norm’ (MINVU’s SEREMI Region Metropolitana, 1994)</th>
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<td></td>
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<td>(9) Special density for social housing projects in AUDP: 300 in/ha. (MINVU’s SEREMI Region Metropolitana, 1997).</td>
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<td></td>
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<td>(10) Generate urban land that makes possible to construct social dwellings. Estevez in ‘PRMS100 Modification Explanatory Report’ (MINVU’s SEREMI Region Metropolitana, 2008)</td>
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<td>(11) ZODUC’s developments have to consider a 2% of their total surface for densities between 300-400 in/ha, and a 3% for densities between 401-500 in/ha. (MINVU’s SEREMI Region Metropolitana, 1997).</td>
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<td>(12) ZODUC’s developments have to consider a 5% of their total surface for productive or services activities (employment). (MINVU’s SEREMI Region Metropolitana, 1997).</td>
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<td>(13) 30% of total dwellings have to be subject of housing subsidies. Those dwellings can be developed with a max. density of 400 in/ha. 40% of the social dwellings have to be subject of ‘FondoSolidario de Vivienda 1’. (MINVU’s SEREMI Region Metropolitana, 2003)</td>
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<tr>
<td><strong>PDUC 2003</strong></td>
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<td>(14) Urban land generation that allows the construction of social dwellings in mixed neighborhoods.</td>
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<td></td>
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<td>(15) PDUC’s developments have to consider a 5% of their total surface for productive or services activities (employment). (MINVU’s SEREMI Region Metropolitana, 2003).</td>
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</tr>
<tr>
<td><strong>PRMS100 ZUC 2008</strong></td>
<td></td>
<td></td>
<td>(16) ‘A more integrated city’. Reverse city’s segregation patterns making possible for low income groups to have dwellings close to city’s networks. (MINVU’s SEREMI Region Metropolitana, 2008)</td>
</tr>
<tr>
<td></td>
<td>(17) To apply for a density of 150 in/ha developments have to consider a 8% of surface of each project phase for social dwellings. (MINVU’s SEREMI Region Metropolitana, 2008)</td>
<td></td>
<td>(18) Besides minimum plot surface for social dwellings, due to local demands more social dwellings than the minimum should be constructed (Iacobelli, 2012) (Poduje, 2012) (19) ‘A better connected city’. Ensure expansion areas connection with city’s consolidated sub-centers. (MINVU’s SEREMI Region Metropolitana, 2008)</td>
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<td></td>
<td>(18)</td>
<td></td>
<td>(20) New added urban areas design including roads infrastructure to construct and required green areas. (MINVU’s SEREMI Region Metropolitana, 2008)</td>
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</tbody>
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*Municipal Regulatory Plan*

**San Joaquin’s Regulatory Plan** -- -- (21) Foster policies implementation (23) 17 residential purpose classifications
Table 6. Regulatory Plans Objectives and Norms regarding residential segregation.

<table>
<thead>
<tr>
<th>Plan</th>
<th>Objective</th>
<th>Norms</th>
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<tbody>
<tr>
<td>Pudahuel’s Regulatory Plan</td>
<td>–</td>
<td>(24) Foster municipality’s social integration.</td>
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<td>–</td>
<td>Communal PLADECO (Pudahuel’s Municipality, 2009)</td>
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<td></td>
<td>–</td>
<td>(25) ZCAE Areas.</td>
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<td></td>
<td>–</td>
<td>Concentration of productive activities,</td>
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<td></td>
<td>–</td>
<td>Pudahuel’s Regulatory Plan (Pudahuel’s Municipality, 1971)</td>
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<tr>
<td></td>
<td>–</td>
<td>(26) Minimum density of 200 in/ha, in principal roads minimum density</td>
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<td>of 350 in/ha. Pudahuel’s Regulatory Plan</td>
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<td></td>
<td>–</td>
<td>(Pudahuel’s Municipality, 1971)</td>
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<tr>
<td></td>
<td>–</td>
<td>(27) In practice free regulation to attract investments</td>
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<td></td>
<td>–</td>
<td>(Campodonico, 2012)</td>
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3.4.7 Objectives and Norms regarding segregation general overview

From reviewing the content of table 6 it is possible to state general conclusions from regulatory plan’s objectives and norms identification regarding segregation. **City’s socio-economic segregation problems are not included as a recurrent regulatory plans objective**, despite city’s evident segregation problems. Only in PRMS100 of 2008 an explicit objective regarding segregation was included in a planning instrument (number 16 in Table 6: ‘A more integrated city’. Reverse city’s segregation patterns making possible for low income groups to have dwellings close to city’s networks. (MINUV’s SEREMI Region Metropolitana, 2008)). The lack of clear objectives regarding segregation is explained by Ivan Poduje15 by the limited scope of action that regulatory plans has over the issue of segregation. Ana Sugranyes16 agrees with this impression adding that regulatory plans attributions are not enough to achieve ‘better’ social dwellings distribution over the city. For them, city’s segregation problems solution is not under the scope of regulatory plans; it is more related to a re-thinking of Chilean housing policy (Poduje, 2012).

According to Francisco Sabatini17, regulatory plan’s first function is to define land uses (zoning) and then state building regulations like density, coefficients, heights, slopes, etc. He also argues that the relation between regulatory plans and inclusion is just the opposite as regulatory plans have always been a ‘veiled’ exclusion instrument. Regulatory plan’s restrictions imply costs that can only be assumed by those who are able to afford it (Sabatini, 2012). For instance low densities and big minimum plot sizes are ‘veiled’ exclusion regulations as usually the costs involved in developments under those conditions exclude socio-economic groups with low acquisition capacity (Sabatini, 2012). Zoning definitions have the same exclusion effect, when defining uses for an area other uses are excluded, the sum of those exclusions implies that excluded functions have to be located somewhere. Usually ‘excluded’ functions are located in areas where there are no ‘political powers’ to exclude: low income groups neighborhoods (Sabatini, 2012).

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15 Interview with Ivan Poduje. Atisba Consultants Director. Conducted the 20th of March 2012, Santiago, Chile.

16 Interview with Ana Sugranyes. Habitat International (ONG) Director. Conducted the 5th of March 2012, Santiago, Chile.

17 Interview with Francisco Sabatini. Academic at P.Universidad Catolica de Chile. Former Urbanism & Housing Minister Consultant. Conducted the 7th of March 2012, Santiago, Chile.
However, interviewees involved in regulatory plan’s elaboration (or former MINVU’s members) disagree with these opinions as they consider that regulatory plans have a potential to counter act city’s segregation patterns. According to Roberto Moris regulatory plan’s attributions under current legal framework do not facilitate solutions for city’s segregation problems. But he also argues that since the incorporation of ‘Conditioned Urbanization’ in Chacabuco – ADUP – ZODUC modification of 1997, PDUC modification of 2003 and PRMS100 modification of 2008, a new dimension of attributions was open for regulatory plans (has to be cleared that ‘Conditioned Urbanization’ is not included in LGUC or OGUC (see section 3.1.2 Types of regulatory plans)). Luis Eduardo Bresciani states that until PDUC 2003 city’s segregation problems were not considered as a subject to be addressed by regulatory plans. Before that all MINVU (Urbanism & Housing Ministry) efforts were directed towards housing stock deficit diminution without monitoring housing complexes status throughout time. During PDUC’s elaboration there was awareness inside MINVU that city’s land markets were performing in an incorrect way. All public infrastructure & services investments were rising urban land values and therefore excluding lower income population from accessing to urban lands inside the city (Bresciani, 2012). Before (PRMS 1994 and ADUP-ZODUC) was considered that regulatory plan’s densities management and housing policy subsidies were enough to ensure low income groups access to urban land (Bresciani, 2012). In PDUC’s was included the first ‘explicit’ norm related to segregation (number 13 in Table 6: 30% of total dwellings have to be subject of housing subsidies. Those dwellings can be developed with a maximum density of 400 in/ha. 40% of the social dwellings have to be subject of ‘FondoSolidario de Vivienda 1’ (MINVU’s SEREMI Region Metropolitana, 2003)) but not as a plan objective. As in LGUC and OGUC documents is not stated regulatory plan’s faculty to require a number of social dwellings, the ‘Contraloría General’ (Independent Chilean institution that supervise administrative power act’s legality) filter was passed with ‘political willingness’ (Bresciani, 2012). In 2006 a new coalition was in Chilean Government and one of the main objectives of central administration was to work over cities’ segregation problems (Bresciani, 2012). As reflection of this PRMS100 modification proposal of 2008 included for first time a regulatory plan ‘explicit’ objective regarding segregation (number 16 in Table 6: A more integrated city’. Reverse city’s segregation patterns making possible for low income groups to have dwellings close to city’s networks. (MINVU’s SEREMI Region Metropolitana, 2008)). According to Luis Eduardo Bresciani regulatory plans are important instruments in the efforts to counter act city’s segregation patterns as they recognize local realities, condition that is not possible to obtain from National laws like Housing Policy that are applicable to all country’s territory. Segregation problems in Santiago are different than the ones on Concepcion or Valparaiso (Chilean cities).

Besides regulatory plans appropriateness to solve city’s segregation problems the following section will analyze regulatory plan’s ‘internal’ effectiveness (degree in which the different objectives regarding segregation stated in the documents have been achieved applying the different norms stated in the plans for their implementation) and ‘external’ effectiveness (extent in which these planning instruments are responding to the challenges that Santiago’s urban socio economic segregation patterns are demanding). The relevance of stating the effectiveness of the different regulatory plans regarding segregation is related to thesis research question of how regulatory plans can effectively reduce city’s segregation patterns. Without knowing what was achieved with the current regulatory plan’s content or why it was not achieved, it will not be possible to propose accurate recommendations to the different planning instrument that recognize city’s segregations patterns and local demands.

18 Interview with Roberto Moris: Between 2000 and 2010 worked as MINVU’s Minister Consultant and also as MINVU’s Urban Projects Division Manager (DPU). Conducted the 15th of March 2012, Santiago, Chile.

19 Interview with Luis Eduardo Bresciani: Between 2000 and 2003 worked as MINVU’s Region Metropolitana Regional Secretary, between 2003 and 2010 worked as MINVU’s Urban Development Division General Manager. Conducted the 22th of March 2012, Santiago, Chile.
3.5 Regulatory Plans ‘internal’ and ‘external effectiveness

After stating in the previous chapter the different regulatory plan’s objectives and norms regarding segregation this section is about to state in which degree these objectives and norms are been effective in solving city’s socio economic segregation problems. Before analyzing the different plans is necessary to explain what is understood by effectiveness.

Usually efficiency and effectiveness are confused. Both of them are adjectives of qualitative nature, both applicable to logistic processes or to any domain in general because they are related to function’s optimization (Killian, 2004). Efficiency implies a comparison of production with cost (as in energy, time, and money) (Merrian-Webster, 2000), the ‘optimal’ use of available resources to achieve objectives. On the other hand, effectiveness implies the degree to which the decided, decisive, or desired effects are achieved (Merrian-Webster, 2000). This research section is aimed to state regulatory plan’s degree of achievement regarding solutions to city’s socio economic segregation. As that regulatory plan’s effectiveness will be assessed related to their ‘internal effectiveness’ meaning the degree in which the different objectives regarding segregation stated in the documents have been achieved applying the different norms stated in the plans for their implementation; and their ‘external effectiveness’ meaning the extent in which these planning instruments are responding to the challenges that Santiago’s urban socio economic segregation patterns are demanding (see section 1.10.5 Research Design).

To conduct ‘effectiveness’ assessment per each regulatory plan the different objectives and norms (explicit & implicit from section 3.4) will be summarized in one main ‘intended strategy’, understood as what in essence the plan would allow to counteract city’s segregation problems. ‘Intended strategy’ definition per regulatory plan will vary according to objectives/ norms types (if they are explicit or implicit). Explicit goals and norms will directly determine ‘intended strategy’ definition. If objectives/norms were found implicitly in the documents, it will imply a ‘holistic’ understanding of all objective/norms for ‘intended strategy’ definition. To determine ‘internal effectiveness’ the implementation of the different plan’s norms related to segregation will be reviewed, allowing at the end to state if regulatory plan’s ‘intended strategy’ has been achieved. The ‘external effectiveness’ will be determined considering the ‘internal effectiveness’ findings and Santiago’s segregation patterns stated in sections 2.6 to 2.7 of this research. Articles, essays, studies and interviews to people with relevant knowledge about regulatory plans and Santiago’s segregation patterns will be considered for regulatory plan’s ‘effectiveness’ definition.

Besides stating regulatory plan’s effectiveness in solving Santiago’s segregation problems, this section is aimed to state why the different goals or norms regarding segregation have been achieved or not achieved. This analysis will also allow determining which other planning instruments or ‘external factors’ have to be considered in the efforts to counteract city’s segregation issues. The identification of this ‘other planning instruments or external factors’ will be the basis of the following chapter (Chapter 4: OTHER PLANNING INSTRUMENTS / URBAN DYNAMICS WITH INCIDENCE OVER SEGREGATION).

Metropolitan Regulatory Plans

3.5.1 PRMS 1994 ‘internal’ and ‘external’ effectiveness

From section 3.4.1 three ‘implicit’ goals were identified: ‘Integral growth with equity: activities decentralization’, ‘Solve city’s problems of segregation and urban marginality’ and ‘Harmonious and balanced territorial developments’ (1-3 in Table 6). Also five ‘implicit’ norms related to objectives implementation: ‘Urban-rural limit and expansion areas definition’, ‘Disposals for 11 sub-centers consolidation’, ‘Average density of 150 in/ha.High, middle and low densities per each municipality’, ‘Facilities requirements per municipality according to population size and type of road where they are located’ and ‘Roads infrastructure design’ (5-8 in Table 6). Considering before mentioned ‘implicit’ objectives and goals, PRMS 1994 ‘intended strategy’ is defined as: ‘Through higher densities and planned urban land extensions allow low income group’s access to city’s
consolidated areas; and improvement of existing low income segregated areas through city’s activities decentralization’ (Table 7).

<table>
<thead>
<tr>
<th>PRMS 1994</th>
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<tbody>
<tr>
<td><strong>Intended strategy</strong></td>
</tr>
</tbody>
</table>
| **Norms** | a) Urban-rural limit and expansion areas definition  
  b) Disposals for 11 sub-centers consolidation  
  c) Average density of 150 in/ha. High, middle and low densities per each municipality  
  d) Facilities requirements per municipality according to population size and type of road where they are located  
  e) Roads infrastructure design |

Table 7. PRMS 1994 ‘Intended strategy’ and norms regarding segregation

**INTERNAL EFFECTIVENESS: RELATIVE**

PRMS 1994 ‘Internal effectiveness’ is rated as relative due to the following points related to norm’s implementation:

a) Urban-rural limit and expansion areas definition

The objective of defining an urban – rural limit containing future urbanizable lands was to stop city’s expansion growth and to foster city’s ‘internal’ growth through higher densities (Poduje, 2006). Previous Santiago’s regulatory plan (PRIS 1979) considered an urban area of approximately 100,000 hectares (the complete Santiago’s province was considered as urban, city’s growth was understood as the result of market dynamics), PRMS 1994 reduced the urban limit to a total surface of approximately 60,000 ha, divided in 42,000 hectares of consolidated urban areas and 18,000 hectares for future urban growth (Figure 29) (Observatorio Social, 2006). Currently urban – rural limit is under discussion due to a supposed lack of urban land. Different actors involved in urban planning have different opinions regarding urban land scarcity. According to MINVU’s SEREMI Region Metropolitana by 2008 only 6,000 hectares were available inside the urban areas for city’s growth. Considering that in a ‘normal’ economic year 800 hectares are consumed as an average, and that in ‘crisis’ years between 300 – 400 hectares are consumed (Gutierrez, 2010), the city will need extra urban land to cope with future demands (expected growth of 1.6 million inhabitants for year 2030 (SEREMI, 2010)). Pablo Trivelli argues that in 2008 Ivan Poduje published a study stating that for that year 8,000 hectares were still available, and that according to his sources this number is even higher (Trivelli, 2010).

Besides urban land scarcity discussion, the problem of urban limit regarding segregation is that from 1998 is not possible to construct social dwellings inside city’s urban limit. According to ‘Observatorio Urbano’ from Alberto Hurtado University from Santiago de Chile, urban limit is generating an artificial land scarcity and land prices distortion with two main consequences: dwelling’s price rise and social dwellings exclusion from city’s urban area (Observatorio Social, 2006). Social dwelling’s developments (dwelling’s surface between 75 – 100 m$^2$) can pay approximately 13 euros per square meters to able to offer affordable prices. Considering that since 1998 there are no land prices inside city’s urban area below 32 euros per square meters (approx.), social dwelling’s developments inside consolidated urban areas are not possible any more (Trivelli, 2010). The problem to develop social dwellings is not land scarcity, is current land prices inside city’s urban area. Dwelling’s developments for higher income groups are still been developed in the ‘planned extension areas’.

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20 Interview with Pablo Trivelli. Trivelli Consultants Director. Conducted the 15th of March, 2012, Santiago, Chile.
Regarding urban land needs, two ‘operations’ has been added to Chilean laws to allow urban developments outside city’s urban limits. First a modification to Urbanism & Construccions General Law (LGUC) article 55 (Law 19.859 enabled the 31st of January 2003). With the modification it is allowed to develop urban settlements of social dwellings in rural lands with a maximum price per dwelling of approximately 32.000 euros (dwellings subject of housing subsidies), detached from any particular economic activity and outside any planning instrument (Amaral, 2003). The reason behind this LGUC modification was the before mentioned difficulties to find urban lands with prices according to what is possible to pay for social dwellings. Second operation was not a ‘new modification’ was more related to an ‘interpretation’ of D.L. 3516 Law from 1980. This law allows landowners of rural plots, to sub-divide them freely until plot sizes equal or higher than 5.000 square meters. From the 80’s until the date the rural peripheral lands of Santiago’s urban limit are mostly divided under this system in what is called ‘pleasure parcels’, where middle and higher income groups have built their dwellings outside the regulation of any planning instrument (Amaral, 2003).

Considering that urban limit objective was to stop urban extended growth towards an ‘internal’ growth were all residential areas can benefit from city’s infrastructure and networks it can be stated that it was effective until 1998, currently dwellings developments inside urban limit is only possible for middle or high income groups, low income groups dwellings’ development is only possible outside urban limit. From the intended 18.000 hectares of urban expansion from PRMS 1994, currently the situation is that 25.000 hectares has been used as urban expansion (Figure 30 ) (considering article 55 developments, ‘pleasure parcels’ and ZODUC’s) (Poduje, 2006).

b) Disposals for 11 sub-centers consolidation

PRMS 1994 definition was aimed to de-centralize Santiago’s activities and bring services, infrastructure and opportunities to city’s peripheral areas: ‘Regarding de-centralization, the plan propose a system of eleven ‘strategic points’ denominated as ‘Metropolitan Facilities Sub-Centers’ (Figure 23). These sub-centers are aimed to bring closer metropolitan facilities to city’s inhabitants through the consolidation of a de-centralized network of facilities and services’ (MINVU’s SEREMI Region Metropolitana, 1994). If these sub-centers were actually
implemented could mean an improvement of city’s segregated areas as many required services and facilities could be found closer from low income inhabitant’s neighborhoods (see sections 2.5 – 2.6). What is relevant in this section is to determine if this sub-centers are currently consolidated and also if they provide the necessary facilities and services to be considered a ‘Metropolitan Sub Center’.

Metropolitan sub-centers appear as a solution for the ‘explosive’ expansion growth of cities with monocentric urban structures (Paredes, 2004). There are two basic types of metropolitan structure. ‘One is the monocentric structure with a strong central district dominating most aspects of city’s politics, economy and culture. From that central area communications and movement spread in radial fashion, linking all districts to the center’. ‘Policentric structure typically includes a weaker central area and many districts that vie for predominance with the larger metropolitan region. Competition of districts with the central area and with one another is a fundamental aspect of this metropolitan structure. It encompasses virtually all aspects of the metropolis and particularly the more salient economic, political and cultural features. As a result, the central district may be less influential in the polycentric than in the monocentric structure. Policentric metropolis typically grew large with the automobile. The emergence of the automobile as a mass consumption product, and its associated road infrastructure, greatly conditioned the polycentric structure’ (Sanchez-Villa, 1989)

From Sanchez-Villas studies over polycentrality it can be stated that a sub centers should gather all required functions to become his ‘catchment area’ independent from the other areas of the city. In PRMS 1994 subcenters are defined according to ‘Major Street Crosses’, however a subcenter encompasses more subjects like historical factors, identity and urban structures that empower the area as a metropolitan sub center but at the same time rooted in the immediate environment (Paredes, 2004).

Regarding the consolidation of PRMS 1994 eleven subcenters there are different opinions. According to Pablo Trivelli in Santiago there are currently 15 consolidated sub centers covering an important part of city’s territory and representing an economic success for companies who developed them (Trivelli, 2010). Trivelli refers to shopping malls developments (Appendix 1) that are satisfying peripheral inhabitant’s commerce and entertainment demands.Trivelli also that if the Government pretend to include services in these shopping malls is just a matter of negotiate with private parties owning these complexes or just consider a budget to rent some space in them (Trivelli, 2010).

According to Victor Paredes PRMS 1994 eleven subcenters have not been consolidated. Only historical centers of former rural settlements absorbed by city’s growth (San Bernardo, Puente Alto, La Florida, Maipú y Renca) can be considered as consolidated sub centers inside Santiago’s urban area. From them La Florida, San Bernardo, Puente Alto and Maipú sub centers were considered in PRMS1994 proposal (Paredes, 2004). Regarding the role of shopping centers (malls) as urban centers exposed by Trivelli, Parada consider this development as outside city’s urban planning and more related to developments looking for economical benefits without a concern for social local demands (Paredes, 2004).

Margarita Greene & Fernando Soler defined this kind of developments as ‘multifunctional periphery’. Since the 80’s peripheral areas have changed their functions, relations and management approach. From a residential function peripheral areas have changed to multi-functional with different dependency degrees to city’s center according to
the characteristics of the different peripheral areas. These different degrees of dependency were posibilitated due to the development of ‘new urban services’ like shopping malls, strip centers, fast food stores, gyms, drugstore and recreational centers (Greene & Soler, 2004). As that, Greene & Soler identify two types of sub-centers in Santiago: absorbed urban centers (same than the ones stated by Paredes) and the new ‘urban services’ (posibilitated by multifunctional peripheries) related to shopping malls, strip centers, fast food stores, etc. (Greene & Soler, 2004). According to Roberto Moris from PRMS1994 eleven subcenters only two can be considered as consolidated sub centers (La Florida and Maipú) as they are the only ones that have concentrated not only facilities or services; also employment and public spaces of meeting. The city as a total still have a monocentric structure as peripheral inhabitants still have to travel to city’s center for work or study (Figure 31). Even more, from a study of Rodrigo Hidalgo (2007) it can be observed that social dwellers from rural areas travels to the city (to work or study) are mostly directed to city’s center (Figure, 32). Also a study conducted by ‘City’s Observatory’ from P.Catholic University of Chile exposes Santiago inhabitant’s travels origin and destiny (Appendix 2). From that study it can be stated that city’s centre, eastern area (high income groups cone) and La Florida & Maipu areas (the two consolidated subcenters according to Moris) are the ones that concentrates most of Santiago’s inhabitants travels (origin and destiny).

The failure of PRMS 1994 subcenters is related to the lack of implementation norms and an investments plan for their consolidation, the subcenters were determined according to major street crosses, leaving their consolidation responsibilities to the different municipalities (Moris, 2012)

c) Average density of 150 in/ha. High, middle and low densities per each municipality

PRMS 1994 Chapter 4, states that as a general standard, the complete city should have a minimum density of 150 inhabitants / hectare, and a maximum determined by each Municipal Regulatory Plan. The instrument defines minimum densities per each municipality in the city according to a classification of high density, medium density and low density.

High density: a minimum of 200 inhabitants / hectare. High density municipalities: Santiago center, Conchali, Estacion Central, Independencia, La Cisterna, Lo Espejo, Pedro Aguirre Cerda, Providencia, Quinta Normal, San Joaquín and San Miguel.


Low density: a minimum of 100 inhabitants / hectare. Low density municipalities: Cerrillos, Huechuraba, La Reina, Penalolen, Quilicura, Vitacura, Melipilla, Penafior, Talagante, Padre Hurtado, Curacavi, Paine and Buin.

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21 Interview with Roberto Moris: Between 2000 and 2010 worked as MINVU’s Minister Consultant and also as MINVU’s Urban Projects Division Manager (DPU). Conducted the 15th of March 2012, Santiago, Chile.
Minimum densities per municipality have to be accomplished as an average. Municipalities are free to determine different densities over their territory as long as they achieve the required average density. Figure 33 shows Santiago’s densities according to national census of 2002. From that figure it can be observed how densities were developed per each municipality.

According to Luis Eduardo Bresciani\(^2\) the problem of segregation was faced during the time of PRMS 1994 elaboration by two complementary fronts: through Metropolitan Regulatory Plan higher densities and through Chilean Housing Policy subsidies (Bresciani, 2012). Ivan Poduje\(^3\) opinion is that densities are the only potential that regulatory plans have to counteract city’s segregation problems (Poduje, 2012) as project’s financial feasibility increases (there are more square meters to be sold) allowing to locate social dwelling in better connected areas of the city.

High densities allowed the development of massive social housing projects mostly in the south and north-west areas of the city (Appendix 5). These developments were only possible until 1998 when city’s land market had prices compatible with social dwellers budget. To develop social housing projects developers are able to pay at most 13 euros per square meter, currently in Santiago there are no land values below 32 euros (Trivelli, 2010) (see before in this section (a) Urban-rural limit and expansion areas definition) (Appendix 3: Santiago’s land prices map). What is possible to observe currently is that densities are been managed to hamper the development of social dwellings as they represent a ‘burden’ for municipalities with low budgets (see following norm (d) Facilities requirements per municipality according to population size and type of road where they are located). According to Pablo Trivelli\(^4\) municipalities’ majors do not want social dwellings in their municipalities.

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\(^2\)Interview with Luis Eduardo Bresciani: Between 2000 and 2003 worked as MINVU’s Region Metropolitana Regional Secretary, between 2003 and 2010 worked as MINVU’s Urban Development Division General Manager. Conducted the 22th of March 2012, Santiago, Chile.

\(^3\)Interview with Ivan Poduje. Atisba Consultants Director. Conducted the 20th of March 2012, Santiago, Chile.

\(^4\)Interview with Pablo Trivelli. Trivelli Consultants Director. Conducted the 15th of March, 2012, Santiago, Chile.
because they affect municipal’s budget (social dwellings do not pay local land taxes (contributions)) and at the same time their inhabitants demand services and facilities that the municipality is not able to provide. To avoid the arrival of new social housing projects municipalities reduce densities making unfeasible social dwellings development (Trivelli, 2012). PRMS 1994 densification rise as a method to allow income groups access to urban land was only possible until to 1998, later on densification has been used in the opposite way: low densities to hamper social housing project’s feasibility. Figures 33-34 shows that densities are one of the factors that allowed city’s socio economic segregation: low densities in the areas of high income groups (east area), and high densities in the areas of low income groups (south and north-west areas). ‘Low density and big minimum plot sizes are ‘veiled’ instruments of exclusion’ (Sabatini, 2012).

d) Facilities requirements per municipality according to population size and type of road where they are located.

Linked to eleven subcenters proposal, PRMS 1994 established the indicative requirement of facilities per municipality according to their population size and the type of road where the facility would be located (MINVU’s SEREMI Region Metropolitana, 1994). The idea behind municipalities’ facilities development is to foster the consolidation of peripheral areas through a decentralization of activities (Carvacho in CA, 1995). Municipalities’ responsibility regarding facilities is established in ‘Municipalities Organic Constitutional Law’ (Interior Ministry, 2002) where attributions, functions and funding norms can be found. Regarding attributions and functions it is determined in article 4 that municipalities, inside their territory, can directly develop functions (together with other governmental bodies) related to: education and culture, public health and environment protection, inhabitant’s social and judicial assistance, employment and productive promotion, entertainment, sport & tourism promotion, urbanization and roads infrastructure development, social housing developments, sewerage infrastructure, public transport, risk prevention, security and social benefit activities development (Interior Ministry, 2002). Regarding funding article 14 (‘heritage and municipal funding’) states that municipalities has independency in the use of their budgets. To ensure municipalities proper functioning a financial resources’ solidarity redistribution mechanism among country’s municipalities (called ‘Municipal Common Fund’) is established. The Municipal Common Fund is composed by the following resources: (1) all municipalities have to contribute with a 60% of local land taxes (contributions). Santiago centre, Providencia, Las Condes and Vitacura municipalities have to contribute with a 65% of their local land taxes. (2) a 62.5% of municipalities’ vehicular permits levying. (3) Santiago centre municipality has to contribute with a 55% of his ‘alcohol permits’ levying. Providencia, Las Condes, and Vitacura municipalities have to contribute with the 65% of their ‘alcohol permits’ levying. (4) a 50% of what municipalities collect regarding car selling taxes. (5) and the resources considered by Central Government for municipalities development (Interior Ministry, 2002).

From the above description of municipal functions and funding it is clear that municipalities have responsibilities over the territory that are crucial for their inhabitant’s social development (like health and education facilities). To be able to provide all this services and facilities their budgets are a fundamental subject and it is in there were the problems are detected regarding segregation. From research interviews was almost a unanimous answer that municipality’s facilities quality was depending on the economic capacity of their inhabitants, as the local land taxes (contributions) are one of the main municipal resources. In Chile social dwellers do not pay local land taxes, therefore municipalities with a high number of low income inhabitants have problems on collecting the required funds to satisfy their inhabitants demands and requirements regarding facilities. Pablo Allard states that low income group’s concentration in a municipality generates operative problems (as they do not pay local land taxes) and social problems as they consolidate ‘urban ghettos’ with demands that municipalities are not able to solve. Municipalities that concentrate low income

25 Interview with Pablo Allard. Universidad del Desarrollo Architecture Faculty Dean, Harvard University PhD in Urban Planning & Transport. Conducted the 16th of March 2012, Santiago, Chile
groups have more facilities’ demands than municipalities with a balanced population distribution; and have fewer funds to satisfy them generating a spiral where the problems are exacerbated (Allard, 2012). Pablo Trivelli26 has the same opinion arguing that municipality majors do not want social dwellings in their territory because social housing dwellers contribution’s payments exemption hampers municipal budget and at the same time demand services that the municipality is not able to provide (Trivelli, 2012). Claudia Campodonico agree with the vision of Allard and Trivelli stating that an homogenous low income groups municipality represent funding problems to provide the required facilities with a quality that satisfy the demands of their inhabitants (Campodonico, 2012).

From the before described ‘Municipal Common Fund’ is possible to think that this resource’s re-distribution mechanism should be enough for ‘covering’ funding needs of municipalities with a high number of social dwellers. However, the differences of budgets between rich and poor municipalities are too big. Rich municipalities are few and poor municipalities too many. About this issue, economist Marcel Claude states that from the 345 country’s municipalities the 48% do not accomplish national average of minimum resources per capita. He also provides an example: Vitacura municipality (in Santiago’s ‘high income cone’ area) has a population around 82,000 inhabitants and a budget of 48 million euros approximately. On the other hand Quillota municipality (from the 5th region) has a population of 83,000 inhabitants and a budget of 8 million euros approx., six times less than Vitacura (Claude, 2008). Budgets differences among municipalities constitute a big problem considering budget amounts that ‘poor’ municipalities have to expend in education and health (i.e. Quillota has to provide education to three times more students than Vitacura (high income groups attend private schools)) (Claude, 2008). Considering funding differences among municipalities, the ‘Municipal Common Fund’ appears as an ineffective mechanism as rich and poor municipalities’s contribution is differentiated by only a 5%. Richer municipalities still have considerable higher budgets than poor ones (Claude, 2008).

PRMS 1994 reflection about municipal facilities to allow a decentralization of activities and an improvment of quality of life standards in peripheral areas is an unrealistic intention. Municipality’s with high income groups population are able to offer quality facilities, whereas municipalities with low income group’s population have problems on offering the minimum amount and quality of facilities that their population demands. Appendixes 4, 5 and 6 show Santiago’s schools, hospitals and cultural centers distribution respectively.

e) Roads infrastructure design

PRMS 1994 Chapter 7 considered a ‘road network design’ to improve city’s accesibility (Figure 24). Improve accessibility from all different areas of the city is a fundamental issue in the efforts to counter act city’s segregation patterns. An efficient road network infrastructure could reduce travelling time of inhabitant’s leaving in segregated areas. Since 1994 city’s investment in infrastructure has been important. The intended road design it is more than accomplished. Besides PRMS1994 intended roads infrastructure; regional highways (Figure 35),metropolitan highways (Figure 36) and subway lines have been constructed. Regional highways have improved region’s conectivy and also have allowed four corridor of urban expansion linked to Santiago’s urban area (developments like ZODUC, ADUP, ‘pleasure parcels’, article 55 and historical rural settlements. See previous section (a) Urban-rural limit and expansion areas definition). The redevelopment of Panamerican Highway North has allowed the consolidation of ‘Chacabuco corridor’, G-68 Highway redevelopment has allowed the ‘Curacavi corridor’, G-78 Highway redevelopment has allowed the consolidation of ‘Melipilla Corridor’ and Panamerican Highway South has allowed the development of ‘Paine-Buin corridor’ (Allard, 2009).One of the most evident effects of highways redevelopment is travelling time reduction from city’s center to peripheral urban centers.

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26 Interview with Pablo Trivelli. Trivelli Consultants Director. Conducted the 15th of March, 2012, Santiago, Chile.
Metropolitan Highways have been developed under the name of ‘Urban Highways Concessions’ where a private party takes responsibility of their construction with the benefit of fifty years exploitation (tolls). Five ‘Urban Highways concessions’ have been constructed between 1995 and 2009 (Figure 36). According to Pablo Allard the effect of these developments were a travelling time decrease (Figure 37 and Table 8), market area’s expansion and new territories become available for urban development because of their improved accessibility. Metropolitan Highways increased the pressure for expanding city’s urban limit (Allard, 2009).

<table>
<thead>
<tr>
<th>Origin – Destiny</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Santiago – Melipilla</td>
<td>40 min.</td>
</tr>
<tr>
<td>Santiago – Puente Alto</td>
<td>70 min</td>
</tr>
<tr>
<td>Santiago – Maipu</td>
<td>50 min</td>
</tr>
<tr>
<td>Santiago – San Bernardo</td>
<td>40 min</td>
</tr>
<tr>
<td>Santiago – Colina</td>
<td>40 min</td>
</tr>
</tbody>
</table>

Table 8. Travelling times using ‘Urban Highways Concessions’. Source: Allard (2009)

Infrastructure investments are fundamental for social integration because allow peripheral communities to be part of the opportunities that the city may offer through a diminution of their travelling times and costs. Besides general economic benefits, Metropolitan Highways have serious serious problems regarding urban insertion, surrounding neighborhoods impact and over all connectivity problems with city’s existing roads and transport means (Allard, 2009). Regarding connectivity problems Margarita Greene (2005) conducted a study using ‘Space Syntax’ method (developed in University of London) to assess the incidence of Metropolitan Highways in Santiago’s roads network. In her model three ‘sintax’ measures were considered: ‘global integration’ meaning the accessibility from one space to the others in the system; ‘local integration’ meaning the accessibility from one space to his immediate surrounding spaces; and ‘synergy’ meaning the correlation between the two before mentioned measures. In general terms ‘global integration’ tells about city’s structure, ‘local integration’ shows the relations with immediate surroundings (the neighborhood), and ‘synergy’ shows the ‘apprehension degree’ between city’s

Figure 35. Regional Highways and corridors. Source: Allard (2009)

Figure 36. Metropolitan Highways. Source: Allard (2009)

Figure 37. Travelling time incidence of Metropolitan Highways. Source: Allard (2009)
global structure and neighborhood structures. The results of Greene’s study shows that besides authorities’ intention of increase city’s connectivity, Metropolitan Highways could intensify city’s segregation patterns. Highways implementation not only divides areas of the city in two, also promotes neighborhoods isolation and difficults city’s roads network functioning as a system. The study shows that people moving by the highways will lost contact with neighborhoods on their way, whereas those who circulate by roads outside highways system will lost connectivity with the ‘global city’. This new conditions generated by urban highways will have important social interaction’s implications: on one hand possibililites to live in a city without knowing the neighborhoods that compose it, and on the other hand discourages traveling by the ‘global structure’ (troll payment and global connectivity difficulties for those who do not use the highways). In both cases city’s concept of social space for interactions is being lost and inhabitant’s ‘reclusion’ in already segregated neighborhoods is being fostered (Greene, 2005).

Another effect of urban highways is their incidence over land prices. According to Luis Eduardo Bresciani27 by the time Government was elaborating PDUC modification (2003) there was awareness that every investment in infrastructure meanted a rise in land prices and therefore making even more difficult for the Government and private parties to develop social housing projects inside city’s consolidated areas. ‘Since PDUC proposal there is awareness that land markets were operating imperfectly. Government investments in infrastructure and services finally generated exclusion (of lower income groups). Urban regeneration was creating exclusion because land market answered to infrastructure improvements with a general rise in land prices’ (Bresciani, 2012). Pablo Allard (2009) conducted a study about this issue using land value’s data from Pablo Trivelli. In the case of ‘Costanera Norte Highway’ land values of the immediate surrounding areas rise between 200% and 1300% (Figure 38).

PRMS1994 roads network design was more than achieved. Metropolitan Highways developed between 1995 and 2009 had different effects for city’s inhabitants. While those leaving in the peripheral lands benefit from an easy access to city’s centre, inhabitants leaving in city’s consolidated area have experienced a ‘fragmented’ city where city travels are determined by urban highways new ‘global connectivity’ and in some cases neighborhoods connectivity’s (local) is hampered by the ‘boundaries’ that highways imply.

Internal Effectiveness Overview

As reviewed in the previous paragraphs, PRMS 1994 five norms (Table 7) related to achieve plan’s ‘intended strategy’ regarding segregation (‘Through higher densities and planned urban land extensions allow low income group’s access to city’s consolidated areas; and improvement of existing low income segregated areas through city’s activities decentralization’) have not been fully implemented. Higher densities allowed developing social

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27 Interview with Luis Eduardo Bresciani: Between 2000 and 2003 worked as MINVU’s Region Metropolitana Regional Secretary, between 2003 and 2010 worked as MINVU’s Urban Development Division General Manager. Conducted the 22th of March 2012, Santiago, Chile.
dwellings until 1998; current residential developments inside city’s consolidated (planned extension areas) areas are only possible for middle and high income groups due to the rising prices of Santiago’s land market. (land prices in Santiago hamper social housing project’s financial feasibility). Furthermore, densities in some municipalities are used to block the development of new social housing projects (setting low densities). An important resource of municipalities’ budget is inhabitant’s local land taxes (contributions), as social housing dwellers do not pay contributions the development of new social housing projects is seen as a ‘burden’ as they do not mean resources and at the same time they demand facilities and services that municipalities are not able to provide. Municipalities ‘budget issues’ is also related to PRMS 1994 consideration about municipal provision of facilities to allow city’s decentralization. Municipalities that concentrate a high number of social housing dwellers (south and north-west segregated) have problems on collecting the required funds for the facilities and services that their inhabitants need. Rich municipalities in the city have high quality facilities, whereas ‘poor’ municipalities have facilities in an insufficient number and low quality. PRMS 1994 roads network design have been more than achieved. City’s investments in infrastructure (regional highways, metropolitan highway, subway) have meant connectivity improvements between city’s centre and peripheral areas. This situation represents an important improvement for low income segregated area as their travelling time to city’s center has been reduced. However, city’s local connectivity among neighborhoods has been reduced as metropolitan highways imply ‘boundaries’ that interrupt city’s traditional roads network. Considering all before mentioned points, PRMS 1994 ‘internal effectiveness’ is rated as relative: most of the norms related to segregation were not implemented or did not have the expected result. However, infrastructure investment opens a new set of possibilities to counter act city’s segregation patterns (Allard, 2012).

EXTERNAL EFFECTIVENESS: LOW

This section is intended to state the extent in which PRMS 1994 is responding to the challenges that Santiago’s urban socio economic segregation patterns are demanding (see sections2.6 and 2.7). More than been an instrument that helps to counter act city’s segregation problems, throughout time have become one of the reasons to explain city’s socio economic segregation patterns. According to Ana Sugranyes28, PRMS 1994 together with Chilean Housing Policy have consolidated a system that repeats the same segregation problems throughout time (Sugranyes, 2012).

Regarding city’s first two segregation patterns ((1) High income group’s ‘cone’ in city’s eastern area, (2) Low income groups segregation in city’s south and north-west areas) it can be stated that PRMS 1994 norm about densities per municipality allowed their consolidation. Municipalities composing ‘high income group’s cone’ were designated as municipalities with low or middle densities (exception of Providencia who has high density) (Figure 33) making unaffordable social housing projects in those areas due the land prices involved and the demand from other sectors (offices, commerce, retail, etc) for being located in those areas due to their ‘premium’ facilities and infrastructure, and also due to the acquisitive capacity of the higher income inhabitant’s living there. ‘Regulatory plan’s restrictions imply costs that can only be assumed by those who are able to afford it’ (Sabatini, 2012). On the other hand, municipalities in the south and north-west areas of the city were designated with high densities (Figure 33) making financially possible to develop social housing projects (Appendix 7). During 80’s and 90’s these municipalities received massive social housing projects (Rodriguez, 2012) allowing the consolidation of extended areas of social homogeneity. Socio economic segregations implies extended areas of the city with social homogeneity where their inhabitants have to travel long distances to find something different than residential areas of their own group. Socio economic segregation represents negative effects over the human capital as inhabitants of deprived neighborhood have problems to access the labor market and also they receive lower salaries due to the ‘residential stigma’ of living

28 Interview with Ana Sugranyes. Habitat International (ONG) Director. Conducted the 5th of March 2012, Santiago, Chile.
in areas considered as places of crime by the rest of the society (Sabatini, 2003). The problems of segregated areas inhabitants to access the labor market and the different social networks is given by the long travel times to potential work places, the lack of information about job opportunities (neighborhood isolation) and the insufficient access to the infrastructure and services that the city may offer. Also inhabitants of segregated areas cultivate feelings of exclusion and to do not have a role inside society. These feelings are observable in the high indexes of school dropout, youth unemployment, teenage pregnancy, crime and drug addiction (Sabatini, 2001) (Sabatini, 2003) (CEPAL, 2006). PRMS 1994 also considered a ‘decentralization’ of activities trusting in municipalities’ development of facilities and a road’s network design to improve city’s connectivity. As shown in the previous paragraphs ‘poor’ municipalities do not have the sufficient budget to provide facilities with the number and quality that their inhabitant’s need. City’s road’s network development (mostly regional highways, metropolitan highways and subway lines) has allowed an improvement in city’s connectivity. However the result of these investments regarding south and north-west segregated areas are still not visible. Only regional highways influence can be observed, perhaps because of their longer existence they have allowed the growth and arrival of middle income groups that benefits from the connectivity of these roads (segregation trend number 2, see scion 2.7).

Regarding the third segregation pattern ((3) New low income inhabitants city’s exclusion) it was reviewed in the previous paragraphs that city’s land values are the main reason behind new low income inhabitants exclusion. As Pablo Trivelli (2010) argues, since 1998 is not possible to develop social housing project’s inside city’s consolidated areas due to land values that hampers project’s financial feasibility (see section Internal Effectiveness: a) Urban-rural limit and expansion areas definition). Some argue that urban limit have direct relation with land values increase because these regulation imply an artificial supply restriction. In 1979 a new metropolitan regulatory plan was implemented, the urban limit was abolished and all Santiago Province was considered as urban land. Regarding 1979 metropolitan regulatory plan, MINVU’s (Urbanism & Housing Ministry) states in 1981: ‘constantly it has been declared that urban land is a scarce and irreplaceable resource. This consideration has led to constant land prices distortions because of artificial supply restrictions with urban limits’ (MINVU, 1981). In 1996 Luis Larrain an important economist from ‘Development and Freedom’ (Libertad y Desarrollo) think tank argues that: ‘urban limit definitions distorts market normal functioning because it creates an apparent shortage of urban land and therefore increases urban land prices. The worst effect of this is that land prices increase implies dwelling’s price increase and therefore makes housing market even more unaccesible for low income groups’ (Larrain, 1996). Following the same line, in 1997 Harald Beyer economist from CEP Center of Studies states: ‘an indisputable fact is that urban growth limitations (urban limit) implies land values considerable increases’ (Beyer, 1997).

Francisco Sabattini has a different opinion about the relation between urban limit and land prices. In his study ‘Santiago’s Land Market Reform’ (2000) he was able to measure land prices variances according to urban limit abolition in 1979 and re establishment of urban limit in PRMS 1994. Regarding abolition of urban limit Sabatini states that this operation did not implied a land prices decrease ‘urban limit liberalization’ did not produce a land prices decrease. Contrary, land prices have risen steadily since 1979’ (Sabatini, 2003). About urban limit re-establishment Sabatini argues that did not implied an increase in land values ‘land prices were not affected by Governmental decision of substracting 40.000 ha from Santiago’s urban area’ (Sabatini, 2003). From Sabatini statements it is possible to state that PRMS 1994 urban limit did not meaned land prices increase, or at least is not the only factor that could explain this phenomenon. PRMS 1994 urban limit cannot be related to new low income group’s exclusion from city’s consolidated ares (city’s third segregation pattern). Santiago’s’s land market and his relations with city’s segregation patterns will be reviewed in the following chapter (Chapter 4: OTHER PLANNING INSTRUMENTS / URBAN DYNAMICS WITH INCIDENCE OVER SEGREGATION).

Considering the incidence of PRMS1994 in the consolidation of two city’s segregation patterns , the intended strategy of ‘Through higher densities and planned urban land extensions allow low income group’s access to
city’s consolidated areas; and improvement of existing low income segregated areas through city’s activities decentralization’ is considered as ineffective to solve city’s problems of segregation.

3.5.2 Chacabuco – ADUP – ZODUC 1997 ‘internal’ and ‘external’ effectiveness

From section 3.4.2 one implicit goal regarding segregation was identified: ‘Generate urban land that makes possible to construct social dwellings’ (number 10 in Table 6). One explicit norm (‘Special density for social housing projects in AUDP developments: 300 in/ha.’ (number 9 in Table 6)) and two implicit norms (‘ZODUC’s developments have to consider a 2% of their total surface for densities between 300-400 in/ha, and a 3% for densities between 401-500 in/ha’ (number 11 in Table 6); and ‘ZODUC’s developments have to consider a 5% of their total surface for productive or services activities (employment generation)’ (number 12 in Table 6)) were also identified. Considering before mentioned ‘explicit’ and ‘implicit’ objectives/norms, Chacabuco – ADUP – SODUC 1997 ‘intended strategy’ is defined according to already identified ‘implicit objective’: ‘Generate urban land that makes possible to construct social dwellings’ (Table 9). Intended strategy sentence use the phrase ‘makes possible’, because as reviewed in section 3.4.2 the different norms enable social housing projects, but their inclusion is not mandatory.

<table>
<thead>
<tr>
<th>Chacabuco – ADUP – ZODUC 1997</th>
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<tbody>
<tr>
<td><strong>Intended strategy</strong></td>
</tr>
<tr>
<td><strong>Norms</strong></td>
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**INTERNAL EFFECTIVENESS: LOW**

Chacabuco – ADUP – ZODUC 1997 ‘Internal effectiveness’ is rated as low due to the following points related to norm’s implementation:

(a) Special density for social housing projects in AUDP developments: 300 in/ha.

Two residential complexes have been developed using ADUP mechanism: Valle Grande (with a total surface of 480 ha and considering 12,000 dwellings (Table 10)) and Larapinta (with a total surface of 300 ha and considering 8,500 dwellings (Table 10)). Both of them were aimed to receive middle and middle-low socio economic groups (Hidalgo, 2009). Dwellings for middle income groups are those called ‘First Market Dwellings’, meaning dwellings prices that are just above Chilean Housing Policy subsidies (>68.000 euros aprox.)(MINVU, 2012). Dwellings for middle-low socio economic groups are those between 34,000 and 68,000 euros approx. and are subject of Chilean Housing Policy Subsidy ‘Title 2’ (the subsidy varies according to dwelling’s price). Dwellings for low income groups are those with prices until 34,000 euros approx and are subject of Chilean Housing Policy Subsidy ‘Title 1’ (Chilean Housing Policy will be reviewed in Chapter 4). The cheapest dwelling in Larapinta is around 40,000 euros (middle low income dwelling) (SOCOVESA, 2012). The cheapest dwelling in Valle Grande is around 37,000 euros (middle low income dwellings) (Valle Grande, 2012). No low income group’s dwellings have been constructed under ADUP mechanism.

(b) ZODUC’s developments have to consider a 2% of their total surface for densities between 300-400 in/ha, and a 3% for densities between 401-500 in/ha.
Three major residential complexes have been developed using ZODUC mechanism: Piedra Roja (with a total surface of 1.300 ha and considering 12.000 dwellings (Table 10)), Valle Norte (with a total surface of 1.600 ha (no info about total number of dwellings)) and La Reserva (with a total surface of 740 ha and considering 4500 dwellings (Table 10)). According to Rodrigo Hidalgo (2009) all ZODUC developments have been developed oriented to middle-high and high income groups. The cheapest dwelling in Piedra Roja is around 204.000 euros (Piedra Roja, 2012), in Valle Grande is around 208.000 euros (Valle Norte, 2012) and in La Reserva is around 226.000 euros (La Reserva, 2012). No low income group’s dwellings have been constructed under ZODUC mechanism.

Compulsary surface percentage to be developed under high densities is been posposed by private developers (Allard, 2012). Chacabuco-ADUP- ZODUC Norm states no mandatory obligations regarding social dwellings neither about phases of the project when project’s surfaces of high density have to be developed (see section 3.3.2 Santiago’s Metropolitan Regulatory Plan (PRMS) (b) Chacabuco Province addition to PRMS and ADUP - ZODUC instruments (1997))

(c) ‘ZODUC’s developments have to consider a 5% of their total surface for productive or services activities.

Considering ADUP and ZODUC developments 19 schools, 4 universities, 10 sport centers, 21 shopping centers, 3 health centers, 5 churches and 2 club houses have been constructed (Hidalho, 2009). Also ADUP and ZODUC have constructed as mitigations three highways that connect their developments with city’s consolidated area: Pie Andino Highway, Radial Nor-Oriente Highway and Del Valle Avenue (Hidalgo, 2009). However, non social dwellings (constructed by ADUP or ZODUC developments) have benefited from theses services and connectivity.

<table>
<thead>
<tr>
<th></th>
<th>Piedra Roja</th>
<th>Valle Norte</th>
<th>La Reserva</th>
<th>Larapinta</th>
<th>Valle Grande</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Surface</td>
<td>1.300 ha</td>
<td>1.600 ha</td>
<td>740 ha</td>
<td>300 ha</td>
<td>480 ha</td>
</tr>
<tr>
<td>Dwelling’s number</td>
<td>12.000</td>
<td>--</td>
<td>4.500</td>
<td>8.500</td>
<td>12.000</td>
</tr>
<tr>
<td>Plot surfaces</td>
<td>700 – 4,800 sqm</td>
<td>700 – 1000 sqm</td>
<td>800 – 5000 sqm</td>
<td>200 sqm</td>
<td>120 – 240 sqm</td>
</tr>
<tr>
<td>Dwelling’s surface</td>
<td>170 – 320 sqm</td>
<td>140 – 193 sqm</td>
<td>--</td>
<td>55 – 96 sqm</td>
<td>47 – 100 sqm</td>
</tr>
<tr>
<td>Facilities</td>
<td>10 schools</td>
<td>3 schools</td>
<td>1 shopping center</td>
<td>2 shopping centers</td>
<td>1 university</td>
</tr>
<tr>
<td></td>
<td>2 universities</td>
<td>1 university</td>
<td>2 supermarkets</td>
<td>2 schools</td>
<td>4 schools</td>
</tr>
<tr>
<td></td>
<td>9 sport centers</td>
<td>1 club house</td>
<td>1 health center</td>
<td>1 club house</td>
<td>1 shopping center</td>
</tr>
<tr>
<td></td>
<td>17 commercial stores</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 health centers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 churches</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 10. ADUP and ZODUC developments. Source: Hidalgo (2009)

*Internal Effectiveness Overview*

As stated in section 3.4.2, ADUP-ZODUC instrument never included a mandatory regulation regarding social dwellings construction. There were only high densities stipulated that could allow social dwellings development (Bresciani, 2012). According to Chacabuco – ADUP – ZODUC 1997 Norm (MINVU’s SEREMI Region Metropolitana, 1997) is compulsory to develop some plot surface with high densities. However, there is nothing stated about when this densities should be included. Private developers have chosen to pospose high density developments and start project’s first phases with low density housing complexes. As that the possibility of generate urban land for social dwellings has not been used.

**EXTERNAL EFFECTIVENESS: LOW**

ADUP – ZODUC instruments offers the opportunity to generate urban land were social dwellings can be located. This condition matches with the third pattern of segregation stated in section 2.7: (3) New low income inhabitants city’s exclusion. As no social dwellings have been developed, ADUP – ZODUC instruments appear as an un-effective mechanism to generate urban land for social dwellings, as private developers are not interested
in developing project’s of high density in the peripheral areas of the city. If in the future social dwellings were constructed in ADUP – ZODUC areas (high density requirement do not mean that social dwellings should be constructed; dwellings for any other socio economic group are possible to) it should be reviewed in which condition they will be located. Every ADUP – ZODUC development are ‘gated communities’ with access only for their inhabitants of for whom they choose to allow in. Also there is a clear differentiation between ADUP and ZODUC regarding socio economic groups. ADUP developments are for middle and middle low income groups, whereas ZODUC developments for high income groups. This differentiation is possible because of land values (higher in ZODUC) and connectivity to city’s consolidated area (Hidalgo, 2009). According to Rodrigo Hidalgo (2009) socio economic groups interactions in these developments will be restricted. On one hand, per each development all their inhabitants will be from the same socio economic group, and on the other hand the development of ‘integrated’ neighborhoods (if high densities are destined for social housing) will not imply a ‘fluid’ interaction or communication as this ‘relations’ will only occur in ‘border’ spaces (absence of a public space of meeting, everything is gathed). Ghated communities could mean a weakening in the public governance of future cities and also could reproduce problems from city’s consolidated areas that inhabitants from ADUP – ZODUC developments are trying to escape from: discrimination, segregation, violence and un-security (Hidalgo, 2009).

3.5.3PDUC 2003 ‘internal’ and ‘external’ effectiveness

From section 3.4.3 one implicit objective was identified: Urban land generation that allows the construction of social dwellings in mixed neighborhoods (number 14 in Table 6). Also one explicit norm (30% of total dwellings have to be subject of housing subsidies. Those dwellings can be developed with a max. density of 400 in/ha. 40% of the social dwellings have to be subject of ‘FondoSolidario de Vivienda 1’ (number 13 in Table 6)) and one implicit norm (PDUC’s developments have to consider a 5% of their total surface for productive or services activities (number 15 in Table 6)) regarding segregation were identified. Considering before mentioned ‘explicit’ and ‘implicit’ objectives/norms, PDUC 2003 ‘intended strategy’ is defined according to already identified ‘implicit’ objective: Urban land generation that allows the construction of social dwellings in mixed neighborhoods (Table 11).

<table>
<thead>
<tr>
<th>PDUC 2003</th>
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</thead>
<tbody>
<tr>
<td><strong>Intended strategy</strong></td>
</tr>
</tbody>
</table>
| **Norms**                          | (a) 30% of total dwellings have to be subject of housing subsidies. Those dwellings can be developed with a max. density of 400 in/ha. 40% of the social dwellings have to be subject of ‘FondoSolidario de Vivienda 1’.  
(b)ZODUC’s developments have to consider a 5% of their total surface for productive or services activities. |

Table 11. PDUC 2003 ‘Intended strategy’ and norms regarding segregation.

**INTERNAL EFFECTIVENESS: LOW**

PDUC 2003 ‘Internal effectiveness’ is rated as low due to the following points related to norm’s implementation:

(a) 30% of total dwellings have to be subject of housing subsidies. Those dwellings can be developed with a max. density of 400 in/ha. 40% of the social dwellings have to be subject of ‘FondoSolidario de Vivienda 1’.

(b)ZODUC’s developments have to consider a 5% of their total surface for productive or services activities.
Due to problems in PDUC’s approval procedure (see section 3.3.2 Santiago’s Metropolitan Regulatory Plan (c) PDUC: Conditioned Development Urban Projects, 2003, regarding approval procedure) no single PDUC development has been constructed. Therefore the internal effectiveness (norms implementation regarding segregation) is rated as low.

PDUC’s problems can be divided in ‘legal’ and ‘implementation’ problems. According to Ivan Poduje PDUC development have ‘legal problems’ because their contents regarding urbanization rights according to conditions to be achieved (see section 3.3.2 Santiago’s Metropolitan Regulatory Plan (c) PDUC: Conditioned Development Urban Projects, 2003) are not according to Urbanism & Constructions General Law (LGUC) (Poduje, 2012). Reviewing LGUC it can be stated that ‘urbanism by conditions’ is not included in the law. Urbanism by conditions was established in the year 1997 with ADUP-ZODUC instrument, and it was again implemented in PDUC proposal. The approval of these instruments by ‘Contraloría General’ ((Independent Chilean institution that supervise administrative power act’s legality) was an act of ‘political willingness’, as all actors involved in the urban discussion during those years understood that there was a need of new urban land to satisfy Santiago’s residential demands (Poduje, 2012). However, currently that ‘political willingness’ is not unanimous any more, so PDUC developments are carefully reviewed by all the institutions that take part in their approval procedure (Bresciani, 2012).

PDUC’s implementation problems are related to approval procedure stated in PDUC’s Norm (MINVU’s SEREMI Region Metropolitana, 2003). PDUC’s approval process consists on the following steps: (1) MINVU’s SEREMI Region Metropolitana ‘Preliminary Report’, where PDUC’s requirements related to zoning and facilities are checked, (2) Agriculture Ministry’s SEREMI ‘Positive Advice’, the proposed plan will be analyzed according to the use of valuable agricultural land and if the proposal consider ‘buffer works’ to protect surrounding agricultural lands. In the case that the proposal is using agricultural lands of high value, Agriculture Ministry’s SEREMI can propose a ‘repositioning plan’, (3) Municipality’s ‘Positive Advice’, the municipality where the proposal is located will check his relation to existent urban areas, concordance with Municipal Regulatory Plan and also an analysis of proposal’s financial implications, (4) ‘Environmental Impact’ studies considering risk studies, sanitary feasibility, transport strategic plan and ‘traffic impact’ studies. The different studies are reviewed by different Governmental bodies like Mining Ministry’s SEREMI, Public Works Ministry’s SEREMI, Transport Ministry’s SEREMI and Transport Planning Inter-Ministerial Secretary (SECTORA), (5) ‘Environmental Impact’ positive advice from Environment Regional Commission (COREMA) and (6) definitive approval by ‘Regional Government Council’ (GORE). Once all steps are accomplished the Municipality is responsible to monitor PDUC’s implementation according to what was approved (MINVU’s SEREMI Region Metropolitana, 2003).

According to Roberto Moris PDUC’s approval process is extremely slowly and without any criteria that the institutions involved could use to evaluate the proposals (Moris, 2012). Pablo Contrucci (2006) agrees with this vision arguing that the lack of methodology in the different steps of approval is hampering instrument’s success. Also many of the Governmental bodies involved never had participation in city’s urban processes, so their duties regarding PDUC’s are not seen as priority. Right now all PDUC developments (three proposals: Urbania, ENEA and Lo Aguirre City) are tramped in Transport Ministry SEREMI approval (Allard, 2012). The discussion is about road’s mitigations to be constructed on each phase of the developments. Transport Ministry argues that to start any urban development all roads have to be constructed as they operate as a system and also there is a risk of saturate surrounding highways (G-68 Highway). Private developers want to construct the roads according to each project phase. Despite this discussion all other approval steps are ready but there is no certainty about when these negotiations will be over (Allard, 2012). From PDUC experience it can be learned

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29 Interview with Ivan Poduje. Atisba Consultants Director. Conducted the 20th of March 2012, Santiago, Chile.
30 Interview with Roberto Moris: Between 2000 and 2010 worked as MINVU’s Minister Consultant and also as MINVU’s Urban Projects Division Manager (DPU). Conducted the 15th of March 2012, Santiago, Chile.
that ‘urbanism by conditions’ in Chilean culture of normative regulatory plans is a complex process that requires more preparation from the institutions involved and clear criteria of analysis (Moris, 2012).

EXTERNAL EFFECTIVENESS: LOW

The external effectiveness of PDUС 2003 regarding Santiago’s segregation patterns is rated as low: no PDUС development has been approved so their potential of adding new urban lands where social dwellings could be build in mixed neighborhood has not been achieved. Moreover, according to Luis Eduardo Bresciani31 PDUС 2003 is not an instrument aimed to solve city’s segregation problems, because it is not a strong argument to say that segregation will be addressed by placing low income groups in city’s peripheral areas (Bresciani, 2012). What PDUС instrument posibilitates is to have less segregated future urban areas, but city’s segregation problems will remain the same (Bresciani, 2012). PDUС’s percentage of dwelling’s total number destined to social dwellings can also be seen as another cost that private developers have to pay to develop their businesses. Land for facilities, green areas or social dwellings can be used in much more profitable ways, but the idea is to ensure the quality and equity of future urban areas (Bresciani, 2012). Claudia Campodonico express some doubts about the future ‘integration’ of social dwellings in this developments as project’s minimum plot is so big that social dwellings would be placed in the worst lands repeating segregation problems at a smaller scale (Campodonico, 2012).

3.5.4 PRMS100 2008 ‘internal’ and ‘external’ effectiveness

From section 3.4.4 one ‘explicit’ objective (‘A more integrated city’. Reverse city’s segregation patterns making possible for low income groups to have dwellings close to city’s networks (number 16 in Table 6), and two ‘implicit’ objectives (‘Besides minimum plot surface for social dwellings, due to local demands more social dwellings than the minimum should be constructed’, ‘A better connected city’. Ensure expansion areas connection with city’s consolidated sub-centers’ (number 18-19 in Table 6)) were identified. Also one ‘explicit’ norm (To apply for a density of 150 in/ha developments have to consider a 8% of surface of each project phase for social dwellings’ (number 17 in Table 6)) and one ‘explicit’ norm (New added urban areas design including roads infrastructure to construct and required green areas (number 20 in Table 6)) were identified regarding segregation. Considering before mentioned ‘explicit’ and ‘implicit’ objectives/norms, PRMS100 2008 ‘intended strategy’ is defined as: ‘Urban lands for social dwellings in areas connected to city’s existing networks’ (Table 12).

<table>
<thead>
<tr>
<th>PRMS100 2008</th>
<th>‘Urban lands for social dwellings in areas connected to city’s existing networks’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intended strategy</td>
<td>(a) To apply for a density of 150 in/ha developments have to consider a 8% of surface of each project phase for social dwellings.</td>
</tr>
<tr>
<td></td>
<td>(b) New added urban areas design including roads infrastructure to construct and required green areas.</td>
</tr>
</tbody>
</table>

Table 12. PRMS100 2008’Intended strategy’ and norms regarding segregation.

INTERNAL EFFECTIVENESS: LOW

PRMS100 2008 ‘Internal effectiveness’ is rated as low due to the following points related to norm’s implementation:

31 Interview with Luis Eduardo Bresciani: Between 2000 and 2003 worked as MINVU’s Region Metropolitana Regional Secretary, between 2003 and 2010 worked as MINVU’s Urban Development Division General Manager. Conducted the 22th of March 2012, Santiago, Chile.
(a) To apply for a density of 150 in/ha developments have to consider a 8% of surface of each project phase for social dwellings.

(b) New added urban areas design including roads infrastructure to construct and required green areas.

PRMS100 2008 modification has not been approved legally as a valid instrument; therefore its ‘internal’ effectiveness is rated as low because there is no implementation of any of his norms regarding segregation. According to Luis Eduardo Bresciani PRMS100 instrument has almost the same content than PDUC instrument, the main difference in their legal arrangements was that during the time of PDUC elaboration (2003) there was a ‘political willingness’ of the different actors that take part in the urban discussion to approve a plan to provide the city with more urban land. Particularly, ‘Contraloria General’ ((Independent Chilean institution that supervises administrative power act’s legality)) had a director that allowed PDUC’s legality. By the time of PRMS100 enactment (2009) there was a new ‘Contraloria General’ director that objected instrument’s legality as ‘urbanism by conditions’ concept is not included in Chilean ‘Urbanism & Constructions General Law’ (LGUC) (Bresciani, 2012). Many objections were formulated by ‘Contraloria General’, for instance PRMS100 first proposal included the norm related to segregation of 18% of project total dwellings (per phase) have to be social dwellings. This requirement was objected because in no part of LGUC is sated the ability of regulatory plan to ask for dwelling’s number. In PRMS100 re-entry to ‘Contraloria General’ this norm was changed to a percentage of surface for social dwellings (‘To apply for a density of 150 in/ha developments have to consider a 8% of surface of each project phase for social dwellings’). It was a change of ‘legal subtlety’ because regulatory plans are able to ask for land percentages but they cannot ask for measure units. However the discussion in ‘Contraloria General’ continues (Bresciani, 2012). According to Ivan Poduje the only way for PRMS100 instrument legal approval is in the same direction than PDUC aprovement: political willingness or a modification of LGUC that requires a parliamentary discussion that could take for ever (Poduje, 2012).

About PRMS100 content, Luis Eduardo Bresciani believes that if the instrument is legally approved could represent important advances in project’s approval procedure (main problem of PDUC instrument). In PDUC developments private developers were responsible for future urban areas design (surface, roads, parks, etc), in PRMS100 proposal future urban areas are already designed by the ‘Government’ (actually they are designed by MINVU’s SEREMI Region Metropolitana) stating an urban limit, roads, parks and a set of requirements that private developers have to consider to develop those areas (Bresciani, 2012). PRMS100 improvements are related to settle down a clear framework regarding roads & infrastructure, green areas and facilities requirements. As there is no law that norms how private parties have to construct the different requirements, PRMS100 pre-design contributes to facilitate public-private negotiations regarding conditions (Bresciani, 2012). Another potential benefit from PRMS100 proposal ‘future urban areas pre-design’ is that is the ‘State’ who is planning, avoiding PDUC’s problems were the different public institutions involved in project’s approval consider those projects as private initiative that did not required priority among ministerial duties (Bresciani, 2012).

According to Ivan Poduje, PRMS100 potential benefit regarding segregation is that could generate urban land for social dwellings in areas relatively close to city’s consolidated areas opportunities, and at the same time foster neighborhoods with a higher level of social heterogeneity (Poduje, 2012). Pablo Allard believes that PRMS100 benefit is the physical continuity with city’s consolidated areas (infrastructure and social networks) that could allow achieving neighborhoods connected to city’s opportunities (Allard, 2012). Also an important difference among PRMS100, PDUC and ZODUC developments, is that PRMS100 proposal consider project’s

32 Interview with Luis Eduardo Bresciani: Between 2000 and 2003 worked as MINVU's Region Metropolitana Regional Secretary, between 2003 and 2010 worked as MINVU’s Urban Development Division General Manager. Conducted the 22th of March 2012, Santiago, Chile.
33 Interview with Ivan Poduje. Atisba Consultants Director. Conducted the 20th of March 2012, Santiago, Chile.
34 Interview with Pablo Allard. Universidad del Desarrollo Architecture Faculty Dean, Harvard University PhD in Urban Planning & Transport. Conducted the 16th of March 2012, Santiago, Chile.
minimum surface of 60 ha (PDUC and ZODUC minimum surface of 300 ha), as the required surface for social dwellings is compulsory per each phase of the projects the addition of social dwellings to Santiago’s housing market could be faster (Allard, 2012). Ana Sugranyes\textsuperscript{35} has a different opinion, according to her private developers will find the ‘loopholes’ to do not construct social dwellings in PRMS100 developments as they hamper the financial feasibility of their projects (Sugranyes also provide the example of ZODUC developments were private developers did not construct any social dwellings. From section 3.4.4 it was stated that Chacabuco-ADUP-ZODUC modification never considered a compulsory norm related to social dwellings construction).

\textbf{EXTERNAL EFFECTIVENESS: LOW}

The external effectiveness of PRMS100 2008 regarding Santiago’s segregation patterns is rated as low: as PRMS100 instrument has not been ‘legally approved’ there is no achievement related to city’s segregation pattern. The addition of new urban lands for social dwellings in areas connected to city’s existing networks could contribute to solve city’s third segregation pattern: ‘New low income inhabitants city’s exclusion’ (see sections 2.6.2.7), however the effectiveness of this measure will depend first of all in proposal’s legal approval by ‘Contraloria General’.

According to Luis Eduardo Bresciani\textsuperscript{36} PRMS100 proposal is aimed to ensure that low income groups have access to urban lands (Bresciani, 2012). However, Roberto Moris\textsuperscript{37} believes that the first objective of PRMS100 proposal is to create more urban land to facilitate real estate developments; a percentage of land is included for social dwellings but the proposal cannot be justified as an instrument to counteract segregation. What is possible to achieve with PRMS100 are neighborhoods with some degree of social mix, but city’s segregation problems are still there. PRMS100 proposal acts over city’s peripheral areas, so the ‘dream of an integrated city’ is again postponed (Moris, 2012). Pablo Trivelli\textsuperscript{38} agrees with this vision being very drastic about his evaluation of the plan: ‘PRMS100 justification of generating land to respond the demand of low income groups is a ‘big lie’, if the Government wants to solve city’s segregation problems other measures are required’ (Trivelli, 2012). Ana Sugranyes believes that PRMS100 proposal settle down the required mechanisms to facilitate real estate businesses, according to her there is no concrete proposal regarding social integration. Sugranyes also states that facing segregation problem from ‘market parties’ is not possible as they have a profit aim that conflicts with the measures that are required to solve segregation problems; after 30 years of the same regulatory plans and housing policy were the ‘market’ takes responsibility of social dwelling’s development, city’s segregation patterns have only been intensified (Sugranyes, 2012). Pablo Trivelli also reflects about the number of social dwellings that could be possible to develop with PRMS100 mechanism. According to his estimations in PRMS100 6.500 hectares it will be possible to construct 29.340 social dwellings (considering the compulsory 8% and Chielan social dwellings standard surface). These 29.340 social dwellings are equal to 1.5 times social dwellings constructed during year 2004, and three times than those constructed during year 2006. According to Pablo Trivelli PRMS100 required surface for social dwellings will only allow to satisfy Santiago’s demand for social dwellings during two or three (if the lands included in PRMS100 are fully developed) (Trivelli, 2010). Trivelli also wonders which one was the need of PRMS100 if PDUC instrument is operative. In PRMS100 proposal explanatory report there is no evaluation regarding similar instruments (PDUC, ZODUC), if those instrument are not performing properly, which one is the reason of that (public management, private parties, content?). Trivelli believes that PRMS100 is an immature proposal that do not reflect about previous experiences and formulates objectives (like segregation) that are not possible to address with the norms

\textsuperscript{35} Interview with Ana Sugranyes. Habitat International [ONG] Director. Conducted the 5\textsuperscript{th} of March 2012, Santiago, Chile.

\textsuperscript{36} Interview with Luis Eduardo Bresciani: Between 2000 and 2003 worked as MINVU’s Region Metropolitana Regional Secretary, between 2003 and 2010 worked as MINVU’s Urban Development Division General Manager. Conducted the 22\textsuperscript{th} of March 2012, Santiago, Chile.

\textsuperscript{37} Interview with Roberto Moris: Between 2000 and 2010 worked as MINVU’s Minister Consultant and also as MINVU’s Urban Projects Division Manager (DPU). Conducted the 15\textsuperscript{th} of March 2012, Santiago, Chile.

\textsuperscript{38} Interview with Pablo Trivelli. Trivelli Consultants Director. Conducted the 15\textsuperscript{th} of March, 2012, Santiago, Chile.
contained in the document (Trivelli, 2012). Pablo Allard\(^\text{39}\) also express major’s concern of those municipalities involved in PRMS100 modification. Majors are afraid that the development of more social dwellings in PRMS100 future urban areas could increase the demand for facilities and services (see section 3.5 Regulatory Plans ‘Internal’ and ‘External’ Effectiveness, (d) Facilities requirements per municipality according to population size and type of road where they are located). Also majors believe that those facilities and park that will be provided by private developers (parks, rodas, etc) after some years will become municipal responsibility (Allard, 2012).

On the other side, Luis Eduardo Bresciani\(^\text{40}\) reflects about the relevance of PRMS100 regarding city’s socio economic segregation. PRMS100 is the first regulatory plan in Chilean history that state as an explicit objective the issue of solving segregation problems. According to Bresciani before this plan segregation problem was always ignored. Every time that segregation issue appears over the table, Governments and politicians posposed its discussion. During former Government (2006-2010) segregation problems were considered subject of ‘public responsibility’, as all metropolitan Chilean cities (>500,000) were experiencing the exclusion of low income groups from city’s urban lands (Bresciani, 2012). Measures from this Government to solve segregation problems were the elaboration of PRMS100 proposal and the implementation of localization and integration subsidies (to be explained in Chapter 4: OTHER PLANNING INSTRUMENTS / URBAN DYNAMICS WITH INCIDENCE OVER SEGREGATION: Housing Policy) (Bresciani, 2012). Bresciani also states that PRMS100 will allow to have ‘reserved urban land’ for low income dwellings that from ‘market dynamics’ would never be possible. Also market parties developing residential complexes in PRMS100 pre-designed areas will have to accomplish a set of requirements that will ensure the location of social dwellings in neighborhoods with proper quality standards (Bresciani, 2012).

*Municipal Regulatory Plans*

**3.5.5 San Joaquin’s Municipal Regulatory Plan ‘internal’ and ‘external’ effectiveness**

From section 3.4.5 two ‘implicit’ objectives (Foster policies implementation regarding integration opportunities: Foster private real estate investments; hosing stock re development (numbers 21-22 in Table 6)), and one ‘implicit’ norm (17 residential purpose classifications with difference densities (starting from a minimum density of 56 in/ha until the highest density of 2800 in/ha) and minimum plot size (from 128 m\(^2\) until 2000 m\(^2\) (number 23 in Table 6)) were identified regarding segregation. Considering before mentioned ‘implicit’ objectives and norm, San Joaquin’s Municipal Regulatory Plan ‘intended strategy’ is defined as: ‘Housing stock re-development and attract real estate investments’ (Table 13).

<table>
<thead>
<tr>
<th>San Joaquin’s Municipal Regulatory Plan</th>
<th>‘Housing stock re-development and attract real estate investments’</th>
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<tbody>
<tr>
<td><strong>Norms</strong></td>
<td>(a) 17 residential purpose classifications with difference densities (starting from a minimum density of 56 in/ha until the highest density of 2800 in/ha) and minimum plot size (from 128 m(^2) until 2000 m(^2)).</td>
</tr>
</tbody>
</table>

*Table 13. San Joaquin’s Municipal Regulatory Plan’intended strategy’ and norms regarding segregation.*

**INTERNAL EFFECTIVENESS: RELATIVE**

San Joaquin’s Municipal Regulatory Plan ‘Internal effectiveness’ is rated as relative due to the following points related to norm’s implementation:

\(^{39}\) Interview with Pablo Allard. Universidad del Desarrollo Architecture Faculty Dean, Harvard University PhD in Urban Planning & Transport. Conducted the 16th of March 2012, Santiago, Chile

\(^{40}\) Interview with Luis Eduardo Bresciani: Between 2000 and 2003 worked as MINVU’s Region Metropolitana Regional Secretary, between 2003 and 2010 worked as MINVU’s Urban Development Division General Manager. Conducted the 22th of March 2012, Santiago, Chile.
(a) 17 residential purpose classifications with difference densities (starting from a minimum density of 56 in/ha until the highest density of 2800 in/ha) and minimum plot size (from 128 m$^2$ until 2000 m$^2$).

According to Jimena Thayer$^{41}$ the effect of the 17 different residential purpose classifications in San Joaquin’s Municipal Regulatory Plan regarding ‘housing stock redevelopment and attract real estate investments’ can be divided in Municipality’s ‘interior’ area and developments in Vicuna Mackenna Street. San Joaquin’s interior areas is experiencing the phenomena of urban ‘shrinking’, as almost the complete population of that area is considered to be ‘low income population’ and ‘new local inhabitants’ (inhabitant’s sons) are able to find social dwellings in city’s peripheral areas breaking social networks that they already had in the municipality (Thayer, 2012). Municipality’s approach regarding social dwellings is to satisfy the demand of people currently leaving in the municipality to avoid younger inhabitant’s migration and also to solve the problem of ‘relatives’ (non members of family unit) leaving with families of the municipality due to their difficulties to find a dwelling that they can afford (Thayer, 2012). According to Thayer, municipality’s field of action on this subject is reduced; main efforts are addresses into municipal management of regeneration processes. First municipality’s urban division identifies affordable land plots: plot lands owned by the state, by the municipality or ‘idle’ industrial land plots that because of PRMS1994 normative regarding industrial uses inside city’s consolidated are not been used (PRMS1994 banned industrial ‘noisy’ activities from Santiago’s central area, industrial ‘non noisy’ activities already present in the municipality are not considered in the search of affordable land plots as they represent employment and important incomes to municipal budget). An important operation for preserve affordable land prices of ‘idle’ industrial plots is to change the land use to residential only when the property is buyed and being careful to preserve this information to avoid speculations. At the same time that land is being obtained, the municipality organize the demand (municipality’s inhabitants that will live in the future residential complex) and apply for Housing Policy subsidies (Thayer, 2012). One example of this ‘Municipal Management’ was the case of ‘Las Industrias’ street. Because of Transport Ministry expropriations to construct Las industrias street the municipality was able to obtain a land plot inside the municipality (Transport Ministry donate the land considering the social purpose of the initiative) with all possible housing subsidies (MINVU’S cooperation) that allowed to construct 400 social dwellings approximately during years 2009 and 2010 (Thayer, 2012). However, the segregation patterns of the municipality have not been modified as the newly constructed dwellings were directed to lower income groups and their number was marginal to be considered as a redevelopment of municipality’s housing stock.

On the other hand, Vicuna Mackenna Street represents municipality’s efforts to attract real estate investments. The different land uses stated in the regulatory plan have allowed residential and educational investments. Because of Vicuna Mackenna excellent connectivity (transport corridor, subway line and close location to city’s center and La Florida sub center), real estate investors have responded positively developing residential ‘high rise’ buildings (maximum of 30 floors) for middle income socio economic groups (Thayer, 2012). The benefits for the municipality are unquestionable, but Vicuna Mackenna developments are being developed around the street without producing a reconversion of San Joaquin ‘interior’ area.

The two before mentioned effects of San Joaquin Municipal Regulatory Plan have different implications over Municipal budget. On one hand, ‘interior’ area shrinking or de-population have meaned to receive less funds from ‘Municipal Common Fund’ (see section 3.5.1 PRMS 1994 ‘internal’ and ‘external’ effectiveness (d) Facilities requirements per municipality according to population size and type of road where they are located) as fund’s re-distribution is according to number of inhabitants among many factors. On the other hand, residential and educational developments over Vicuna Mackenna Street have represented important sources of income that allow a ‘new’ municipality independency from ‘Municipal Common Fund’ (Thayer, 2012). The challenge of the municipality is to foster Vicuna Mackenna street developments and to incentivate the integration of Municipality’s interior areas into these dynamics. Considering all before mentioned effects of San Joaquin’s Municipal Regulatory Plan norms implementation, its ‘internal’ effectiveness is rated as relative: the

$^{41}$ Interview with Jimena Thayer: San Joaquin’s Urbanistic Consultant. Conducted the 21th of March 2012, Santiago, Chile.
variety of residential land uses have allowed the arrival of real estate developments over Vicuna Mackena Street. However, Municipality’s ‘interior’ area remains in the usual urban fabric than before: residential low income groups homogeneity (only ‘Municipal management’ developments have allowed some extent of renovation).

EXTERNAL EFFECTIVENESS: RELATIVE

San Joaquin is located in an area of the city called ‘peri-centrality’: previous periphery of the city that was destined for industrial activities and workers neighborhoods (Moris, 2012). Due city’s growth San Joaquin was absorbed inside city’s consolidated area (Figure 28) and now benefits from an excellent ubicación inside the city. Regarding Santiago’s segregation patterns, San Joaquin is located in the ‘beginning’ of Santiago’s south low income group’s segregated area. However, segregation conditions in the municipality are much better than the rest of the municipalities composing south segregated area as their inhabitants have easy access to city’ centre and also have the opportunity to interact with different socio economic groups from the surrounding municipalities (Santiago centre, San Miguel, Macul, La Florida) with all the benefits than this implies (see Chapter 2). From the interview with Jimena Thayer it can be stated that San Joaquin’s Municipal Regulatory Plan have not been effective in reducing municipality’s low income groups social homogeneity. Municipal Regulatory Plan’s flexibility aimed to attract investments and regenerate the housing stock has not been achieved: San Joaquin is still characterized by a low income group’s social homogeneity. However, Vicuna Mackenna Street represents an important achievement of the plan as middle income groups have arrived. As stated before, Vicuna Mackenna developments have not implied a regeneration of Municipality’s interior areas, investments in that streets are only located in that street because of the connectivity benefits to other city’s areas more than the ‘attractive’ that San Joaquin represent for new middle income groups inhabitants. Also it is necessary to review whether the investments were possible because Municipal Regulatory Plan flexibility or because of city’s connectivity due to metropolitan transport & infrastructure investments that positioned Vicuna Mackenna street in the market. From the before mentioned points San Joaquin Municipal Regulatory Plan ‘external’ effectiveness regarding city’s segregation pattern is rated as relative as low income groups homogeneity remains but developments in Vicuna Mackenna street have allowed the arrival of middle income groups in one of Municipality’s borders.

3.5.6 Pudahuel’s Municipal Regulatory Plan ‘internal’ and ‘external’ effectiveness

From section 3.4.6 two ‘implicit’ objectives (Foster municipality’s social integration; ZCAE Areas. Concentration of productive activities (number 24-25 in Table 6)), and two ‘implicit’ norms (Minimum density of 200 in/ha, in principal roads minimum density of 350 in/ha; In practice free regulation to attract investments (number 26-27 in Table 6) were identified regarding segregation. Considering before mentioned ‘implicit’ objectives and norms, Pudahuel’s Municipal Regulatory Plan ‘intended strategy’ is defined as: ‘Break municipality’s social homogeneity and foster logistics activities (airport)’ (Table 14).

<table>
<thead>
<tr>
<th>Pudahuel’s Municipal Regulatory Plan</th>
</tr>
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<tbody>
<tr>
<td>Intended strategy:</td>
</tr>
<tr>
<td>‘Break municipality’s residential homogeneity and foster logistics activities (airport)’</td>
</tr>
<tr>
<td>Norms</td>
</tr>
<tr>
<td>(a) Minimum density of 200 in/ha, in principal roads minimum density of 350 in/ha. Pudahuel’s Regulatory Plan</td>
</tr>
<tr>
<td>(b) In practice free regulation to attract investments</td>
</tr>
</tbody>
</table>

Table 14. Pudahuel’s Municipal Regulatory Plan ‘Intended strategy’ and norms regarding segregation.

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42 Interview with Jimena Thayer: San Joaquin’s Urbanistic Consultant. Conducted the 21th of March 2012, Santiago, Chile.
INTERNAL EFFECTIVENESS: LOW

Pudahuel’s Municipal Regulatory Plan ‘Internal effectiveness’ is rated as relative due to the following points related to norm’s implementation:

(a) Minimum density of 200 in/ha, in principal roads minimum density of 350 in/ha. Pudahuel’s Regulatory Plan

(b) In practice free regulation to attract investments

Both of municipal regulatory plan norms related to segregation are reviewed together in this section, as the second one (b) implies to do not follow the first norm (a) stated in the municipal regulatory plan from 1971. This second norm related to free regulations to attract all potential investments was implemented around 2002 and implies the continuous modification of the urbanistic norms stated in the regulatory plan (Campodonico, 2012).

Pudahuel Municipality is in the peripheral north-west area of the city. His terrotry implies urban areas (Santiago’s consolidated areas ruled by PRMS1994) and rural areas. Pudahuel’s Municipal Regulatory Plan has different norms regarding the urban areas (where free regulations to attract investment apply) and rural areas (according to what is stated in LGUC and OGUC legal documents (see section 3.1 Regulatory plan’s legal framework)). Pudahuel’s Municipal Regulatory Plan ‘internal’ effectiveness will be analyzed according to his influence over Municipality’s urban area, the incidence of developments in the rural area will be considered in the analysis of the ‘external’ effectiveness.

Pudahuel’s urban area is part of Santiago’s north-west low income group’s segregated area (composed mainly by Pudahuel, Lo Prado, Cerro Navia, Renca and Quilicura (see Figure 11)) and it is divided in two main areas without spatial continuity: the residential area and the ‘commercial’ area related to city’s airport activities. According to Claudia Campodonico⁴３ Pudahuel’s Municipality do not ‘need’ more residential developments as Municipality’s urban area is almost completely composed by residential low income groups projects developed since the 70’s until the present year. The social low income homogeneity that characterize Pudahuel’s urban areas implies many problems for the inhabitants (segregation negative effects (see section 2.6-2.7)) and for the municipality (budget incidence (see section 3.5.1 (d) Facilities requirements per municipality according to population size and type of road where they are located)), therefore the focus of the municipality is to foster different investments in the territory. One strategy of the municipality could be to foster the arrival of higher income groups, but according to Claudia Campodonico Pudahuel cannot continue being a residential monofunctional area because is not possible a balanced municipal development without the presence of other functions (like commerce, entertainment, employment, etc), also it has to be considered that all PDUC proposals (see section3.5.3) are planned to be located in Pudahuel implying a significant number of new dwellings (for higher income groups). Pudahuel’s municipality considers that their contribution to Santiago’s residential needs is more than achieved (Campodonico, 2012).

Municipal regulatory plan flexibility implies buildings free heights, free land use coefficients and maximum densities according to what is stated in PRMS1994. This ‘flexibility’ was implemented around 2002 and until 2010 there was no significant investments or arrival of new activities to the municipality, as according to Claudia Campodonico, without a market free regulations do not have what to rule (Campodonico, 2012). The ‘absence of market’ can be explained by Municipality’s low income groups homogeneity, as their acquisition capacity is low, services and commerce are not attracted to be located there. In 2010 Santiago’s subway was expanded until Pudahuel meaning a change in Municipality investments. Before subway’s arrival all residential developments were at most of four floors and destined for lower income groups. Since 2010 until the date a ‘new market’ was created around subway stations as many inhabitants want it to be located there due to connectivity benefits. The consequence was the development of residential buildings of 8 to 10 floors for low

⁴３ Interview with Claudia Campodonico. Pudahuel’s urbanism consultant. Conducted the 20th of March 2012, Santiago, Chile.
and middle low income groups. Private investors detected the location demand around Pudahuel’s subway station but municipality’s social homogeneity and detachment to city’s central areas hampered the potential of attracting higher income groups (Campodonico, 2012). Subway infrastructure investment implied the generation of new investments in the municipality. However these were not according to municipality objectives of having different functions than residential. On the other hand, ‘airport’ area has represented an important source of employment and resources for inhabitants and municipality. According to Campodonico, Pudahuel’s municipality is now oriented to become a ‘logistics’ municipality as the effect of the airport over the surrounding areas has allowed the development of business parks (ENEA), cargo storages, distribution centers, etc. Another important development for Pudahuel Municipality is the possibility of a new Shopping Mall Center between municipality’s residential area and the airport. The investors of this development are still evaluating its construction but the municipality has contributed with the required regulatory plan modification to allow its development as the benefits that this shopping center could represent for the future of the municipality cannot be lost (Campodonico, 2012).

Pudahuel’s Municipal Regulatory Plan ‘internal’ effectiveness is rated as low because plan’s ‘flexibility’ has not meant the arrival of new functions in municipality’s residential area (only low income dwellings around subway station). However, regulatory plan’s flexibility have allowed the development of logistic activities around city’s airport but these trends are not because of regulatory plan norms’ they respond to the dynamics that the airport generate and the role of the regulatory plan here is to rule them.

**EXTERNAL EFFECTIVENESS: LOW**

Pudahuel’s Municipal Regulatory Plan ‘external effectiveness’ regarding Santiago’s segregation patterns is graded as low. Regulatory Plan’s flexibility has not been enough to attract investment and counteract municipality’s problem of low income group’s segregation in his urban residential area. Also in his rural area, Pudahuel has been one of the ‘receptor’ of many social housing projects constructed under the figure of Article 55 (see section 3.5.1 (a) Urban-rural limit and expansion areas definition) meaning the exulsion of new low income groups inhabitants from city’s consolidated area. Social housing developments in municipality’s rural area implies negative effects for the inhabitants located there (far away from city’s services and facilities and long travel distances among others) and also for the municipality as those new social dwellers demand facilities that the municipality with his limited budget has to provide. To be able to cope with these needs, the municipality is reproducing the same operation of using LGUC’s Article 55 to construct facilities in municipal rural areas, configuring a system of detached social housing complexes with no relation to municipality’s residential urban area (Campodonico, 2012). According to Claudia Campodonico, private developers are more interested in municipality’s rural areas as they do not have the ‘negative’influence of low income groups of the consolidated urban area. Before PRMS 1994 urban limit definition were approved important surfaces of current rural land (according to PRMS1994) for residential developments. Those projects (detached from Pudahuel’s urban area) are ‘satelital’ cities for midlle income inhabitants (dwellings around 96.000 euros). Also it has to be considered the three PDUC developments (see section 3.3.2 (c) PDUC: Conditioned Development Urban Projects, 2003) that are planned to be constructed in municipality’s rural area considering dwellings for high income groups (dwellings around 160.000 euros). PRMS100 first proposal (the one rejected by ‘Contraloría General’) considered Pudahuel as one of city’s extension areas where it could be possible to develop residential complexes. However, municipality’s rejection to receive again more dwellings implied a modification of PRMS100 proposal considering this time only facilities and infrastructure in municipality’s territory (Campodonico, 2012).

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44 Interview with Claudia Campodonico. Pudahuel’s urbanism consultant. Conducted the 20th of March 2012, Santiago, Chile.
3.5.7 Regulatory Plans ‘internal’ and ‘external’ effectiveness overview

All reviewed regulatory plans (metropolitan and municipal) were graded as un-effective regarding the implementation of their norms that could be related to segregation, and also un-effective to modify city’s segregation patterns (Table 15). From the review of the different plans objectives and norms regarding segregation (see section 3.4) was possible to state that regulatory plans do not have as an ‘explicit’ objective the issue of segregation, condition that hampers the design of strategies and norms directed to counteract city’s segregation patterns, and therefore reducing their ‘effectiveness’ over the issue. Also the different ‘implicit’ objectives that were identified are not complemented with a set of norms or investments plan to allow their implementation. PRMS100 regulatory plan is the only one with an ‘explicit’ objective regarding segregation but his effectiveness is low as the plan has not yet been implemented due to the ‘legal’ problems that is facing (see section 3.5.4 PRMS100 2008 ‘internal’ and ‘external’ effectiveness). PRMS100 strategy to face city’s segregation problems is the implementation of ‘urbanism by conditions’ concept, where a required percentage of plot surfaces should be considered for social dwellings as a condition for the development of the complete plot. However this concept is not included in Chilean ‘Urbanism & Constructions General Law’ (LGUC) so plan’s enactment will depend on ‘political williness’ to approve the ‘judicial filter’ of ‘Contraloría General’ (Independent Chilean institution that supervises administrative power act’s legality) or from a parliamentary discussion to modify LGUC’s content and include ‘urbanism by conditions’ as a regulatory plan’s attribution.

From municipal regulatory plan’s ‘external’ effectiveness review it was possible to identify the limited field of action that these plans have regarding city’s segregation patterns. Segregation patterns have a ‘metropolitan’ scale where more than one municipality is involved and also are the consequence of different urban dynamics (to be explained below) where municipalities’ regulatory plans have small competence. However, from ‘internal effectiveness’ analysis it was possible to identify municipal regulatory plans capability to detect local demands and to facilitate urban developments through ‘municipal management’ (for instance the case of San Joaquin where Municipality’s urban division coordinates inter-sectorall processes to allow the construction of social dwellings inside the municipality; settled down attractive urbanistic norms and land uses to foster real estate investments, and the strategic definition of land uses to allow affordable plots (see section 3.5.5)). Municipal regulatory plans are not an instrument that facilitates a change in the housing stock or municipality’s socio economic composition by themselves. The different norms of regulatory plans are un-effective without the presence of a ‘market’ that attracts private developer’s investments. For instance Pudahuel’s Municipal Regulatory Plan have free regulations since 2002, only in 2010 whit the arrival of the subway line some ‘high rise’ residential developments were possible due to the increasing demand of inhabitants willing to live close to subway stations (see section 3.5.6). Also in San Joaquin Municipality, the real estate developments over Vicuna Mackenna Street were possible due to inhabitant’s demand for living in that street with excellent connectivity (see section 3.5.5). Through municipal regulatory plan’s ‘internal’ and ‘external’ effectiveness review it was possible to realize that in low income group’s segregated areas, municipal regulatory plans are not an instrument which by its own action or content allows to attract investments. Low income groups socially homogenized areas do not represent an attractive market for private developers: residential developments for higher income groups are not seen as feasible due to the rejection of potential new dwellers to live in deprived neighborhoods, and also facilities and services arrival is hampered due to low income group’s reduced acquisition capacity. If from the ‘market’ is not possible to generate segregated area’s renovation processes, it is necessary to think in a different model (public investment, private public partnerships, etc) to allow the arrival of new activities and services to mono-functional low income residential areas. About this issue it will be reflected on Chapter 5: Conclusions.
**Table 15.** Regulatory Plan’s ‘internal’ and ‘external’ effectiveness regarding segregation.

<table>
<thead>
<tr>
<th>Plan</th>
<th>INTERNAL EFFECTIVENESS</th>
<th>EXTERNAL EFFECTIVENESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRMS 1994</td>
<td>RELATIVE</td>
<td>LOW</td>
</tr>
<tr>
<td>Chacabuco-ADUP-ZODUC 1997</td>
<td>LOW</td>
<td>LOW</td>
</tr>
<tr>
<td>PDUC 2003</td>
<td>LOW</td>
<td>LOW</td>
</tr>
<tr>
<td>PRMS100 2008</td>
<td>LOW</td>
<td>LOW</td>
</tr>
<tr>
<td>San Joaquin’s Municipal Regulatory Plan</td>
<td>RELATIVE</td>
<td>RELATIVE</td>
</tr>
<tr>
<td>Pudahuel’s Municipal Regulatory Plan</td>
<td>LOW</td>
<td>LOW</td>
</tr>
</tbody>
</table>

**Unrealized strategies and implemented strategies regarding segregation**

From the reviewed regulatory plans ‘internal’ and ‘external’ effectiveness it is possible to determine ‘unrealized strategies’ meaning those plan’s objectives that were not implemented or have been un-effective in the efforts to counter act city’s socio economic segregation patterns. Unrealized strategies are:

(1) **PRMS1994:** ‘Through higher densities and planned urban land extensions allow low income group’s access to city’s consolidated areas; and improvement of existing low income segregated areas through city’s activities decentralization’

Due to Santiago’s land market values since 1998 it is not possible to find affordable land prices for the development of social dwellings inside city’s consolidated areas (Trivelli, 2010). Current social housing developments in Santiago’s urban area are possible thanks to ‘extra resources’ provided by governmental instituciones (like municipalities or Ministries providing ‘public land’), private institutions willing to cooperate in better solutions for social housing developments (financial contribution) or innovative architectural design solutions that allows to afford land prices through an efficient use of densities and building form (see the experience of ELEMENTAL architectural office: www.elementalchile.cl). Social dwelling’s without ‘extra resources’ support are being developed in the rural areas around Santiago using LGUC’s Article 55 that allows the development of social housing in country’s rural areas. PRMS 1994 considered the development of 11 subcenters and facilities’ provision by municipalities to allow city’s decentralization of activities. However, only two of the eleven proposed subcenters can be considered as consolidated (subcenters that concentrate services, facilities, work places and public spaces of meeting) and provision of facilities by municipalities is hampered by the limited financial resources of ‘poor’ municipalities. Some extent of de-centralization have been achieved through city’s infrastructure investments (highways and subway lines) improving city’s connectivity. However, highways can only be accessed by those who own a car and the public transport system (Transantiago (to be explained in the following chapter)) have experienced serious implementation problems. All before mentioned points are explained in section 3.5.1.

(2) **Chacabuco-ADUP-ZODUC 1997:** ‘Generate urban land that makes possible to construct social dwellings’

Chacabuco – ADUP – ZODUC norm never stated a compulsory requeriment of including social dwellings as a condition for the development of peripheral urban areas (it is a common believe among Chilean architects and urbanists that Chacabuco – ADUP – ZODUC plan included a requirement of social dwellings) it only stated density requirements that could allow to construct social dwellings. As that, private developers have constructed in this kind of projects dwellings for middle low, middle and high income groups. Until the present year no social dwellings have been constructed so the ‘opportunity’ of having urban land for social housing has not been used. See section 3.5.2.

(3) **PDUC 2003:** ‘Urban land generation that allows the construction of social dwellings in mixed neighborhoods’.
PDUC’s developments have the compulsory requirement of including a 30% of dwellings total number for social housing. However, due to problems in their ‘approval procedure’ no single PDUC development has been constructed. There is no certainty if approval procedure problems will be solved; according to Ivan Poduje PDUC mechanism has ‘foundation problems’ that makes them useless in their objective of generating new urban land (Poduje, 2012). Until the present year no social dwellings have been constructed under PDUC mechanism so the ‘opportunity’ of having urban land for Santiago’s new low income inhabitants is again missed. See section 3.5.3.

(4) PRMS100 2008: ‘Urban lands for social dwellings in areas connected to city’s existing networks’

PRMS100 is not yet an official regulatory plan instrument. Due to legal problems with their content related to ‘urbanism by conditions’ the ‘Contraloria General’ (comptroller) has objected the plan. Currently the plan has been re submitted by MINVU SEREMI Region Metropolitana to Contraloria General, but there is no certainty about plan’s approval or rejection. As that, PRMS100 potential of generate urban land for new low income inhabitants (PRMS100 states the compulsory requirement of considering an 8% of project total surface for social dwellings) is currently not even an option. See section 3.5.4.

(5) Pudahuel’s Municipal Regulatory Plan: ‘Break municipality’s residential homogeneity and foster logistics activities (airport)’

Pudahuel’s Municipal Regulatory has stated ‘flexible’ urbanistic norms to facilitate the arrival of new investments (with new functions) to the municipality. However, only residential developments for low income groups have been developed in Municipality’s urban residential area reinforcing its segregated condition. Municipality’s efforts to foster airport’s related activities (logistics) have been successful but those developments are located close to the airport and have not influenced new developments in Pudhauel’s residential urban area. See section 3.5.5.

(*) San Joaquin Municipal Regulatory Plan’s ‘intended strategy’ of ‘Housing stock re-development and attract real estate investments’ have not been considered as an unrealized strategy because despite not been successful in the re-development of municipality’s interior area (low income group’s segregated area) the attraction of real estate investments over Vicuna Mackenna street represent an important modification of municipality’s inhabitants socio economic composition and also important resources for municipal budget. The challenge is to include the internal area of the municipality into this dynamic and not to generate a border (Vicuna Mackenna Street) detached from the reality of the interior areas.

From the review of regulatory plan’s effectiveness and the interviews conducted with actors involved in Santiago regulatory plan’s elaboration or with relevant knowledge about city’s segregation patterns it was also possible to identify which strategies are currently been considered as the means to solve city’s segregation problems. From the analysis of regulatory plan’s ‘internal’ and ‘external’ effectiveness it was possible to state that segregation is not an objective of Santiago’s regulatory plans (metropolitan & municipal), and those objectives and norms that ‘implicitly’ could have an effect over city’s segregation patterns are un-effective in their implementation and at the same time un-effective to counter act city’s segregation patterns. Current strategies used to reduce city’s segregation patterns are not neccessarily planning instruments; are more related to how from public administratitration the problem of segregation is being addressed. For the effects of this research those strategies are called ‘implemented strategies’. Three’implemented strategies’ regarding segregation were identified:

(1) URBAN LAND FOR LOW INCOME GROUPS DWELLINGS OUTSIDE CITY’S CONSOLIDATED AREA (LGUC’s ARTICLE 55).

Due to the before mentioned difficulties to find affordable land values inside city’s consolidated areas, in year 2003 LGUC’s Article 55 was modified allowing the development of social housing complexes in any rural area of
the country (see section 3.5.1 (a) Urban-rural limit and expansion areas definition). This article is being used in many of the social dwellings developed in the last decade configuring detached social dwelling settlements from the infrastructure, services and opportunities that cities may offer. Despite all the problems that this developments implies for the government (negative social impacts, extension of infrastructure and sewerage among others) and municipalities (new inhabitants demand for facilities) MINVU’s (Urbanism & Housing Ministry) do not react against these developments as they allow to obtain affordable plot lands relatively close to city’s peripheral areas (Moris, 2012).

(2) ‘INTEGRATION’ AND ‘LOCALIZATION’ SUBSIDIES.

Conscious about Chilean city’s segregation problems the former Government (2006-2010) introduced two subsidies to the housing policy: ‘localization subsidy’ consisting of extra 6.500 euros approx. if the social dwelling to be bought or constructed is located according to a list of requirements stated by the subsidy; ‘integration subsidy’ consisting of 3.300 euros extra per dwellings for those social housing complexes including a 30% of low income groups dwellings and a 30% of middle low income groups dwellings. These subsidies are aimed to achieve a better location in the city and at the same time to foster the development of ‘integrated’ neighbourhoods through the concept of social mix (Iacobelli, 2012) (Sabatini, 2012).

(3) HIGHWAYS AND SUBWAY INVESTMENTS TO IMPROVE CITY’S CONNECTIVITY.

By 1990 Santiago presented an outdated infrastructure without important investments since the 70’s. In 1993 a new transport plan was elaborated (‘Infrastructure Development Study’ by Marcial Echenique) indicating a set of highways, subway, concessioned roads, toll systems, trams, commuter rails and the requirement of re-design Santiago’s public transport system. From those recommendations highways and subways developments have been developed representing and investment of 78.000 million euros approx. (Allard, 2008), the biggest in city’s history. Highway investments have allowed increasing city’s connectivity diminishing travel times from peripheral areas to city’s center. However, this travel time reduction is possible only for those who own a car. This issue raises the question about which effects these developments represent to city’s segregated areas.

Subway investments have meant a diminution of traveling times, a valorization of properties close to subway station and a rise in the quality of public transport system. However subway investment is extremely expensive and the five available lines do not cover all the areas of the city (Allard, 2008).

Other planning instruments / urban dynamics identification

The aim of this research is to identify how regulatory plans can effectively reduce city’s segregation patterns. It is not possible to consider reducing city’s segregation from an ‘isolated’ regulatory plans perspective. The identification of the ‘implemented strategies’ regarding segregation (Table 16) plus interviews conducted with experts in city’s segregation patterns (Sabatini, 2012) (Rodriguez, 2012) (Moris, 2012) (Allard, 2012) allowed to identify three ‘other planning instruments’ or ‘urban dynamics’ that have incidence in the consolidation (or reduction) of city’s socio economic segregation patterns. Any regulatory plans proposal to reduce city’s segregation patterns have to consider the following three ‘other planning instruments/urban dynamics’:

(1) LAND MARKET: as land values are the ones hampering the development of social housing dwellings inside city’s consolidated area (Trivelli, 2012) (Bresciani, 2012)

(2) HOUSING POLICY: among many factors Chilean Housing Policy is identified as one of the reasons for the consolidation of the extended segregation areas of low income groups (Rodriguez, 2012) (Sugraneyes, 2012) (Moris, 2012). Also last explicit efforts from the Government to solve cities segregation problems are ‘localization’ and ‘integration’ housing policy subsidies (Table 16)

(3) TRANSPORT & INFRASTRUCTURE: as reviewed from PRMS1994 effectiveness (3.5.1 (e) Roads infrastructure design) and ‘implemented strategies’ (Table 16), city’s investments in transport & infrastructure have meant
new connectivities and valorization of urban lands that represents a potential instruments to modify segregated area’s social homogeneity (Sabatini, 2008)

In the following chapter the three identified ‘other planning instruments / urban dynamics’ will be described and their relation with city’s segregation patterns will be stated.

<table>
<thead>
<tr>
<th>IMPLEMENTED STRATEGIES</th>
<th>EXTERNAL FACTORS / URBAN DYNAMICS</th>
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<tbody>
<tr>
<td>(1) Urban land for low income group’s dwellings outside city’s</td>
<td>Land Market</td>
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<td>consolidated areas (LGUC’s Article 55)</td>
<td></td>
</tr>
<tr>
<td>(2) ’Integration’ and ’Localization’ subsidies</td>
<td>Housing Policy</td>
</tr>
<tr>
<td>(3) Highways and subway investments to improve city’s</td>
<td>Transport &amp; Infrastructure</td>
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<tr>
<td>connectivity.</td>
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Table 16. ‘Implemented strategies’ and ‘external factors/urban factors with incidence over city’s segregation patterns.'
CHAPTER 4: OTHER PLANNING INSTRUMENTS / URBAN DYNAMICS WITH INCIDENCE OVER SEGREGATION

In this chapter three ‘other planning instruments/urban dynamics’ will be reviewed. First a description of the different variables will be provided, and second their influence over Santiago’s segregation patterns will be stated. The analysis of the different variables will be conducted with relevant literature over the subject and with information collected through research’s interviews.

4.1 LAND MARKET

Land markets are the reflection of specific location’s characteristics (Trivelli, 2007). There are many articles in the international discussion regarding land market/land values, however the conditions among countries (among cities also) varies according to specific laws, regulations and taxations that regulate countries’ territory. For instance in the Netherlands there is a distinction between ‘land ownership’ (meaning ownership of the ground including all space above surface, all earth layers below, all ground water and all fixtures (van den Molen, 2004)) and ‘right of superficies’ (meaning that ownership of a building is separated from the ownership of the ground below, by means of a separate title (van der Molen, 2004)); in Chile, ‘land ownership’ and ‘right of superficies’ are considered as inseparable units. Actually all South American countries (with the exception of Brasil) follow this principle rooted in their constitutions since the foundation of the nations in XIX’s century first decades (Perez, 2007). This simple difference (about land ownership) implies a complete different land market’s conception and performance that is even more specific per each city according to their own physical and social characteristics. As that the review of Santiago’s land market will be realized considering the work of people with expertise over Santiago’s land market functioning. Pablo Trivelli’s work was reviewed by analyzing his article ‘About urban policy, land policy and Santiago’s urban area land value generation: theoretical and empirical data’ (Trivelli, 2007), and a personal interview with him (Trivelli, 2012). Also the work of Francisco Sabatini was reviewed considering his article ‘Land value and dwelling’s development: 4 relevant conclusions for Santiago’s public policies’ (Sabatini, 2007) and a personal interview with him (Sabatini, 2012).

From the reviewed articles and conducted interviews is possible to state that land market understanding differs according to economic’s theoretical background. Among Chilean urban planners and economist there are different visions about what Santiago’s land market consists and about how should be analyzed. The first part of this section is a description of Santiago’s land market including current expert’s discussion regarding the subject (mainly urban limit and land value relation) and a quick review of the economic theories underlying their opinions; and the second part is a description of Santiago’s land market and its relation to Santiago’s segregation patterns.

4.1.1 Santiago’s Land Market Description

The different opinions about how Santiago’s land market should be addressed can be observed in the discussion about Santiago’s urban limit and its incidence about city’s land values. During 1979 a new Metropolitan Regulatory Plan for the city of Santiago was enacted (PRIS 1979) abolishing city’s urban limit. Some of the plan’s main arguments was that city’s urban limit was generating an ‘artificial’ land scarcity due to its incidence over land prices raise and the deleterious effects of increasing dwellings values and the difficulty to find urban lands to locate social dwellings. These arguments (supported by Miguel Kast and Arnold Harberger) were according to ‘Chicago School’ principles that urban land is not a scarce resource and that is the ‘market’, without public (Government) intervention, the appropriate mechanism to efficiently distribute resources over city’s territory. According to this vision urban limit is an ‘arbitrary’ measure; city’s transition between urban activities and agricultural functions should be regulated by the ‘free competition’ of those

45 Chilean economist with expertise over land policy and land value.
46 Chilean sociologist with expertise over socio economic segregation and land value.
47 Minister of Planning during the Government that enacted PRIS1979.
activities for the use of land (Trivelli, 2007). However, due to problems during city’s growth after PRIS1979, the same Government modifies his perception about land availability in a new ‘Urban Developmet National Policy’ from 1985: Land is a scarce economic resource due to its ‘non-produced’ nature and its ‘inelastic’ supply.

In 1994 under a new Government, PRIS 1979 regulatory plan was replaced for PRMS1994 plan that re established city’s urban limit. Libertad y Desarrollo (Chilean Think Tank with similar economic principles than Chilean Government during 1973-1989) disagreed with Government’s re establishment of urban limit arguing that ‘free competition’ should determine the use of land that neccesarily will imply city’s growth as land is an scarce resource: ‘land total supply (in surface) is given (is not possible to add more land to the territory); is not dependent of land prices. In this sense land’s total supply is completely inelastic, as that land values are determined basically by total demand’ (Libertad y Desarrollo, 1994). Libertad y Desarrollo also argues that urban limits will increase more land prices as implies more restrictions for land supply ‘urban limit to contain city’s growth distorts land market’s normal functioning, creating an ‘artificial’ land scarcity that increases land prices’ ‘city’s growth areas stated in PRMS1994 (residential expansion in south-east area, industrial expansion in north-west area) were the areas with the highest increase in land prices. Land owners in these areas were ‘expecting’ that regulatory plan will allow urban expansion there, demonstrating that authorities through regulations can distort land prices and also that land owners ‘expectatives’ regarding authorities decisions can also modify land prices’ (Libertad y Desarrollo, 1994).

Harald Beyer, economist from CEP Think Tank agrees with the vision of Libertad y Desarrollo regarding urban limit and its effects over land market. According to him is a fact that city’s growth limitations implies significant land prices increase, that are beyond ‘natural economic growth’ increases. Urban limit negative effect over land prices is not related to the specific territorial definition of it, even ‘loose’ regulations can be related to land price’s increase (Beyer, 1997). Marcial Echenique⁴⁹ who elaborated an infrastructure plan for country’s central regions was also critical regarding PRMS1994 urban limit. According to Echenique urban limits implies dwelling’s higher cost and city’s traffic congestion meaning a general population impoverishment (Trivelli, 1997). In 2004, Felipe Morande⁵⁰ continue this line of criticism about city’s urban limit stating that to end with city’s artificial land scarcity is necessary ‘to open’ the complete territory for urban development. Real Estate Developers association (Camara Chilena de la Construccion) through its president Patricio Munoz was also critical about city’s urban limit. Trough several press articles Munoz has exposed the negative effect of city’s urban limit over the land market: ‘dwelling’s prices have grown a 25%; apartment’s prices have grown a 12%. In all markets (potatoes, cars, etc.) prices rise foster productivity increases, allowing price’s return to ‘equilibrium’ levels. Despite the fact that dwellings supply takes longer than other products, in the ‘apartments market’ it has been possible an efficient market performance benefiting consumers, however this efficiency has not been possible to achieve in dwelling’s market. The reason of this is current urban policy that limits urban land availability, meaning a rise in land prices and therefore dwelling’s prices increase’ (Munoz, 2005).

On the other hand, urban planners and economist defending urban limit state that there is no direct relation between urban limit and land prices. PRMS1994 objective with the implementation of an urban limit was to achieve city’s ‘internal growth with equity’ considering that urban limit, density increase and land uses will allow to have ‘harmonious and balanced territorial developments’ that in some extent could allow city’s economic growth improving environment quality and solving city’s problems of segregation and marginality (CA, 1995). According to Pablo Trivelli urban limit cannot be considered a limitation of urban land supply, considering PRMS1994 modifications of 1997 (Chacabuco-ADUP-ZODUC) and 2003 (PDU) that introduced the concept of urban land by conditions (see section 3.3.2) opening ‘unlimited’ potential urban lands in city’s peripheral areas (Trivelli, 2007). Trough the review of city’s land prices evolution (Santiago land prices, Pudahuel Municipality land prices and Zone 180 (rural area of Pudahuel Municipality)), Trivelli states that PRMS1994 urban limit implementation did not affect city’s land prices tendential growth.

⁴⁹Chilean urban planner. On 1993 elaborated ‘Infrastructure Development Analysis for 5⁰-6⁰ and Metropolitan Regions’
⁵⁰Former Dean of Economic Faculty – University of Chile
Figure 39 (elaborated by Pablo Trivelli) shows that after the implementation of PRMS1994 urban limit, land prices continued their tendential growth since 1990. According to Trivelli if PRMS1994 urban limit would have caused an impact over land market, it would have manifested in the period before its implementation (speculation) and probably stronger after its enactment. However, empirical data shows that Santiago’s land market average prices was stable during 1994 and 1995, and later on maintained their tendential growth since 1990.

As land markets have the particularity of being different among areas, Trivelli also reviewed the impact of PRMS1994 urban limit over Pudahuel’s Municipality land market (Figure 40). PRMS 1994 urban limit did not affect Pudahuel’s land market because by the time of plan’s implementation Pudahuel did not have an ‘active market’ of urban development (visible in the low amount of offered land before plan’s implementation) and also because municipality’s offered land supply was always too small compared to Santiago’s land supply, therefore any variation on municipal land prices is marginal compared to city’s land supply average prices.

Trivelli conducted the same measurement with Zone 180, a rural area inside Pudahuel’s Municipality to analyze if PRMS1994 urban limit have meant an increase in the value of rural lands (Figure 41). From this study Trivelli concludes that Zone 180 have never offered a considerable amount of urban land, however land prices grown steadily without any particular effect of PRMS1994 urban limit.

From the before reviewed opinions (and opposite results) regarding urban limit and their incidence over city’s land values is possible to state that there are different perspectives regarding land markets functioning. These different perspectives can be distinguish because of deep ideological differences regarding right of ownership, development’s rights, capital gains distribution, market and private parties role and Government field of action.
through planning and regulations (Trivelli, 2007). In an effort to understand these positions and to state how land markets influence city’s segregation patterns Pablo Trivelli conducted a comparative study over these ideologies. This research uses trivelli structure and arguments to compare these ideologies complemented with other relevant literature and information obtained from conducted interviews. First, ideologies regarding ‘right of property’ and ‘common good’ will be compared, and then their respective ‘economical background’ will be reviewed (‘free market’ and ‘land rent theory’).

‘Right of property – Common Good’

Some perspectives regarding land market consider ‘right of property’ as an ‘absolute’ right where the economical benefits that is possible to obtain from the development of economic activities over the plot cannot be limited by planning instruments or normatives. Regulatory plans interventions affecting land market ‘free functioning’ are considered unilateral and arbitrary meddling over the ‘right of property’. Also regulatory plan’s normatives would be unnecessary as land market’s ‘free functioning’ would allow a more efficient resource’s distribution over the territory. Critics to this perspective argues that ‘market free functioning’ ignores the fact that cities and specially land markets are far away from a ‘perfect competition’ over the territory as individuals and institutions have different political and financial power, therefore affecting their location choices over the territory. ‘Right of property’ perspective do not include considerations regarding the ‘common good’ as this one should be the sum of all individual’s welfare. Society is understood as the sum of their inhabitant’s choices and the relations among them are reduced to goods and services’ exchanges inside the urban context. Under this perspective Government role is reduced to the minimum, public spaces and political discussion almost do not exist (Trivelli, 2007).

On the other hand, ‘Common Good’ perspective considers that ‘right of property’ should be subordinated to inhabitants’ common interests. Under this perspective Government has an unavoidable responsibility regarding city’s urban development, implying ‘common good’ promotion through planning instruments like regulations and norms. This role is unique for the Government as a ‘neutral’ body can orientate city’s development considering market trends that should be evaluated considering common good and ensuring inhabitants participation. Private parties persue of profit and their actions over the market foster city’s development, however cities has a ‘public nature’ that is expressed in physical, economical, legal, cultural and political manifestations; therefore governance is a fundamental part of society as this manifestations have to be coordinated. ‘Common good’ perspective consider that norms and regulations is what provides value to private properties as entails an order, clear rules for all parties and private property protection through regulations stating land uses and form (Trivelli, 2007)

‘Free Market’ – ‘Land Rent Theory’

Economist and urban planners following the principles of ‘right of property’ and ‘free market’ have been influenced by the School of Chicago and particularly by the work of William Alonso ‘Location and Land Use: towards a general theory of land rent’ (1964). Alonso propose a ‘neo-clasical framework’ where activities locates over the urban space according to an ‘isotropic’ competitive market (Figure 42) where there is no physical, legal, political, social or cultural elements that could interfere with market’s free functioning that is supposed to operate in the context of a ‘perfect competition’. This theory is a residential location static model developed from the demands of ‘homo economicus’ inhabitants that are aimed to maximize their investments. The model considers a monocentric structure with symmetric extensions towards peripheral areas; economic actor’s location decisions are studied according to their distance to the center (transport time and cost) and available land (surface and cost). In this ‘abstract urban context’ resource’s optimal distribution (functional and territorial) would be achieved through market’s free functioning; city’s internal organization would be an automatic scheme of gradient densities starting from the center (higher density) towards peripheral areas (lower densities). Land prices would follow the same gradient structure starting from high values in the center to lower values in the periphery adopting the shape of a ‘circus tent’ (Figure 43). Market’s free functioning
would allow also the transition from urban activities to agricultural (or rural) uses according to their respective profitability, therefore, market’s free functioning would allow to automatically determine city’s size and growth (Trivelli, 2007).

On the other hand, ‘Land Rent Theory’ considers that market’s analysis cannot be isolated from physical, legal, political, social or cultural factors as land prices depend on ‘causality relations’ with different ‘external factors’ that compose ‘real urban context’ affecting activities’ location decisions over the territory. Rosalba Todaro (1978) based on the application of ‘Land Rent Theory’ by A. Marshall (‘Situation Rent’) summarized ‘Land Rent Theory’ applied to the urban case according to four relevant considerations:

1) Land rent is related to the part of the product that is paid according to land’s original and indestructible attributes (differential rent I), to the surplus obtained as consequence of land’s yield capacity (differential rent II), and the gains obtained from land’s ‘spatial advantages’ (monopolic rent).

2) Product’s price in the market is the required price to support production, therefore, its product’s price the one that determines land’s rent.

3) Land’s rent is a surplus, therefore is not included in cost’s calculations of the products using it.

4) In a ‘competitive context’ all land’s rent goes to land’s owner.

Under this vision land’s rent is related to all external factors with which the field interacts. Urban context conditions are the ones that determine land’s development capability and therefore the willingness to pay for it. From this it can be stated that land’s value is the consequence of urban societies’ productive effort, including public and private resources. External factors determining land’s value (beyond shape and size) can be summarized in the following points: transport system and accessibility, centrality, city’s area and neighborhood, location according to city’s socio economic structure, location demands and land uses (zoning), public interventions (infrastructure investment, urban regeneration, urbanistic norms (like zoning, land use, density, maximum height, constructability), etc.) and identity (Trivelli, 2007).

Analyzing land values of different South American cities (Figure 44), Trivelli was able to determine that land value’s spatial structure is not according to Alonso’s ‘circus tent’ shape. South American cities has land value’s structures characterized by a central very high ‘cusp’ of land values (monocentric cities) were city’s roads, and transport means converge, where city’s main economic and political activities concentrates, and with different land price levels over the rest of the territory according to the concentration of ‘external factors’ (mentioned before) that gave the areas their particular land development capability. Considering the before mentioned data is possible to state that cities do not perform in a ‘perfect competition’, cities’ predominant context is one of ‘externalities’ generating a segmented market where land values differs over the territory according to the potentials of each particular area.

However, land market values are not only depending on land’s relations to their urban context, also during land market’s process the retention and ‘speculations’ about urban plot’s future capabilities can ‘distort’ land prices. In some markets speculation is considered as a positive practice, however in land markets cannot be

Figure 42. Alonso’s land value model. Source: Alonso (1964)  
Figure 43. Adaptation of Alonso’s model. Source: Bodoni (1985)
considered as positive because land is a ‘non-tradable good’ (cannot be moved from one place to another) and that is a limited resource. Urban land speculative retention has negative consequences over cities’ development because when urban plots are ‘retained’ can affect cities’ continuous development implying high social costs. According to Pablo Trivelli (2007) speculative practices can generate monopolic markets considering land segmented condition (each areas has its own characteristics and development potential) and the possibility that some of those specific ‘segments’ can be owned by few landlords. Land speculative retention to capitalize future plot’s development capabilities, can generate ‘artificial scarcities’ in urban land markets with sufficient land for development. As land is an ‘indestructable and imperashable’ good, landlords can pospose its development until a better land price is obtained.

In the case of Santiago, speculative practices are favoured by the low cost of retaining ‘idle’ plots and also by the fact that ‘surpluses’ obtained from speculative practices are not subject of taxation in the country (Trivelli, 2007). In Chile when landlords are ‘natural persons’ and do not have real estate purposes (inscription of activities in the national tax system) capital gains obtained from land valorization (surpluses) are not considered as rent and therefore are not subject of taxation. Also, ‘idle’ lands inside city’s consolidated area can be declared as ‘agricultural plots’ paying considerable less contributions than developed plots that receive ‘urban condition’ for the effects of contributions payment.

From the incidence of external variables and speculative practices it can be concluded that land markets are far away from ‘perfect competition’. In the case of Santiago, land market can be considered as a monopoly as bigger economic groups are in control of city’s developable urban areas (Trivelli, 2007), and their retention of those plots (speculative practices) configure a market that has been articially controlled for the capitalization of potential future rents.

4.1.2 Santiago’s Land Market - Santiago’s Segregation Patterns

From before section (4.1.1) it was possible to state that according to theoretical economical background land market can be analyzed according to different perspectives and obtaining different results. However, from the result of each perspective it was possible to observe a common conclusion: land prices in Santiago are rising continuously throughout time. According to Pablo Trivelli (2007), if Land Rent Theory is accepted the dymanic that ‘moves’ Santiago’s land prices is urban land demand growth derived from residential and other uses demand, population growth and income growth.

Currently Santiago has a rural inmigration close to zero, meaning that Santiago’s population growth index is similar to country’s population growth index. However, at the same time inhabitant’s per dwelling index is decreasing due to inhabitant’s longer longevity and because of changes in chilean home’s structure (Trivelli, 2007). Country’s economical growth, population growth and reduction of Chilean home’s structure (less inhabitants per dwellings) should produce a higher demand for urban land. According Harald Beyer, between years 2000 and 2010 Santiago used an average of 930 hectares per year for residential purposes and considering other uses demand Santiago’s is demanding 1.800 hectares per year approximately. Beyer considers that for year 2020 Santiago will ‘consume’ 3.600 hectares per year meaning that urban land will be
6,700 apartments and 2,456 dwellings were sold, a 73% of Santiago’s new houses were apartments (Figure 45). Considering that new apartments are mostly located in city’s central areas (highest percentage of new houses) without using ‘new’ urban land; and new dwellings in peripheral urban areas (inside urban limit), Beyer’s estimation of urban land consumption per year should be reconsidered.

City’s residential densification (through PRMS1994 allowed densities and high amount of new apartments introduced into the market) have meant a clear impact over city’s land prices. Land prices increment is related to real estate developments at higher densities that allow obtaining higher profits. For instance if a new high density development is constructed in an area that used to be of low density, land prices will rise from values related to lower densities until the maximum land price that real estate developers are willing to pay for a development of higher density without hampering their internal rates of return. The most important condition of this land values increase because of higher densities is that this relation differs over the city according to product’s price, according to the socio economic target group that the development is aimed for, allowed densities in that particular area, and the particular characteristics of that urban context. Therefore, land’s real estate development capability and high density product’s prices are the main factors explaining land values increment.

Current statistics about dwelling’s markets in Santiago’s 34 Municipalities shows a fluid production with dwellings covering almost all price segments. The only dwelling price segment that is not possible to find in Santiago’s dwelling market are those bellow 34,000 euros. This situation is because city’s land values hampers the financial feasibility of this kind of dwellings mostly destined for social housing purposes. The empirical data shows that since 1998 there are no urban lands in Santiago below 32 euros per square meters that is the maximum amount that a social housing development can pay for land (Trivelli, 2007). Regarding other price segments and inhabitant’s choice between apartments or dwellings, it can be stated that inhabitants are opting for central area’s apartments because of their location benefits. Also, apartment’s preference can be related to country’s home size reduction (inhabitants per home). Smaller homes (like university students, old people and singles, and couples with one kid) express a clear preference in the market for apartments located in central areas or ‘sub central’ neighborhood with good facilities and easy accessibility to city’s centre (Trivelli, 2007).

Regarding land prices in city’s peripheral urban areas it can be observed a clear increment trend due to a higher real estate dynamic. This land prices increment is related to dwelling’s higher value that is posibililited by inhabitant’s higher acquisition capacity (income per inhabitant increase). Peripheral areas land values increment is even higher when there are modifications in the socio economic composition of the urban areas. If over. Pablo Trivelli is critical about Beyer’s estimations because are not been considered residential types demand’s changes (new dwellings and new apartments). Beyer constructed his estimations using census data from 1992 where a 16% of Santiago’s population opted for apartments, however from census data of 2002 it is possible to observe that inhabitant’s preference had changed as a 25% of city’s population preferred to live in appartments. Considering this change, trivelli estimates that from dwellings’s number increase between census (1992-2002) a 70% were appartments. Also Collect Private Consultants estimates that for year 2005,
in a particular area of the city were traditionally low income population was living, developers starts developing residential solutions for higher income groups will imply a valorization of those urban lands as the product’s constructed over those lands are of a higher value and the private developer can obtain a higher profit. Also a higher willingness to pay for the same residential solution (when normatives and socio economic structures remains the same) can explain a rise in peripheral urban areas land values, condition that usually is fostered by a land scarcity in that particular area or an improvement in the ‘external factors’ (accessibility, facilities, security, etc) conditioning the area (Trivelli, 2007). This situation can be observed in Santiago’s eastern area where higher income groups are concentrated.

Higher income group’s ‘self segregation’ can be explained by the benefits obtained from this localization pattern: first, as higher income groups have strong economic and political power can influence over Government decisions and obtain ‘urban benefits’ like public investments, premium facilities, particular urbanistic norms; second, their high acquisition capacity attracts services and facilities’ private investments; and third, their political power allows them to exclude those activities and land uses that are ‘not desirable’ (polluting activities, cementeries, stadiums, social housing developments). This activities or land uses are also known as NIMBY’s: Not in my backyard). In these areas where higher income groups are located are commonly used low densities and big minimum plot sizes as ‘veiled’ instruments of lower income group’s socio economic segregation (as low densities and minimum plot size affects the financial feasibility of residential development for inhabitants with limited acquisition capability) (Trivelli, 2007).

According to Trivelli, Government and higher income group’s influence have favored the development of city’s particular areas, concentrating infrastructure & facilities investments and higher income group’s demand to live there, conditions that consolidate land prices’ tendencial growth over those areas. Higher income groups will always have preference over urban land use as they are able to offer higher land prices (and therefore displace lower income groups to other areas) and also because they have the political power to influence Government decisions.

Land market and higher income groups

In Santiago, higher income group’s have located in the eastern part of the city (detached dwellings mainly) in what is called the ‘eastern cone of high income groups’ as it start from city center until eastern periphery. One of the particularities of this area is that is limited by Cordillera de Los Andes (Chilean regulations do not allow to construct over 1,000 meters) so there are no expansion possibilities further to the east. As available land was obviously going to be over in this area, several real estate dynamics appeared with consequences over eastern’s area and other city’s areas land prices. First, as there is a scarcity of land in this area land values increase. Second, new inhabitants who want to live in this area (mainly existing inhabitant’s sons/daughters) cannot pay current dwelling prices, therefore they have moved to other areas: (a) eastern area central part densifications (apartments), (b) new high income groups developments in Penalolen and La Florida Municipalities (‘eastern high income cone’ southern limit), (c) new high income groups developments in Huechuraba and Chacabuco (norther part of the city, detached from ‘eastern high income cone’) in lands that traditionally were used by lower income groups (Sabatini, 2007).

The areas were high income groups are moving (Penalolen, La Florida, Huechuraba, Chacabuco) are unoccupied areas that are situated in higher income groups ‘mind map’ thanks to effective marketing techniques. The first consequence of this ‘displacements’ is that land prices immediatly increase until being adjusted to real estate developers willingness to pay according to the characteristics and product’s price (dwellings). As higher income groups demand dwellings of higher quality and therefore higher price, land values of the complete area have risen, conditioning other socio economic groups and land uses options of location. For instance Huechuraba used to be an industrial area, after first high income group’s residential developments in the area no new industrial permit have been requested in the Municipality, residential land use its more profitable and despite not been yet allowed residential use in areas of existing industries, landowners prefer to speculate and wait for
a future capital gain. Another effect of higher income groups ‘displacement’ is that social housing is not possible to be developed anymore in areas were traditionally were constructed. The reason is a general land value increase because of ‘more expensive products’ (high income dwellings) arrival to the area.

From the before mentioned examples is possible to identify a ‘territorial chain’ in inhabitants location choice according to their socio economic group and the specific areas of the city where those groups usually concentrate. This ‘territorial chain’ is transmitted through land prices in the extent that specific urban areas are changing their structure and development capability according to ‘new’ socio economic groups arriving to the area. Socio economic group’s transitions and land prices changes are not a mechanic or instant process as the arrival of different social groups to an area is a gradual process. However, predominant socio economic groups are the ones that determine area’s ‘character’ and land prices according to the prices of the products developed over the land (Sabatini, 2007).

Land market and middle income groups

Before mentioned high income group’s ‘displacement’ to areas traditionally used by lower income groups, leads real estate developers with middle income groups as a target group to search for new locations over the city. The result are middle income group’s high density residential developments (apartments) in city’s interior areas (Santiago centre) and dwelling’s development with medium densities in peripheral urban areas like Puente Alto, San Bernardo, Quilicura and Maipu. These municipalities were usually occupied for social housing developments, and now with the arrival of middle income developments their land values have raised. For instance, Puente Alto’s average dwelling price rose from 20.000 euros in 1993 until 65.000 euros approx. in 2005. During the same period land prices increased from 8 euros/sqm until 65 euros/sqm (Figure 46).

Land market and low income groups

As mentioned before, currently is not possible to develop dwellings below 32.000 euros (social housing dwellings) because city’s land values hamper the financial feasibility of that kind of projects. Pablo Trivelli has collected land prices data since 1982, according to his information since 1998 is not possible to find land values in Santiago below 32 euros. This situation has serious implications for the development of social dwellings for lower income groups as the maximum amount of money that social housing developers are able to offer for urban land is 13 euros per square meter (Trivelli, 2007). This maximum amount that they are able to pay is related to project’s financial feasibility as higher land values will imply the need to raise social dwellings price hampering product’s affordability for lower income groups. This situation has two consequences: first, the exclusion of lower income groups from Santiago’s urban land, and second is related to an ‘availability’ or urban land in city’s peripheral area for other income groups as lower income group’s land demand has been transferred to lands outside city’s urban limit.
The three before mentioned relations between land market and socio economic groups cannot be considered as a general condition of the city. As stated before, land markets are specific to area’s particular characteristics. For instance Providencia Municipality (high income groups in city’s central area) has experienced a stable real estate market of high density buildings for higher income groups during last ten years. This ‘stability’ can be observed in Municipality’s average land prices. Despite inhabitant’s income increase land prices have not been affected. A possible explanation for this situation is that real estate developers have precise knowledge about costs and incomes related to investments in this municipality, allowing them to determine the maximum price that they are able to pay for land (residual land value). In Providencia Municipality this maximum price to pay for land has stabilized in 710 euros per square meter (Figure 47). Population’s income increase does not mean that private developers can increase product’s values, is the willingness of inhabitants to pay more for the same residential solution what leads to product’s price increment. This one is not the case of Providencia.

On the other hand, in the case of Nunoa Municipality (middle high income groups in city’s central area) is possible to observe a change in prices and market conditions. Since 1989 has been allowed middle and high density developments in considerable areas of the municipality. Until 1989 when allowed density was low, land prices were around 130 euros per square meter. When higher densities were allowed, land prices increased until 1996 when they stabilized in 390 euros per square meter (Figure 48).

This ‘stabilized’ land price can be considered as the maximum price that developers are willing to pay for developments in this area (considering possible densities and socio economic target group) without hampering their internal rates of return. This example allows seeing that are the products determine land prices and not vice versa (Trivelli, 2007).
4.2 HOUSING POLICY

Housing Policy review was based on the official information published by MINVU on his website (MINVU, 2012) and through interviews with relevant actors who work (or used to) on MINVU and with consultants/academics with expertise over Chilean Housing Policy. Luis Eduardo Bresciani (2012), Roberto Moris (2012) and Andres Iacobelli (2012) are the interviewees from MINVU; and Ana Sugranyes (2012), Alfredo Rodriguez (2012), Pablo Trivelli (2012), Pablo Allard (2012) and Francisco Sabatini (2012) are the interviewees with expertise over the issue.

4.2.1 Housing Policy Description

Housing Policy is implemented by Urbanism & Housing Ministry (MINVU) which is divided in seven ‘divisions’ with different purposes:

(1) Technical Division (DITEC): aimed to research social dwelling’s ‘technical improvements’ and to elaborate studies and data to foster MINVU’s housing and urban development management.

(2) Housing Policy Division (DPH): aimed to ensure that housing policy subsidies are implemented in the complete national territory. DPH attributions are: (a) elaborate housing policy subsidies, establish dwelling’s standards and to elaborate investments plannings to foster subsidies resources. (b) Subsidies’ regulations design and to monitor subsidies’ implementation. (c) To define the required funds to satisfy housing demand. (d) Monitor housing applications before resources’ allocation. (e) Subsidies applications (from inhabitants) management. (e) To define subsidies allocation and to provide legal certificates.

(3) Urban Development Division (DDU): aimed to study and propose (for parliamentary discussion) territorial and urban development national policies; and to develop MINVU’s urban investments programs. DDU attributions are to elaborate and evaluate: (a) Urban development national policies and regulations; LGUC’s (Urbanism & Constructions General Law) modifications. (b) Instructives for planning instrument’s elaboration (regulatory plans). (c) Regulation’s interpretation when is required by public institutions. (d) Urban development’s investments planning and management.

(4) Legal Division (DIJUR): aimed to ensure and monitor that MINVU’s interventions and plans are according to the law and according to what ‘Contraloria General’ (national auditors) states as law interpretations.

(5) Administrative Division (DIVAD): aimed to support MINVU’s divisions management through a ‘modern’ and ‘efficient’ use of material and human resources according to Government’s administrative regulations.

(6) Informatics Division (DINFO): aimed to provide informatic resources and solutions to the different MINVU’s divisions and processes.

(7) Financial Division (DIFIN): aimed to coordinate MINVU’s planning, resources, programming and management according to Ministerial budget.

According to Ana Sugranyes (2012) more than a housing policy what Chile has is a policy of ‘housing finance’, where MINVU sets subsidies to satisfy low income group’s housing demand and private parties takes care of dwelling’s development. Last time than MINVU developed (process management) a social housing project was in 1997 (Copeva dwellings), in that occasion many construction problems were faced (dwellings quality) therefore MINVU decided to be a finance body and left private parties assuming construction management and responsibilities (Trivelli, 2012). Until 2011 subsidies system was organized under ‘communities’ subsidies’ were non-profit organizations (EGIS) organized inhabitant’s demand (inhabitants who scored less than 13.500 points in Chilean Social Protection Form are subject of housing subsidies) , developed a housing project (architects design and construction company budget), sign a ‘Contract for Deed’ with the landlord of housing project’s plot land and then the complete projects was entered into MINVU for the assignation of housing subsidies per each
one of the inhabitants included in the project. In 2011 this system was changed and now subsidies are individually granted to inhabitants. Housing subsidies’ target groups are low income groups (full dwelling’s cost subsidy) and what MINVU’s call ‘emergent’ groups, meaning low income groups that have some ‘debt’ capacity (non complete dwelling’s cost subsidy).

From the before reviewed MINVU’s division two of them have incidence over the urban space Housing Policy Division (DPH) and Urban Development Division (DDU), the other five divisions are related MINVU’s internal organization. These two divisions (DPH, DDU) are related to MINVU’s main functions: the provision of social dwellings and urban developments. But as in before decades the country was facing a huge social dwellings deficit, almost all MINVU’s efforts are directed to the provision (financing) of social dwellings and urban development is considered to be consequence of private initiatives (Rodriguez, 2012). Therefore DPH division has elaborated a set of subsidies that ensures to all Chilean low income inhabitant’s the financial means to access the residential market.

During 2006, Chilean former Government assumes as ‘public responsibility’ segregation problems that the city was facing. To operate over city’s deteriorated urban areas (low income segregation) was decided not to use DDU division potential of urban intervention, and was decided to include in the housing policy’s subsidies (DPH) two new subsidies related to deterioed housing stock refurbishment and subsidies to improve social dwelling’s location inside city’s urban area. The new subsidies are expected to generate segregated areas renovation and a better location of social dwellings by increasing low income inhabitant’s acquisition capacity and by fostering residential private market functioning (Moris, 2012). Current DPH housing subsidies can be summarized according to their levels of intervention: dwelling’s subsidies, neighborhood’s subsidies and territorial subsidies.

**Dwelling’s subsidies**

(1) Integrated Subsidy Title 1 (former Fondo Solidario de Vivienda 2): to buy dwellings with prices until 32.000 euros, in urban or rural areas. The subsidy is aimed for families with ‘saving capacity’ and the ability to complement dwelling’s price with bank credits or personal savings. The family has to score a maximum of 13.400 points in Social Protection Form (MINVU, 2012).

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<tr>
<th>Dwelling’s location</th>
<th>Dwelling’s price (eu)</th>
<th>Subsidy (eu)</th>
<th>Maximum subsidy (eu)</th>
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<tr>
<td>(a) All regions and cities except (b)</td>
<td>Until 32.000</td>
<td>26.000 – 0,5 x P*</td>
<td>16.000</td>
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<tr>
<td>(b) Aysén Region and Magallanes Region; Palena and Chiloé Provinces; Isla de Pascua and Juan Fernández Municipalities</td>
<td>Until 38.800</td>
<td>32.000 – 0,5 x P*</td>
<td>22.000</td>
<td>1.000</td>
</tr>
</tbody>
</table>

P*: Dwelling’s Price

(2) Integrated Subsidy Title 2 (former DS N40): to buy dwellings with prices until 64.000 euros, in urban or rural areas. The subsidy is aimed for families with ‘saving capacity’ and the ability to complement dwelling’s price with bank credits or personal savings. (MINVU, 2012).

<table>
<thead>
<tr>
<th>Dwelling’s location</th>
<th>Dwelling’s price (eu)</th>
<th>Subsidy (eu)</th>
<th>Maximum subsidy (eu)</th>
<th>Minimum saving (eu)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) All regions and cities except (b)</td>
<td>Until 45.000</td>
<td>26.000 – 0,5 x P*</td>
<td>9.700</td>
<td>1.600</td>
</tr>
<tr>
<td></td>
<td>More than 45.000 Until 64.000</td>
<td>3.200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Aysén Region and Magallanes Region;</td>
<td>Until 58.000</td>
<td>32.000 – 0,5 x P*</td>
<td>13.000</td>
<td>1.600</td>
</tr>
</tbody>
</table>
(3) Fondo Solidario de Vivienda 1 - Group housing project’s construction for ‘vulnerable’ inhabitants in new land plots: this subsidy allows to a group of organized families to built social housing complexes (with facilities included) in new urban or rural lands without bank credits. At least a 70% of all applicants must have scored less than 8.500 points in Social Protection Form, whereas the other 30% can score until 13.500 points. Subsidy’s amount will vary according to the municipality where the development is located, starting from 10.600 until 15.000 euros. Applicants should contribute with a minimum saving of 323 euros (MINVU, 2012).

(4) Fondo Solidario de Vivienda 1 / Variation 1 – For social dwelling’s construction in landlord’s plot land and ‘emergent’ groups plot land’s densification: this subsidy supports the construction of social dwellings with a maximum price of 32.000 euros, inside landlords own plot. The subsidy is aimed for urban and rural areas. Applicants must have a maximum score of 13.483 points in Social Protection Form, have ‘savings capacity’ and have to be able to complement dwelling’s total price with bank’s credits or personal savings. Applicants should contribute with a minimum saving of 970 euros (MINVU, 2012).

<table>
<thead>
<tr>
<th>Dwelling’s location</th>
<th>Dwelling’s price (eu)</th>
<th>Subsidy (eu)</th>
<th>Maximum subsidy (eu)</th>
<th>Minimum saving (eu)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) All regions and cities except (b) and (c)</td>
<td>32.000</td>
<td>26.000 – 0,5 x P*</td>
<td>14.500</td>
<td>970</td>
</tr>
<tr>
<td>(b) Valparaíso, Viña del Mar, Concón, Quipué, Villa Alemana; Concepción, Talcahuano, San Pedro de la Paz, Chiguayante y Hualpén; Puente Alto, San Bernardo municipalities and Santiago province.</td>
<td></td>
<td></td>
<td>16.000</td>
<td></td>
</tr>
<tr>
<td>(c) Aysén Region and Magallanes Region; Palena and Chiloé Provinces; Isla de Pascua and Juan Fernández Municipalities</td>
<td>38.800</td>
<td>29.000 – 0,5 x P*</td>
<td>19.000</td>
<td></td>
</tr>
</tbody>
</table>

P*: Dwelling’s Price

(5) Fondo Solidario de Vivienda 1 / Variation2 - For social dwelling’s construction in landlord’s plot land and ‘vulnerable’ groups plot land’s densification: this subsidy allows to a group of ‘vulnerable’ families to construct a dwelling in their respective plot lands or in a plot land where already exists a dwelling (plot densification). This subsidy can be used in urban and rural areas, without families’ debt (no bank credits). At least a 70% a applicants total number must have scored less than 8.500 points in Social Protection Form, whereas the other 30% must have scored until 13.484 points. Subsidy’s total amount will vary according to the municipality where the dwelling is located, starting 10.600 until 15.000 euros. Applicants should contribute with a minimum saving of 323 euros (MINVU, 2012).

(6) Integrated Subsidy Title 2 (former DS N40) – Variation 1: to buy dwellings with prices until 64.000 euros, in urban or rural areas. The subsidy is aimed for families with ‘saving capacity’ and the ability to complement dwelling’s price with bank credits or personal savings (MINVU, 2012).
<table>
<thead>
<tr>
<th>Dwelling’s location</th>
<th>Dwelling’s price (eu)</th>
<th>Subsidy (eu)</th>
<th>Maximum subsidy (eu)</th>
<th>Minimum saving (eu)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) All regions and cities except (b)</td>
<td>Until 45.000</td>
<td>26,000 – 0,5 x P*</td>
<td>9.700</td>
<td>1.600</td>
</tr>
<tr>
<td>More than 45.000 Until 64.000</td>
<td></td>
<td>3.200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Aysén Region and Magallanes Region; Palena and Chiloé Provinces; Isla de Pascua and Juan Fernández Municipalities</td>
<td>Until 51.600</td>
<td>29,000 – 0,5 x P*</td>
<td>11.300</td>
<td>1.600</td>
</tr>
<tr>
<td>More than 51.600 Until 64.000</td>
<td></td>
<td>3.200</td>
<td></td>
<td></td>
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</tbody>
</table>

P*: Dwelling’s Price

(7) Dwelling’s refurbishment and improvement subsidy – Family ‘Heritage’ Protection program: aimed to allow dwelling’s (with a maximum price of 21,000 euros) refurbishment or improvement. Applicants cannot have scored more than 13,484 points in Social Protection Form. Subsidy’s total amount will vary according to the municipality where the dwelling is located, starting from 1.600 until 2.100 euros. Applicants should contribute with a minimum saving of 100 euros (MINVU, 2012).

(8) Dwelling’s extension subsidy - Family ‘Heritage’ Protection program: this subsidy allows resources for dwelling’s extensions (dwelling’s maximum price of 21,000 euros). Applicants cannot have scored more than 13,484 points in Social Protection Form. Subsidy’s total amount will vary according to the municipality where the dwelling is located and according to dwelling’s original surface. For dwelling’s extensions the subsidy will vary from 2.900 until 8.700 euros. For apartments extensions will vary from 3.000 until 11.300 euros. Applicants should contribute with a minimum saving of 160 euros (MINVU, 2012).

(9) Dwelling’s thermal conditioning subsidy – Family ‘Heritage’ Protection program: this subsidy allows improving dwelling’s thermal conditioning (for dwellings with a maximum price of 21,000 euros). Applicants can not have scored more than 13,484 points in Social Protection Form. Subsidy’s maximum amount will vary according to the municipality were the dwelling is located, staring from 3.400 until 4.200 euros. Applicants should contribute with a minimum saving of 100 euros (MINVU, 2012).

**Neighborhood’s subsidies**

(10) Community facilities’ subsidy - Family ‘Heritage’ Protection program: this subsidy allows to built, maintain or refurbish community facilities or ‘national property’ of common good. The subsidy is aimed for groups of families living in social dwellings with a maximum value of 21,000 euros, located in urban or rural areas. Also can apply families renting properties if the intervention is related to public spaces improvement or public buildings refurbishment. According to the municipality where the dwellings are located the subsidy can vary from 390 until 520 euros per dwelling. Applicants should contribute with a minimum saving of 32 euros (MINVU, 2012).

(11) Paving subsidy: this subsidy is aimed to finance paving works for unpaved roads or deterioered paved streets. ‘Vulnerable’ residential areas have priority in resources’ allocation. ‘Municipal Paving Committees’ have to apply for MINVU’s resources (subsidy) for specific streets inside their municipality. Paving works will be financed as follows: ‘Municipal Paving Committees’ have to contribute with 5-25% of paving work’s total cost. If ‘Municipal Paving Committees’ are from ‘vulnerable’ municipalities they are exempt from this contribution; Municipalities have to contribute with 5-25% of paving work’s total cost. If municipalities have more than 50% of lower income inhabitants (according Social Protection Form) they are exempt from this contribution; MINVU will finance the required resources to complete paving work’s total cost (MINVU, 2012).

(12) Public areas improvement subsidy: allows constructing new public investments (buildings, squares, pedestrian roads, cicle paths, etc.) or to refurbish existing ones with the objective of recovering urban area’s
‘heritage districts’ or ‘emblematic areas’. Low income group’s municipalities have priority (Social Protection Form). Subsidy’s application is conducted by municipalities. All works have to be related to properties owned by municipalities or MINVU. Subsidy’s resources can be used in private properties if they are destined for public use and if they are of free access to all inhabitants. Municipalities’ financial contribution will vary according to their municipal budget level (from 0-25% of work’s total cost respectively). Work’s total cost cannot exceed 970,000 euros and cannot be less than 96,000 euros (MINVU, 2012).

(13) ‘I love my neighborhood’ subsidy – Neighborhood’s Recovery Program: this subsidy is applicable to 200 neighborhoods considering ‘integral urban interventions’ (interventions and social management). 550,000 inhabitants are the target groups of these interventions (3% of Chilean population and 10% of low income population). The selected neighborhoods were identified by MINVU, Regional Governments and municipalities according to the following criteria: neighborhoods from municipalities with more than 70,000 inhabitants or urban areas with more than 100,000 inhabitants, located in regional capitals or port’s cities with physical deterioration and social vulnerability.

MINVU’s SEREMI of each region is responsible for program’s implementation ensuring local authorities and inhabitant’s involvement. Each one of the selected 200 neighborhood has a ‘multi-disciplinary’ team in charge of program’s management, control and implementation supervision (MINVU, 2012).

(14) ‘Integration’ subsidy: aimed for social housing developments considering a 30% of total units for social dwellings subject of Fondo Solidario 1 (numbers 1 and 3 in this description) and the rest of the dwellings with a maximum price of 64,000 euros (subject of Fondo Solidario 2, number 2 in this description). The subsidy provides extra 3,500 euros to inhabitant’s buying dwellings in this ‘mixed developments’. The idea is to foster ‘middle income’ social groups to buy dwellings in neighborhoods including lower income group’s dwellings.

<table>
<thead>
<tr>
<th>Dwelling’s price (eu)</th>
<th>Subsidy (eu)</th>
<th>Minimum saving (eu)</th>
<th>Integration subsidy (eu)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Until 32,000</td>
<td>8.900 – (P* x 0.175)</td>
<td>1,600</td>
<td>3,500</td>
</tr>
<tr>
<td>More than 32,000</td>
<td>3,500</td>
<td>3,200</td>
<td>3,500</td>
</tr>
<tr>
<td>Until 64,000</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

P*: Dwelling’s Price

*Territorial subsidies*

(15) Localization subsidy: aimed to improve the localization of social dwellings inside urban areas. To be subject of the subsidy, social housing developments have to present a project (design and budget) that is located in an urban area with more than 5,000 inhabitants, with full sanitary and sewer coverage, to be located at least at 1,000 meters from a school and 2,500 meters from a ‘health center’. The subsidy per family included in the development will not be higher than 3,500 euros; if housing developments consider plot land acquisition the subsidy can be raised with a maximum of 6,000 euros. Dwellings that receive this subsidy cannot be sold in 15 years (MINVU, 2012).

(16) Urban Renovation Areas Subsidy: aimed for the acquisition or development of new dwellings in specific areas of the city. This subsidy provides a máximo of 6,500 per family that should be complemented with personal savings or bank credits to finance dwellings total cost. Applicants’ minimum savings contributions will vary according to dwellings’ total price. In Santiago there are currently seven urban renovation areas: Santiago Centre, Colina, Conchali, Lo Prado, Nunoa, La Cisterna and La Pintana (MINVU, 2012).

<table>
<thead>
<tr>
<th>Dwelling’s Price (eu)</th>
<th>Subsidy (eu)</th>
<th>Minimum saving (eu)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Until 32,000</td>
<td>6,500</td>
<td>3,200</td>
</tr>
<tr>
<td>Until 64,000</td>
<td>6,500</td>
<td>6,400</td>
</tr>
</tbody>
</table>
According to Luis Eduardo Brescinai (2012) from all above mentioned subsidies, the ones related to new dwellings construction concentrate the main part of MINVU’s resources. However, subsidies aimed to dwelling’s refurbishment or neighborhood’s improvements are the ones with the highest number of applications. This ‘disbalanced’ distribution of subsidies between ‘new dwellings’ and ‘refurbishments’ has a ‘political explanation’. As housing deficit has a high ‘social impact’ all MINVU’s efforts are addressed to reduce it (inhabitant who already have a dwelling can wait) and also because is a ‘popular’ political image to construct and inaugurate new social dwellings complexes (Bresciani, 2012). Pablo Trivelli (2012) adds to this discussion that MINVU’s ‘unbalanced’ budget between new dwellings and refurbishment/renovation is also based in wrong assumptions about city’s housing deficit, last MINVU’s deficit estimation was around 400.000 housing units (MINVU’s SEREMI Region Metropolitana, 2008) number that according to Trivelli is too high considering the amount of social dwellings constructed in the last decades and tendential city’s population and growth (Trivelli, 2012).

**4.2.2 Housing Policy – Santiago’s segregation patterns**

The relation between housing policy and Santiago’s segregated patterns is given by housing policy purpose, that is to facilitate lower income group’s access to the residential market. Therefore Santiago’s segregation patterns that affect lower income groups will be reviewed: ‘Low income group’s socially homogeneized segregated areas (south and north-west)’ and ‘New low income inhabitant’s exclusion from city’s urban area’.

**Housing Policy – ‘Low income group’s socially homogeneized segregated areas (south and north-west)’**

According to Alfredo Rodriguez (2012) there were two periods of time that highly contributed to the consolidation of Santiago’s low income groups segregated areas (south and north-west areas (Figure 11)) and both of them are related to Chilean housing policy. First, low income groups informal settlements eradication between 1979 and 1985 (Figure 9) that had as main destinations for eradicated inhabitants, social housing developments in city’s south and north-west areas. And second current subsidies’ housing policy that during last decades (mostly 80’s and 90’s) developed massive social housing developments in the two before mentioned areas of the city. As the main objective was to solve the deficit, and housing subsidies do not allow MINVU’s to have a control about how the supply is been generated, private agents developed a system were their profits for constructing social dwellings were according to ‘economies of scale’ meaning that the same residential solution repeated several times will allow to reduce costs and therefore higher profits for developers (Cerda, 2012). To achieve this ‘economies of scales’ it was necessary to have big plot land to locate as many as possible residential solutions, and at a cheap price. Those conditions were founded in current segregated areas in city’s south and north-west parts. These areas were available in big surfaces and at low prices because they used to be the location of undesirable functions (industries, workshops) and low income groups eradicated families from 1979 (Moris, 2012).

In 2005 Alfredo Rodriguez and Ana Sugranyes conducted a study called ‘Those with a roof’ (Rodriguez, et al. 2005) were they state the deficient conditions of the social dwellings constructed under current housing policy and the consolidation of segregated areas inside the city detached from the dynamics and opportunities that the city could offer. Five years later Ivan Poduje and his consultant’s office ‘Atisba’ conducted a similar study analyzing current social housing stock in the country. Their conclusions were similar than the study from Rodriguez & Sugranyes adding that segregated areas conditions have worsened and that segregated areas have become ‘urban guettos’ (Atisba, 2010). Also it has to be considered low income segregated areas inhabitant’s high levels of dissatisfaction with the places where they live. According to Sugranyes (2012) most of them are...
willing to leave their neighborhood due to the deteriorated environment and the negative consequences that represents. This dissatisfaction can be observed in the low amount of social dwellings transactions and the low demand in the rental market for living in segregated areas; only a 23% of social dwellings in segregated areas is rented (Sugranyes 2012).

As mentioned before in 2006 Chilean Government decided to solve city’s problem of segregation and one of the instruments to achieve this goal was housing policy. Current housing stock and neighborhood’s refurbishment subsidies (numbers 7, 8, 9, 10, 11 and 12 in before described list of subsidies) and the selection of 200 neighborhoods for public areas improvement and social intervention (‘I love my neighborhood’ subsidy Number 13 in list of subsidies)) were included in Chilean housing policy with the objective of revert segregated areas negative impacts. According to Alfredo Rodriguez, refurbishment subsidies have meant marginal impacts due to interventions limited scope (dwellings extension, refurbishment, thermal a conditioning) that improve dwellings and neighborhoods conditions but do not work over the real problems of segregation: extended areas of social homogeneity (Rodriguez, 2012). Regarding ‘I love my neighborhood’ program, Rodriguez reflects about the same problems than refurbishments subsidies: the intervention is aimed to improve public spaces and common buildings when segregation problems are related to segregated areas monofunctionality (Rodriguez, 2012). Also if the aim is to renew the housing stock the appropriate operation should be redevelopment (demolition and construction) as most of the housing stock is too deteriorated and refurbishment works will only cover dwelling’s real problems (Rodriguez, 2012).

_Housing Policy - ‘New low income inhabitant’s exclusion from city’s urban area’_

From section 4.1 (Land Market) was stated than since 1998 there are no land values inside Santiago’s urban area according to the prices that social housing developments are able to pay. In 2003 a modification to Urbanism & Constructions General Law (LGUC Article 55, see section 3.5.1 (d)) reacted until this problem allowing to construct social dwellings in rural areas where land prices were according to social housing budgets. However, in 2006 former Governmet states that city’s segregation problems (exclusion of new low income inhabitants and segregated areas) were public responsibility and that it was necessary to counteract them. Regarding new low income group’s exclusion from city’s urban areas, two new subsidies were introduced to the housing policy with the objective of ensuring well located urban land for social housing developments: ‘localization subsidy’ (number 15 in before described list of subsidies) and ‘integration subsidy’ (number 14) (Trivelli, 2012).

About ‘localization’ subsidy there is a general concensus among ‘research interviewees’ that the subsidy was a necessary instrument to allow low income groups to access city’s urban area but the instrument was not well designed and their effects were opposite to what was expected. First the requirements for its allocation were too broad (projects have to be located in an urban area with more than 5,000 inhabitants, with full sanitary and sewer coverage, to be located at least at 1.000 meters from a school and 2.500 meters from a ‘health center’) so finally almost the complete urban area of the city was subject of the subsidy without ‘rewarding’ a better location (Trivelli, 2012) (Iacobelli, 2012) (Sabatini, 2012). Second, as the subsidy was applicable to all city’s urban area, private developers ‘internalized’ the subsidy and the effect was a general rise of city’s land values with the negative consequences of not allowing low income groups access to city’s urban area (Trivelli, 2012) (Iacobelli, 2012) (Sabatini, 2012). Regarding ‘integration’ subsidy its effect is hard to evaluate as there are only three social housing developments that used the benefit (Rodriguez, 2012). This social housing development have represented a valuable improvement in social housing standards, however still cannot be considered as significant instrument to allow a better location of social dwellings due to the limited amount of dwellings constructed under this system. Private developer’s low use of this subsidy can be related to the ‘risks’ of mixing socio-economic groups in the same project as there is no tradition in the country of this type of developments (Rodriguez, 2012)
4.3 TRANSPORT & INFRASTRUCTURE

Santiago’s Transport & Infrastructure review was conducted based on an interview with Pablo Allard who has specialized in city’s infrastructure and transport systems (Pablo Allard has a Harvard University PHD degree with mention on infrastructure, and also is Universidad Del Desarrollo, Architecture & Urbanism Faculty Dean). Also three relevant articles were considered: ‘Infrastructure impacts and new regulations’ (BBVA-OCUC, 2008), ‘Urban highways concessions: a new way of segregation’ (Greene, 2005) and ‘Urban infrastructure, gentrification and intersectoriality’ (Sabatini, et al, 2008).

4.3.1 Santiago’s Transport & Infrastructure Description

According to Pablo Allard, Santiago’s infrastructure investments are the reflection of a country that in the last decade has doubled his per capita income and today seeks to consolidate its growth in the global networks while repairs on their internal limitations and inequities (Allard, 2012). The 87% of Chilean population lives in urban areas with a complete coverage of services like drinking water, sewerage and electricity. In the case of Santiago, sewerage coverage is close to the 95%, drinkable water coverage close to 100%, wastewater treatment coverage (that in 1990 was close to 5%) now is around 90% (BBVA-OCUC, 2008).

At the beginning of the 90’s, Chile had an outdated infrastructure due to a lack of investments in the previous twenty years (economic recession). Infrastructure deficit was that big that only to ‘actualize’ roads network it was necessary an investment of 5.5 million euros approximately (BBVA-OCUC, 2008). Infrastructure deficit represented a risk for country’s economic development as country’s exports increment required to recover and expand roads, maritime ports and airports infrastructure to remain competitive compared to other ‘emergent’ countries. Therefore Chilean Government during that period (1990-1994) considered two lines of action regarding country’s infrastructure: infrastructure & services private concessions, and an ‘infrastructure investments plan’. Private concessions were a solution to update country’s infrastructure deficit; private developers obtained the right to construct and operate specific infrastructures for a pre-determined period of time. During that period private develops were able to recover their investments by toll payments; once the period was over the constructed infrastructures returned to public ownership. The idea behind this mechanism was to avoid emptying the national budget only in connectivity’s recovery, slowing down country’s economic activity or to reduce budgets for another projects with higher urgency or with higher social benefits (BBVA-OCUC, 2008). Private concessions allowed the construction of airports, maritime ports and ‘inter-urban’ highways, increasing country’s connectivity and to contribute country’s steady economical growth (Allard, 2012).

‘Infrastructure’s investment plan’ was elaborated in 1993 when Chilean Government entrusts Marcial Echenique (Chilean urban planner) a study regarding ‘Chilean Central Area’ (5th-6th and Metropolitan regions). The result of the study was a document called ‘Infrastructure Development Analysis for 5th. 6th and Metropolitan Regions’. Regarding Santiago that document states that the only way to maintain city’s economic and competitiveness indicators was to increase city’s mobility and land availability. The study proposed the implementation of a set of inter-regional highways (see section 3.3.1 (b) About Region Metropolitana connectivity) and urban highways (see section 3.5.1 (e) Roads infrastructure design), together with the development of transport policies like subway extension, urban roads toll, trams, commuter rail lines and public transport system optimization (BBVA-OCUC, 2008). Urban highway’s principal effect is a decrease of the travel times inside the city and towards peripheral areas, producing as a second effect a rise in the demand and valorization of new urban lands. Urban land’s new demands can be observed in Santiago’s land prices increase during last years, where municipalities like Pudahuel, Renca and Quilicura raise their land values since the announcement of urban highways construction (Figures 38, 49 and 50).
Despite the successful construction of the urban highways included in the plan (1993), the proposed ‘integral’ approach (consisting of infrastructure’s investment coordination with public transport and land policies) was not achieved due to different visions about how the city should be planned among the public institutions (ministries and municipalities) that take part in the urban discussion. Many of the initiatives included in 1993’s plan were not implemented, were modified or were posposed; therefore plan’s objective of ‘city generation’ through infrastructure and not only connect specific points was restricted to a list of interventions and detached developments aimed to impact’s mitigation instead of capitilazing investment’s benefits (BBVA-OCUC, 2008). Every public institution (ministries and municipalities) concentrated in their own definition of projects to improve city’s infrastructure in an ‘isolated’ and ‘unilateral’ internal discussion. The possibility of a ‘multi-sectoral’ approach to achieve infrastructure requirements of 1993’s plan was missed and the results of city’s uncoordinated infrastructure investments are now visible. ‘Urban highways are like ‘disconnected parts’of a bigger machine that not only is missing pieces; some of the pieces are working in the opposite direction’ (BBVA-OCUC, 2009). An example of public institutions disconnected way of working over the city can be observed during the implementation of PRMS1994. While MINVU (Urbanism & Housing Ministry) was enacting PRMS1994 considering a urban limit restricting city’s growth, MOP (Public Works Ministry) was enacting a new plan of roads investments to facilitate city’s urban extension. Also during MOP’s public tender for the private concession of ‘Costanera Norte Highway’, MINVU’s was informing about the construction of a new free highway (Costanera Sur) with a similar design than Costanera Norte. This lack of coordination among ministries exposes the lack of visions and common objectives about Santiago’s urban development and also shows that despite accessibility problems that an urban highway has by concept (to be explained in ‘Transport & Infrastructure and segregation’), their implementation is not possible from an ‘isolated’ sectorial approach as the effects of this kind of developments are bigger than the scope of any particular ministry (BBVA-OCUC, 2012).

Together with urban highways, 1993’s transport infrastructure plan recommended the re-design of Santiago’s public transport system, considering a system of subway lines, commuter rails, trams and buses to connect city’s urban and rural areas. The result should be an ‘integrated’ transport system allowing metropolitan inhabitant’s displacements, sustainable modal transport transfers, traffic jams control and the valorization and availability of new land markets in the peripheral areas of the city. From the before mentioned transport systems only bus transport system re-design, subway lines, and one line of commuter rail have been implemented. Bus system re-design is knowed as ‘Transantiago’ (Appendix 8) and it was implemented with the objective of producing a radical change in the way public transport system was being offered. The idea was to end with the unefficiencies of the previous system due to an uncontrollable number of operators configuring a ‘monopolic block’ that contributed to the consolidation of a public bus system of low quality, unsecure, producing congestion in the streets and contributing to city’s contamination due to used machine’s obsolescence (BBVA-OCUC, 2008). Transantiago plan was aimed to ‘professionalise’ the system through routes design modification, bus fleet renewal, control system improvements and private concessions of the different
routes. Despite Transantiago was inspired in successful Latin American experiences like Transmilenio in Colombia, the Chilean solution did not consider critical elements for plan’s success. These terms were related to difficulties in the implementation of Transantiago’s technological support, automatic payment system (chipcard) and fleet coordination; generating successive postponements, millions in loses for private operators and the state, excessive travel times, confusion and distress for users (BBVA-OCUC, 2008).

Transantiago implied a complex design due to the scale of the operation (the complete city of Santiago). From the beginning there was an excessive attention to economic and management plan’s variables, reducing significantly infrastructure and operative quality resource’s amount. Plan’s theoretical design ignored previous system’s market equilibrium (meaning service coverage according to demand) producing that users needed to adapt to system’s design instead of the public transport system adapting to inhabitant’s needs. Transantiago original infrastructure’s investments were reduced in more than 310 million euros, these reductions implied plan’s exclusion of ‘exchange’ stations, re pavings, ‘urban corridors’ exclusive for buses, bus stops and the redevelopment of important roads junctions (BBVA-OCUC, 2008). Currently Transantiago has not been able to offer shorter travel times than the previous transport system; reasons that could explain this situation are related to the shared use of roads with private vehicles, limited available space in bus stops for loading and unloading of passengers and the increased number of transfers during one travel.

Transantiago’s ‘poor’ infrastructure and design (with shared responsibilities between government and private parties over this issue) is nothing compared with system’s ‘legal problems’. Private operators contracts were the real reason why Transantiago was implemented without all the aspects of the proposal solved (in the contracts was stipulated the starting date of the plan, private operators demanded its accomplishment to be able to recover their investments). Also the bad service during the first months can be explained by the six months of ‘probationary period’ stipulated in the contracts for private operators. The most critical time of Transantiago was exactly that period where Government did not have the attributions to demand for a better services as private operators were in ‘probationary period’ by law and at the same time proposal’s creditability under inhabitant’s opinion was severely damaged. Currently Transantiago discussion is beyond its technical problems and has become a political problem. Despite unfavourable press and inefficient system management, Transantiago cannot be considered as a complete failure. Plan’s public condemnation obliged the different Governments to inject extra resources considering the social impact that a public transport system has. Last measures regarding Transantiago’s improvement were the re-negotiation of contracts with private operators to introduce incentives towards a better service and resources injection to compensate plan’s deficient infrastructure. Those measures have meaned improvements but still there is a lot to do to have a public transport system working properly (BBVA-OCUC, 2008).

At the same time than urban highways and Transantiago design and implementation, new subway lines were constructed (Appendix 9). Due to Transantiago’s low quality service, subway system has received a higher amount of passenger. Despite of comfort, cleanliness and movility within platforms quality standards diminution, the higher amount of passengers has not meant service frequency’s diminution or travel times’s increase. Currently two new subway lines extensions are planned to be constructed, meaning an important increase in subway service coverage and the easy access of an important number of inhabitants to the system considering that Transantiago will not be an option (low quality service) if the subway option is there. However, it has to be considered that subway system has a maximum passenger’s capacity that without a surface transport system (Transantiago) absorbing part of travels demands could mean the saturation or collapse of the subway system. Regarding this issue the discussion has turned into rise subway tickets price to foster the use of Transantiago, but considering surface public system low quality and the limited budget of lower income groups this measure has been postponed until Transantiago can be considered a similar option than Santiago’s subway (BBVA-OCUC, 2008).
During last years Santiago’s subway has concentrated important infrastructure resources in the efforts to improve city’s connectivity (2.700 million euros approx.). In only ten years subway system has grown from 52 stations and 40.3 kms, to a system of 108 stations and 102 kms. Some critics argue that instead of subway’s last investments those resources could have been destined for the implementation of a surface public transport system (Transantiago) with ‘subway quality’ and coverage for the complete city (including deprived areas). According to these critics, subway extension resources are enough to construct buses ‘exclusive roads’ (corridors) and ‘platform’ bus stops that could allow to decrease surface public transport system travelling times, buses time schedule compliance and an improvement on passengers comfort (BBVA-OCUC, 2008). Apart from the discussion about subway’s priority over other transport systems with higher social benefit, subway investments have meant positive effects over subway’s new covered areas (like Recoleta and Maipu municipalities) increasing inhabitant’s connectivity, diminishing travelling times, and at the same time meaning an increase of the land values of those areas close to subway stations (Figure 51 and 52).

Regarding commuter rail, only one line has been implemented connecting Santiago’s city centre with Rancagua city (in country’s 6th Region) and peripheral urban centers like San Bernardo and Buin. Another commuter rail project connecting Santiago’s centre and peripheral urban centers like Til Til, Talagante and Melipilla was proposed for private concession competition about ten years ago. However, due to the high costs involved (underground tunnel to access city’s centre) no tenders were received from private parties (Figure 53). Also, due to Santiago’s population size and detected problems with Transantiago, an increasing number of private proposals to develop ‘light train’ lines (tram) are being received. However, all these proposals have been rejected as they are planned to operate in city’s main roads consisting of multiple ‘signalized junctions’ and the evaluation is that tram’s speed will not be better than surface vehicles making unfeasible their implementation. Evenmore, in those cases were the demand and technical conditions made possible trams’ implementation; the Government has opted for subway’s extensions (BBVA-OCUC, 2008).
4.3.2 Transport & Infrastructure and Santiago’s segregations patterns

Infrastructure investments (at regional and city scale) have meant an unquestionable economical benefit as the improved connectivity have expanded the markets allowing more, cheaper and higher quality products that can be distributed efficiently (lower cost), further and faster (Allard, 2012). Santiago’s continuous infrastructure investments during last decade (mainly roads infrastructure and public transport) have influenced inhabitant’s location decisions, travelling times and their properties’ valorization (BBVA-OCUC, 2012). However, these new conditions (location decision, travelling times and land valorization) facilitated by infrastructure investments varies according to the type of infrastructure and the socio economic groups that are affected. These effects will be reviewed according to Santiago’s three main infrastructure investments reviewed in the previous section: urban highways, Transantiago and subway investments.

4.3.2.1 Urban Highways

Urban Highways have represented an improvement in city’s connectivity. In year 1990 to travel from city’s northern part to the south (40 kms approx.) could take around 70 minutes, now with urban highways investments that distance can be covered in 24 minutes (BBVA-OCUC, 2008). However, these connectivity achievements are not applicable for all the types of travels that citizens needs to do inside the city. Urban Highways facilitate long distance displacements or to increase the connectivity among distant points, however the access (physical and social) to the urban highways differs among socio economic groups affecting city’s segregation patterns. Urban highways are only accessible for those who can afford it, as a first requisite is to have a car and also every travel is paid by a toll system (vehicles’s TAG). Therefore, urban highways ‘offers connectivity’ according to acquisition capacity where high and middle income groups can move smoothly by the city from one point to another without any contact with the neighborhoods on their way; and low income groups without a car (majority of them) or without the means to afford toll payments are excluded from an urban system that is changing city’s physical structure. Also it has to be considered that urban highways construction implies city’s ‘physical division’ as these developments implies the construction of ‘barriers’ that can only be crossed in specific street junctions or through pedestrian bridges. Therefore, urban highways also represent an ‘obstacle’ to existing roads networks (and public transport system) as its physical continuity is interrupted with ‘highway’s barriers’ (Greene, 2005). Another point is that urban highways has a limited number of entrances and exits, meaning ‘bottlenecks’ to those specific areas of existing roads network if the design and traffic studies are not properly done. The case of Santiago is that in every peak hour (morning and afternoon) there are specific urban highway’s entrances and exits that collapse due to an unsolved connection to city’s existing roads network affecting the normal functioning of both systems and therefore the ‘smooth’ functioning of Santiago’s public transport system.

4.3.2.2 Transantiago

Considering that urban highway’s investments are not an option for lower income groups due to the cost that their use implies, surface public transport is of significant relevance to satisfy these groups travel needs (work, studies, etc). Higher income groups almost do not use this transport mean because their travels over the city are realized in their private vehicles. Unfortunately Transantiago public transport system cannot be considered a successful plan due to service’s low quality (peak hours saturation, buses’ unsufficient frequency), long travelling times (travelling time of one hour approx. between city’s centre and peripheral areas), unsecurity and general inhabitant’s discontent with plan’s design and implementation (see section 4.3.1 Description). However, from city’s socioeconomic distribution (Figure 1) and transport studies from Francisco Sabatini et al. (2008) it can be observed the influence that public transport has over their paths. Due to passenger’s circulations, streets with the sufficient dimension and normative capacity (land uses) concentrates local markets according to the characteristics and demands of the area (Sabatini, 2008). Unlike urban highways, streets had the capacity to concentrate social interactions as they are the space of ‘goods and services exchange’ and social interactions (Greene, 2008). According to ‘Space Syntax’ theory, one of architecture’s
contributions to society is urban roads network and public spaces construction, because in the way they are disposed determines ‘flow mobility’ and the contacts instances among inhabitants (Greene, 2008). Transantiago has an integration potential because the attraction of passengers around its routes posibilitates linear developments (commerce growth due to inhabitants concentration) with the capability of connecting neighborhoods of different characteristics and socio economic composition (Sabatini, et al. 2008). Transantiago’s proper functioning is fundamental considering the amount of resources that low income groups use in transportation (Santiago’s inhabitants, earning the minimum wage spends 40% of it in transport (Figueroa, 2011)) and that is the only transport mean for those living in peripheral areas (Transantiago is the only public transport with full coverage over city’s territory). An efficient public transport system can contribute to the integration of low income groups to city’s dynamics and opportunities as travel time should be reduced increasing the opportunities of interaction.

4.3.2.3 Santiago’s subway

Santiago’s subway lines represent an efficient transport that because of Transantiago’ problems in the last years has received an important increase in the number of passengers. Despite passenger’s increase the service maintain his frequency and travel times (see section 4.3.1 Description) consolidating subway’s positive image among inhabitants. Subway’s good evaluation can be observed in that all socio economic groups use this service. However, subway coverage does not cover the complete city. Most of city’s peripheral areas inhabitants have to travel by car or bus to be able to access a subway station (Transantiago’s public transport system consider payments per hour of travel including buses and subway lines). The most appreciated attribute of subway among passengers is their reduction of travel times compared to other transport means. However, this travel times are not always ‘door’ to ‘door’, so the extra walk, bus ride or car driving to arrive subway lines should be considered. Subway systems allow the fast connection among different points (stations) over the city. However, does not have an ‘integration’ effect as the characteristics from one station to the other are completely different. Each station facilitates the development of local demands (see section 3.5.6 Pudahuel’s Municipal Regulatory Plan ‘internal’ and ‘external’ effectiveness), but influences among the different areas do not occur, as there is no influence of subway lines over the areas between stations (underground lines).

Furthermore, in some cases the influence between close areas is possible when the local markets around stations grow into systems as is the case of Providencia or Santiago’s city centre. These configurations of ‘systems’ cannot be attributed to subway stations effects as they are the consequence of many centralities. For instance, subway stations in low income segregated areas have only allowed the development of high rise social dwellings (Campodonico, 2012). Subway lines have an integration potential related to reduce low income group’s travel distances and also related to the dynamics that generates around stations. However, a subway station by itself cannot generate low income group’s segregated area re-development, as their social homogeneity is not attractive for the arrival of higher income groups, and their low acquisition capacity do not represent an attractive market for private investors developing facilities or commerce.

As a summary of the before mentioned points, a classification of infrastructures developed by Francisco Sabatini, et al. (2008) is presented. In this classification two types of infrastructure are recognized according to their morphology and their ability to generate or difficult integration. The two types of infrastructure are:

1) ‘Linear infrastructures’ – promotion of social equity: linear infrastructures does not guarantee social equity but they facilitate it as they cross city’s neighborhoods with different socio economic compositions (see section 4.3.2.2). Linear infrastructures can be divided in highways and streets. Highways cannot be considered as an instrument to achieve social equity as they do not allow social contact, whereas streets (Transantiago) are the space of interactions.

2) ‘Point infrastructures’ – associated with increases in city’s inequality: Point infrastructures are more related to facilities provision but also subway stations can be considered under this classification. The relation between ‘Point Infrastructures’ and inequality is given by the fact that facilities varies in amount and quality over city’s
neighborhood according to inhabitant’s income levels (Municipal provision of facilities (see section 3.5.1 (d) Facilities requirements per municipality). Also in lower income neighborhoods NIMBY’s projects (Not in my backyard developments) are usually developed, as those groups have small political power to reject them.

As reviewed before, subway stations in low income group’s segregated areas are not capable to generate a re-development of the area by themselves, however the mere addition of a ‘new factor’ inside area’s functional homogeneity generates an impact as it was possible to see in Pudahuel’s case. Despite that subway stations in Pudahuel did not implied a significant regeneration it allowed the construction of high rise social housing to the demands of inhabitants to live there. Socio economic segregation is not a problem to be solved with a singular solution; potentials of ‘linear’ and ‘point’ infrastructures have to be considered.

4.4 OTHER PLANNING INSTRUMENTS / URBAN DYNAMICS WITH INCIDENCE OVER SEGREGATION - OVERVIEW

The following table (Table 17) summarizes the relation between ‘other planning instruments/urban dynamics’ and Santiago’s segregation patterns and trends. Each relation was stated in the analysis conducted before per each urban dynamic. The purpose of this table is to have a general overview of how this ‘dynamics’ have consolidated or reduced city’s segregation patterns.

<table>
<thead>
<tr>
<th>Segregation patterns</th>
<th>Land Market</th>
<th>Housing Policy</th>
<th>Transport &amp; Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) High income group’s eastern ‘cone’.</td>
<td>- High income group’s homogeneized area allows product’s development for inhabitant’s with high acquisition capacity (high price). - Eastern ‘cone’land scarcity, new high income group’s inhabitants moving outside. -High land values due to ‘offered’products (dwellings) high prices.</td>
<td>- Concentration of premium facilities and services. - Urban highways allow high income group’s fast displacements over the city, allowing them to live in the eastern ‘cone’ and work or study in ‘detached’ areas.</td>
<td></td>
</tr>
<tr>
<td>(2) Low income group’s segregation in city’s south and north-west areas.</td>
<td>- Low income group’s social homogeneity is not attractive for higher income groups (seen as a negative externality). No residential developments (for higher income groups) in these areas. - Undesirable land uses (NIMBY’s) located in socially homogeneized areas also hampers investments arrival.</td>
<td>- Informal settlements eradication during 1979 and massive social housing developments during 80’s and 90’s contributed to consolidate low income group’s socially homogeneized areas. - Currently the are housing policy subsidies for the improvement of deteriorated social dwellings and neighborhoods dwelling’s subsidies - Refurbishment subsidy (b) Extension subsidy - Neighborhood’s subsidies (c) Facilities and environment improvement subsidy (d) Paving subsidy (e) Roads subsidy (f) Public spaces subsidy (g) ‘I love my neighborhood’ subsidy - Also there are ‘territorial’subsidies for specific areas of the city (segregated areas are not included): (f) Urban regeneration subsidy (g) Priority development subsidy</td>
<td>- Low income group’s limited acquisition capacity hampers the arrival of services and commerce investments. - Socially homogeneized area’s municipalities do not have enough resources for the adequate provision of facilities. - Low income groups cannot acces urban highways due to the costs they imply. - Transantiago (public transport system) potential of regeneration but system’s implementation problems still needs to be solved. - Subway stations in socially homogeneized areas increase the demand of location of low income groups but do not attract different investments (than low income group’s residential projects).</td>
</tr>
</tbody>
</table>
| (3) New low income inhabitant’s city exclusion. | - Since 1998 is not possible to find in Santiago land values that allow social housing developments, implying the ‘expulsion’ of low income inhabitants from city’s urban area. | - Current social housing developments in city’s peripheral rural areas have been developed under LGUC Article 55. MINVU (Urbanism & Housing Ministry) allow its use as is the only way to obtain cheap land values for social housing developments. | - Connectivity problems to city’s central areas to low income inhabitants located in peripheral rural areas:  
(a) Urban highways are not an option due to the cost they imply  
(b) Regional highways are only accessible for those living close to them.  
(c) Transantiago public system do not cover all peripheral rural areas. To travel to city’s central areas low income inhabitants have to consider more than one transport mean implying high costs and long travel times.  
- Social housing developments in peripheral rural areas implies extra resources form Government and municipalities to provide infrastructure and facilities. |
| --- | --- | --- | --- |
| Segregation trends | - Middle income groups moving to areas traditionally used by low income groups is facilitated by:  
(a) connectivity improvements of those areas (urban highways, subway extension)  
(b) New low income inhabitant’s ‘expulsion’ to rural peripheral areas, ‘canceling’ their land demands to their original neighborhoods and allowing the arrival of higher income groups that can afford current land prices.  
- Middle income developments are not integrated to existing low income neighborhoods, they isolate from the context through ‘gated communities’.  
- Land values increase as the new ‘offered’ products are of higher price. | - Urban highways and subway extensions allows the location of middle income groups in ‘low income neighborhoods’ as those investments allow fast displacements and to connect with distant areas without having to pass by the neighborhoods in the middle.  
- Middle income groups developments implies the arrival of facilities and services due to their higher acquisition capacity. | --- |
| (4) Middle income groups moving to ‘low income areas’ | - Limited land stock in eastern ‘cone’ (mountains natural limit), foster the displacement of ‘new’ high income groups to peripheral areas of the city traditionally used by low income groups.  
-These areas are close to eastern ‘cone’.  
- The arrival of high income groups implies a general rise of land values and a mofication of land uses pattern.  
- High income developments are not integrated to existing low income neighborhoods, they isolate from the context through ‘gated communities’.  
- Land values increase as the new ‘offered’ products are of higher price. | - New high income developments are located in city’s peripheralurban areas out of subway and Transantiago coverage. Urban highways are the main transport infrastructure facilitating their development as allow to live far away from city’s central areas and at the same having reasonable travel times.  
- High income group’s developments imply the arrival of facilities and services to their ‘new urban areas’ due to their higher acquisition capacity. | --- |
| (5) High income groups moving to isolated areas. | --- | --- | --- |
| (6) 'Old' low income areas growth. | - Due to a general income increase of the inhabitants of specific areas (La Florida, Maipu) some neighborhoods have developed from being an 'stigmatized' low income area to a middle income area. - Land values increase as the 'offered' products are of higher value. | - These areas have a good location inside the city and have benefited from all city's infrastructure investments of the last decades (urban highways, subway extensions, Transantiago). - Inhabitant’s income increase allows the arrival of commerce and service due to inhabitant’s higher acquisition capacity. |
| (7) Concentration of middle income groups in 'linear' infrastructure | - Infrastructure investments generate land values increase of the properties where they pass by. - Land values increase is related to higher demand to be located in those areas of higher connectivity. | - City’s main roads concentrates middle and high income groups (this effect is still not visible for urban highways). - Subway stations do not have the same effect as their impact is ‘punctual’, therefore not allowing to relate areas with different socio-economic structures. |

Table 17. ‘Other planning instruments/urban dynamics’ and ‘Santiago’s segregation patterns and trends’ relation.
CHAPTER 5: CONCLUSIONS

This chapter is aimed to provide an answer to thesis' research question: How can regulatory plans (Regional, Metropolitan or Municipal) in relation to other planning instruments effectively reduce Santiago de Chile socio economic segregation patterns? To be able to answer this question the chapter is divided in three parts: (1) First part are research's conclusions composed by a definition of what is necessary to reduce regarding city’s segregation patterns, which potentials represent regulatory plans, the incidence of the reviewed ‘external factors’ and the proposal of a new ‘emergent strategy’ to counter act city’s segregation patterns. (2)Second part is the identification of the different planning instruments or ‘urban dynamics’ that are necessary for emergent strategy's implementation composing a ‘set of recommendations’. Some of the recommendations imply modifications to current planning instruments’ attributions. Therefore a reflection regarding planning instrument’s modifications feasibility is presented. (3) The third part of this chapter are research’s final reflections related to proposal’s ‘dilemmas/contradictions’ considering proposal’s (emergent strategy) political feasibility and the urgent need to discuss and legislate modifications to the legal instrument that norm’s Chilean urban planning: Urbanism & Constructions General Law (LGUC).

5.1 Conclusions

The conclusions are related to a general review of thesis’s findings that will be presented in the following order: (1) source study’s theoretical propositions (Chapter 2); (2) regulatory plan’s effectiveness & potentials (Chapter 3); (3) other planning instruments/urban dynamics with incidence over segregation (Chapter 4); (4) definition of a proposal (emergent strategy) to counter act city’s segregation patterns.

5.1.1 (1) Theoretical propositions from literature review regarding Santiago’s segregation patterns:

From source study on Chapter 2 it was possible to state four theoretical propositions that were considered as requisites to achieve a ‘balanced’ distribution of socio economic groups over Santiago’s territory. These propositions were elaborated at the beginning of the research based on the work of academics with expertise over the subject of segregation. The aim of reviewing them in this section is to state their feasibility considering the knowledge gained during empirical research (Chapter 3: Regulatory Plans effectiveness; Chapter 4: other planning instruments/urban dynamics with incidence over segregation), and to redefine what is necessary to be achieved to counter act Santiago’s segregation patterns negative effects. In the following paragraphs the four theoretical propositions will be presented and a reflection per each statement will be provided:

(1) Regulatory plans can facilitate segregated low income group’s spatial integration. Social integration of these groups implies the integral proposal51 with other planning instruments (i.e. housing policy, transport & infrastructure planning).

(2) Current high income group’s dispersion trend should be fostered. However, gated communities should be of free access (security can still be ensured by maintaining walls, guards and controlling points of access)

(3) Extensive socially homogenized areas (low income) in the South and Northwest areas of the city have to allow the location of higher income groups. Mix of functions and sub centers consolidation are relevant issues to achieve it.

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51. An integral proposal to counteract low income group’s segregation is related to identify the different alternatives that Chilean planning instruments (regulatory plans, housing policy, transport & infrastructure planning) could offer to achieve a better socio economic groups distribution, and to state how this ‘alternatives’ can be coordinated in an strategy to work over segregation patterns. An integral approach does not mean that the different planning instruments have to be integrated under one system as they respond to different purposes, and also a central system could mean higher bureaucracy and a lack of transparency (Wigmans, 2012).
(4) Supply of low income dwellings (social housing) inside Santiago’s consolidated areas. Land market (speculation) regulation is required.

Statement (1) consider regulatory plans ‘spatial’ attributions (as they define land uses and urbanistic norms) as a potential to facilitate low income groups integration, but there is no reflection about how an spatial integration can be achieved or which regulatory plan’s ‘spatial’ attributes can be a useful instruments to allow low income groups integration. Therefore, statement (1) relation between regulatory plan’s ‘spatial attributions’ and low income group’s spatial integration its seen as an ‘idealistic’ concept that requires a clear identification of which regulatory plan’s spatial attributes can be considered as useful instruments. The following conclusion’s subsection ((2) Regulatory plan’s ‘effectiveness’ and ‘potentials’) reflects over this issue according to the knowledge gained during thesis empirical research.

The following three statements (2,3 and 4) define what should be achieved to counter act city’s segregation patterns. After conducting regulatory plans evaluation (Chapter 3) and ‘external factors’ analysis (Chapter 4) is possible to review those statements and conclude that some of their proposals are not suitable or feasible according to the case.

Statement (2) propose to foster high income group’s dispersion over the territory as their arrival to areas that traditionally were occupied by lower income groups represent benefits for the original inhabitants due to social networks that could be established and also because of the potential arrival of new investments to the area (facilities and services) related to high income groups higher acquisition capacity. High income groups have the right to be located wherever they want, however does not give them the right to exclude (Bresciani, 2012). As high income groups dispersion is already a growing trend in the city, it should not be considered as one of the objectives of a plan to reduce city’s segregation problems. Santiago’s socio economic segregation problems are been suffered by inhabitants who cannot make effective their demands of localization (low income groups), all efforts should be addressed to improve their localization or neighborhood conditions inside city’s urban area.

Statement (3) reflects about the need of allowing the arrival of higher income groups to low income groups socially homogenized areas. The idea behind this statement was to ‘break down’ low income groups homogeneity on those areas as it was considered that the interaction with higher income groups would establish social networks and the access to new opportunities for the people living there. From land market analysis (see section 4.1) it was possible to gain insight about how land markets operate regarding socio economic groups. Low income group’s socially homogenized areas do not represent an ‘attractive’ location for higher income groups due to the low urban quality of those areas (facilities deficit, deteriorated public spaces, etc.) and the negative ‘externalities’ that those areas represent at time of investing (crime, drugs, stigmatization, etc.). For instance subway investments in Pudahuel’s Municipality (low income group’s segregated area) have only allowed the development of high density social housing (close to subway stations) as private developers do not consider that area attractive for higher income groups, not even facilities or services have been developed there as low income groups limited acquisition capacity do not represent a potential demand of buyers. To operate over segregated areas is necessary, but other regeneration operations are necessary before thinking in the arrival of higher income groups.

Statement (4) reflects about the need of allowing new social housing developments inside city’s urban area. To achieve this it was ‘proposed’ a control over land markets speculation. New low income inhabitant’s ‘exclusion’ of city’s urban area is related to city’s land values that hampers the financial feasibility of social housing developments (see section 4.1), speculation practices are only one of the many variables that have consolidated city’s land values. However, statement purpose of allowing social housing development’s inside city’s urban areas is extremely relevant as a good location in the city would allow low income inhabitant’s access to the opportunities that the city may offer.
From reviewing theoretical proposition it was possible to accurate their definition of what is required to achieve regarding Santiago’s segregation patterns. Low income groups are the ones that suffer the negative effects of city’s segregation patterns as they cannot make effective their localization choices and the places were social dwellings have been located suffers the ‘stigmatization’ and negative ‘externalities’ of socially homogenized segregated areas or are located far away from city’s infrastructure, facilities, social networks and opportunities. As that a proposal to counter act city’s segregation problem should concentrate in the following two points:

- Inclusion of new low income inhabitants into city’s urban area.
- Low income groups socially homogenized south and north-west areas revitalization.

Current ‘segregation trends’ (middle income groups moving to ‘low income areas’, high income groups moving to isolated areas, ‘old’ low income areas growth, concentration of middle income groups in ‘linear’ infrastructure) are considered as positive residential market developments that are contributing to improve city’s segregation patterns, however their incidence varies according to segregation pattern type (Sugranyes, 2012) and considering that the before mentioned ‘two points of attention’ are not been addressed by the market they require an special attention from any proposal regarding counter act segregation patterns. The following points will reflect about regulatory plans effective ‘instruments’ to work over segregation(Chapter 3), which capabilities they have to achieve the before mentioned ‘points of attention’ and how the external factors (Chapter 4) should be involved in a proposal to counter act city’s segregation patterns.

5.2.2 (2) Regulatory plan’s ‘effectiveness’ and ‘potentials’

The effectiveness of regulatory plans to reduce segregation patterns and their potentials to elaborate a solution will be divided according to the type of regulatory plans: Metropolitan and Municipal.

Regarding metropolitan regulatory plans first reflection is about the lack of objectives related to city’s segregation patterns (only metropolitan regulatory plan with an explicit objective is PRMS100 but as reviewed in section 3.5.4 the plan is not been enacted yet due to legal problems). The relevance of not having explicit objectives regarding segregation is that regulatory plan’s design is not aimed to work over city’s segregation problems, meaning that there is no strategy supported by regulations or an investment plan to achieve a concrete result. Reviewing regulatory plans articles and also through conducted interviews it was possible to realize that segregation problems in all plans was addressed through ‘implicit’ objectives implying that segregation improvements were expected as the result of regulations that their first objective was not an specific segregation achievement. Clear goals regarding segregation are fundamental for the design of a metropolitan regulatory plan that between its attributions could facilitate improvements in city’s segregation patterns. The review of the existing regulatory plans shows that none of them has been effective in reducing Santiago’s socio economic segregation (see section 3.5.7).

According to Juan Ignacio Cerda (2012) one of the most relevant attributes of Metropolitan Regulatory Plans is that they determine the ‘physical organization’ of the territory as they define spatial conditions like urban/rural limit, densities, roads design and infrastructure investments plan. Considering that socio economic segregation has a ‘spatial’ inherent nature (distribution of socio economic groups over the territory), metropolitan regulatory plans have a potential related to the socio economic groups ‘balanced’ distribution. Densities and minimum plot sizes has been traditional used as ‘veiled’ exclusion instruments (Trivelli, 2012) (Sabatini, 2012) as low densities and big minimum plot sizes hampers low income groups accessibility as the costs to develop land plots under those conditions are out of their reach. Francisco Sabatini (2012) argues about this issue that regulatory plans has an inherent exclusion conditions, as the different regulations they impose implies costs that only can be afforded by those with sufficient economic means, and at the same time ‘undesirable’ land uses (or NIMBY) are located in those areas where there is no political or economic power to reject them: usually low income group’s areas. According to Schoonrad (2004) the rational division of uses throughout cities
facilitates the consolidation of functional segregations that are not according to the demands of lively neighborhoods at a human scale.

An important definition among regulatory plan’s ‘spatial attributes’ is the definition of land uses. Regarding socio economic segregation the only attribution of land uses is to define residential areas therefore it is not a useful instrument to achieve a better distribution as do not allow to distinguish among socio economic groups. However land uses are important in fund’s collection for urban project’s development (Cerda, 2012). For instance when a municipality wants to construct a public road they can expropriate and apply for public funds for its construction (Ministries have funds for urban projects according to their type. For instance Education Ministry has funds for schools; Public Works Ministry has funds for roads, etc. (Cerda, 2012)). The concordance between infrastructure & facilities developments and regulatory plans land uses is a requisite for funds allocation and many problems in current urban projects funds are related to this issue.

A relevant potential of regulatory plans to counteract segregation patterns is the introduction of the concept of ‘Urbanism by Conditions’. In 1997, ZODUC modification to Santiago’s Metropolitan Regulatory Plan opened new attributions for regulatory plans beyond their traditional function of setting down the rules for urban developments (normative). Urbanism by Conditions allows to include norms inside regulatory plans asking for requirements or conditions that should be accomplished (or agreed with) by private developers before obtaining development rights. From a normative approach where regulatory plans were considered as ‘check list’ prior urban developments, now regulatory plans allows Governmental bodies (MINVU and municipalities) to negotiate with private developers regarding the quality of the proposals. In ZODUC modification Urbanism by Conditions allowed to ask for a variety of residential units stating density requirements according to project’s surface, and to negotiate with private parties infrastructure investments (roads, bridges, etc.) related to the impact that future urban developments would represent. In 2003, PDUC modification to Santiago Metropolitan Regulatory Plan also included the concept of ‘Urbanism by Conditions with specific norms related to socio economic groups balanced distribution in future peripheral urban areas. To be able to develop residential developments in the peripheral areas of the city, private developers have to consider a 30% of the housing units for social dwellings. In 2008, PRMS100 modification proposal to Santiago Metropolitan Regulatory Plan also considered the concept of Urbanism by Conditions stating the requirement for private developers willing to develop residential complexes of considering an 8% of residential projects surface for social dwellings.

Urbanism by conditions represent a new regulatory plan’s potential as allows Governmental bodies to ask for standards/quality more than pre-defined norms accomplishment without the revision of projects content (Cerda, 2012). A proposal for reducing city’s segregation patterns can consider urbanism by conditions concepts but with the awareness that this ‘instrument’ is not well defined (not included in the law (LGUC)) so any proposal should reflect about their planning and political feasibility.

Regarding Municipal Regulatory Plans, these instruments were also rated as un-effective in reducing city’s segregation patterns. Same than metropolitan regulatory plans, no explicit objectives regarding segregation were founded, therefore hampering the design of a strategy with specific norms and regulations to achieve a concrete result regarding city’s segregation problem. In Municipal Regulatory Plans is also important to state clear (explicit) objectives regarding what is wanted to be achieved in relation to municipal low income group’s social homogeneity.

From the review of Municipal Regulatory Plans effectiveness it was possible to state that their scope of action is not according to the scale that Santiago’s segregation patterns imply. City’s segregation problems involved extended areas of socio economic homogeneity (implying more than one municipality (Figure 11)) or the exclusion of new low income inhabitants from city’s urban area; to be effective in reducing segregation patterns an isolated approach from a municipal regulatory plan is not possible as the problem demands a metropolitan perspective. However, Municipal Regulatory Plans have important attributions regarding
‘territorial spatial organization’. (1)First they have the attribution to increase or decrease in a 20% the densities stated in Metropolitan Regulatory Plan; (2) second they are the instrument that provides the ‘legal framework’ for municipal territory development as through their ‘urbanistic norms’ (land uses definition (residential, industrial, facilities, commerce areas definition), roads type definition (widths and roads functions inside city’s road network), constructability coefficients, minimum plot sizes, public areas definitions (green areas, squares), etc.) requirements and procedures for public and private investments are defined; (3) and third they have the attribution of defining ‘sectional plans’ for specific areas of their territory were specific ‘urbanistic norms’ can be defined to achieve particular goals (see section 3.1.2.4).

From reviewing San Joaquin’s Municipal Regulatory plan was also possible to identify the relevance of ‘municipal management’ to activate urban processes (in that case social dwellings construction). Usually the different public institutions (municipalities, ministries) with incidence over city’s urban planning are operating with independent agendas. Municipal management can coordinate the actions of these institutions for the achievement of particular urban projects that are identifiable due to municipalities’ capability of recognizing inhabitant’s local demands.

From all before reviewed Metropolitan and Municipal regulatory plan’s potentials regarding counter act city’s segregation patterns, perhaps the most relevant one is their attribute of recognizing and be able to respond to local demands. Segregation patterns are different among cities, and also as stated in section 2.7 each city has different segregation patterns inside their territory. Current ‘implemented’ strategies regarding segregation have operated through planning instruments or laws with a ‘national character’, applying ‘universal’ policies for all areas of the country without recognizing the particular characteristics and demands of each specific area (city). For instance housing policy ‘localization subsidy’ (section 4.2) was aimed to allow social dwellings to be located inside Santiago’s urban areas and revert city’s low income group’s exclusion segregation pattern. As it was implemented through the housing policy (that have incidence over all Chilean territory) the subsidy was applied in cities where it was not required and also as the requirements for its application were too broad all Santiago’s urban area was subject of it producing a general rise of land prices (Brain, et al, 2010). Metropolitan regulatory plans allows to have a metropolitan perspective and to operate over city’s socio economic segregation patterns, Municipal regulatory plans allows to adapt metropolitan regulatory plan ‘general perspective’ according to local needs regarding segregation. For instance Pudahuel Municipality (low income groups segregated area) has different segregation patterns than Providencia Municipality (high income cone) therefore a plan aimed to reduce city’s segregation patterns needs to operate allowing to differentiate among different local characteristics and demands. However, this unique regulatory plan’s characteristic (of allowing local interventions) among planning instruments and public policies, is not sufficient to counter act city’s segregation patterns as urban processes cannot be addressed without considering the influence of other ‘urban dynamics’. The following point reflects about the incidence of ‘external factors’ (land market, housing policy and transport & infrastructure) in the consolidation of city’s segregation patterns and how their dynamics can facilitate a proposal to counter act segregation.

5.2.3 (3) Other planning instruments/urban dynamics with incidence over segregation.

From Chapter 4 it was possible to state that city’s land market, national housing policy and city’s transport & infrastructure have relevant influences over city’s segregation patterns and trends. In point (1) of this chapter the scope of the proposal was reduced to those segregation patterns that implies negative effects for lower income socio economic groups: exclusion of new lower income inhabitants from city’s urban area and socially homogenized low income segregated areas. Urban dynamics reflection will be orientated to state their influence over the two before mentioned segregation patterns and to identify which potentials they have to counteract them.

According to Pablo Trivelli (2007), Santiago’s land values are the main reason for new lowincome inhabitant’s exclusion from city’s urban areas. Since 1998 it is not possible to find land values according to the prices that
social housing developments are able to pay, as higher land values would mean higher social dwellings price hampering their affordability for lower income groups (section 4.1). Land values are the reflect of the potential products that is possible to develop over the land, meaning that currently in Santiago other developments (like high and middle income group’s dwellings) are seen by private developers as more profitable than the development of social dwellings. Also it has to be considered that municipalities do not want social dwellings in their territories as they hamper the municipal budget (social dwellers do not pay contributions) and at the same time social dwellers demand facilities and services that municipalities are not able to provide (limited municipal funds). Low densities and big minimum plot size are traditional municipal ‘techniques’ to hamper social dwellings developments.

However, to develop a land plot for higher income group’s dwellings have always been more profitable than develop it for low income groups, and before 1998 it was possible to find land values according to the budget of social dwellings developments. Some economists state that city’s urban limit of PRMS1994 has implied an ‘artificial land scarcity’ with the result of a general rise in city’s land values (section 4.1). About this opinion Pablo Trivelli showed by land values empirical data collected since 1982 until 2006 that PRMS1994 urban limit did not implied a rise in land values, whereas they continued their ‘tendencial growth’ (Trivelli, 2007). What is possible to observe currently in Santiago’s land market is (1) a steady land prices growth and (2) an unequal acquisition capacity among socio economic groups. (1) Santiago’s land prices steady growth can be explained by country’s GDP (Gross Domestic Product) per capita growth (improving inhabitant’s acquisition capacity (Figure 54)), higher densities established in PRMS1994 (allowing to develop more square meters in the same land plot), city’s transport & infrastructure investments (increasing the connectivity of the complete urban area and making ‘available’ new urban land markets for development), speculation practices (that allow private developers (under a low cost) to retain plot lands expecting future more profitable development capabilities (section 4.1)) and current socio economic segregation trends. Current socio economic trends imply the ‘displacement’ of higher income groups to areas traditionally used by lower income groups (facilitated by urban highways). Despite the fact that this ‘displacements’ represent benefits for low income inhabitant’s already living in the areas where higher income group’s arrive (higher income groups attract facilities and services investments (section 2.7)); higher income group’s higher acquisition capacity has an effect over the surrounding plots as landlords or private developers evaluating investments in those areas can achieve higher profits by developing products related to higher income demands (residential projects, services, commerce, etc) and therefore increasing land values (Trivelli, 2007). (2) On the other hand, lower income groups are outside all this land market dynamics as their acquisition capacity is too low compared to middle and high income groups. One of the biggest problems in Chilean society is income distribution; despite country’s GDP steady growth,
unbalanced income distribution remains (even increasing between some socio economic groups) (Figure 55). While the highest quintile of the population accumulates the 51.03% of country’s total income, the lower quintile of the population only receives a 5.38% (INE, 2010). With this acquisition capacity differences among socio economic groups, low income groups urban area’s exclusion is a problem that will be extended to the future as land prices grow steadily and income unequal distribution remains.

Regarding new low income group’s exclusion from city’s urban area, housing policy has reacted according to their ‘financial approach’. According to Ana Sugranyes (2012) and Roberto Moris (2012), Chilean Housing Policy acts like a bank as their policy is to trust housing supply to private developers and to subsidize low income group’s housing demand through a diverse set of housing subsidies. As there is no control over social housing supply, social dwellings production depends on market conditions and as saw before due to land prices is not possible to construct social dwellings inside city’s urban area. To cope with this situation MINVU (Urbanism & Housing Ministry) has implemented two ‘policies’: (1) LGUC’s modification (Article 55) to allow the construction of social dwellings in rural areas (see section 3.5.1) and (2) new housing subsidies to allow social dwellings better location inside city’s urban areas (‘localization’ subsidy and ‘integration’ subsidy). (1) Article 55 has meant the construction of many social housing complexes in peripheral rural areas without an adequate provision of services and infrastructure, implying high social costs and without offering a solution to new low income inhabitants housing demand as they are being located far away from all the benefits and opportunities that the city may offer (Moris, 2012). (2) ‘Localization’ subsidy provides extra resources for inhabitants to finance the higher costs of land plots inside city’s urban area. However this subsidy was applied to the complete urban area producing a general land values increase (Brain, et al., 2010). ‘Integration’ subsidy provides extra resources to social housing developments including a minimum percentage of social dwellings (see section 4.2). According to Alfredo Rodriguez (2012) this subsidy has been used marginally by private developers so it has not represented an alternative of better location for new low income inhabitants.

According to Alfredo Rodriguez (2012), socially homogenized low income segregated areas in south and north-west areas of the city are the consequence of Chilean housing policy throughout last decades. Between 1979 and 1985 Chilean Government conducted informal settlements eradication having current segregated areas as some of the destinies for eradicated inhabitants (Figure 9). During 80’s and 90’s housing policy objective was to solve country’s high housing deficit. Therefore massive housing developments were developed with the financial support of MINVU’s housing subsidies. As the main objective was to solve the deficit and housing subsidies do not allow a control about how the supply is been generated, private agents developed a system were their profits for constructing social dwellings were according to ‘economies of scale’ meaning that the same residential solution repeated several times will allow to reduce costs and therefore higher profits for developers (Cerda, 2012). To achieve this ‘economies of scales’ it was necessary to have big plot lands to locate as many as possible residential solutions, and at a cheap price. Those conditions were founded in current segregated areas in city’s south and north-west parts. These areas were available in big surfaces and at low prices because they used to be the location of undesirable functions (industries, workshops) and low income groups eradicated families from 1979 (Moris, 2012).

As reviewed in section 2.5 low income segregated areas represent many negative effects for their inhabitants as the social homogeneity of those areas hampers their ability to insert themselves in city’s social networks and opportunities. Also in section 3.5.2 was stated low income group’s social homogeneity represent of a problem for municipalities as social dwellers (low income groups) do not pay contributions (hampering municipal funds) and at the same time they demand facilities that the municipalities are not able to provide due to their limited resources. Former Chilean Government was aware of the problem that segregated areas represent; therefore through Chilean housing policy new subsidies were introduced for dwellings and neighborhood’s refurbishment (section 4.2). However, according to Bresciani (2012) and Allard (2012) the effectiveness of these new subsidies is very low due to the limited impact that a dwelling or neighborhood refurbishment has over the extension of Santiago’s segregated areas, and also to the limited resources that MINVU considers for this purposes.
According to Bresciani (2012) MINVU’s main objective is still the provision of subsidies to satisfy social housing demand and a limited part of their resources goes to urban development (see section 4.2).

Also it has to be considered that segregated areas do not represent an attractive market for investments. Higher income groups are not willing to move over these areas due to the bad image that these areas have (crime, drugs, deteriorated environment, etc.) and because of the lack of appropriate facilities and services. Private developers do not want to invest in facilities or services in these areas due to low income group’s reduced acquisition capacity (they do not represent a potential demand), because of the risk that their investments will depreciate due to environment’s deteriorated conditions or because of the fear that their investments would be victims of robbery (Campodonico, 2012). Low income group’s social homogeneity do not facilitate the arrival of other socio economic groups or private investment, moreover low income group’s homogeneity it is seen as a ‘negative externality’. During 2010 a subway line arrived to Pudahuel’s Municipality center (low income groups segregated area), it was expected to have different private investments around subway station due to the higher connectivity that this area could offer. However, only low income buildings in high density were developed as it was not seen by private developers that Pudahuel’s center was attractive to other socio economic groups or to invest in facilities or commerce (Campodonico, 2012).

From section 4.3 it was possible to state that urban highways are not accessible for lower income groups due to the costs they involve (owning a car, paying gas and tolls). Also in some cases (like segregated area in the south), urban highways represent new ‘boundaries’ that interrupt city’s roads network continuity. However, urban highways also represent the arrival of higher income groups into surrounding areas with the benefits that this implies for low income segregated areas (facilities and services arrival, land values increase). In section 4.3 it was also reviewed the potential of surface public transport systems to generate developments over their routes connecting neighborhoods of different socio economic composition due the high number of passengers that they attract (Sabatini, et al., 2008).

Santiago’s land market, Chilean housing policy and Santiago’s transport & infrastructure investments high incidence over segregation patterns with negative effects for lower income groups reaffirms that a proposal to counteract segregation problems cannot be the result of an ‘isolated’ regulatory plans approach as some of the requirements are beyond the attributions of these planning instruments. Subsidy tools from MINVU (Urbanism & Housing Ministry), infrastructure benefits of connectivity and land valorization, and considerations about land market functioning have to be considered.

From this reflection is possible to state that the two segregation patterns with negative effects for low income groups (exclusion of new low income inhabitants from city’s urban area and low income groups segregation in city’s south and north-west areas) are the result of different factors and any proposal aimed to solve them requires different approaches. For instance high income group’s ‘displacement’ to areas traditionally used by lower income groups has positive effects over low income segregated areas as they benefit from the facilities and services arriving to the area (due to high income groups acquisition capacity), whereas it has negative effects over ‘new low income inhabitants exclusion from city’s urban area’ as their arrival to areas traditionally used by lower income groups implies land value’s increase hampering low income groups access to the areas where they were traditionally located. Also, both segregation patterns cannot be expected to be solved from market free functioning, as after 30 years of market operation, segregation pattern’s problems have only increased (Sugranyes, 2012).

5.1.4 (4) Proposal

A proposal to counteract Santiago’s segregation patterns should be orientated to improve the negative consequences that these patterns implies for those segments of the population who cannot make effective their localization choices or are located in an environment that hampers their social development. Therefore, socio economic segregation patterns of ‘new low income inhabitants city’s urban area exclusion’ and ‘low
income group’s segregation on south and north-west areas’ should be addressed. Current urban dynamics and public policies are based on supporting private developments as the ‘engine’ for urban development. However, private market ‘free functioning’ cannot be considered as a valid solution for the segregation patterns that the proposal wants to counteract, as private developments aims of profits cannot be satisfied in ‘low incomes markets’ as their low acquisition capacity hampers investment’s financial feasibility. Also, after 30 years of ‘free market’, low income segregation patterns have not been addressed by the market allowing their consolidation and the negative effects that they represent for inhabitants. According to Peter Boehhouwer (2010) ‘welfare’ policies are required (among other conditions) when ‘market failures’ are detected in areas affecting inhabitant’s human rights. Article 55 of UN ‘Universal Declaration of Human Rights’ states the human right to adequate housing is the right of every woman, man, youth and child to acquire and sustain a secure home and community in which to live in peace and dignity’ (UN, 1966). Chilean constitutional law do not consider housing as inhabitant’s right, however Chilean housing policy ensures social housing access to low income inhabitant’s but without any consideration about the quality, location and dignity of the residential solutions provided. Santiago’s segregation patterns that are affecting low income groups requires a higher Government intervention as from the market no solutions has been developed.

A higher Government intervention implies a change in the way that Urbanism & Housing Ministry (MINVU) is addressing urban development. As stated above, currently all planning instruments (housing policy and regulatory plans) are aimed to provide a clear framework to allow the production of social dwellings by private parties. Regulatory plans define the urbanistic norms that should be accomplished by every residential project and housing policy subsidies provides the resources to improve inhabitant’s financial means (social dwellings affordability). This system has allowed to significantly reduce Chilean housing deficit, however there is no concern related to where the social dwellings are been constructed (localization) and also there is no monitoring regarding existing social housing stock quality (Sugranyes, 2012). The negative effects of segregation patterns affecting low income groups (south and north west segregated areas, and new low income inhabitants exclusion) requires a MINVU approach not only focused on the production of new social dwellings; requirements regarding localization and existing housing stock monitoring are relevant if there is a real interest in solving city’s segregation patterns. The following proposal is directed to Urbanism & Housing Ministry (MINVU) according to their in-house capabilities and recognizing the different instruments (housing policy, regulatory plans, transport & infrastructure, land market) with potentials to counteract segregation patterns.

To counteract before mentioned segregation patterns two ‘urban operations’ are required. Each segregation patterns demands particular approaches as the factors and urban dynamics that originate them are not the same. To counter act ‘low income group’s segregation on south and north-west areas’ a urban regeneration process is required; and to counter act ‘new low income inhabitants city’s urban area exclusion’ and land generation policy should be implemented (Table 18).

<table>
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<tr>
<th>SEGREGATION PATTERN</th>
<th>REQUIRED ‘URBAN OPERATION’</th>
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<tr>
<td>Low income group’s segregation on south and north-west areas.</td>
<td>Urban Regeneration</td>
</tr>
<tr>
<td>New low income inhabitants city’s urban area exclusion</td>
<td>Land Generation</td>
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Table 18. Low income segregation patterns and required urban operations to counter act them.

‘Urban operations’ can be considered what Mintzberg & Waters (1985) call ‘emergent strategies’. According to the authors a deliberate strategy supposes a division between strategy formulation and strategy implementation, whereas emergent strategy do not has that division, there is no strategy ‘formulation’ only strategy ‘formation’ according to what is required to achieve considering all available means. Mintzberg & Waters also reflects about the issue that there are no completely deliberate strategies or completely emergent strategies as strategies are more often a ‘mix’ of them according to ‘in-house’ capabilities and the ability to forecast and react to unforeseen events. The two proposed ‘urban operations’ are aimed to counteract city’s
segregation patterns considering ‘implemented strategies’ learning (urban land for low income group’s dwellings outside city’s consolidated area (LGUC Article 55), ‘Integration’ and ‘Localization’ subsidies, and highways & subway investments to improve city’s connectivity (see section 3.5.7)) and the potential that the different planning instruments, public policies and urban dynamics have as ‘available means’ to effectively reduce segregation pattern’s negative effects. Among these ‘available means’ regulatory plans have specific roles according to their capabilities and what is required to achieve in each ‘urban operation’.

‘Urban regeneration of low income group’s segregated areas’

Santiago’s segregation trends have shown that higher income groups ‘displacement’ to areas traditionally used by lower income groups represent a regeneration potential as higher income groups attract investments related to their high acquisition capacity (residential developments, facilities, services, commerce, etc.). However, low income group’s segregated areas city’s south and north-west areas are not receiving this kind of ‘displacements’ as the extensive areas of low income groups social homogeneity are seen as ‘negative externalities’ for higher income group’s residential developments and at the same time constitute a deteriorated environment to which higher income inhabitants do not want to be associated. Low income segregated areas also are not subject of private investments like facilities services or commerce as their low income capacity is not enough to constitute a demand from which private developers can obtain profits.

To achieve segregated area’s urban regeneration their mono-functionality (social dwellings) has to be modified as this condition is one of the main reasons hampering their inclusion into city’s market dynamics. Public investments in urban regeneration could facilitate these processes as direct public investments can allow the development of other functions and to refurbish deteriorated urban environments. A good example of this kind of interventions in the Latin American context is the public investments in Medellín (Colombia). The city of Medellín has implemented PUI (Integral Urban Project) program where integration, social mobility, governance, poverty reduction and crime problems are addressed under singular ‘spatial projects’ (Mashini, 2012). One of PUI’s investment is ‘Metrocable’, a public investment program aimed to socially integrate deprived neighborhoods through a ‘cableway’ transport system (Figure 56) connecting segregated neighborhoods with Medellín’s main roads and infrastructure, developing public buildings close to Metrocable’s stations (Figure 57) and at the same time consolidating a new tourist attraction that increase the number of visitors circulating by ‘former’ excluded areas (Mashini, 2012).

MINVU has the attributions and resources to lead this kind of developments. MINVU is divided in seven divisions with two of them having direct incidence over the territory (the other five divisions are related to internal administration): (1) DPH (Housing Policy Division) who elaborates national housing policy and subsidies
(dwelling’s subsidies, neighborhood’s subsidies and territorial subsidies (see section 4.2)), and (2) DDU (Urban Development Division) who elaborates and propose modifications to LGUC (Urbanism & Housing General Law), to regulatory plans, and coordinate urban development investments. According to Luis Eduardo Bresciani (2012) the biggest part of MINVU’s resources are directed to DPH as the production of new dwellings is still seen as priority. Urban regeneration has been addressed by MINVU’s DPH division by dwelling’s and neighborhood’s refurbishment subsidies, but according to Roberto Moris (2012) the incidence of these subsidies to regenerate segregated areas is minimal considering the scale of these deprived areas. Moris also states that previous Governments have reduced MINVU’s role regarding urban planning to be an agent that provides resources and private parties take control of developments. Under this modality DDU division (with limited resources as main part of MINVU’s budget goes to DPH subsidies) has developed a ‘urban development investments’ system were facilities or projects for specific areas are defined and offered for public tender. MINVU’s DDU provides the resources according to a list of requirements without a qualitative evaluation of the proposals (Moris, 2012).

DDU division has the capability and resources (if there is a redistribution of MINVU’s budget) to initiate urban regeneration processes as these plans can be organized under ‘competition’ modality for the design and construction of it. MINVU’s DDU role is to provide resources, steer the process and most important of all, to state a ‘vision’ and clear goals regarding what is wanted to be achieved through segregated area’s urban regeneration (the exact definition of visions and goals depend on a study of the particular area). Also existing MINVU’s DPH ‘territorial’ subsidies (‘urban renovation area & priority development area subsidies’ (section 4.2)) could be applied if segregated areas are declared subject of them. MINVU’s DPH dwellings and neighborhood’s ‘refurbishment’ subsidies (section 4.2) can be considered for the improvement of deteriorated housing stock. However in same cases refurbishment works are not enough due to the obsolete condition of many residential complexes inside segregated areas, more than refurbishments it is necessary a re-development of deteriorated housing stock (Rodriguez, 2012).

The role of regulatory plans in urban regeneration processes is to define spatial’s territorial organization to allow the implementation of urban regeneration design, if there is a clear goal regarding urban regeneration regulatory plan’s urbanistic norms can foster the development of particular urban areas (for instance with the definition of densities or banning specific land uses). Metropolitan regulatory plans have the attributions to define zoning and land uses that are fundamental in the process of applying to resources outside MINVU. For instance if urban regeneration design consider a school, it is possible to apply for Education Ministry’s resources. To be able to conduct this inter-sectoral process land uses matching intended projects are a pre requisite for resources assignment (Cerda, 2012). Municipal regulatory plans have an important role in the implementation of urban regeneration plan as they are the instrument that allows identifying local demands. As Santiago’s segregated areas are composed by more than one municipality, the definition of lands uses, densities and urbanistic norms is important to be the result of a coordinated work among municipalities. An useful municipal regulatory plan’s tool to achieve this, is the definition of ‘sectional plans’ (see section 3.1.2.4) that allows some extent of freedom to modify urbanistic norms and regulations, allowing to coordinate contents with other municipalities and to facilitate urban regeneration plan implementation.

Other relevant urban dynamics have to be considered in segregated area’s urban regeneration plan. The required measurements or considerations regarding transport & infrastructure and taxes & land value are reviewed in the following section (5.2 Recommendations & planning instruments feasibility).

The benefits of urban regeneration projects for city’s low income groups segregated areas can be divided according to the main actors involved in these processes: (1) segregated area’s inhabitants, (2) public bodies (MINVU), (3) and private parties. (1) The benefits of urban regeneration projects for segregated area’s inhabitants are related to the potential arrival of different functions than social dwellings to the area where they live and the re-development of the obsolete social housing stock. To breakdown segregated areas mono-functionality is a relevant issue to achieve an integration of these areas to city’s networks. Facilities and
services located inside their neighborhoods could mean an improvement in the accessibility to this kind of functions for low income groups, as currently they need to travel long distances inside the city to find them. Also the consolidation of facilities and services and infrastructure investments could imply the arrival of higher income groups to the area in the future, as a better provision of facilities and an increased connectivity could re-position these areas inside Santiago’s residential market, making attractive for private parties to invest in these areas. (2) The benefits for MINVU (public body) of urban regeneration projects is that an improvement of city’s low income areas could be achieved without changing their ‘modus operandi’ (of being a financial body that entrust private parties urban and social dwellings developments). Urban regeneration projects open competition for segregated areas among private parties, would allow MINVU a qualitative evaluation of the proposals before resources assignation. Current MINVU’s approach of not being involved in urban development’s design and construction would not been modified, private parties will still develop the proposals (tender) and receive MINVU’s resources for construction. However, due to the particular challenges that segregated areas implies, through ‘open competitions’ MINVU would be able to develop a brief stating their goals and objectives regarding segregated areas. (3) The benefits of urban regeneration projects for private parties are related to the profits that could be obtained by the construction of the proposals, and also by the ‘inclusion’ of new land markets for investments as segregated area’s improved condition (due to urban regeneration) could represent in the future attractive characteristics for developments.

‘Land generation for low income inhabitants’

As reviewed in before sections, from market developments is not possible currently to develop social dwellings inside city’s consolidated areas. The objective of ‘urban land generation’ is to allow well located social dwellings inside city’s urban areas with sufficient provision of facilities and services. Looking in the international context for policies aimed to land provision for social dwellings the French model of social dwellings per municipalities was reviewed. Article 55 from French Law 2000-1208 ‘Solidarity and Urban Renewal’ states that all towns with more than 50,000 inhabitants have to consider a 20 percent of their housing stock for social housing units (UN, 2007). This percentage is compulsory; if a municipality does not accomplish it, fines are extended. However ‘exchanges’ of social housing percentages among municipalities (higher income municipalities paying lower income municipalities for the development of social dwellings) has occurred hampering the ‘balanced’ distribution of social dwellings over the territory (UN, 2007).

The application of a percentage of social dwellings per municipality in Santiago is considered as a valid option to counter act the lack of urban land for low income groups. A measure like this implies a radical change in the way social dwellings have been produced, and that is exactly the idea as according to current land market values and country’s problems of income distribution, low income group’s would never be able to access city’s urban lands. Regulatory plans are considered as the adequate instrument to implement a policy regarding percentage of dwellings per municipality due to their potential of recognizing local demands, not like policies with a national character (housing policy) that do not allow to distinguish the requirements of each specific area. MINVU’s Region Metropolitana SEREMI (MINVU’s representative in Santiago) is the Governmental body that has to elaborate a modification to Santiago’s Metropolitan Regulatory Plan including a mandatory percentage of social dwellings per municipality (as seen in section 3.1.2.2, Metropolitan Regulatory Plans are elaborated by MINVU’s regional division (SEREMI) of each city). ‘Urbanism by conditions’ concept implemented in Metropolitan Regulatory Plan modification of ZODUC1997, PDUC2003 and PRMS100 would allow asking for a percentage of social dwellings per municipality. However, there is still a legal discussion in the country regarding what it is possible to ask with urbanism by conditions. According to last specifications in PRMS100 Metropolitan Regulatory Plan modification proposal, urbanism by conditions do not allow to ask for units of social dwellings (this attribution is not included in Urbanism & Constructions General LAW (LGUC) that provides regulatory plan’s legal framework), therefore French requirement of considering a percentage of dwellings total number for social dwellings is adapted to the requirement per municipality of considering a percentage of municipal residential plots total surface for social dwellings (that is possible to ask with urbanism by
conditions). Regarding what is possible to do with urbanism by conditions and how the French model could be adapted to Chilean legal framework will be reviewed in the following section: 5.2 Recommendations & planning instruments feasibility.

Metropolitan Regulatory Plan allows to implement policies with a ‘metropolitan perspective’ meaning that urban dynamics affecting extended areas of the city are possible to be addressed from this instrument and not from Municipal regulatory plans that have attributions over specific areas of the city. Metropolitan regulatory plan could define a ‘bandwidth’ of the required surface per municipality to be considered for social dwellings. This bandwidth could be defined according to technical studies (out of the scope of this research) stating low income group’s housing demands in Santiago’s urban area and the required amount of surface that is required to cover it; also a criteria could be established to determine per each municipality the exact percentage or urban land that should be allocated for social dwellings (a criteria for stating the percentage could be municipalities’ infrastructure and facilities capacity). This required percentage of surface for social dwellings could represent high cost for municipalities that do not have social dwellings (‘low income’ municipalities would not have to develop social dwellings as they already have the percentage of surface); therefore incentives could be considered to foster the production of social dwellings. A good example of incentive policy for the production of social dwellings by private parties is ‘Chapter 40B’ implemented in the state of Massachusetts USA. Chapter 40B allows private developers and public institutions to obtain development permits that exceed urbanistic norms (density, maximum height, etc.) in the area (Figures 58 and 59). The condition is to consider a 25% of total units for social dwellings; the definition of the extent in which urbanistic norms can be exceeded is the result of a negotiation between local authority (municipality) and residential developers (Fisher, 2008).

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**Figure 58.** Chapter 40B Massachusetts, density benefits. Source: Sabatini, et al.(2010)

**Figure 59.** Chapter 40B Massachusetts, maximum heights benefits. Source: Sabatini, et al. (2010)

Municipal Regulatory Plans with their capability of recognizing specific local demands could determine the exact percentage of surface that should be considered for social dwellings (according to technical standards defined in Metropolitan Regulatory Plan) and to negotiate with private developers the urbanistic norm’s exception and benefits for the construction of social dwellings (Chapter 40B). As reviewed in regulatory plan’s ‘effectiveness’ (Chapter 3) any proposal of urbanism by conditions should be designed considering explicit norms to ensure the adequate policy ‘interpretation’ and clearly stated ‘approval procedures’ steps to avoid implementation problems like the ones experienced in PDUC2003 (section 3.5.3). A final consideration about Municipal Regulatory Plans role in the efforts of land generation is that urbanistic norms of density and minimum plot sizes have to be defined allowing the development of social dwellings (as reviewed before low densities and big minimum plot sizes are ‘veiled’ instruments of exclusion).

Other relevant urban dynamics/planning instruments have to be considered in a proposal for urban land generation. The required measurements or considerations regarding housing policy, transport & infrastructure
and taxes & land value are reviewed in the following section (5.2 Recommendations & planning instruments feasibility).

The benefits of land generation policy can be divided according to the main actors involved in this process: (1) new low income inhabitants, (2) public bodies (MINVU), (3) and private parties. (1) New low income inhabitants would benefit from a land generation policy with a better location inside city’s urban area. A better location would allow them to use city’s infrastructure and to benefit from the interaction with higher income groups that could foster their insertion to the opportunities that the city may offer (information, jobs, facilities & infrastructure, parks, events, etc.). Also a better location of their dwellings could imply an economic benefit as their properties could increase their value throughout time according to city’s residential market dynamics. (2) The benefit for MINVU (public body) is related to provide a solution to current exclusion of new low income inhabitants from city’s urban area and avoid the consolidation of new segregated areas in city’s peripheral areas. Also the inclusion of ‘incentive policies’ like Massachusetts 40B could allow a co-funding between public and private parties for the development of social dwellings. (3) The benefit for private parties is given by the inclusion of ‘incentive policies’ (Massachusetts 40B) that would increase the profitability of their investments as developments could be constructed with higher heights and densities.

5.2 Recommendations & planning instruments feasibility

This section is divided in two parts related to urban operations proposal’s implementation (urban regeneration and urban land generation). (1) First part are recommendations consisting on a review of the different planning instruments with potentials to allow the implementation of the two before mentioned urban operations, and also considerations regarding urban dynamics that have to be addressed for proposal’s success. (2) Second part is an evaluation of urban operations proposal’s planning feasibility, stating if the proposals are according to current Chilean planning instruments attributions and capability.

5.2.1 Recommendations

As stated in proposal’s section (5.1.4) urban operations proposals are directed to MINVU (Urbanism & Housing Ministry) as is the Chilean public institution with the required attributions to develop urban regeneration projects and to modify Santiago’s Metropolitan Regulatory Plan to include a required surface amount per municipality for social dwellings (urban land generation policy). However, city’s segregation patterns affecting low income groups cannot be addressed from an isolated MINVU’s approach as segregation patterns are the consequence of diverse factors (some of them beyond MINVU’s attributions) that demands an ‘inter-sectoral’ approach among Chilean public institutions and planning instruments to provide an effective answer to the challenges that segregation patterns represent. An inter-sectoral approach implies the coordination of the agendas of the different actors involved in city’s urban planning (mainly MINVU, MOP (Public Works Ministry) and Municipalities) for the implementation of specific measurements aimed to counter act segregation pattern’s negative effects for lower income groups.

A good instance to allow this ‘inter-sectoral’ coordination for the implementation of both urban operations is COMICYT: ‘Cities and Territory Inter-Ministerial Committee’. COMICYT was established in 2007 after the understanding that Chilean model of urban development was requiring modifications to allow the implementation of ‘integral’ plans and programs of urban development specifically located in the territory (COMICYT, 2007). COMICYT understands that ‘prevailing Chilean sectoral decision making system is showing signs of exhaustion’ and imperfections that need to be overcome. Current sectoral system is missing an overview guide that leads, orientates, informs and provide coherence to the different Chilean sectoral policies. Also, sectoral management in many occasions has been conducted in a ‘compartmentalized’ way without interaction with other public institutions or local communities; affecting public investments efficiency and attenuating their social impact’ (COMICYT, 2007). According to COMICYT it is required a ministerial, public institutions and municipalities convergence of agendas and resources in specific plans and programs to achieve
an effective impact in areas of the territory that requires inhabitants and communities’ quality of life improvements (COMICYT, 2007).

‘Cities and Territory Inter-Ministerial Committee’ is composed by the ministers of the following ministries: Urbanism & Housing Ministry (MINVU), Public Works Ministry (MOP), Transport & Telecommunications Ministry (MTT) and National Goods Ministry. Together with the ministers a COMICYT technical department is considered for the evaluation and elaboration of plans regarding country’s urban developments. According to COMICYT’s vision, the main function of the committee is the development of integrated investment programs in country’s main cities, aimed to significantly improve public investment’s social efficiency. The Committee shall seek to coordinate efforts in this endeavor with Regional Governments and related municipalities, in order to create synergies between their investments projects and achieve greater social impacts. COMICYT ‘fields of actions’ can be summarized in four points:

a) Definition of strategic plans for country’s main cities (these are issues that require minister’s decisions among many options to be able to coordinate the actions of the different institutions involved);

b) Elaboration and validation of cities’ strategic plans (considering the different studies conducted by MINVU, MOP and MTT ministries, and information and data exchange)

c) Scheduling agreements between ministries and regional governments in order to direct public investments in country’s main cities as part of an urban development vision.

d) Coordination of ongoing projects (projects that are in some stage of implementation, should identify bottlenecks to allow the effective preparation/reaction of MINVU and MOP ministries).

The following set of recommendation (Table 19) is considered as a proposal that should be developed by MINVU to be presented in COMICYT to coordinate the required inter-sectoral approach that each urban operation requires. Each public sector, planning instruments or urban dynamics have instruments that are considered to have the potential to generate positive impacts over city’s segregation patterns. However, the elaboration of an appropriate inter-sectoral strategy per each ‘urban operation’ demand a detailed study of actors involvement and the ‘power relations’ among them; analysis that is beyond the scope of this research. The aim of the proposed recommendations is to identify which instruments are available and why they could represent positive impacts over city’s segregation patterns that are affecting lower income group’s quality of life.

<table>
<thead>
<tr>
<th>LOW INCOME GROUP’S SEGREGATED AREAS URBAN REGENERATION</th>
<th>NEW LOW INCOME INHABITANT’S (well located) URBAN LAND GENERATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINVU’s (Housing Policy + Urban Investments)</td>
<td>(9) MINVU’s ‘Localisation’ subsidy only for specific areas in the city.</td>
</tr>
<tr>
<td>(1) ‘Vision’ + Management</td>
<td>(if not generates a general land prices rise)</td>
</tr>
<tr>
<td>(2) Design of an ‘Urban Regeneration Project’ (URP), (Required ministerial balance between Housing financing and Urban Projects)</td>
<td>(10) MINVU’s Dwelling subsidies</td>
</tr>
<tr>
<td>(3) URP subject of MINVU’s territorial subsidies (Urban Renovation Area &amp; Priority Development Area)</td>
<td>(11) MINVU’s Neighborhood subsidies</td>
</tr>
<tr>
<td>(4) Deteriorated housing stock in URP renovation</td>
<td>(12) MINVU’s Territorial subsidies (if applicable)</td>
</tr>
<tr>
<td>(a) Re-development (b) MINVU’s neighborhood subsidies</td>
<td></td>
</tr>
<tr>
<td>Metropolitan Regulatory Plan (by MINVU’s Region Metropolitana SEREMI)</td>
<td>(13) 5-10%* Municipalities’ total residential land surface should be considered for social dwellings. Percentage per municipality according to infrastructure, facilities and services capacity. (Art. 55 Law 2000-1208 on ‘Solidarity and Urban Renewal’ of France consider a 20% per municipality)</td>
</tr>
<tr>
<td>(5) Required zoning definition to achieve URP. Zoning strategy fundamental for applying to governmental public funds (each ministry have special funds for projects per region (MINVU, Transport, Education, SUBDERE, FNDR, etc.)</td>
<td>(14) Incentive norm for social dwellings construction. Residential projects that include a 25% of their total surface for social dwellings: extra density, land use coefficients and height (Massachusetts 40B)</td>
</tr>
</tbody>
</table>
**Urban regeneration**

MINVU (numbers 1-4 in Table 19): For an Urban Regeneration Project MINVU is the main actor as it is the Governmental sector with authority over urban planning and development. MINVU’s Urban Development Division (DDU) has the attributions to start regeneration processes under the format of ‘public competition’. MINVU’s DDU has to establish a clear brief considering goals and specific requirements that are considered suitable to break down low income group’s extended social homogeneity. Current ‘territorial’ and ‘refurbishment’ subsides from MINVU’s DPH division (section 4.2) have to be considered as they allow extra resources for the redevelopment of obsolete housing stock.

Regulatory Plans (numbers 5-6 in Table 19): As mentioned before regulatory plans can support MINVU’s Urban Regeneration projects as they can provide the ‘spatial territorial organization’ (densities, land uses, etc) for the implementation of the proposals. Also regulatory plans land uses definition is fundamental for the allocation of inter-sectoral resources.

MOP Transport & Infrastructure (number 7 in Table 19): last decades investments in transport and infrastructure have different effects over low income segregated areas. Urban highways are not an alternative for low income groups due to the costs they involve (car owning, gas, tolls, etc) and subway extensions, despite of representing a valuable improvements in connectivity, do not imply a regeneration around subway stations as segregated area’s social homogeneity is not attractive for investments (see section 4.3). Surface public transport represents valuable opportunities to attract other land uses and investments to segregated areas due the amount of inhabitants they attract (passengers) and the ‘linear’ connections that they allow among neighborhoods of different socio economic structure. However, to ‘capitalize’ this potential ‘Transantiago’ (surface transport system) has to be improved.

Taxes and Land values (number 8 in Table 19): from the analysis of regulatory plan’s effectiveness it was possible to detect the financial problems that low income group’s social homogeneity represent for the municipalities composing segregated areas. As social dwellers do not pay contributions municipalities’ budget is seriously damaged. To ‘compensate’ this situation exist a ‘Municipal Common Fund’ where Santiago’s richest municipalities (Santiago centre, Providencia, Las Condes and Vitacura) have to contribute with a 65% of their local land taxes, while the other municipalities with a 60% (Interior Ministry, 2002). Considering country’s income distribution this 5% of difference cannot be considered as significant extra resources for low income municipalities. To improve municipalities’ resources collection is relevant for the regeneration of segregated areas, as these institutions are responsible for the provision of facilities and services that are fundamental for the social development of low income inhabitants (Allard, 2012).
Urban Land Generation

Regulatory Plans (numbers 13-16 in Table 19): As reviewed in before sections, from market developments is not possible currently to develop social dwellings inside city’s consolidated areas. The objective of ‘urban land generation’ is to allow well located social dwellings inside city’s urban areas with sufficient provision of facilities and services. Following the French model of a compulsory percentage of social dwellings per municipality, regulatory plans are considered as the suitable instrument for the application of this kind of measurements in the Chilean context. Regulatory plans allow to respond to local demands and to distinguish among the different urban centers according to their own characteristics. Situation that is not possible from policies (like housing policy) that rules country’s complete territory. Metropolitan regulatory plan could establish a ‘bandwidth’ of the required surface (according to last ‘definition’s of what is possible to do with ‘urbanism by conditions’ (see section 5.1 Proposal)) per municipality that should be designated for social dwellings; and also a criteria to determine per municipality the exact percentage of residential surface that should be considered (this criteria could be according municipalities’ infrastructure and facilities capacity). Each municipality (trough municipal regulatory plan) could define the required percentage according to the standards defined in the metropolitan regulatory plan. As social housing developments could imply high costs for the municipalities who do not have social dwellings (not for low income municipalities has they already would accomplish the required surface) incentive norms for the construction of social dwellings could be considerate (Chapter 40B, see section 5.1 Proposal).

MINVU (numbers 9-12 in Table 19): MINVU’s DPH subsidies for new dwellings (section 4.2) are an important instrument as they finance almost completely the access of low income groups to social dwellings. Neighborhoods and Territorial subsidy can also be considered if the residential solutions are developed in areas that are subject of these subsidies. A relevant consideration is about ‘Integration’ and ‘Localization’ subsidies that were aimed to improve the localization of social dwellings inside city’s urban areas. According to Alfredo Rodriguez (2012) ‘Integration’ subsidy has not been used by private developers because the inclusion of social dwellings in their projects according to the extra resources that the subsidy implies, does not represent extra profits. To make effective this subsidy urbanistic norms privileges (like Chapter 40B) could be considered. Regarding ‘Localization’ subsidy is important to determine specific areas of the city were this subsidy is applicable, as current requirements to obtain the subsidy are too broad (covering the complete urban area almost) implying an undesirable consequence of a general rise in city’s land values (see section 4.2).

MOP Transport & Infrastructure (number 17 in Table 19): Transport infrastructure investments have allowed peripheral urban land to be well connected to city’s central areas, increasing the amount urban areas with appropriate connectivity. However, only subway lines (without a full coverage of city’s urban area) and surface transport system are available for lower income groups as urban highways are not an option for them due to high costs that they imply. If every municipality under a ‘land generation policy’ will have to develop social dwellings is of extreme relevance to consider improvements to Transantiago (public surface transport system) as it is the only transport mean with affordable prices and with full city’s territory coverage.

Taxes and Land values (numbers 18-19 in Table 19): According to Pablo Trivelli (2007) land ‘speculations’ are one of the many factors that can explain Santiago’s current high land values. Speculative practices can generate monopolic markets considering land segmented condition (each areas has its own characteristics and development potential) and the possibility that some of those specific ‘segments’ can be owned by few landlords. Land speculative retention to capitalize future plot’s development capabilities, can generate ‘artificial scarcities’ in urban land markets with sufficient land for development. As land is an ‘indestructible and imperishable’ good, landlords can postpone its development until a better land price is obtained. These practices are favored by the low cost of retaining ‘idle’ plots and also by the fact that ‘surpluses’ obtained from speculative practices are not subject of taxation in the country (Trivelli, 2007). Also, ‘idle’ lands inside city’s consolidated area can be declared as ‘agricultural plots’ paying considerable less contributions than developed plots that receive ‘urban condition’ for the effects of contributions payment. Measurements to control land
speculations could be considered as the retention of urban plots and their effects over land values (increase) affects the affordability of urban land for low income groups.

5.2.2 Planning instruments feasibility

Planning instrument’s feasibility for the implementation of each urban operation (urban regeneration and land generation policy) will be reviewed per each case. Also an analysis of proposal’s inter-sectoral approach planning feasibility will be provided.

Urban Regeneration

Urban regeneration projects elaboration are part of Urbanism & Housing Ministry (MINVU) attributions. MINVU is divided in seven divisions with two of them (DDU (Urban Development Division) and DPH (Housing Policy Division)) with direct incidence over the urban space, the other five divisions are related to internal administration (see section 4.2.1 Housing policy description). Urban Development Division (DDU) is aimed to study and propose (for parliamentary discussion) territorial and urban development national policies; and to develop MINVU’s urban investments programs. DDU attributions are to elaborate and evaluate: (a) Urban development national policies and regulations; LGUC’s (Urbanism & Constructions General Law) modifications. (b) Instructive for planning instrument’s elaboration (regulatory plans). (c) Regulation’s interpretation when is required by public institutions. (d) Urban development’s investments planning and management (MINVU, 2012).

According to Roberto Moris52 (former DDU director) DDU division has the legal attributions to elaborate urban regeneration projects. However, last Governments (since 1990) have decided to ‘minimize’ DDU’s role (of developing project for urban intervention) towards the provision of resources (subsidies from DPH division that concentrates the biggest part of MINVU’s resources) for private parties’ development of new social dwellings and existing housing stock refurbishment. Currently DDU urban interventions are limited to specific projects like the development of squares, facilities or refurbishment of obsolete public buildings. To do not hamper private initiatives of urban development, those ‘specific interventions’ are develop under the figure of ‘open competitions’ where DDU states a set of requirements for the allocation of resources and private parties submit their tender for project’s assignation (Moris, 2012). Low income group’s segregated areas urban regeneration proposal is possible to be conducted by DDU under the figure of ‘open competitions’ where MINVU states goals, requirements and evaluate proposals quality before project’s resources allocation for private parties’ development. However, segregated areas urban regeneration requires a change in the way that MINVU is addressing urban development and a redistribution of ministry’s resources not only orientated to the production of new social dwellings. A higher concern regarding existing social housing stock is required (as reviewed in section 4.2.2 Housing policy – Santiago’s segregation patterns, current refurbishment subsidies are not enough to regenerate city’s segregated areas) to achieve improvements in the quality of life conditions for low income groups living in city’s segregated areas. A higher MINVU’s DDU division action and resources allocation will be discussed in the following section 5.3 Reflections: political feasibility.

Urban land generation

Urban land generation is possible to be introduced in Santiago’s Metropolitan Regulatory Plan under the figure of ‘Urbanism by conditions’. This process has to be conduct by MINVU’s Region Metropolitana SEREMI as the elaboration of Metropolitan Regulatory Plans are the responsibility of MINVU’s representative per each region of the country. ‘Urbanism by conditions’ concept implemented in Metropolitan Regulatory Plan modification of ZODUC1997, PDUC2003 and PRMS100 would allow asking for a percentage of social dwellings per municipality. However, as ‘urbanism by conditions’ is not included in LGUC (Urbanism and Constructions

52 Interview with Roberto Moris: Between 2000 and 2010 worked as MINVU’s Minister Consultant and also as MINVU’s Urban Development Division director (DDU). Conducted the 15th of March 2012, Santiago, Chile.
General Law) and there is no clarity about what is possible to do with this instrument, some considerations have to be stated. Trough urbanism by conditions’ PDUC2003 established the requirement of including a 30% of total housing units as social dwellings in city’s peripheral areas. During the time of PDUC2003 elaboration the legal bodies reviewing policies concordance to the law (Contraloria General) approved the plan because of political willingness (there was a concordance among actors with incidence over urban planning that a policy including ‘urbanism by conditions’ was necessary to plan city’s urban extension). Different situation was experienced by PRMS100 proposal that was rejected in the first instance by ‘Contraloria General’ (with a new director) as their contents related to ‘urbanisms by conditions’ were not in the law (LGUC). PRMS100 proposal was modified adapting its contents to what is possible to do according to LGUC (Bresciai, 2012), the main modification of the contents regarding segregation was the change of the compulsory percentage of social dwellings (20%) to a required surface (8%) of projects total plot for social dwellings development. Considering this last ‘specifications’ regarding what is possible to ask with urbanism by conditions, French requirement of a percentage of dwellings total number for social dwellings could be adapted to the requirement per municipality of considering a percentage of municipal residential plots total surface for social dwellings.

Another important consideration regarding urbanism by condition’s planning feasibility is related to their approval processes as this instrument implies public – private negotiations. From the three regulatory plans considering urbanism by conditions (ZODUC1997, PDUC 2003 and PRMS100) only PDUC2003 has an explicit norm related to a mandatory percentage of social housing units that must be considered by private developers for the development of new urban areas. For the approval of private developer’s proposals under PDUC2003 method they have to submit their projects for approval and negotiation with six different public institutions (MINUV, Agriculture Ministry, Municipality, Transport & Telecommunications Ministry, Environment Regional Commission (COREMA) and Regional Government Council (GORE)). Despite the fact that PDUC instruments was implemented in 2003 currently there is no single project approved under this method. According to Roberto Moris one of the main reasons for this issue is that PDUC’s approval process is extremely slow and without any criteria that the institutions involved could use to evaluate the proposals (Moris, 2012). Pablo Contrucci (2006) agrees with this vision arguing that the lack of methodology in the different steps of approval is hampering instrument’s success. Also many of the Governmental bodies involved never had participation in city’s urban processes, so their duties regarding PDUC’s are not seen as priority. From PDUC experience it can be learned that ‘urbanism by conditions’ in Chilean culture of normative regulatory plans is a complex process that requires more preparation from the institutions involved and clear methodologies stating requirements of time and content for projects approval; conditions that currently do not have a legal framework as urbanism by conditions is not included in Chilean Urbanism & Constructions General Law (LGUC).

Urban land generation proposal consider the mandatory requirement per municipality of a specific percentage of municipal residential surface for social dwellings. To be able to implement a policy of this type is also required to analyze their management. Who is going to monitor the accomplishment per municipality of the required surface? Have municipalities the managerial capability to develop and negotiate with private parties the construction of social dwellings? Are private parties interested in developing social dwellings considering incentive policies likes Massachusetts 40B? If the required surface for social dwellings is not accomplished, would imply fines to the municipalities? These questions are out of the scope of this research, however their definition is fundamental to increase proposal’s planning feasibility.

From this reflection is possible to state that urban land generation planning feasibility is low as still is not clear what is possible to do with urbanism by conditions instrument. As urbanism by conditions is not included in Chilean Urbanism & Constructions General Law (LGUC) the definition of its attributions is a subjective issue depending on the political willingness of the Government and public institutions (Contraloria General) in turn. To improve urban land generation planning feasibility it is required a modification of Urbanism & Constructions General Law (LGUC) to provide urbanism by conditions with a legal framework that clearly states instrument’s
attributions, approval procedures and liabilities between private and public parties. About LGUC’s modification will be reflected in the following section 5.3 Reflections: Urbanism & Constructions General Law Modification.

Inter-sectoral feasibility

Recommendation’s inter-sectoral required coordination would depend in the inclusion of Santiago’s socio economic segregation problems on COMICYT’s (Cities and Territory Inter-Ministerial Committee) agenda. COMICYT has defined a plan of investments for the period between 2007 and 2012 considering the following investments for the city of Santiago: (1) infrastructure investments that are responsibility of Public Works Ministry (MOP). (2) Support of MINVU’s refurbishment subsidies for deprived neighborhoods revitalization, (3) ‘Interior ring project’ considering public spaces surrounding Santiago’s city centre regeneration. This project is MINVU’s responsibility. (3) Santiago’s buildings heritage recovery; responsibility of National Goods Ministry. (4) Transantiago (Santiago’s public transport system) investments to improve service’s quality; responsibility of Transport and Telecommunications Ministry (MTT). (5) Green areas, landfills sanitation, and bike paths investments conducted by Santiago’s Regional Government (MOP et al, 2007).

As stated before MINVU is the public institution with the attributions to present into COMICYT proposal’s urban operations (urban regeneration & urban land generation). However, MINVU’s current approach to social dwellings production and urban development is not according to research’s proposals. MINVU’s approach of providing resources for private parties’ development of new social dwellings and urban projects would hamper the inclusion of the proposed urban operations into COMICYT for the required inter-sectoral recommendations coordination. As it can be seen in point number 2 of COMICYT’s investments plan, COMICYT is supporting MINVU’s approach of refurbishment subsidies for the regeneration of city’s deprived neighborhoods. During research’s empirical research was possible to state that this strategy has been un-effective to solve segregated areas problems, considering that refurbishment subsidies work over dwellings physical improvement and segregated areas problems are related to their residential low income mono-functionality. Research’s urban operations proposals inter-sectoral required approach will depend on MINVU’s political willingness to address segregation patterns affecting low income groups, regarding this issue it will be reflected in the following section 5.3 Reflections: political feasibility.

Despite proposal’s inclusion in COMICYT’s agenda, there are some considerations regarding COMICYT’s managerial capability. According to Carlos Mingo (2010) COMICYT’s efforts of inter-sectoral coordination are being affected by member’s unstable participation and also because this committee is not a ‘resolution’ instance as there is no legal obligation that obliges the different ministers to be part or to cooperate in the development of proposals. Therefore, COMICYT inter-sectoral organization depends on ministers and public institutions director’s willingness to develop the different projects or plans discussed on COMICYT’s meetings (Mingo, 2010). COMICYT’s managerial concerns reflect the need of having a legal framework for inter-sectoral decision making. To have an inter-sectoral decision making legal framework stating times, responsibilities and attributions implies a modification to country’s Urbanism & Construction General Law (LGUC), issue that will be reviewed in the following section 5.3 Reflections: Urbanism & Constructions General Law Modification.

5.3 Reflections

The aim of this research was to state how Chilean regulatory plans together with other planning instruments could effectively counteract Santiago de Chile segregation patterns. In the previous section a proposal was elaborated and evaluated according to their planning instruments feasibility. However planning instruments are not ‘neutral’ objects, meaning that their elaboration is the reflection of country’s political discussion. In the following paragraphs a reflection is elaborated regarding urban operations proposal’s political feasibility according to the information that was possible to obtain from research’s interview with relevant actors in the elaboration of Chilean planning instruments. From previous section was also possible to identify that some of proposal’s contents (urbanism by conditions, inter-sectoral decision making legal framework) are not included
in Chilean Urbanism & Construction General Law (LGUC), hampering urban operation’s planning feasibility. In this section last proposals to modify LGUC will also be reviewed.

Urban regeneration political feasibility

According to Luis Eduardo Bresciani (2012) MINVU is focused on the production of new social dwellings (provision of resources for private parties’ developments) as in the country there are still inhabitant’s without a dwelling. Therefore, urban regeneration projects are not seen as a priority as they would imply to provide subsidies to inhabitants that already received one for the construction of their social dwellings (segregated areas are composed mainly by social dwellings constructed with housing policy subsidies). Also it has to be considered that despite the fact that urban developments are part of MINVU’s responsibilities, last governments since the return of the country to democracy (1990) have opted to diminish Government ‘intervention’ in urban development and to limit MINVU’s role to be a financial body that entrust private parties city’s development (Moris, 2012). An active construction industry it is considered as a fundamental element for country’s economical growth, so MINVU’s subsidies policy it is seen as an effective investment that allows to achieve social and economical benefits at the same time (Rodriguez, 2012). This vision of having a ‘financial’ Urbanism & Housing Ministry is shared by Chilean main political coalitions (right wing and left wing) as MINVU’s subsidies policy have allowed to significantly reduce country’s social housing deficit and new social dwellings developments are an effective measurement to increase political popularity of the governments in turn (Sugranyes, 2012).

MINVU’s housing subsidies were established during the 70’s with the purpose of consolidating Chilean construction industry and to counteract country’s housing deficit (Sugranyes, 2012). During the 90’s (after 15 years of housing subsidies implementation) the construction industry organized under the figure of CCHC (‘Camara Chilena de la Construccion’ = Construction Chilean Chamber) was not interested anymore on the development of social dwellings as the potential amount of square meters to be constructed and profits that they represent were significantly smaller that the residential demand from other socio economic groups (Sugranyes, 2012). MINVU’s answer to keep CCHC in social dwelling’s production was an increase on the amount of the housing subsidies and the inclusion of mid-low socio economic groups as subject of subsidies (see section 4.2 Housing policy). MINVU’s evaluation for the modification of subsidies’ amount and target groups considered that current social housing stock was sufficient and that it was necessary to ‘attend’ higher socio economic groups to allow a bottom-up social mobility and to allow the re-utilization of the existing housing stock for new low income inhabitants (Sugranyes, 2012). However, this intended social mobility (inhabitants of existing housing stock moving to other residential solutions) was never achieved. Low income group’s acquisition capacity is too low to afford other residential solution than social housing, and also the low quality of the existing stock hampers the possibility of selling their properties. Ana Sugranyes and Alfredo Rodriguez through their study ‘Those with a roof’ (2005) were able to check this issue stating than from existing housing stock only a 23% was rented and the rest was still occupied by their owners or relatives.

According to Ivan Poduje (2012) the complete MINVU’s structure is based on a subsidy policy to increase low income group’s dwellings acquisition capacity, but Chilean housing problems are not related only to housing deficit considering that only a 5% of the population lives in informal settlements and the serious social problems that have been detected in the existing housing stock constructed under subsidies system (segregated areas). Poduje also states that Chilean Governments cannot ignore segregation problems anymore ‘in past decades everything was priority needs (education, health, housing, etc), and fostering private market functioning was seen as the only manner to cope with those demands. But considering country’s current levels of development there are urban responsibilities, like the social problems in segregated areas, that cannot be expected to be solve from private initiatives and that requires an active MINVU’s involvement’ (Poduje, 2012).

The political feasibility of research’s urban regeneration proposal depends on the recognition of the serious social problems that segregated areas represent for low income groups living there, and also to the
understanding that current MINVU’s model of subsidies is not enough to counteract segregated area’s social homogeneity. As a positive sign that segregation problems are in the public agenda, in 2008 MINVU introduced neighborhoods and dwellings refurbishment subsidies. However, this research was able to state that their effectiveness to achieve segregated area’s regeneration is low as refurbishment subsidies are aimed to neighborhoods and dwellings physical improvement whereas segregated areas problems are related to their mono-functionality that requires more than physical improvements.

Despite the discussion if refurbishment subsidies are a good strategy to improve segregated areas condition, Luis Eduardo Bresciani (2012) appreciates that at least there is awareness inside MINVU that segregated areas represent serious social problems that requires solutions. Pablo Trivelli (2012) and Alfredo Rodríguez (2012) are more skeptics regarding a Governmental willingness to solve segregation problems, as under the current system ‘everyone is happy’ (except segregated area’s low income inhabitants); private developers (CCHC) have financial support to construct, politicians from both coalitions (right wing – left wing) evaluates housing system as a successful policy providing political popularity, and MINVU is able to develop social dwellings to counteract country’s housing deficit under a system that do not demand to get involved in the design, location and construction of the residential solutions, increasing their managerial processes efficiency and transparency.

Urban land generation political feasibility

Research’s proposal of urban land generation political feasibility can be analyzed according to two points: (1) MINVU’s approach to social dwellings production and urban development, (2) and reactions among urban planning actors about a project of law presented in 2007 consisting of including a mandatory 5% of social dwellings for every residential development in the country.

(1) As stated in urban regeneration political feasibility section, MINVU’s approach to social dwellings production and urban development is to be a financial body that entrust private parties the construction of social dwellings and urban area developments. A proposal like urban land generation per municipality implies to interfere with private market free functioning, condition that is evaluated differently according to political coalitions. According to Alfredo Rodríguez (2012) right wing and left wing political coalitions have opposite opinions regarding this issue. While right wing parties will support initiatives that eliminate restrictions to market free functioning, left wing parties would support measurements stating restrictions or a framework to control free market outputs (Rodríguez, 2012). According to Luis Eduardo Bresciani MINVU’s role is to achieve a balance between market/private initiatives and social interests, as a system without a market and full of governmental restrictions would generate a scenario where nobody builds. MINVU’s instruments to achieve this balance are the different policies that act as incentives or restrictions to free operation (Bresciani, 2012). Proposal’s urban land generation would face the opposition of those supporting market free functioning, however the inclusion of Massachusetts 40B incentive policy could act as a ‘compensation’ for the extra cost that this urban operation would imply. Bresciani also states that MINVU’s role should reach those areas where the market is not able to provide solutions (Bresciani, 2012). As new low income inhabitants exclusion from city’s urban area is a problem without solution from the past decade (not addressed by the market), urban land generation policy is seen as a reasonable policy that requires political discussion to agree on the urgency of the problem.

(2) However, a required percentage of social dwellings per municipality affect directly economical and political interests of the main actors involved in country’s urban development discussion. During 2007 this situation was possible to be observed when MINVU’s developed a project of law considering a mandatory 5% of social housing units per each residential development in the country. According to Luis Eduardo Bresciani (2012) this initiative was only a political movement from MINVU to situate the discussion on the public agenda. Inside the Government this initiative was only supported by MINVU’s DDU division (Urban Development Division), and was rejected before parliamentary discussion by Finance Ministry as it was considered as ‘more taxes’ for private developers during times of economical crisis (2007). According to Bresciani this initiative did not have
any chance of success as it was not properly elaborated. For instance there were no considerations regarding their management (which institutions was going to check accomplishment of the percentage), and also the policy was planned to be implemented at a national level without distinguishing among urban centers different needs regarding social dwellings (Bresciani, 2012). Despite the fact that this proposal was not properly elaborated and never go out from Government for public discussion, its discussion within Government was known by CCHC (Construction Chilean Chamber) who immediately stated their rejection as this intended policy was making them (private developers) responsible for segregation problems in Chilean cities when their practices were all the time according to Chilean laws of urban development (Moris, 2012). CCHC rejection was logical as they were defending their own interests, and a policy of this type only implied extra costs for them without any benefit in change (Sabatini, 2012).

Research proposal of urban land generation cannot be imposed without the consent of private developers (CCHC) as currently they are the main engine of country’s urban development. The proposed plan of urban regeneration would imply extra cost for private developer’s residential initiatives; however the inclusion of Massachusetts 40B policy would compensate them as urbanistic norms benefits could imply extra profits as well. For further development of research urban land generation proposal it is required a financial evaluation to state if urbanistic norms benefits (with Massachusetts 40B) could compensate the extra cost of including social dwellings in residential developments.

Urbanism & Constructions General Law (LGUC) Modification

As reviewed before, research proposal’s contents of urbanism by conditions (to implement a required percentage of surfaces per municipality for social dwellings) and recommendations inter-sectoral coordination, are lacking from a legal framework that clearly states their attributions, procedures and responsibilities among involved parties. Urbanism & Constructions General Law (LGUC) is the Chilean law that rules country’s urban planning. This law was established in 1947 and it was considerably modified on 1975. Since then only minor modifications have been conducted. Among urban planners there is a general consensus that LGUC and regulatory plans as urban development mechanism are obsolete and that a ‘modernization’ of them is an urgent issue (Allard, 2012). According to Luis Eduardo Bresciani (2012) the main problem for LGUC modification are the different interest (sometimes contradictory) of actors involved in cities’ urban development that hampers the approval of the different effort to modify it. In the past decades three proposals of LGUC modifications have been presented by MINVU for parliamentary discussion in Chilean Congress (1999, 2004 and 2008), and none of them have been approved (not even for discussion in parliamentary sessions). In 2008 the proposal of modification was rejected as according to Bresciani (2008) it was too ambitious and it was presented at the end of the period of the Government in turn. As there are too many interest related to urban development (real estate industry in Santiago operates with 6.000 million dollars per year approx. (Rodriguez, 2012)) to present an LGUC modification proposal have to be done at the beginning of Governmental period, as long negotiations and discussions are expected and at the end of Government periods politicians are more interested in re-elections and avoid political discussions that could hamper their popularity in front of the citizenship and private parties that finance their electoral campaigns (Bresciani, 2012).

Current Government is preparing a new proposal for LGUC modification divided in ‘parts’ to increase the chances of being subject of parliamentary discussion (Allard, 2012). The main contents of this new proposal are related to urbanism by conditions definitions and attributions, inhabitant’s participation in urban development planning, new attributions for municipalities in the definition of their regulatory plans, inclusion of urban development project as an instrument for urban regeneration, etc. Research’s urban operations proposals could considerably increase their planning feasibility if this LGUC modification is approved as urbanism by conditions instruments would have a clear legal framework determining what is possible to be done with it, and also would be recognition of urban regeneration projects for the improvement of cities’ deprived areas. However, Government proposal for LGUC modification do not include measurements for the establishment of
a legal framework that norms inter-sectoral decision making; condition that is seen as fundamental for research’s recommendations implementation.
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APPENDIXES

7.1 Santiago's Shopping Malls
7.2 Santiago’s inhabitants travel origin and destiny.
7.3 Santiago’s land values
7.4 Santiago’s primary schools distribution
7.5 Santiago’s Hospitals distribution.
7.6 Santiago’s cultural centers distribution.
7.7 Santiago’s social housing developments distribution.
7.8 Transantiago map (surface public transport system)
7.9 Santiago’s subway map.