



HAL
open science

Deconstructing water scarcity in urban projects: a "silent" privatization of water network in Lima

Candice Pigeard

► **To cite this version:**

Candice Pigeard. Deconstructing water scarcity in urban projects: a "silent" privatization of water network in Lima. Political science. 2017. dumas-01832688

HAL Id: dumas-01832688

<https://dumas.ccsd.cnrs.fr/dumas-01832688>

Submitted on 8 Jul 2018

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Candice Pigeard

DECONSTRUCTING WATER SCARCITY IN URBAN PROJECTS
A 'SILENT' PRIVATIZATION OF WATER NETWORKS IN LIMA

Governing the Large Metropolis – Spring Semester 2017
Professional dissertation
Under the supervision of Dr. Alvaro Artigas and Dr. Jérémy Robert

Foreword

The recent natural hazard – the phenomenon “El Niño Costero” – that hit Peru in march 2017, provoking heavy rainfalls leading to landslides and inundations, has put the whole country in an emergency situation revealing meanwhile its unpreparedness. In Lima, the capital, water infrastructure completely collapsed, unable to proceed the quantity of water, creating water shortages for several days.

On top of highlighting the vulnerability of the territory to natural events and the lack of resilience-driven policy design and implementation, it reveals Lima’s main urban issues that participated to build the metropolitan territory’s vulnerability: a lack of urban planning, an urban growth dominated by settlements built in zones at risk, an inefficient water infrastructure and a fragmented and mono-sectoral urban governance presenting an absence of collaboration and coordination among the actors involved in city-making. The collapse of an authorized formal real estate development located on the banks of the river Chillón is an illustration among others.

If this research doesn’t aim at analysing the recent crisis nor at drafting policy recommendations, it offers to shed light on some of the challenges highlighted by this crisis at the metropolitan level and to give a more distanced and in-depth analysis of Lima’s governance by focusing on the issue of water utilities in formal real estate development.

Acknowledgements

I am deeply thankful to my two advisors for giving me the opportunity to do this research project. I could have hardly imagined working on such a stimulating topic. Dr. Alvaro Artigas provided great support, advises and orientations to write this dissertation. Dr. Jérémy Robert, as my supervisor in Lima, welcomed me as a research intern at the French Institute of Andean Research to work on the BLUEGRASS project¹ and provided me with valuable guidance, thoughtful comments and excellent mentorship along my internship.

I would also like to thank the French Institute of Andean Research (IFEA) and in particular its staff, and its director Evelyne Mesclier, for their warm welcome and the stimulating conversations with a special credit to Quentin Marchand for his valuable insights.

I am also grateful to the many professionals that I had the opportunity to interview, for sparing their time and providing key information to the writing of this research.

Finally, a special thanks to Dantès Pigeard for his unconditional support, his patience and his constructive advices that were essential to the writing of this professional dissertation and to Eliana Aragon for her positive energy and daily support.

¹ BLUEGRASS Struggles for “Blue Gold” : From Grassroot Mobilizations to International Policies of Environment is an ANR project led by UMI iGlobes (CNRS/ University of Arizona) involves different research centers (IFEA, CEMCA, CIRAD, USP) in the American continent and France. It aims at studying the environmental conflicts in different cities of Latin America and the United States of America in order understand the principles defining international policies for water management. The last axe of research consists in observing the appropriation of new challenges arising with climate change and metropolization processes by actors of the water sector.

Abstract

In city-making, actors react to problems and water provision is one of them in Lima. The recent conflicts around water shortcomings in privately developed housing complexes have pointed out a new issue regarding water services. Lima presents a case where the incentives implemented by the government to produce mass housing solutions for the middle and lower classes have stimulated the real estate market but were not accompanied by an integral planning of the metropolitan area nor an improvement of its infrastructure. Formal building development is hardly dissociable from urban infrastructures, including water: when delivering real-estate units, the access to basic services is supposedly comprised. Focusing on water infrastructure, an essential good to sustain human existence and one of the most complex utility in terms of provision and profitability, is an opportunity to understand the mechanisms at work. It also enables to characterize the regulatory framework in which it takes place, specifically regarding vital infrastructures provision in the development of buildings. Indeed, in the case of real estate projects, water issues take another dimension than in the informal settlements as it involves private entities, considerable investments, legally authorized building projects and a section of the population that have accessed to housing legally and formally (often through governmental programs). In this sense, it is an opportunity to shed light on another aspect of water utilities problem in Lima and in turn, to understand the mechanisms at work regarding Lima's urban development and its regulatory practices. This research will conclude on the integration of the water utilities provision to the private developer's responsibilities uncovering a 'silent' and progressive privatization of the water network expansion.

Summary

Foreword	2
Acknowledgements	3
Abstract	4
List of Acronyms and Entities	7
Introduction	8
Theoretical Framework	8
Research Question	12
Methodology	15
CHAPTER I. THE INCREASE OF FORMAL DEVELOPMENT IN AN UNPLANNED CITY: A NEW CHALLENGE FOR WATER UTILITIES PROVISION IN LIMA	17
A. Facing Lima’s urban growth: an impossible planning	17
a. Lima: a metropolis born from a concomitant demographic and urban transition	17
b. Governing arrangements for urban planning	18
1. An unplanned metropolitan area	18
2. An unachieved decentralization: a strong presence of the State	19
3. A weak and politicized metropolitan level in Lima’s urban governance	20
B. A consolidated real estate market: a recent feature of Lima’s urban development	22
a. Addressing the housing deficit: from permissive policies to public-private solutions	22
1. Former housing policies: regularizing the informal and ‘double sided policy’	22
2. New social housing programs: the rise of a new class of buyers	23
b. New real estate expansion dynamics: spatial outcomes	25
1. Lima’s real estate sector: features and historical trends	25
2. Vertical and horizontal development	26
C. The real estate sector: a new actor lobbying for water	27
a. Water utilities: a territorial monopoly disconnected from local governments	27
1. Water utilities for Lima’s territory: a constrained provision	27
2. Improving water utilities: a long-term challenge	28
3. Water utilities: a competency out of the Metropolitan Municipality of Lima jurisdiction	30
b. The insufficiency of the network: premises of a widespread issue	31
1. Water access in formal development: a late mediatization of the issue	32
2. Water shortcomings in Lima	32
c. The real estate sector: a recent pressure on water utilities	33
1. The discourses of the actors: reflecting a systemic issue	34
2. The real estate sector: economic and symbolic power	35
CHAPTER 2. WATER SCARCITY IN URBAN PROJECTS: DECONSTRUCTING LIMA’S GOVERNANCE	38
A. An unreliable water utilities provider operating in a weak urban planning framework	38
a. The shortcomings of a managing system in the face of Lima’s new urban challenges	38
1. A nature of demand out of SEDAPAL’s priority	39
2. An inadequate planning to sustain urban projects	40
3. SEDAPAL’s shortcomings as a provider	41

b.	The ineffective regulation of zoning in an unplanned city	42
1.	Lack of planning: a recognized feature of Lima	42
2.	An exceptional norm enabling zoning changes easily	43
B.	The inefficiency of administrative tools to ensure water utilities	46
a.	The <i>factibilidad de servicios de agua y desagüe</i> – a conditional authorization	46
1.	Delivering the <i>factibilidad</i> : an uncoordinated management within SEDAPAL	46
2.	The <i>factibilidad</i> : a check within the building permit demand	47
3.	From water services provision to a conditional access to water	48
b.	Building higher: serving both the developer and the district municipality interests	50
C.	Improving water utility through real estate activity?	52
a.	Resolving a conflictual case: water shortcomings in Carabayllo	52
1.	A long-term issue dating back to 2004	52
2.	A first collective negotiation	53
b.	Towards the internalisation of water utilities to the developer's responsibility?	55
1.	Private developers: between opportunistic strategies and internalisation	56
2.	SEDAPAL: renovating their network through urban development?	58
c.	Public action for water issues: promoting a devolution to the private developer	59
1.	A locally negotiated solution: the historical case of San Isidro	59
2.	The Government's initiatives: a new water relationship with the private developer?	60
	Conclusion	63
	Bibliography	65
	Annexes	67
	Index	79

List of Acronyms and Entities

ADIP

Asociación de Desarrolladores Inmobiliarios Perú
Association of Real Estate Developers in Peru

ASEI

Asociación de Empresas Inmobiliarias del Perú
Peru's Real Estate Companies Association

CAPECO

Camara Peruana de Construcción
Peruvian Chamber of Construction

FONAFE

Fondo Nacional de Financiamiento de la Actividad Empresarial del Estado
National Fund for the Financing of the Public Sector Companies

FONCOMUN

Fondo de Compensación Municipal
Funds for Municipal Compensation

IMP

Instituto Metropolitano de Planificación
Metropolitan Institute for Planning

MVCS

Ministerio de la Vivienda, Construcción y Saneamiento
Ministry of Housing, Construction and Sanitation

MML

Municipalidad Metropolitana de Lima
Metropolitan Municipality of Lima

SEDAPAL

Servicio de Agua Potable y Alcantarillado de Lima
Water and Sanitation Services for Lima and Callao

SUNASS

Superintendencia Nacional de Servicios de Saneamiento
National Superintendence for Sanitation Services

Introduction

Theoretical Framework

- The rise of the private sector in Latin American cities: from utility services to real estate development

Emerging megacities are new centres of capitalist accumulation as they concentrate an unprecedented amount of investments with the private sector taking a growing importance in city-making (Lorrain, 2014). In Manila, the conglomerate Ayala Corporation is in charge of the Manila Water Company while being a real estate developer (Lorrain, 2017). In this sense, real estate and water infrastructure competencies can be tightly connected, as one stakeholder can ensure two main components of the urban realm.

With an average of 80% of its population living in cities in 2014 when the urban population accounted for only 40% in 1950, Latin America is today considered as the most urbanized continent (UN DESA, 2007)². Latin American cities were quickly seen as key factors of their country's development and as strategic places of developing countries transformation (Poupeau & Lorrain, 2014). As the fast-pace urbanisation process resulted in an increasing demand for all types of infrastructure, they have become attractive places for market operators. In this context, the sector of urban utilities (electricity, telecommunication, water, transport) experienced a transition from a Keynesian inspired management to a neoliberal provision of public services. The neoliberal governing paradigm that inspired politico-economic reforms in Latin America since the 1980s (Loris, 2012) have greatly participated to the rise of participation of the private sector in cities' development, accompanied by the shift, at the institutional level, towards a more regulatory role of the State (Dubash & Morgan, 2012).

If water utilities management is an historical example of the private sector participation to the urban realm, the progressive constitution of a real estate sector constitutes another feature of Latin American cities. As they experience the end of an unprecedented demographic transition that have characterized their growth in the second half of the 21st century, the real estate market has taken an increasing role in city-making. Shifting away from informal dynamics and an urban sprawl dominated by auto construction, the stabilization of the demographic growth has enabled

² Data source: UN Department of Economic and Social Affairs, Population Division, —World Urbanization Prospects: The 2007 Revision,|| pp.78-81

Latin American cities to enter in new modes of urban production partially shaped by the growth of a real estate market with development such as mega housing projects, malls or business districts. In this sense, the Latin American city enters in a paradigm of financialisation of the urban production.³

- The real estate sector: an actor depending on the water infrastructure and creating new forms of governance

Within this context, a new type of private actor appears in Latin American cities with the figure of the developer. Among the private actors invested in urban affairs, the private developer occupies a special status as his mission goes from land acquisition to building sales. Private developers are often described as strongly autonomous and weakly regulated (Halpern & Pollard, 2013). In this perspective, the private developer seems to have a strong power to influence urban policy-making and make new forms of governance to arise.

The real estate development is tightly linked to the development of its infrastructure (Rutherford, 2009) as infrastructures are socio-technical objects: the development of the network structures the city and organizes its viability by defining the city and its potential extension (Lorrain, 2011). Indeed, infrastructures are material and technical objects that are inherently socio-technical as it is not possible to detach a technical object from the context it is implemented in (Akrich, 2010). Therefore, utilities are an entry point on the issue of city management (Lorrain, 2011). The material vision of the city defends that infrastructures govern the city as they induce the creation of institutions to solve practical problems that progressively evolve towards an "urban services model". The bulk of regulations serve as institutions and frame the distribution of competencies among public and private actors: the urban networked infrastructure creates its own rules of management. This essential deterministic feature of the network seems to enter in contradiction with the freedom of the private developer as he could be constrained in his expansion strategies by the lack of the infrastructure and his decision-making would be partly subjected to the utility provider, even greater for water utilities regarding its vital necessity.

However, the development of urban projects without enabling water services seem to contradict the powerlessness of the real estate developer in front of the network. Indeed, this approach doesn't necessarily permit to explain its inconsistencies or its possible instrumentation. To overcome those shortcomings, a vision of the infrastructure development as a result of

³ This contextualization results from the work of Marie France Prevot Schapira in a conference at the PUCP, in Lima on the « Demographic transitions and socio-spatial effects in Latin American cities in the 21st century » (May 2nd, 2017)

governance could be more appropriate. In this perspective, the concept of political infrastructure highlights that “infrastructures and technologies are not neutral” (McFarlane, Rutherford, 2008) as “it is not « *in the nature* » of Large Technical Systems to grow irresistibly” (Coutard et al., 2005). As their development depends on a decision, the extension of water infrastructure is “undeniably a material, social, and political process that is decisive for [...] shaping future spatial sprawl” (Criqui, 2015). This underlines that infrastructures remain technical objects subordinated to the cities’ own governance dynamics with the underlying idea that infrastructure always benefits to someone. In order to understand the patterns of infrastructure development in Lima, it is necessary to understand the power play (motivations and resources) of each actor involved within the water utilities governance framework. A mapping of the competencies and strategies between the different actors participating to the urban and water development is key to seize the policies implemented. Indeed, considering water infrastructure as political implies that its expansion is discussed within a decision space in which actors can execute possibilities of action. The analysis of this decision space enables to grasp who decides. As urban development and water utilities connect both private and public actors, a methodology to observe this decision space is to consider the instruments implemented by the public authority to frame and regulate the private developer’s activities.

The literature on public action highlights the relevance of studying instruments (Halpern et al., 2014, Le Gales & Lascoumes, 2007) in order to reveal discretionary practices while assessing a change or as an explanatory variable of the dynamics observed. Therefore, instruments are not neutral and react to political strategies, and the instrumentation is tightly connected with the exercise of power regarding their potential to be politicized and mobilized by actors. The regulation through the implementation of instruments appears as a relevant entry point to analyse the ties between the private sector and the public regulator. Indeed, private developers, in order to build projects, have to go through multiple administrative procedures aimed at framing and regulating their action. Each step of the process would correspond to an instrument implemented by the public bodies. In this perspective, the analysis of instruments and how they are appropriated by the actors is an opportunity to establish the causes of a conflictual situation.

In Lima, water services are described as qualitatively poor, operated by a financially unsustainable operator with unskilled staff, within a weak institutional framework (Ioris, 2016). Regarding the necessity of water infrastructure in real estate development, and the large scale of the developers’ activities, it is likely that water constitute a challenge for its development. Interrogating the relationship of the water provider to the private developer looks appropriate to

understand the extent of the developers' decision making on the urban production and their participation to city's governance.

If the relationship between real estate sector and water provision is not unexplored, it remains centred on the hydric resources management level whether it is through the reconfiguration of the urban development decision-making space by the real estate sector under environmental constraints (Benites et al., 2016) or with a focus on the interconnection between land and water property in Chile (Lukas & Fragkou, 2017). In this sense, it doesn't focus on water urban services nor on the mission of the utility provider to extend and maintain the water network.

- Lima, a metropolis in a transitory phase: new challenges for water provision

With the consequential water reforms implemented in the 1990s, water utilities have become a traditional theme of research in Lima (Centeno & Calderon, 2015). By comparison with other Latin American cities, the role of private operators has remained limited to punctual public-private partnerships for large-scale infrastructure in Lima and private actor participation has not constituted a main angle of analysis in the existing literature. Often described as the "second biggest metropolis located in a desert worldwide" (WWF, 2014), Lima's water issues are often reduced to geographical characteristics and explained through physical reasons with international organisations diffusing a discourse focused on water scarcity (World Wide Foundation, World Bank). This explains the abundant literature on Lima's hydric stress with an emphasize on its water supply shortcomings and its vulnerability to climate change (LiWa Report, 2009). Another main trend to address the water question is through the access to water in poor neighbourhoods and informal settlements (Fernando, 2008; Criqui, 2014) pointing out the inequalities of water services provision at a metropolitan level (Ioris, 2012). In this sense, water scarcity is also defined as a social construct unveiling the socio-economical dynamics beyond the decision of water allocation (Ioris, 2016). Building on the concept of splintering urbanism (Graham & Marvin, 2001), water provision would follow a double-standard with an abundance in the consolidated and rich centre and a water scarcity in the poor periphery.

The outcome of the new housing policies promoted by the Peruvian government in the early 2000s (Maldonado, 2010) has participated in the empowerment of the real estate sector. As it grew, its role in the urban production increased and it became a key actor in Lima's governance creating new socio-spatial dynamics with a verticalisation of its centre and a private-driven urbanization of its peripheries. Building real estate projects further than the last informal

settlements, the private developers transcend the initial internal urban segregation, between centre and periphery, rich and poor (Calderon Cockburn, 2005). As space segregation is being reconfigured, it is necessary to go beyond the dual city approach and questions the strict water segregation between connected formal housing and disconnected informal settlements (Jaglin & Zérah, 2010).

To summarize, the academic production mainly reflects the imperative of universal coverage that constituted the core of political discourses and utilities reforms in the past twenty years. With the emergence of a real estate sector, marked by large-scale formal housing production and new urban dynamics, the traditional dual prism used to define the socio-spatial organisation of Lima and its associated water provision is not sufficient to understand the new challenges it raises for water utilities provision. Indeed, this framework doesn't enable to seize the complexity of Lima's new modalities of urban development and in turn, define its new modes of production.

Research Question

In 2016, the newly elected president of Peru reaffirmed water provision as his top-priority announcing to reach universal water coverage by 2021. As highlighted by the most recent natural disaster, water infrastructure is deficient in Lima. Providing access to water and sanitation has been to this date an issue of prime concern in the capital presenting both quantitative and qualitative deficiencies. Since the 1990s and the first attempts to privatize the public utilities, it has become a very politicized topic subject to multiple debates, especially regarding the model of management that should be implemented – private concession or structural reforms of the public provider.

Water shortcomings in Lima have acquired a status of public problem when they became a prioritized issue on the national agenda. As framed on the national agenda, water presents two problems: its lack of access in the informal settlements and the efficiency of the utility provider. Regarding the framing of the problems, water policy consisted in reforming SEDAPAL and prioritizing the extension of the network in the periphery. As the water policy objective is to reach universal coverage, it became a social goal; pro-poor policies and the structural reforms implemented became a necessary condition to fulfil this objective. The social framing of the policy enables to rationalize the involvement of the private sector in large-scale infrastructure projects that also support the government's economic interests as another of its objectives is to foster the growth of business sectors such as construction. The same pattern of policy framing can be observed for housing. Set in terms of social housing provision, the affirmed objective of the

housing policies is to provide decent life conditions. However, elaborated to incentivize private sector participation, the social housing policy also hides economic interests, especially as for now, access to formal housing remains reserved to middle and higher classes.

Indeed, the Peruvian government holds a contradictory stand as it implements pro-poor policies to deal with the strong remaining of informality - a characteristic of the metropolis expansion - while it aims at turning Lima into a key metropolis within Latin America, with a productive economic and financial centre. In this perspective, it promotes a “development through investment and not through invasion”, quote which was the government’s official precept when it implemented social housing policies in the 2000s. This captures the transitional moment in which the government stands: between its international aspiration and the national situation. Following contradictory objectives, its policies can be qualified as inconsistent. Regarding the link between water infrastructure and housing developments, the objectives set by the State appear contradictory as water services expansion is prioritized in the existing informal settlements when the development of housing also requires water utilities. To this extent, there was no coordinated and consistent public policy to ensure water provision in new housing developments and the contradictory nature of the Peruvian governments’ policies create a fragmented governance. Finally, the issues created by the central state conflicting objectives are reinforced by the inconsistency of public policy filiation across time and electoral mandate.

In a literature mainly focusing on the access to water services in the informal settlements located at the outskirts of the city, analysing the water issue in formal real estate development is an opportunity to bring a broader perspective on the governance of water utilities and its challenges in Lima. Since the early 2000s, the formal real estate sector, driven by private companies, has increased significantly experimenting a “boom” of housing. To this respect, the growing importance of the real estate sector is not an uncommon feature in the emerging countries: in Pacific Asia, the direct investments in property reached \$42 billion in 2006 (against 15B in 2003).⁴ Existing at an increased business level, real estate activity adds up pressure on the water utilities, requiring a faster water infrastructure development. Therefore, this dissertation will intent to assess if the real estate development in Lima is conditioned by the existence of water infrastructure. If yes, what are the objectives of the water provider – SEDAPAL – regarding network development policies in order to deal with this fast formal real estate development? On which grounds does their decision-making rely? If not, how does the real estate market interact with the constraints of access to water? Through the SEDAPAL or through other channels?

⁴ Source: Grosvernor on DTZ data, 2007 in Bakham R., *Real Estate and Globalisation*, Wiley-Blackwell, 2012

In spite of the legal nature of those developments, water and sanitation services are not always provided while it is one of the basic requirements of functional buildings in a sector regulated by Peruvian political institutions. This has led to conflictual situations with inhabitants formally owning a home without a water connection or companies developing buildings without being able to guarantee access to water. Not only this problem arose in development projects taking place in peripheral and under urbanized lands of the city, following a horizontal dynamic but also in the consolidated centre of the city, where a densification process and vertical development would happen.

On the one hand, the inability of the water provider to deliver required infrastructures interrogates the rationale behind its incapacity: is it that water utilities are inefficiently governed or is it a manifestation of other motivations? On the other hand, the fact that the real estate sector was able to keep developing in presence of an insufficient water services capacity raises questions about the legal framework supposed to regulate formal development.

Assessing the raising concerns of the problem, this research aims at outlining the causes explaining the lack of water and sanitation services in formal development. In this sense, this research goes from an assessment of an issue in the specific metropolitan context of Lima – leading to a conflict between SEDAPAL, private developers, governmental authorities and the civil society – to the review of the mechanisms at work that have enabled the capture or instrumentation of specific devices within the urban development regulatory framework. Partially explaining the development of formal buildings without water services, it enables, combined with the analysis of one of the negotiation process that took place to solve this issue, to point out the strategies of the different actors in relation to water utilities in Lima.

Moreover, the outcome of this research will aim at understanding the mechanisms that led to water shortcomings in urban developments that are subjected to an established regulatory framework at the metropolitan level. After having demonstrated, in a first part, that the activity of private developers represents a new challenge for Lima's water provider, the second part will consist in deconstructing the water shortcomings' issue in real estate development. This should reveal the mechanisms at work, drawing special attention on the logics of instrumentation and also outline the associated strategies for each actor with respect to water utilities provision.

After specifying the urban context in which the real estate sector has emerged, the first part will present the respective institutional arrangements for urban planning and water utilities provision and introduce the characteristics of the conflictual situation between SEDAPAL and private developers, through their respective discourses. This will enable to represent the stakes surrounding this up-and-coming issue.

The second part highlights the reasons why such an issue has emerged. It shows how Lima's weak urban planning framework has deepened the structural dissociation of water infrastructure and formal building due to their distinct decision-making process and pace of development. Then, it sheds light on the logics of instrumentation of the regulatory tools implemented that participated to the emergence of the water crisis in formal developments.

As a final ambition, this research wants to think territorial inequalities differently: in order to understand water provision constraints and dynamics in Lima, one has to go beyond the binary vision of irregular settlements deprived of water versus a prosperous city where resources are enshrined and flow in abundance. This investigation shows that the water shortcomings in Lima also results from the challenge brought by the growth of the Peruvian real estate sector and suffers from the capture of the existent legal framework by the different actors involved in city making, participating to the deregulation of water utilities provision. In this context, the negotiations and solutions implemented so far illustrate the emergence of new arrangements regarding water utilities governance and the production of the urban fabric.

Methodology

This professional dissertation was written in the context of an internship at the Institut Français des Études Andines (IFEA), from February to May 2017. The theme of the research was predefined as part of BLUEGRASS, a project that aims at providing an analysis of the regulatory issues of water services in Lima. This research would aim at understanding the relationships between water provider and real estate sector, with the objective to understand the role of water provider (SEDAPAL) in the urban planning and the urban production.

If the theme of the research was decided beforehand, part of the research consisted in an exploratory phase of the topic and in establishing a methodology to analyse the relations between water utilities and private developers. Regarding the reciprocity of the two variables, one of the challenge of the research was to determine the independent variable from the dependent one. The real estate actor was chosen as the independent variable producing some effects on the water utilities.

The entry point chosen for this research has followed the assessment of conflictual cases in which inhabitants wouldn't have access to water in newly built housing developments. Therefore, the initial idea was to deconstruct this new situation in order to understand the determinants and modalities of the problem by defining it, assessing its scope, identifying potential case studies and the actors involved. This exploratory phase also consisted in grasping Lima's general urban context, its current dynamics of development and seizing the real estate and the water utilities sectors. This also facilitated to identify potential actors to interview. This phase was carried out through a media review, a literature review and the consultation of grey literature.

In the end, 19 semi-directed interviews were realized out with private developers, local governments, civil society, water engineer, urbanist, CAPECO, SEDAPAL employees and a former Vice-Minister of Housing (cf. annexe #1). It is necessary to point out that no representative from the Metropolitan Municipality of Lima nor from the current Minister of the Housing, Construction and Sanitation were interviewed in spite of attempts to contact them. However, the interview of an ex-minister and former employee of the MML enabled to have an insight on both the role of the MVCS and MML. Those interviews were carried out along with the research and have helped to orientate it and define its research question. In the end, the methodology chosen for the research was to deconstruct the administrative process surrounding the development of a real estate project as it would reflect the legal framework implemented to regulate urban development. This leads to focus on three tools of regulation that would link local governments, private developer and utility provider and to operate a comparison between two case studies, following the two current urban dynamics of Lima: a central neighbourhood, Surco, following a vertical development and a peripheral one, Carabaylo, following a horizontal dynamic. Those districts were also chosen as they presented the most tensions between real estate development and water utilities. This approach intends to overcome the difficulties of the research, mainly the lack of standardized information, the vastness of Lima as a fieldwork and the discrepancies among the 49 districts. To this respect, this investigation highly relies on the information provided by the interviewees. However, the analysis of laws and decrees combined with material from the media have enabled to cross sources and consolidate the provided insights.

Along with the interviews, the research consisted in one fieldwork in Carabaylo, one of the case studies selected. Due to the lack of response from the local governments of Surco, this case study was treated through alternative sources (mainly grey literature and a media review). This research was also alimented by the attendance to a conference at the Pontificia Universidad Católica del Peru by Marie-France Prevot-Schapira on the « *Metropolitan transitions and socio-spatial reconfiguration in Latin America in the 21st century* ».

CHAPTER I

THE INCREASE OF FORMAL DEVELOPMENT IN AN UNPLANNED CITY: A NEW CHALLENGE FOR WATER UTILITIES PROVISION IN LIMA

Lima's urban growth history has greatly contributed to shape the current governance of Lima by creating specific policy-making practices. Indeed, Lima is a metropolis that has mainly grown through informal dynamics. In this context, the policies implemented by the government have often consisted in regularizing and formalizing the informal settlements, extending de facto the size of Lima's urbanization. Therefore, the use of urban planning and the implementation of prospective urban policies are not part of Lima's city-making tradition. However, in the early 2000, the central government implemented a new type of policies to tackle the huge quantitative housing deficit. Those indirectly enabled the expansion of the Peruvian real estate sector and the take-off of its activities in the metropolis of Lima. Regarding the nature of its activity, this new actor is tied to water utilities management, as its development is heavily dependent on the presence of water infrastructure. The scale of its activities constitutes a new challenge for water utilities provision in Lima that is hardly overcome today.

A. Facing Lima's urban growth: an impossible planning

After reminding the historical development of Lima's urbanization and the evolution of its institutions, this section will specify the current institutional arrangements concerning the governance of Lima by outlining the repartition of the urban planning competencies.

a. Lima: a metropolis born from a concomitant demographic and urban transition

'Lima is defined as a megapolis because of its dimensions and the amount of its inhabitants, not because of its planned, safe and equal features as a city' (Garcia et al., 2015)

With one third of the national population, Lima concentrates half of the urban population of Peru with 9,7 million inhabitants (INEI, 2014). The high concentration of inhabitants results from a sustained process of internal migrations that started in the 1940s: every year, 30.000 to 50.000 newcomers would migrate to the city from rural areas (Driant, 1991 in Ioris, 2012). If this process peaked between the 1950s and 1970s with a rate of demographic growth superior to 5% yearly (IMP, 1998 in Ioris, 2012), it has progressively slowed down. Today, most of the

demographic growth results from endemic dynamics: the demographic situation is more stable with a rate of growth around 1,2%.

Compared with other Latin American cities that have experienced the same process of uncontrolled urbanization and massive rural migrations, Lima presented less employment opportunities, due to a delayed post-war industrialization. It also had a restricted housing offer and an inadequate urban utilities system (Fernandez-Maldonado, 2007) that would mainly serve the central areas encompassing the wealthier neighbourhoods, government buildings and industries. This resulted in creating a wide class of unemployed and precarious urban dwellers that had to resort to alternative housing solutions lacking access to basic services (water and electricity).

During this quick urbanization process, Lima has mainly grown through informal dynamics: it is estimated that 40% of the city was built informally through processes of invasion and auto-construction (Riofrio, 2003) extending progressively the borders of Lima and participating to its sprawl. In this configuration, the water utilities would be, if ever, provide after the dwellings' construction. This situation created a complicated context for the public authorities to control urban growth and implement housing and infrastructure policies regarding the constant demographic pressure and the unpreparedness of a traditional city that had barely grown in four centuries. This challenge was even bigger as urban planning is not part of Lima's governing tradition. Since its creation in 1535, only 7 urban plans were done at the metropolitan scale with a majority that were not applied nor followed (Criqui, 2014).

b. Governing arrangements for urban planning

In spite of a decentralization process and a lack of direct competencies in urban planning, the central Government remains highly involved in the capital's affairs. This section will show the fragmentation of the urban planning competence and highlight the weaknesses of the Metropolitan Municipality of Lima (MML) as an urban planner.

1. An unplanned metropolitan area

The Metropolitan Municipality of Lima has been in charge of elaborating the urban plan since 1963. The PLANDEMET (Plan de Desarrollo Metropolitano) symbolizes the first time the local authority is in charge of urban planning competencies, with an autonomous and independent decision-making. Before, the municipality of Lima would function as an office set by the national Government without any executive power.

As in 2017, the municipality of Lima doesn't have an actualized urban plan. The last plan implemented is the PLANME, done by the Instituto Metropolitano de la Planificación (Metropolitan Institute of Planning) at its creation, in 1990 and would plan Lima's urban development until 2010. If the last municipal administration (mayor Susana Villáran) drafted an integral plan for the metropolis of Lima until 2035, it was never approved by the Lima Municipality Council nor used by the following administration (mayor Luis Castañeda). At the lower administrative level, only 10 municipal districts (out of the 49) have an urban development plan (INEI, Registro Nacional de Municipalidades, 2013). In spite of a decrease in informal urban growth, the capacity of urban planning remains limited with one of its dedicated institution (the IMP) financially and humanly constrained but also outdated (interview #14).

2. An unachieved decentralization: a strong presence of the State

Implemented in 2002, the new process of power decentralization creates a new regional level and redefines the competencies of both district and provincial municipalities.⁵ It aims at reinforcing the autonomy of the local governments. In spite of this reform, the institutional arrangement over the territory covered by the metropolis of Lima is scattered as there is no administratively constituted metropolitan authority and the State remains an active actor in the management of the metropolis. The metropolitan territory of Lima is formed by the independent provincial municipality of Lima and the constitutional province of Callao, respectively constituted of 43 and 7 districts. The management of the metropolitan territory results from the repartition of competencies among three administrative layers (departmental/regional, provincial and district) that often enter in competition. In this framework, the metropolitan municipality of Lima (MML), which jurisdiction represents the most substantial part of the territory operates under a "Special Regime" that grants it with the functions and competences of both Regional Government and Provincial Municipality.⁶

If the decentralization is hardly effective at the national scale, the process was specifically limited for the governing authorities of Lima's urban area as the Peruvian state has kept an important weight in the management of the capital (Durand, 2010) making Lima a metropolis without a fully political nor financial autonomy. Indeed, the territory of Lima is highly strategic as it is the political, financial, cultural and commercial centre of Peru: it generates 45% of its GDP and has a strong demographic weight. The decentralization process was not accompanied by

⁵ "Ley de Base de la Decentralización" n°27783, the "Ley Organica de Gobiernos Regionales" n°27867 that enabled the creation of the regions and the Ley n°27972 that have redefined the competencies of both the district and provincial municipalities.

⁶ This principle was already inscribed in the 1993 Constitution

financial and human capacity (Criqui, 2014). This weakens the local governments' capacity to comply with their assigned missions. For instance, most of them, especially the less well-off districts heavily rely on the financial resources transferred from the central State such as the FONCOMUN (Fondo de Compensacion Municipal) or from resources coming from the Ministry of Housing, Construction and Sanitation's⁷ budget for specific purposes. To this extent, the district municipalities don't have the same degree of financial independency. For instance, Carabayllo, a district located in the North, barely urbanized with a lot of informal settlements gets 60% of its resources come from the FONCOMUN and only 19% from taxes when in Miraflores, it represents less than 1% and the taxes equal to 60% with the rest of his budget coming from the sale of goods and services and administrative rights.⁸

3. A weak and politicized metropolitan level in Lima's urban governance

The unclear definition of each entity's exact role produces a conflict of competencies with projects that tend to overlap between district municipalities, provincial municipality and the Ministry of Housing, Construction and Saneamiento (MVCS)⁹. The current repartition of competencies for urbanism and planning matters tends to be fragmented, weakening the public regulatory power.

The Metropolitan Municipality of Lima (MML) is mainly in charge of urban planning and zoning documents, meaning land-use and building heights regulation. However, the competencies regarding urban fitting-out and building permits are the responsibility of the district municipality.¹⁰ This participates to weakening the MML's capacity to regulate urban expansion. The district municipality can suggest or ask for a zoning change but the Metropolitan Municipality of Lima is the only authority able to approve and regulate a change in zoning. At a national scale, the Ministry of Construction, Housing and Sanitation¹¹ have both exclusive and shared competencies regarding urban planning and zoning. For instance, it has the exclusive responsibility for land tenancy. One of its shared missions "in agreement with the organic laws of regional and municipal governments" is "to norm, approve, execute and supervise national policies on regulation and urbanistic development, urban fitting out and buildings, use and occupation of urban and developable land,

⁷ traduced from Spanish : Ministerio de la Vivienda, Construcción y Saneamiento (MVCS)

⁸ The data was extracted from the budget of the respective municipality on their website [Carabayllo](#) and [Miraflores](#)

⁹ Extracted from a transcription of a conference on Lima's shortcomings as a planning institution done by Marisa Glave, former councillor at the Metropolitan Municipality of Lima

¹⁰ Law 26 878 (1997) transfer of the urban habilitation to the district municipalities reducing the power of the provincial municipality limiting therefore its ability to regulate the urban expansion

¹¹ Article 5 of the Law 30 156 (2014): the Ministry of Housing and Construction has competencies in Housing, Construction, Sanitation, Urbanism and Urban Development, Urban Property and State Goods

in the sphere of its competences”. If this competency is shared with local governments respecting the jurisdiction given at each scale, the current state of decentralization in Lima questions its effective implementation. The competencies aim at framing and regulating urban planning are therefore fragmented.

In this context, a striking aspect of Lima’s governance is the weakness of the Metropolitan Municipal entity. Regarding its main functions, the MML is in charge to set the general vision supposed to frame the city’s development. However, the current inexistence of an urban development plan shows its inability to implement an integral policy.

First, its urban planner competence is fragmented among multiple agencies and offices that each have a role regarding urban planning but which actions are uncoordinated, such as the Instituto Metropolitano de Planificación, Gerencia de Desarrollo Urbano, Empresa Municipal Administradora de Peaje de Lima (EMAPE) and Empresa Municipal Inmobiliaria de Lima, Programa Municipal de Recuperación del Centro Histórico de Lima (PROLIMA) and the Instituto Catastral de Lima (Glave, 2016)

Second, by organic definition, most of the decisions are taken by the administration without consulting the Municipal Council (Glave, 2016), therefore its policy-making capacity takes place in a context of strong politicization of the metropolis. The municipality of Lima responds to the electoral calendar preventing the implementation of a long term vision and policy continuity as a new elected mayor will tend to undo the policies enforced by the previous one. For instance, Susana Villarán, mayor from 2010 to 2014 implemented in 2012 a policy (through ordinance 1617) to regulate zoning changes and enable their approval only twice a year. The day Luis Castañeda came back to office, in 2015, he restored the former regulation authorizing zoning changes at any time of the year. The Metropolitan Municipality of Lima’s politicized nature also encourages populist policies implementation and the stalemate of administrative processes for no specific reasons. For instance, requests of zoning changes are not being processed during the municipal council sessions even though they are on the agenda (interview #11).

Regarding urban affairs, there are also tensions between the Metropolitan Municipality of Lima and the MVCS. If the municipality denounces the interference of the MVCS in the management of urban issues and the lack of consultation, the MVCS points out the MML’s lack of effective deciding power and the difficulty to collaborate with the municipality. Former Vice Minister of Housing and Urbanism describes the municipality of Lima as a “realm within a realm, not willing to collaborate in the fear of losing its independence”. (interview #14)

The lack of urban planning and update of zoning plans constitute multiple challenges in respect to water utilities and to real estate development. Regarding the water utilities provider SEDAPAL, the inexistent urban plan challenges its ability to make accurate estimations for the prospective demand of water, that is defined by the type of activities taking place on a given territory. It can also impact the cost of the infrastructures as developing water networks in already built areas requires most costly techniques. As for the real estate sector, it is challenged by a lack of developable land at the metropolitan scale. The lack of plan prevents them to foresee the profile of the neighbourhood and the most accurate type of project to develop in this area¹². Therefore, water utilities infrastructure and real estate activities development take place in an uncertain urban environment in which future dynamics of development are not clearly outlined, creating a discrepancy at the metropolitan scale between infrastructure and urban fabric.

B. A consolidated real estate market: a recent feature of Lima's urban development

Regarding its urban development trajectories, housing deficit has quickly characterized the city of Lima. This section aims at showing that the housing reforms and policies implemented in the early 2000s by the Peruvian government participated to the emergence of the real estate sector as an important actor of Lima's urban development, in a housing sector dominated by informal constructions. In turn, this has participated to produce new urban dynamics at the metropolitan level.

a. Addressing the housing deficit: from permissive policies to public-private solutions

Since 1961, the government has adopted different approaches to address housing deficit. From "permissiveness" and "tacit agreement" with the new comers allowing them to occupy public land, followed by neoliberal regulatory policies with property titling, the Government has finally shifted to the implementation of affordable housing programs, based on the Chilean-inspired housing subsidy model with the involvement of the private sector.

1. Former housing policies: regularizing the informal and 'double sided policy'

In order to face surging urban growth and increasing housing deficits, Peruvian governments started promoting "progressive housing construction". In 1961, the central Government developed a legal framework permitting to consider the existing *barriadas* legal and integrate them to the city. This process of physical and legal regularisation, respectively enabling

¹² Lima aún no cuenta con el Plan Urbano Metropolitano, Gestion, 11/02/2013

the reception of basic services and giving a formal property title was key in the urbanization of Lima as it became a policy solution to face the lack of housing. It constituted a “radical shift” to solve informal settlements’ issue in comparison with other Latin American cities. Villa El Salvador is an iconic example of ‘planned *barriadas*’ (Riofrio, 1991) and shows the State intervention in transforming former informal construction into decent places to live with an access to basic services. The expansion of the city through this new form started in the North Cone of the city, followed by the South Cone in the 1970s and the East Cone in the 1980s.

However, the Nineties is marked by the withdrawal of the Government from housing promotion: the right to housing is removed from the 1993 Constitution and the ministry of Housing and Construction and its related institutions (the Housing Bank, Mortgage Bank and other associations and cooperatives for housing goals) (Calderon, 2005) dedicated to progressive housing policies are dismantled. The mandate of Alberto Fujimori (1990-2000) is characterized by a neoliberal turn with policy-making practices influenced by the framework promoted by international organizations. This decade is also marked by a land liberalization movement. In order to tackle informality, President Fujimori created COFOPRI (Commission for the Official Registration of Informal Property) as a special land-administration office with a loan from the World Bank, with the aim to secure land tenure, integrate the informal housing sector into the formal economy and participate to the development of a real estate market at the metropolitan scale. Between 1996 and 2009, 1.8 million property titles were delivered with 25% located in Lima (COFOPRI, 2009).

2. New social housing programs: the rise of a new class of buyers

The early 2000s symbolizes a turning point with the return of a pro-active government to tackle housing quantitative and qualitative deficit. While housing is set as an issue of national interest and the Government re-establishes the Ministry of Housing reassembling the previously created institutions MiVivienda (1998) and Banmat¹³(1980), a new legal framework for urban planning is implemented, including the approval of the Law of Licences of Urban Fitting Out and Edification.¹⁴

Largely inspired by the Chilean housing provision model, the new housing policy consists the set-up of mechanisms to enable the access to mortgage credits for lower socioeconomic

¹³ Banmat was a loan provision created to purchase housing materials. The problem is that it was not systematic and disqualified the very low income groups

¹⁴ Ley de regulación de habitaciones urbanas y de edificaciones (n°30494) that modify the ley 29090 published 07.2016

classes, formerly uncreditworthy. This was done through the reinforcement of the Mi Vivivenda fund¹⁵ as a promoter of the social housing market, the implementation of the program Techo Propio (offering direct subsidies) and the adoption of Housing National Plan. All those policy tools aimed at attracting the private sector to produce affordable housing. This public policy would also plan the transfer of public-owned land to the private sector in order to develop housing projects. This new housing policy would reject the progressive housing reforms that consisted in formalization of the *barriadas* and was followed by a second national housing plan (2006-2011) that readjusted the MiVivienda programs for the lower income groups. In the first semester of 2007, 25% of all the investment in the construction sector were done through the MiVivienda Funds with 40% of granted loans (Fernandez & Bredenoord, 2010).

This shift illustrates the new paradigm followed by the Peruvian government "*ciudad por inversión y no por invasión*" ("a city through investment and not through invasion") that inspired the policy to tackle Lima's housing deficit. It appears as a motto in official documents, press articles and interviews of both the public sector (mainly the ministry of Housing) and the private sector. This leitmotiv captures the dichotomy of Lima's urban development with on the one side the negatively connoted informality (through the word of invasion) and on the other side, the formal one, beneficial, through the word investment that refers to a chosen process. The implementation of the program Mi Vivienda was possible thanks to a good conjectural political context¹⁶. This housing program embodies a shift in the role of the State regarding housing solutions: from now on, the public sector expects private developers to build and sell houses while its role remains to promote investments and facilitate the administrative processes.

¹⁵ The MiVivienda fund offers facilities to access to credit

¹⁶ Vice Minister Romero would have had the political power and support to implement a decision through 'supreme decree' as he would be from the same political party than the Prime Minister and have a friendly relationship with him. This facilitates his authority as a Vice Minister and provided him the tools to enforce the housing reform (information extracted from interview #14)

b. New real estate expansion dynamics: spatial outcomes

The policies implemented by the government have made the credit system accessible for middle to lower social classes (mainly NSE B, C and D)¹⁷ and have created an unsatisfied demand for housing products sold by private developers. This fostered the Peruvian real estate sector that in turn impulsed new dynamics of urban growth in Lima: one horizontal, extending the urban area and one vertical, increasing the height of the building.

1. Lima's real estate sector: features and historical trends

Since the early 2000, Peru has experimented an important economic growth (PIB over 6% in 2011 and 2012), resisting to the 2008 economic crisis, and making of its capital an attractive city for investments. Lima is the 10th most attractive city for business among Latin American cities.¹⁸ This enabled the real estate sector to develop its activities at a larger scale and in a more sustainable manner. If housing policies considerably contributed to its development (as it constitutes 85% of the global real estate offer), the development of malls and office buildings are other components of its activity.

Formerly, formal housing had been confined to the top socio-economic class living in the centre of the city, that would access to housing directly through the private sector. The housing reform implemented by the Toledo government triggered the development of a mortgage credit market that in return granted the access to credit to a lot of families from lower social levels. Having now the financial capacity to buy a house, this portion of the population became an unsatisfied demand for the real estate sector. In the past ten years, the quantity of housing for families of the sectors A and B (initial targets of the real estate sector) grow respectively by 1.5% and 1.4% when the sector C grew by 11%.¹⁹

The development of the real estate sector in Lima is fairly recent and experienced a strong dynamism in the past decade (from 2002 to 2012), commonly called the "real estate boom" with an increase of formal housing sales by 24% annually. However, since the record year of activity in 2012²⁰, the real estate sector has been experiencing a slow down at the national

¹⁷ Most surveys in Peru are done according to the NSE (socio-economic levels) scheme, based on variables related to the possessions and consumption habits of the households and their heads. Households are distributed in five socio-economic levels: high-income (A level), middle-income (B level), middle-low-income (C level), low-income (D level) and very low-income (extreme poverty) (E level). (APEIM, 2008 in Fernandez-Maldonado & Brenenoord, 2010) cf. annexe #5

¹⁸ Ranking of the review America Economia, 2012 in Centeno & Lafosse, 2013

¹⁹ Identifican terrenos en Lima para 125,000 viviendas nuevas, 12.03.2014 in Gestion

²⁰ cf. annexe #4 presenting the evolution of housing offer with the number of housing units sold

level with the numbers of companies operating in the sector falling from 600 to 300²¹. This slowdown is due to three factors: a restricted access to credit, a global economic growth deceleration at the national level²² and a lack of basic services, municipal barriers and shortage of constructible land²³. Indeed, the main firms of the real estate sector point out that those factors increase the costs and prevent the expansion of the offer regardless of the localization of the development as it happens both in zones of expansion and in consolidated zones.²⁴ On top of a 40% increase of the land price, the average time spent on administrative procedures has risen by 20%. In spite of this deceleration, the sector remains active with developers that keep acquiring land to build and a demand that remains constant.

In spite of this new trend, the formal real estate market remains a minority compared to the informal market in Lima. For instance, it only accounts for 33% of the global housing market. Indeed, according to CAPECO (Camara Peruana de Construcción), between 2002 and 2012, 193.000 dwellings were provided through the formal market²⁵. However, within a decade, the housing stock has increased by 590.000 dwellings meaning that out of ten dwellings, seven are built informally.

2. Vertical and horizontal development

Informal land invasion and land trafficking are phenomenon that keep happening in Lima. However, the access to formal housing with the development of a real estate sector at the metropolitan level, has created new dynamics of urban development.

Long mainly characterized by informal dynamics, the urban sprawl has progressively integrated formal dynamics (Lafosse & Centeno, 2013). Indeed, in the second half of the twentieth century, the urban area of Lima would mainly grow following horizontal dynamics characterized by land invasions and self-built housing at the edge of the consolidated core of the city. This informal and uncontrolled development that was partially recognized and formalized by the government from 1961 would keep extending the size of the city. However, since the 90s, a new trend of development has emerged with the establishment of the private sector that started densifying the core districts (Lima Moderna, Lima Top)²⁶ replacing 2-storage building by 10 to 20-

²¹ [Gesstion, 24/04/2016, ¿Que le espera este ano al Mercado inmobiliario?](#)

²² Sandro Vidal - Colliers International, real estate consulting agency in [Gesstion](#)

²³ APOYO CONSULTORIA Report (January 2014), Lima Metropolitana: evolución del mercado inmobiliario de viviendas en el 2013 e implicancias para el 2014

²⁴ « Las principales empresas del sector señalan que estos factores incrementan notablemente los costos del negocio e impiden aumentar la oferta de viviendas, no solo en zonas de expansión de Lima como Carabayllo o Ate, sino también en zonas consolidadas como La Molina o Surco, por ejemplo ».

²⁵ including 143.000 dwellings by private developers and 50.000 dwellings built by the households themselves through state programs

²⁶ cf. anexe #3 : those denomination correspond to the sectorization of Lima by the real estate market

floor towers. This initiated the vertical growth of Lima. Nowadays, this type of growth - led by private developers - is progressively being extended towards the periphery of the city, creating denser areas, with the development of 5 to 7-floor *condominios* (condominiums), in the districts located in the cones but still close to the centre (such as Los Olivos). The further periphery, like Carabaylo, is also being developed with mainly projects of urbanization that continue the horizontal extension of the formally built environment. The development of massive housing projects is now a characteristic of Lima's urban development. In turn, those dynamics present new challenges for water provision as they transcend the traditional development of the city. By extending formal developments beyond the periphery and increasing the volume of the demand in the consolidated centre, they create a new pressure on the existing network and constitute a new demand for the network's extension.

C. The real estate sector: a new actor lobbying for water

The take-off of the real estate sector occurs in a specific urban context in which water provision is under constraints and with water services disconnected from city planning at the metropolitan level. If the management of water utilities is centralized within one state company, SEDAPAL, that has a monopoly over Lima's territory, the urban planner and regulator competencies are the responsibility of the local governments. However, due to the non-completion of the decentralization reform, the State remains a key actor in Lima's governance, mainly through the Minister of Housing, Construction and Sanitation.

a. Water utilities: a territorial monopoly disconnected from local governments

I. Water utilities for Lima's territory: a constrained provision

Created in 1981, SEDAPAL (Servicio de Agua Potable y Alcantarillado de Lima y Callao), a state company under private law, is in charge of water services provision for the metropolis of Lima. SEDAPAL is in charge of the water cycle process from the purification of the water resources to its distribution at the metropolitan level and the recollection of the wastewater (cf. figure #1). The water resources rely on the Pacific basin, mainly composed by the Rimac, the Chillón and the Lurín rivers basin and on transferred water from the Mantaro River situated in the Atlantic Basin, through important infrastructures that are also used for energy production. The conditions for water provision, highly relying on the melt of glaciers, has aggravated along the

years with the disappearance of two-thirds of the glaciers, decreasing the river's glacier-contributed volume by 90% in the past 40 years (Vince, 2010). In addition to the uneven allocation of water resources at a national scale, future water provision is highly challenged both on the supply side with a high uncertainty of the impact of climate change (heavy rainfall or prolonged drought situation by 2025) and on the demand side by high level of urbanization and population growth, even if its increase has stabilized around an annual rate of 1.2% since the 2000s. Described as the 2nd desert city after Cairo, the shortcomings of Lima's water systems are often explained by the hydric stress the city suffers from and an insufficient water offer regarding the level of the demand.

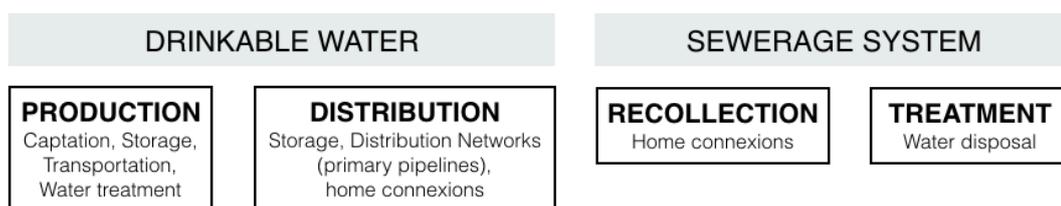


Figure #1: Simplified legal responsibilities of SEDAPAL (source: law on sanitation services "Ley General de Servicios de Saneamiento" n°26339, (1994); figure: own elaboration)

2. Improving water utilities: a long-term challenge

In 1987, 78% of the population was connected to the drinkable water network (Figari, Ricou, 1991). If investments in water services were not a priority, the burst of a cholera epidemic crisis in Lima in 1991 highlighted the deficiency of Lima's urban water infrastructure. This marked a turn in the management of water services with the allocation of substantial resources and the implementation of new policies that restructured the SEDAPAL and enabled the improvement and extension of the water network at the metropolitan level. This process happened under two different governments that were particularly proactive regarding water challenges: Alberto Fujimori (1990 – 2000) and Alan Garcia (2006 – 2010). The improvement of water services was financed by massive investments from the State²⁷ and a participation of international institutions through financial help. For instance, the Fujimori government received a loan of 600 million from the World Bank. From this moment, SEDAPAL was mandated to expand the network coverage to the city periphery.

In spite of having improved the urban water system since the 1990s succeeding to connect 93% of the urban population to official network and 84% to sewerage (Hordjik et al., 2013) and

²⁷ Rate of investments fell from 228.9 million per year in the 1990s to USD 166.6 million per year in the 2000

increasing its service continuity to 21.5 hours compared to 11.5 hours in 1995 (World Bank, 2009), water provision in the metropolitan area remains uneven and income-based: high-income area inhabitants are provided up to 460 litres when low-income areas residents have access to 50 litres (cf. annexe 3bis). Historically, the consolidated and central parts of the city have received most of the investments, rarely presenting water shortages in comparison to the periphery. With one million of urban dwellers that don't have access to drinkable water nor sewerage and water unreliability with common shortages, water is a strongly politicized topic. If the access to water was quantitatively improved, the access to water is also qualitatively differentiated: some inhabitants don't possess a connection to SEDAPAL's network in their home. Access to water is also handed through public standpipes, water trucks and water wells. Finally, water utilities shortcomings are also due to an insufficient micro metering system (87% of the network, SEDAPAL, 2014), consequent water losses, and insufficient wastewater treatment with only 15% of the total volume of wastewater retreated (SEDAPAL, 2008).

Set up in 1994, in the perspective of SEDAPAL's privatization, the SUNASS²⁸ is the regulatory agency in charge to oversee and support Peruvian water utilities. However, its power is limited and the final level of tariffs is often largely influenced by national authorities according to the political priorities of the ruling administration. The SUNASS struggles to implement an objective price for water taking into account the long-term marginal cost of the service. Indeed, tariffs have remained low: what pays an urban dweller is equivalent to the cost of service provision but it doesn't include the maintaining and operating costs. In Lima, water is mostly subsidised by the government regardless of the socio-economic level of the population: in 2006, only 11% of the households would pay more than the real water costs (León, 2006).

In its attempts to optimize and reinforce the water utilities public provider SEDAPAL, the Peruvian government has tried since 1990s to privatize the independent entity. Up to now, all the attempts have failed, mainly for political reasons. The last project involving the participation of the private sector, a concession for the operation and commercialization of the services, was postponed on the political agenda when the new president PPK came into office as it was a political and sensitive topic, especially right after an election. However, if the SEDAPAL is not privatized, most of its infrastructural projects to increase its capacity to produce, treat and recollect are done through public private partnerships. Since 2000, there were 5 infrastructures project done through Public-Private Partnership (Asociaciones Publicas-Privadas) mainly as concessions.²⁹

²⁸ SUNASS : Superintendencia Nacional de Servicios de Saneamiento (Superintendence for the sector of Water and Sanitation)

²⁹ source : SEDAPAL

3. Water utilities: a competency out of the Metropolitan Municipality of Lima jurisdiction

After a failed attempt to privatise water services in the 1990s, SEDAPAL was transformed into a 'public limited company' and incorporated into FONAFE (National Fund for the Financing of the Public Sector Companies) in 1998. It is under the guardianship of the central Government - through the Ministry of Construction, Housing and Sanitation (MVCS) - and operates under a concession contract. This evidences another presence of the central State at the metropolitan level. Regarding water utilities provision (drinkable water and sewage services), SEDAPAL has a monopoly over Lima's metropolitan territory (province of Callao and province of Lima). Therefore, Lima's situation contrasts with the rest of the country where water management is municipalized since 1989, becoming an exclusive competency of the local governments. Indeed, the Metropolitan Municipality of Lima has no assigned competence regarding water matters and is not even symbolically associated to water-related issues. For instance, the recent water-use sensitization campaign on water consumption in Lima was supported by the Ministry of Construction, Housing and Sanitation, the SUNASS and SEDAPAL. Therefore, the MML participation to water-related decision-making is inexistent. In the Organic Law on Municipalities (Law 27972), water utilities are not mentioned at all. It has no control over major investment related to water - those are discussed within the national Government scope and never in collaboration with city authorities. Even if SEDAPAL is a Utility Services Provider (Empresa Prestadora de Servicios) and is supposed to remain autonomous as in any other municipality (technically, administratively and financially), it is still under the supervision of the Ministry of Housing, Construction and Sanitation and receives financing from FONAFE. It is also the only water company that doesn't count a municipal representative in its board.

On top of the absence of water utilities among the MML competencies, there is no relationship or coordination between SEDAPAL and local governments. In the same perspective, the district municipality doesn't have any information regarding the condition of the existing water network in its district or the scheme of the future work of development and maintenance of the water infrastructure. SEDAPAL designs its plans in a disconnected manner from the municipality and functions completely independently (interview #4). Reciprocally, the SEDAPAL is rarely consulted by the MML regarding the theme of urban development or zoning changes (interview #6). Therefore, the planning of a district, the policies implemented and the decisions taken are done regardless of the water infrastructure topic as there is no dialogue among the two authorities and information is not shared.

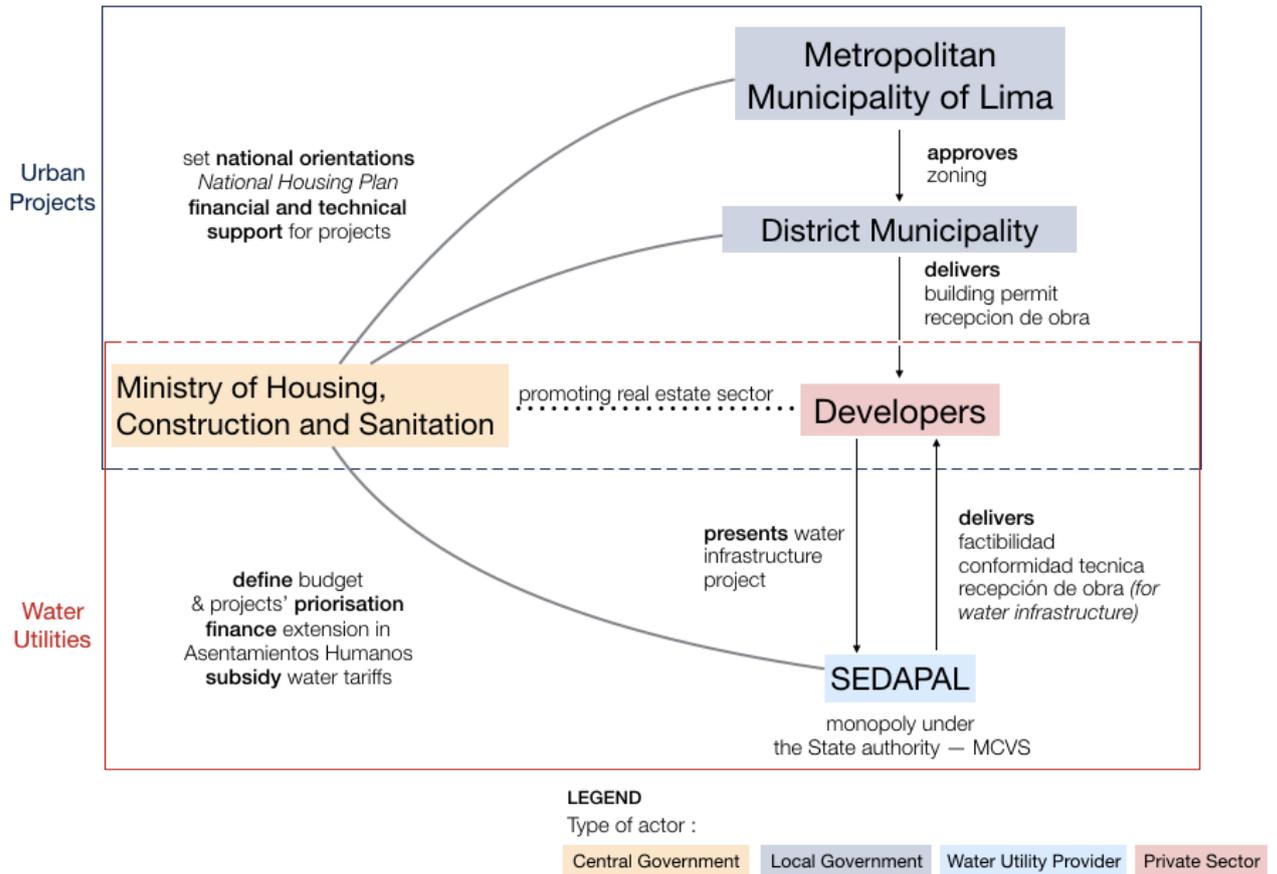


Figure #2: Urban Planning and Water utilities within Lima legal framework, competencies and relations among stakeholders (figure: own collaboration)

In a context of “hydric stress”, the dynamism of the real estate sector in the past 15 years and the multiplication of large-scale projects, which were unusual before or happening in a restricted number of districts in the consolidated centre, have exerted a new pressure on the capital’s water system. Regarding the multiplication of cases where projects development was stopped or prevented due to a lack of water and sanitation services, this matter has progressively become a newsworthy issue.

b. The insufficiency of the network: premises of a widespread issue

“First, the built part grows and then comes the infrastructure. The edifices grow too quickly and the existing network is not sufficient” (interview #5)

As pointed out in the previous part, water provision is a sensitive issue in Lima with a dysfunctional water utilities system. As showed by the literature (cf. literature review), the lack of water access in Lima is often associated to the informal nature of the settlements, correlated with

the socio-economical level and corresponding to the cleavage centre/periphery. This refers to the idea of double-standard of water services - water abundance for the wealthiest in the centre of the city and water scarcity for the lower classes in the periphery. However, the rise of a new issue related to water has come questioning this dual vision. Indeed, water problems in Lima also happen in formal developments carried out by private developers. If this issue is not new ³⁰, it has become up-and-coming in the past five years, as the problems took place at a larger scale, worsening and calling attention of the public authorities.

1. Water access in formal development: a late mediatisation of the issue

The mediatisation of this issue dates back to 2012 as the development of real estate projects in central districts (San Isidro and Surco) were threatened to be stopped due to a lack of water services ('servicio de agua y desagüe podría colapsar'). This means that the infrastructure didn't have the capacity to provide water services for the future inhabitants of the newly developed buildings. Along the years, the issue worsened when were disclosed cases of achieved formal developments where inhabitants wouldn't have access to water in the houses they had recently acquired from private developers. The media spoke of "nightmare of the individual house in Carabaylo" describing people having bought a house in big urbanizations located in the remote part of peripheral districts. Today, in some central districts, such as Surco, developers have stopped doing projects due to the lack of water provision. The situation seems to expand to other neighbourhoods according to Roberto Bragnini, president of the ASEI (Asociación de Empresas Inmobiliarias del Perú), "*The districts such as San Isidro, Miraflores, Lince, Jesus Maria y Magdalena are starting to collapse because there aren't sufficient investments [in water infrastructure]. The situation would reach a point when it would become impossible to build anything*"³¹. Therefore, the issue of water utilities is a challenge for formal urban projects that were already built or in the process to be built and seems to prevent new urban developments from happening.

2. Water shortcomings in Lima

Water issues in formal development correspond to a double problem: one associated to the distribution network installed across the city, through which drinkable water and wastewater are carried out and the other one to the sewerage infrastructure (waste water treatment plant) which role is to collect and treat wastewater. As a reminder, water utilities require on the one

³⁰ Centenario (interview #18) mentioned a case of an office project in Surco in 2001-2002 called Cronos in which SEDAPAL didn't have the capacity to provide water anymore. In this case, SEDAPAL had said that the developer should either find an alternative solution on his own or extend SEDAPAL's network

³¹El Comercio (16/07/2016), *Falta de agua : la tortura de la gota para las viviendas*

side a potable water provision and on the other side a sewerage system to recollect wastewater (cf. figure #1) For the first one, the characteristics of the water issue follows the type of the real estate project being developed. As mentioned in paragraph B.b.2, Lima is being developed following two axes: a horizontal one, that consists in the development of *urbanizaciones* (large-scale individual houses development) or *condominios* in the periphery and a vertical one, that consists in the development of high edifices, mainly happening in the central neighbourhoods. In the first case, the water problems are related to a lack of water infrastructure coverage as the previous lands were not urbanized. For instance, in the case of Carabaylo, there was no existing water utilities system because the lands used to be for an agricultural use. In the second case, the issue is linked to the inefficiency of a pre-existing infrastructure, mainly due to the oldness of the network (problem of pressure or size of the pipelines). Normally, pipelines have to be changed every 20 years: 68% of the sewerage pipelines are more than 20-year-old and 14% are more than 50-year-old with 43 % in a bad or critical condition.³² For the second one, the formal real estate water utilities related issues were mostly linked to a deficiency of the sewerage infrastructure and not to a lack of drinkable water. In the peripheral districts (i.e. horizontal development), water scarcity resulted from the inability of the Puente Piedra collector to process more wastewater. The reasons were similar in the centre as the collector was at a critical level of operation and additional connections would have provoked its collapse.

The degree of water shortcomings depends on the type of formal project. Today, the most problematic case is to be found in the housing sector, with horizontal housing projects first and followed by vertical housing developments. Regarding offices, there are also some problems. However, for malls, it is less complicated as the need for water utilities is punctual and small compared to the demand from households (Interview #15)

c. The real estate sector: a recent pressure on water utilities

After presenting the discourses from the different actors concerned by water shortage in formal development, this section will present the new challenge that constitutes the private developer for SEDAPAL, in its mission of water provider.

³² State of the sewage network, source EOMR - Centros de Services (2005) (annexe #7)

I. The discourses of the actors: reflecting a systemic issue

As the issue has become public with media coverage, multiple discourses can be highlighted. This following paragraph points out the main cleavages among the actors involved in city-making, and shows the questions it raises concerning Lima's urban development. This analysis relies on the combination of material extracted from interviews, press articles and official reports. If the real estate developers accuse SEDAPAL to be responsible for the current water issues constraining and restricting their activity, SEDAPAL accuses the private developers to exert too much pressure on their network, making their system to collapse.

Regarding this issue, the private sector is mainly represented by CAPECO (Camera Peruana de Construccion) that represents the interests of the construction sector and by private developers, that are not necessarily part of CAPECO – and that are often represented in the media by the president of two different associations: ADI Perú (Asociación de Desarrolladores Inmobiliarios Perú) and ASEI (Asociación de Empresas Inmobiliarias del Peru). The two associations were recently created (respectively 3 and 5 years) in order to voice their interests as developers, that they would find different from CAPECO's (interview #11).

For Guido Valdivia, executive director of CAPECO, the growth of the formal sector and the “real estate boom” of the past 15 years can't be hold responsible for the issues experienced regarding water utilities for two reasons: first, the houses developed during this period (2002-2012) only account for 9% of the total housing stock {“It is obvious that such a small fraction of the housing stock can't explain the collapse of the services”} and second, the demand for water services is defined by the size of the population and its demographic trends, not by the form of housing. Therefore, for him, the situation of water scarcity is only due to the “lack of foresight from the water provider which has not dedicated sufficient investments to attend the requirements of Lima's growing population”. The sustainability of water and sanitation services relies to a great extent on the consolidation of the provider meaning that the issue is not necessarily a lack of water resources but a dysfunctional management of SEDAPAL. This idea is reinforced by the fact that private developers advance that in spite of a pre-agreement with SEDAPAL ensuring them water services, the water provider doesn't respect the deadline making the developer having to look for another alternative. For Humberto Martinez - President of CAPECO)³³, ‘it is important that the State assumes the responsibility to provide water services to formal companies’.

³³ Gestion (10/05/2016) - Estado debe proveer servicios basicos a las inmobiliarias para que ejecuten sus proyectos

For the ex-minister of Housing, Construction y Sanitation - Francisco Dumler, the issue is linked to the disorganized urban development of the cities as this would enable a better answer from the water services provider³⁴. Indeed, in absence of an urban development plan, supposed to orientate or anticipate the location of its future development by the norms it outlines, the development initiated by private companies follows the logics of the market (land availability, land prices, localization of the demand, availability of infrastructures such as water and transportation) and happens according to their own interests, that differ from the criteria of SEDAPAL. In this sense, the problem is that the water provider is unable to cope with the rhythm of development imposed by the real estate sector.

Regarding SEDAPAL, its position towards the private sector is clear: it is not their priority. For SEDAPAL, the priority are the water social programs implemented for the popular neighbourhoods at the periphery of the city, where informal settlements in the process of being regularized are prevailing. This partially explains the position of SEDAPAL, for which the water and sanitation crisis experienced in formal buildings comes from the real estate development and the pressure it exerts on the current infrastructure. When the first problems arose in 2012, in central districts, SEDAPAL highlighted the negative impact of high rise buildings construction on its network and called for legal measures to the district mayors to regulate the delivery of building permits. To justify its inability to provide more water, SEDAPAL pointed out the change in zoning from low density to high density area preventing it to anticipate the increase in water demands. SEDAPAL also justifies this issue by a problem of water resources, referring to the “water scarcity” situation Lima currently faces. Indeed, “the water problem today is due to the lack of hydric resources. It is more a problem on the supply side rather than on the management of the demand.” (interview #6). For another engineer working at SEDAPAL, the problem is linked to the availability of the resources and to the state of the network (interview #3). To this respect, the private developers don't see the water utilities issue as a problem connected to the supply side. For them, there are multiple alternatives such as desalination or potabilisation of wastewater (only 15% is retreated).

2. The real estate sector: economic and symbolic power

In comparison to the problems of water access in the informal settlements, the issue of water utilities in formal development presents a change in the nature of the actor demanding for water and in the nature of the regulatory framework it takes place in. The demand for water

³⁴ [El Comercio \(16/07/2016\), Falta de agua : la tortura de la gota para las viviendas](#)

connexion in informal settlements is done at an individual scale, often through neighbourhood's associations representative of the *Asentamiento Humano (human settlement)*³⁵ whereas in this specific case, the claimant is a private company with substantial economic resources. His symbolical and economical power also differs as it is a private actor with lucrative purposes. To this respect, SEDAPAL doesn't believe it is its responsibility to provide water infrastructures for this type of development and presumes that the developers should be in charge of this task and invest with their own funds: "*SEDAPAL finances the water equipment freely only for the population of a low socioeconomic level, not for the real estate companies*" (SEDAPAL, Interview #3). Therefore, private developers become an intermediary between water provider and future inhabitants when in the informal case, the relation is more direct as the neighbourhood association would lobby directly to the water provider to access water. In some cases, they can resort to the local government as a support but it is not a mandatory component. However, its economic power can enable the developer to pressure the water provider through legal means or through bribery more than in the *Asentamientos Humanos* where the logic followed seems different.

The nature of the real estate activity observed in the cases of water scarcity is also important. Indeed, with the consolidation of the real estate market, the role of the private sector has gone beyond the only function of constructor as most of the companies are now developers. This means that they take care of the whole process: from land acquisition to buildings sales. This has two main consequences: a presence of the actor at every step of the administrative procedure and a responsibility to ensure water utilities to the buyer.

If real estate sector follows the logics of the market and takes place where land is cheap, the logics of SEDAPAL are different and take place on another time frame. Often, in areas that are not connected to the current network, SEDAPAL says that it could take up to 20 years. The real estate development in Lima happens in a context where the water provider is not prepared nor have the sufficient capacities to address the demand and the lack of water infrastructure is a component preventing, restricting or slowing it down the development of formal (mostly housing) projects. For instance, Centenario, a promoter - bought a piece of land with the intent to build housing facilities in 1997. "Up to 2014, the lack of water services was the reason that prevented us to develop the land and if we have changed the initial housing project to an industrial one, we are still looking for a definitive solution for water services" (interview #18).

To summarize, water shortcomings in real estate urban development revolves around the reciprocity among two actors: the water provider – SEDAPAL – and the private developers. It also includes as a mediator the Ministry of Housing, Construction and Sanitation as it is

³⁵ for further reference, see Criqui, 2014

concerned both by building issues and sanitation matters. The local governments are upstage actors that are either solicited by SEDAPAL to regulate building permits delivery or that are partially hold responsible for the emergence of the issue. For instance, the Metropolitan Municipality of Lima is blamed for lacking an urban development plan or an adequate zoning regulation when the local governments are liable for delivering irregular building permit. The main reasons given to rationalize the deficiency of water services in formal urban developments depend on each actors' vision, position and interests : the uncertain metropolitan environment (with too many zoning changes and lack of metropolitan plan), the manipulation of the information regarding water utilities from the private companies (interview #3), an absence of hydric resources "water scarcity", the pressure exerted by the private developers regarding the large scale of their activities, the dysfunctionality of SEDAPAL's management and its lack of investment, ... The plurality of answers requires to understand water utilities management practices at the metropolitan scale: how it is planned and how it is regulated. It also interrogates the urban practices in Lima and more specifically the existent regulatory mechanisms surrounding the development of a real estate project and how it integrates water.

This first chapter presented the specific context of Lima's governance regarding water infrastructure and urban planning: an urban planning competency shared at the local level, hardly executed, and a water utility management at the territorial scale under the authority of the State, without any power from the local authorities nor relationship with the provider. This governing arrangement highlights the disconnection between two key components of the city: the network and the built environment. In this uncertain urban planning context, the real estate sector plays an increasing role as his activities affect directly the urban environment and have resulted in a new type of water issues. Regarding the diversity of the discourses surrounding the issue of water utilities, it is necessary to deconstruct water shortcomings in this particular case, point out the planning practices of each actor and existing regulatory mechanisms for urban development. In the end, this will enable to identify the stakeholders' strategies to adapt to this new challenge.

CHAPTER 2

WATER SCARCITY IN URBAN PROJECTS: DECONSTRUCTING LIMA'S GOVERNANCE

This chapter aims at unveiling the dynamics at work that explain the emergence of a water issue in pre-authorized urban development by the governing authorities. On the one hand, the existing discontinuity among water utilities policies and real estate development can be structurally explained regarding the uncertainty of the current urban framework and the respective motivations and development strategies followed by SEDAPAL and by the private developers. On the other hand, it appears even greater given the potential capture of the regulatory framework by the actors involved in city-making. In the end, the structural issues combined with the inconsistencies of regulation for formal developments have created a water utility situation in which new trends of urban production can be highlighted.

- A. An unreliable water utilities provider operating in a weak urban planning framework

« The issue is that there is no planning and SEDAPAL is a bureaucratic entity with 0% of efficiency » (interview #15)

- a. The shortcomings of a managing system in the face of Lima's new urban challenges

As showed in the first part, water utilities issues in Lima are not new. Lima's water provider SEDAPAL has constantly faced some challenges in executing its planned work. This section will intent to show how the company's internal problems and planning practices constitute a challenge for the real estate development, especially regarding the time-discrepancy existing between the private developer and SEDAPAL.

I. A nature of demand out of SEDAPAL's priority

“SEDAPAL is a public company that obeys to a political vision and will therefore prioritize the extension of the network” (interview #5)

The demand of water services on behalf of the real estate companies is not the priority of SEDAPAL. Its main goal remains to improve the global coverage by extending the network's and to provide water services in the informal settlements. This priority can be explained by three reasons. First, this objective was assigned to SEDAPAL after the outburst of cholera in 1991 and that has been reaffirmed since through programs such as *Agua para todos* in 2006. The newly elected President Pablo Kuczynski (July 2016) is not an exception and has set the objective to reach a 100% basic universal coverage by 2021. Indeed, access to water is a sensitive topic in Peru and its provision has been instrumented by some governments as an electoral strategy, as the provision of water services in informal settlements would be the symbol of their social commitment. Second, all the works related to this objective are directly financed by governmental funds (interview #6) whereas the rest of the infrastructural work has to be financed through SEDAPAL own financial recourses. This incentivizes SEDAPAL to carry this type of work over an extension or improvement financed through its own budget. Third, this priority is embedded within the company's core values. Indeed, the workers have been used to deal with the invasion. *“They have an anachronistic vision of what planning means”* (interview #14). To illustrate this, ex-minister from MVCS - Romero tells that *“one time a project manager told [him] that there was an invasion and that SEDAPAL was ready to give water services for this new invasion.”* (interview #14). This partially explains the paradigm in which SEDAPAL has been evolving: a post-construction water services provision, in which the infrastructure comes after the construction, responding to an existing demand, and highlights their lack of forward planning. The prioritisation of water provision in informal settlements creates a situation in which an informal settlement is likely to be connected to the water network prior to a formal project. Indeed, SEDAPAL considers that the private developers have to pay for their own water network. It justifies their position by arguing that their tariff is subsidised and therefore not sufficient to invest in the extension or densification of the network following on real estate dynamics. In this sense, they view their role as a subsidized social water provider. For instance, the provision of water utilities in a privately developed project was conditioned to the termination of a work in *Asentamientos Humanos*.³⁶

³⁶ in English, *Human Settlements*

2. An inadequate planning to sustain urban projects

“There is a real lack of planning within SEDAPAL” (interview #15)

This tendency can be observed in the methodology SEDAPAL follows to plan the extension of its network. Their planning is based on the work of external consultants that go directly on the field to measure the existing population and run an estimation of the future demand for water services based on the rate of demographic growth. This enables SEDAPAL to outline a plan based on the main demographic trends and orientate the development of the primary pipelines.³⁷ This appears in the Plan Maestro Optimizado {the last was approved in 2014 and is supposed to be updated every 5 years}. However, *“the PMO is not very detailed because the situation constantly changes and outlines the future work of extension and densification of the pipelines of the primary network. It doesn’t specify the date of implementation of the secondary pipelines as it is impossible to define it”* (interview #3). Therefore, SEDAPAL’s Optimized Master Plan seems inaccurate especially as the orientations and priorities defined in this plan are likely to be changed. Indeed, *“If there is a more urgent situation to be fixed, it will automatically postpone the rest of the planned infrastructure.”* (interviews #12).

For an independent water engineer, the methodology used by SEDAPAL is *“problematic as the urban development is faster than the one anticipated by SEDAPAL. For instance, if there is a planned housing development, SEDAPAL considers that it will have to provide water services in 20 years.”* (interview #5) This time-discrepancy with the private is also highlighted by one of SEDAPAL’s engineer. *“The only issue is that the private capital builds faster than SEDAPAL has the capacity to develop its network. When it is a program from the State, it is easier to coordinate because the processes are alike and the development takes the same time”* (interview #6). For Guido Valdivia, executive director of CAPECO, the priority given to the informal settlements and the lack of planning regarding the real estate developments create the unsustainability of the model as the water infrastructure is being disconnected from the housing policy.³⁸

³⁷ *“When they design a hydraulic sector, they project the population, consider the future density and take into account the urban development plan”* (interview #6).

³⁸ *“SEDAPAL doesn’t plan for the new urbanizations as it is already busy with what exists. As to now, they wait for the invader, prioritises it, and the housing policy collapses. Those practices create the unsustainability of the model”* (Interview #1)

3. SEDAPAL's shortcomings as a provider

The strong social grounds of SEDAPAL are one of the reason of the failure of previous privatization reforms. As a former public company, management practices haven't drastically changed and SEDAPAL is not incentivized to improve its management as the water in Lima is subsidized by the government. Combined with a strong politicization of the company with a powerful labour union able to influence the government's decisions, SEDAPAL is rigid to any type of reforms. With more than 2400 employees, it remains today a very bureaucratic organization with a lot of administrative processes that often fall behind. The high rate of horizontal rotation increases the time of the processes (interview #15). The entity hardly succeeds in executing its budget and in achieving its planned projects. This creates a general lack of maintenance of the existing network and produces an investment deficit for water network expansion.

The inefficiency of water utilities in Lima is also aggravated by a problem of corruption, both at the top of the hierarchy and at the administrative scale. Since 2000, the government has been promoting Public Private Partnerships in the water sector, in order to improve the capacity of water utilities in Lima. The problem is that most of those projects were subjected to corruption trajectories or created judiciary problem between SEDAPAL and the concessionary company. This delayed the building of infrastructures³⁹. For instance, the plant of Huachipa was built through a Public Private Partnership. Its construction was conceded to the consortium Huachipa (Construções e Comercio Camargo Correa y OTV S.A.). This new plant was supposed to unfreeze the problems of water provision in the North of Lima. However, even though the plant was accepted by SEDAPAL after inspection, it would present some deficiencies, preventing its functioning at full capacity and creating further problems for water utilities. This can be explained by the bribes that were given to SEDAPAL's top decision-maker and the former Minister of Housing, Construction and Sanitation.⁴⁰ The corruption issue within SEDAPAL is double as there are also cases of petty corruption regarding administrative procedures. *"The one that holds the power is the technicity that is often corrupt. To get factibilidades, they often delay the process on purpose. If you refuse to pay bribes, they can make you wait forever."* (interview #11).

³⁹ The sewerage crisis in the North due to the collapse of the wastewater collector Puente Piedra was supposed to be solved with the construction of a collector linked to the wastewater treatment plant Taboada. However, due to judiciary problems with the co-constructor, this project was delayed.

⁴⁰ [America TV \(26/03/2017\), Huachipa: ¿Cuales son los cuestionamientos a la planta de tratamiento?](#)

According to the material extracted from interviews and reports, it is possible to identify three types of problem experienced by SEDAPAL: its planning methodology, its motivations and its internal organization. Those shortcomings make the provision of water utilities unable to sustain the demand from the real estate sector as they both follow different rhythm of development as well as different motivations. This gap between the urban development and the water infrastructure development is reinforced by the fragility of Lima's metropolitan planning.

b. The ineffective regulation of zoning in an unplanned city

"Lima is a disorganized city; the current urban planning is insufficient and when it exists, it is not enforced" (interview # 11)

This part will show that the current practices of urban planning and urban regulation present some deficiencies. The lack of integral planning and the weakness of zoning regulation enabled an unorganized expansion of the private developers' projects. In turn, this has exerted additional pressure on water utilities, making its planning by the provider more complex. Therefore, the gap between formal development and water utilities is wider.

1. Lack of planning: a recognized feature of Lima

The different interviewees participating to urban development (developer, SEDAPAL, district municipality, MVCS) point out the lack of planning as one of the biggest challenge: *"The basic problem is that urban planning and projection are lacking"* (interview #15), in addition to the lack of continuity in the metropolitan policies between two electoral mandates. As there is no integral planning for the metropolitan area of Lima, the zoning plans have become the document of references (including for water utilities planning) to reflect the direction that might take the urban development. However, they are not actualized and often don't reflect the reality of the situation. If the municipality of Lima is in charge to approve and regulate zoning changes, the stakes around zoning combined with the weak and changing regulatory framework favour a disorganized zoning change, sometimes following discretionary practices.

The zoning plan specifies the nature of the land use (residential, industrial, commercial, agricultural or recreational) while the norm for building heights is specified on the heights plan. One of the problem in Lima is the saturation of the available urbanized lands (land with basic services). To overcome this barrier, developers tend to either build horizontally on former agricultural land (or in under urbanized zones) or vertically in the consolidated areas of the city.

Considering that a zoning change can multiply the price of the land by 5 times, enabling land valuation through project development, zoning is subjected to logics of capture by the developers.

Facing land scarcity in the central zones⁴¹, the recent evolution of the private developers' activity has consisted in developing projects in the *conos* (Northern districts as Carabayllo and Ancon and also in the South as in Lurin, Pachacamac)⁴², sometimes further than the location of the ultimate informal settlements of the district. It consists in acquiring agricultural lands⁴³, that is cheaper, and then in exerting pressure to change the zoning from agricultural to residential. For DESCO, this process often happens in a *"barely formal legality as their business, constrained by the current zoning, is developed in a disjoint manner from district urban plans. Because of this, the south of Lima today lives the same process that is leading to the exhaustion and virtual disappearance of the Chillón valley, north of the city"* (Garcia et al., 2011)

2. An exceptional norm enabling zoning changes easily

In 2004, the Metropolitan Municipality of Lima introduced the ordinance 620. It stipulates that until the approval of a new urban development plan, every owner can request a zoning change at any time of the year at the level of one piece of land⁴⁴. From 5 to 6 requests a year, they went up to 800 requests. Combined with the discretionary practices regarding the approval of a zoning change, this has enabled a disorganized and fast modification of zoning across the metropolitan area without a frequent update of planning documents. For the metropolitan councillor Augusto Rey, this norm provoked a *"disorganized and fragmented development of the city with no homogeneous criteria of land management, reinforcing the discretion of the functionary and weakening the planning capacity of Lima"*⁴⁵. The developers interviewed also point out the complexity to obtain a zoning change by following the rules, highlighting a problem of administrative corruption.

⁴¹ « *Las restricciones legales que les han impuesto algunos municipios y las limitaciones físicas de la propia ciudad han llevado a las inmobiliarias a establecer sus grandes proyectos fuera de la Lima tradicional* » in La Republica, 2013.01.06 - Carabayllo, la nueva ciudad al norte de Lima.

⁴² Multiple cases of zoning changes from agricultural to residential have been disclosed in the media and in the literature

⁴³ The acquisition of agricultural lands, especially by the established groups of the sector was largely facilitated by the neoliberal land reforms that took place in the 1990s as it took off the restrictions on the use of agricultural lands with the Ley de Tierras 26505. At this moment any person was able to purchase a piece of land.

⁴⁴ The following administration (Villaran) regulated this practice with the ordinance 1617. However, as Castañeda was reelected in 2014, the former ordinance was reinstated.

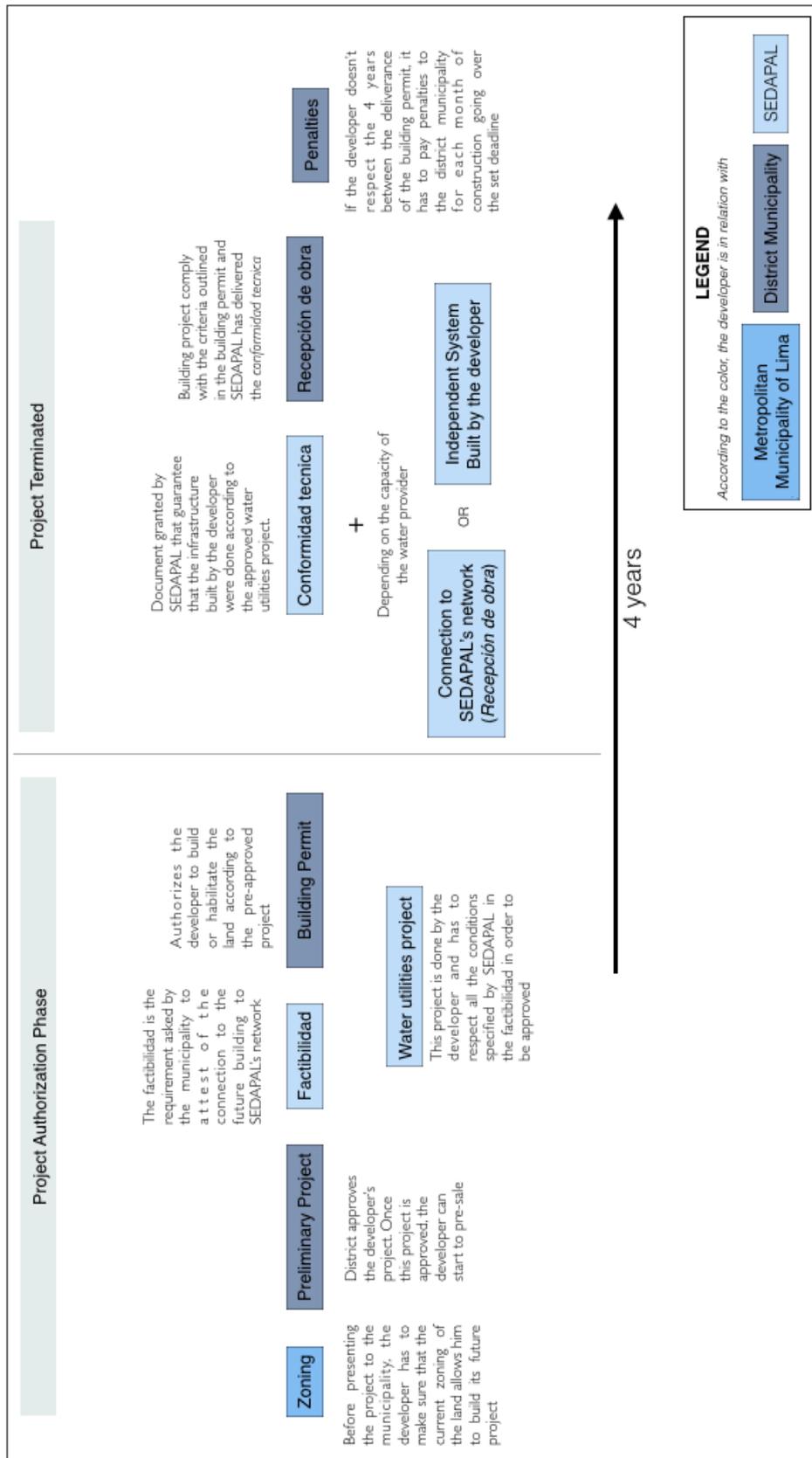
⁴⁵ El Comercio, 16/11/2015, Ordenanza de Lima afectaria planificacion urbana de la ciudad

This uncontrolled zoning change is problematic for SEDAPAL as it authorizes developments in areas where SEDAPAL had not planned to extend its services as there were former agricultural zones (interview #12). Some district municipalities also highlight the pressure exerted by the developers to obtain a zoning change. For instance, in Miraflores⁴⁶, which mayor has a political will to keep a medium density and residential use, their Urban Development Plan is “submitted to the pressure of the developers on land use or building heights change” (interview #4).

Their respective decision-making processes and environments combined with their own priorities led to a situation in which formal real estate development is going faster than the water provider. Regarding SEDAPAL’s planning practices, its inability to execute its projects and the lack or inefficiency of its infrastructure, Lima’s water utility provider was unable to sustain a growing formal real estate development. In a sense, this should have induced a slow-down of the formal private expansion. However, the formal real estate sector kept expanding in a context of uncertain water provision. This is partially explained by the subjection of the legal framework supposed to regulate and ensure water provision in real estate projects to logics of capture and instrumentation by the different actors, resulting in the enablement of the private development without the necessary presence of water infrastructure. The next section will point out the deficiencies of the regulatory framework by deconstructing the administrative process to develop a real estate project. (cf. figure #3)

⁴⁶ Miraflores is a district located on the seafront, one of the wealthiest in Lima

Figure #3: Developing a real estate project in Lima, administrative relations between the private developer, local governments and SEDAPAL (sources: interviews, Law 29090 & Law 26338; graph : own elaboration)



B. The inefficiency of administrative tools to ensure water utilities

If zoning changes have enabled a development of real estate projects in an uncoordinated and disorganized way, this section will analyse two tools that are supposed to frame and regulate the urban development while ensuring water utilities in newly developed projects. By highlighting their insufficiency due to their potential capture, this section will show how they actually enable the implementation of strategies serving the respective interests of the public and private actors, and making the current regulation irrelevant.

a. The factibilidad de servicios de agua y desagüe⁴⁷ – a conditional authorization

The factibilidad is a document delivered by SEDAPAL to the developer supposed to guarantee the connection of the future building to the water network. However, its progressive flexibilization following an order from the Ministry of Housing, Construction and Sanitation has weakened its original regularizing function and has enabled the development of formal projects without any actual water utilities capacity from SEDAPAL.

“The conditional factibilidad is the figure enabling to give an authorization without [water utilities] capacity” (interview #5)

I. The factibilidad delivery: an uncoordinated management within SEDAPAL

In order to obtain the building permit from the municipality, the developer has to obtain a water feasibility permit from the water provider that specifies its ability to ensure water and sanitation services for the future project, guaranteeing its connection to the network. (cf. figure #3).

This permit specifies the technical conditions and the terms of access to the services of water and sewerage. Following this, the developer has to present a water infrastructure project specifying how it will comply with the conditions mentioned in the factibilidad. The approval of this project is a mandatory step to have its final water related work approved by SEDAPAL and its built project connected to the network. This document is supposed to coordinate private development with water utilities. The rationale behind it is the following: if there is no factibilidad, there is no building permit delivered by the municipality so there won't be any project legally built by private developers deprived from water.

⁴⁷ « factibilidad de servicios de agua y desagüe » can be translated by « water feasibility permit »

The *factibilidad* is a document delivered by SEDAPAL. However, before 2013, there was no dedicated entities to treat the demands of *factibilidades*. It was under the responsibility of the project management entities of every zone (Centre, North, South). In reaction to the unprecedented real estate development, and as they measured the importance of this document, SEDAPAL delegated this competence to the 7 technical teams spread out across the city without establishing a standardized data treatment process. The decentralization of the decision-making resulted therefore in a fragmentation of the data. Indeed, each service follows its own procedure to treat the demand for water feasibility permit. “*The data is not centralized and the criteria of classification are not the same in every technical centre*” (interview #16). For instance, an engineer from the technical centre of Surquillo doesn’t know who manages the data in the North. The idea is that the technical team manages it (interview #16). Also, SEDAPAL doesn’t make any difference between a *factibilidad* requested for a real estate project or by a particular, which can result in planning problems regarding the differences of water volumes for each project and the associated infrastructure. The late appearance of dedicated entities devoted to the delivery of *factibilidades* combined with the current decentralization of the services shed light on other shortcomings of SEDAPAL’s planning that is essentially based on demographic and zoning data.

2. The *factibilidad*: a check within the building permit demand

The building permit is delivered by the district municipality and authorizes the developer to start building his project, that was previously approved by the municipality. If one of the requirements to obtain the building permit is the *factibilidad*, in any case the delivery of a building licence (or urban rehabilitation) takes into account if the *factibilidad* is conditioned to specific requirements from the provider (interview #16). “*For the municipalities, the factibilidad is only a check, a document part of the demand. There is no thinking behind the delivery of building permits*” (interview #5). Even in its competency of *recepción de obra*⁴⁸, the municipality can deliver the *recepción de obra* even though the new building doesn’t concretely have access to water. Indeed, this is only conditioned to the delivery of the *conformidad técnica*⁴⁹ by SEDAPAL, which signifies that the work requested regarding water services was well executed (“*the pipelines well done*”). However, it doesn’t say that it is connected to SEDAPAL’s network nor that the alternative system implemented by the real estate company functions and provides basic services. To this extent, the *recepción de obra* means that the project was well executed and can be recognized as legal.

⁴⁸ The *recepción de obra* corresponds to the document delivered by the municipality that recognizes the newly built property as corresponding to the initial and approved project (cf. figure #3)

⁴⁹ The *conformidad técnica* is a document delivered by SEDAPAL recognizing that the approved project of the necessary infrastructure the developer had to build for its project is well executed (cf. figure #3)

3. From water services provision to a conditional access to water

“We [SEDAPAL] always have to give factibilidades, we can only condition them. What changes is if the factibilidad is conditioned to a project planned by SEDAPAL” (interview #16)

At the beginning, the *factibilidad* would be delivered by SEDAPAL only when it had the actual capacity to guarantee access to water for the new real estate projects. However, as SEDAPAL started to refuse to hand in *factibilidades*, and regulate therefore the number of new buildings constructed, the Ministry of Housing, Construction and Sanitation made the delivery of *factibilidad* mandatory. To this respect, the *factibilidades* became conditional, either to substantial work from the developer to be connected to the network or to the termination of a project of improvement of SEDAPAL’s capacities. This is illustrated by the following quote: *“Before, SEDAPAL would reject the demand of feasibility when there was no capacity to provide water services. However, when SEDAPAL began to issue negative feasibility, the government intervened saying that it was not possible to do this - there is a law that provides not to give water – and that he couldn’t not give water facilities. Indeed, for the ministry, this would go against the real estate development policies that are a priority at the national level because it is an important sector for the economy.” (interview #4).*

For SEDAPAL, *“the fact of obtaining a factibilidad doesn’t mean that SEDAPAL will connect your project to its infrastructure. It says that, eventually, in a future, from 20 to 30 years, SEDAPAL’s services will arrive up to this area” (interview #3).* This quote emphasizes the dephasing between real estate projects and water utilities and how the development of water utilities in a new urbanizing area is completely out of the scope from the rationale of a real estate project. In this sense, it highlights the necessity of the developer to invest in the water infrastructure if it is willing to implement its project. In this sense, the conditioning of the access to water and sewerage has progressively delegated the responsibility of ensuring water provision to the private sector as it has opened multiple possibilities to develop a project following the law and presenting all the requisite without SEDAPAL guaranteeing you a water connection in the end. *“The conditional factibilidad is the figure enabling to give an authorization without [water utilities] capacity” (interview #5).*

The basic one would consist in delegating to the developer the amplification or extension of the primary pipeline and the building of secondary pipelines for both water and sanitation. This has become a normalized practice integrated by the developer in its costs: *“Every time a new building is developed, SEDAPAL makes the developer change the trunçal as the current one is not*

sufficient” (interview #4)⁵⁰. With the increase of real estate projects, the work requested by SEDAPAL became more substantial. “This generated conflicts as the costs to be connected to water would be too high. And you can’t win by denouncing SEDAPAL by legal means as it will last forever and your development project will already be dead.” (interview #1). In this sense, the private sector substitutes SEDAPAL in its role of water network provider supposed to extend and maintain the water network across the city. This mainly happens in the central districts of the area.

Progressively, the *factibilidad* also became conditioned to the termination of an infrastructural project carried out by SEDAPAL. Regarding the structural deficiencies of SEDAPAL (corruption, defective infrastructure, reactive practices), the level of uncertainty regarding the presence of water services in the final building increased. In some cases, it was conditioned to the termination of major infrastructural work such as the amplification of a wastewater collector⁵¹ or to the termination of the “work of extension and improvement of the systems of water and sewerage for the scheme Las Lomas de Carabayllo y Anexos”⁵². The indexing of the access to water utilities to the termination of work in a regularized informal settlement illustrates the priority of SEDAPAL in terms of network. The development of SEDAPAL’s infrastructure is often delayed and SEDAPAL can’t cope with the quickness of formal real estate development. In absence of the termination of the planned infrastructure within the *factibilidad*, it results that there is no water when the development is terminated.

Initially, the *factibilidad* would guarantee water services provision in new developments. Yet, its flexibilization and the transformation of *factibilidad* that were negative into conditional ones, with widened conditions, has made the former regulatory tool irrelevant especially regarding Lima’s uncertain urban context and the structural deficiencies of water utilities.

The main reason for its broader conditioning results from an order of the MVCS. The instrumentation of the tool shows the ambivalence of the position of the MVCS that is at the same time the responsible of the housing policy, promoting private solutions but also the ministry overseeing SEDAPAL activity. In this sense, it is possible to understand the conditioned *factibilidad* as a manner to prevent a potential liability of SEDAPAL for not providing water while sustaining the private activity.

⁵⁰ This happens in the cases of vertical project in the consolidated neighbourhoods where the existing water infrastructure exists but doesn’t have enough capacity. “It would be very rare the case when we don’t have to amplify the trunical” (interview #19)

⁵¹ Collector Puente Piedra

⁵² extracted from administrative correspondance between SEDAPAL and a developer

b. Building higher: serving both the developer and the district municipality interests

Building permits are also being captured through a tacit agreement between private developers and local governments in the perspective of a win-win strategy that threatens the water network resilience.

District municipalities are in charge to regulate the building construction by delivering building permits that respect the zoning norms (building heights and land use) approved and specified by the Metropolitan Municipality of Lima. Their role goes from the approval of a preliminary project presented by the developer to the reception of the built project. Lima presents some cases in which the zoning norms were overcome in a legal way, enabling the construction of higher buildings than the ones permitted by the zoning plan or of developments that wouldn't respect the established land use.

The district of Santiago de Surco, part of the Lima Top⁵³ neighbourhoods, has experienced an unprecedented urban development in the past ten years with a multiplication of high-rise buildings. The problem in Surco⁵⁴ was that the district decree presented loopholes in the norm concerning the building height and would enable the developer to legally develop buildings while containing more floors than what was authorized in the building heights plan⁵⁵. Another loophole was the exclusion of certain zones from the zoning plan defined by Lima. In spite of the additional regulations enforced by the MML, the multiplication of buildings exceeding the authorized heights continued, emphasizing the interests of the district municipality to leave the regulation weak. For the developer, the rationale behind the instrumentation of the building heights norm is to make its project more profitable and optimize the price of land as he can sell more apartments. For the municipality district, it is also financial: a new building brings new revenues from the right to administrative procedures and inspection that are proportional (1.5%) to the value of the building (so the higher the building, the higher the value)⁵⁶ and through property taxes paid by each new inhabitants. Between 2007 and 2008, the income from property taxes increased by 18%.

Even if the former instrumentation of the norm by the real estate developers was unwillingly permitted, the persistence of the discretionary practice and the refusal to implement a stronger regulation of building heights combined with the economic interests linked to the instrumentation of the norm witnesses the existence of influence peddling at the political or administrative levels. Quickly, the existing water utilities system became insufficient and the impact

⁵³ In the report of CAPECO, Lima is separated in 7 areas corresponding to a special socio-economic profile (cf. annexe #3)

⁵⁴ *Gestión*, 5/10/2009, Edificios a la medida en surco : municipio habría vulnerado zonificación

⁵⁵ cf. annexe #6 : Ordenanza 265-2006 and Decreto de Alcaldía 07-2006

⁵⁶ This amount is capped at 355.000 soles (\$100000) that corresponds to 10 floors

on water provision was so critical that SEDAPAL requested several times the municipality of Surco to restrict the building heights. This type of instrumentation increases the inadequacies between urban utilities and built environment and can explain the arising problems in terms of water access in wealthier neighbourhoods.

Either done *a priori* or *a posteriori*, on purpose or not, the disconnection between water utilities provider and local government that exists by their respective competencies is similar on the field. A building project can legally be developed without providing a secure access to water utilities. Moreover, the local government has a rigid vision of their competencies *"The role of the municipalities is defined by the law 29090. We don't see the theme of water utilities. The municipality can't request from the real estate companies to have a PTAR, we can only do what is within the ley 29090"* (interview #16). This emphasizes the sectoral and technical approach to urban development that can be observed in Lima and outlines the inexistence of a collaboration between the provider of the water infrastructure and the regulator of the built environment. In this sense, the municipalities don't have a vision of governance.

The instrumentation of the building permit tool makes the zoning irrelevant for water utilities planning as it creates a different reality from what is being authorized and make the delivery of water utilities in adequacy with the demand impossible. Done at a large scale, this can threaten the resistance of the water network, especially in the case of Lima, where the existing infrastructures are poorly maintained. Indeed, the instrumentation of the building permit prevents the planning of an adequate rehabilitation of the networks or the development of alternative solutions for water provision. The non-respect of the zoning combined with the flexibilization of the *factibilidad* have authorized real estate developments without a corresponding infrastructure capacity from SEDAPAL. In turn, this has exerted more pressure on the existing network that are for most of them already functioning at their full capacity. This explains the burst of a water crisis.

The two previous sections showed that the water shortcomings crisis in real estate sector developments is the result of longer-terms processes that reveal an exclusive situation in which water infrastructure can't sustain the urban development. With the growth of the real estate sector, the multiplication of housing projects throughout the city have exerted an unprecedented pressure on SEDAPAL, unused to deal with the requirements of the real estate companies. After presenting the negotiation process following the burst of a water crisis in Carabayllo, the next paragraph will draw the main strategies adopted by the private developers, SEDAPAL and the Government to adapt to these new shortcomings and will highlight the new conditions for urban production in Lima.

C. Improving water utility through real estate activity?

After presenting the case of Carabaylo, this section will point out the strategies of adaptation from the developers and SEDAPAL to cope with this conflictual issue. After featuring an historical case of local arrangement to solve the insufficiency of the water network, it will outline the current perspectives to address this issue examining the current position of the Ministry of Housing, Construction and Sanitation on the topic. Regarding the position of the different stakeholders towards water utilities, this section argues that the incorporation of water utilities competencies to the private developers' initial mission is a new feature of Lima's modes of urban production.

a. Resolving a conflictual case: water shortcomings in Carabaylo

After describing the sequence⁵⁷ that led to water shortcomings in Carabaylo, this section will present the negotiation that temporarily resolved the issue related to water services. This will introduce the strategies of adaptation from the different actors.

I. A long-term issue dating back to 2004

Carabaylo is a district located in the North-East of Lima with 419,696 inhabitants in 2015 (PDLC Carabaylo, 2016) when there were only 201,149 inhabitants in 2005 (INEI, 2007). Housing developments in Carabaylo was initially impuled by the public sector with the coordination between the Ministry of Housing, Construction and Sanitation (MVCS), the Metropolitan Municipality of Lima (MML) and SEDAPAL in 2004. In this perspective, part of the zoning was changed from agricultural to residential enabling the developer to build. Regarding water utilities provision, the developer would take care of the infrastructure within the urbanization enabling the connection of every house to the SEDAPAL's primary network.⁵⁸ On its side, SEDAPAL would ensure water provision and wastewater recollection.⁵⁹

The low prices of land with the right zoning and the provision of water services in a near future attracted more developers than expected by SEDAPAL. Therefore, the company didn't have the capacities to provide water services to all the developers⁶⁰ : without water services,

⁵⁷ cf. timeline of the sequence in annexe #8

⁵⁸ This is the normal role of the developer when the project consists in urbanizing an area

⁵⁹ The provision of water utilities in this area would rely on the amplification of the existing purification plant Chillón and the sewerage on the building of the wastewater treatment plant Taboada.

⁶⁰ This analysis of the sequence relies on the information extracted from interviews of three actors (interviews #1, #5, #18)

the real estate developers couldn't carry out their projects and most of them went bankrupt as they had already bought the land⁶¹. After this episode, the water solution in Carabayllo was solved by the construction of the Huachipa plant, announced in 2008, and planned to be operational in 2011. This triggered a renewed interest for Carabayllo: in 2011, it had attracted 18 real estate companies planning to develop 28.000 new dwellings, aimed at welcoming 100.000 new inhabitants.⁶² This massive interest for the district is not harmless. As pointed out by DESCO, it reflects the logics of speculation on agricultural land initiated by the developers, either by intending to initiate a zoning change, having a building permit approved without the adequate zoning or building informally by extending the urbanization that was approved. For instance, some developers use the blurry definition of the districts' borders to execute unapproved extension of their project.⁶³

If the water issue was eventually solved with the development of the Huachipa plant, a new problem regarding water services emerged: SEDAPAL's sewerage capacities were not sufficient. Indeed, sewerage services were conditioned either to the construction of a derivation from the Taboada plant⁶⁴ or to the amplification of the current collector Puente Piedra. Up to now, neither of the two infrastructures was built and the sewerage problem remains as the collector Puente Piedra is already functioning at 100% of its capacity. If the improvement of the collector was planned to be finished by 2014, it is now scheduled to be terminated in 2019. In the meantime, the developer followed its own path of development and delivered houses in 2013. With no water services, the developer had to find alternative solutions such as water provision through water tank. As showed in the previous part, the miscarriage of SEDAPAL's infrastructure projects results in the absence of water utilities in new developments.

2. A first collective process of negotiation

As water problems became critical and completely stopped the development in this part of the city, the promoters presented their case to the Ministry of Housing, Construction and Sanitation in order to initiate a process of negotiation with SEDAPAL and unlock the water scarcity situation. This negotiation process was impulsed by 10 private developers present in

⁶¹ As it was at the premises of the real estate development, SEDAPAL would refuse to give factibilidades as the Ministry of Housing, Construction and Sanitation had not emitted a decree yet

⁶² <http://larepublica.pe/06-01-2013/carabayllo-la-nueva-ciudad-al-norte-de-lima>

⁶³ « Si volvemos a la actividad de Los Portales en el distrito norteño de Carabayllo, vemos que de las doce habilitaciones urbanas realizadas allí, diez son colindantes, tomando en algunos casos como nombre comercial el mismo de la habilitación original, adicionando nuevas etapas, de acuerdo al ritmo de compras de terreno » (García et al., 2011)

⁶⁴ SEDAPAL entered in a judiciary process with the constructor delaying the project

Carabayllo through the Asociación de Desarrolladores Inmobiliarios del Peru (ADI Peru)⁶⁵. This association regroups the biggest developers of the country whose core business is the urbanization of lands with the construction of individual houses. This organization of the private sector resulted from “a willingness to present the issue as a general problem compared by the real estate sector and not just as an isolated problem experimented by one company” (interview #15, Menorca). Regarding the economic importance of the developers, negotiating as an organized association helped the developers to have more weight and ease the negotiation process with SEDAPAL and MVCS. After 6 months of negotiation with the MVCS as a mediator, SEDAPAL and the ten developers⁶⁶ found a temporary solution: as the problem was related to sewerage and not to water supplies, the developers would have to take care of wastewater capitation and in exchange, SEDAPAL would ensure the supplying of water continuously. In order to solve the sewerage issue sustainably, one of the developer financed the preliminary studies of the project to increase the capacity of the wastewater plant.⁶⁷ If the project was approved by the Ministry of the Economy that allocated the funds to SEDAPAL, the issue remains. The alternative solution offered to the developers was that each developer builds its own wastewater treatment plant and in the low hour activities that he connects the plant to SEDAPAL’s network.

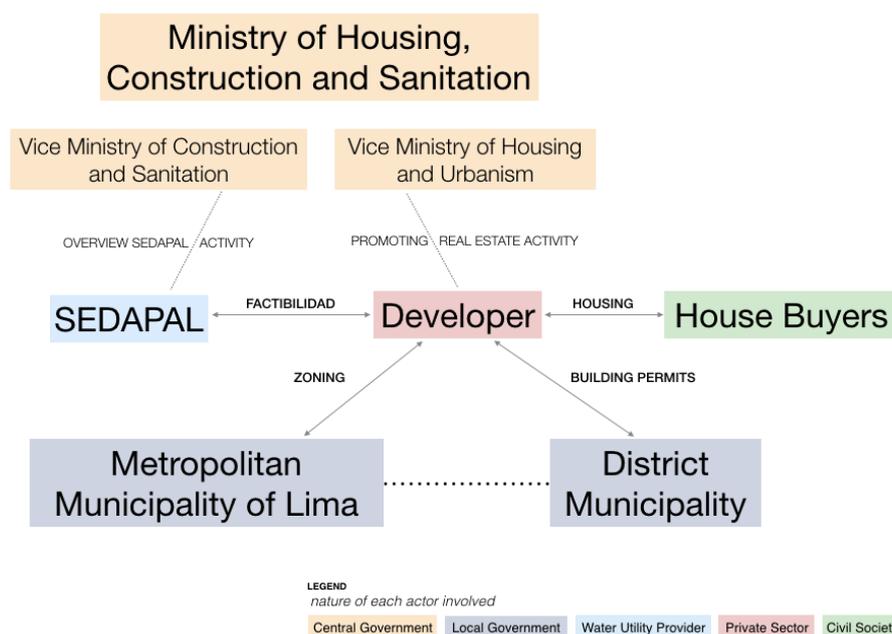


Figure #4: Administrative ties among stakeholders involved in urban projects (graph: own elaboration)

⁶⁵ Association of Real Estate Developers of Peru. As described by his executive director, Antonio Amico, “this guild represents the top real estate developers’ companies of the country such as Portales, El Pino, Centenario and supports the developers that has an activity more macro”

⁶⁶ Arteco, Inversiones Centenario, Imagina, Enacorp, Líder, Los Portales, Menorca Inversiones, Urbana, Villa Club S.A y Wescon

⁶⁷ Gestión, 4/09/2015, MVCS: 9000 nuevas viviendas en Lima Norte contarán agua y saneamiento

This case study highlights the systemic issue of water utilities in formal urban development that was exposed in the previous paragraphs (A & B): disorganized urban development, delayed water infrastructures and inadequate water services planning. As the housing projects are developed faster than the water infrastructure, the presence of infrastructure relies on the execution of the projected water infrastructure which in the case of Lima experience multiple shortcomings. In the case of Carabayllo, the water provision was conditioned to the termination of the extension of the network in informal settlements and to the execution of major infrastructural work. The resolution of the conflict was partial and didn't not lead to the development of a real policy at the metropolitan level, whether it was from the local governments or the State. It reveals the planning issues of SEDAPAL and its priorities of development while outlining the precariousness of the alternative solutions that were implemented. Also, it points out the absence of the civil society in this negotiation process when they are the most concerned by the problem⁶⁸. This process of negotiation is the first done publically (i.e. media coverage), with the presence of the public authority (the MVCS), the private developers and SEDAPAL. Before, if there were water shortcomings, the developer would negotiate directly with SEDAPAL to find alternative solutions.⁶⁹ Being the first negotiation done publically hints on the importance of the problem and also on the power of organization that have some developers. However, the capacity of organization can't be taken as a general feature of Lima's real estate actors. Indeed, the other network ASEI (that comprehends more recent companies doing smaller projects mainly in the consolidated part of Lima), also experiments problems with water services in the more consolidated neighbourhoods but there is no coordination among them: "*it is a preoccupation but we don't negotiate it together, every developer negotiates directly with SEDAPAL*" (interview #19).

b. Towards an internalisation of water utilities to the developer responsibility?

After presenting the progressive internalisation of water utilities competencies within the real estate developer activity, this section will demonstrate that this new feature goes along with SEDAPAL's interests as it is not legally liable for not providing water services nor reimbursing private sector participation to the improvement of water utilities.

⁶⁸ Regarding civil society, some associations of buyers exist. For instance, the Asociación de Compradores de Villa Club started a legal process against the developer for not providing water. This leads to a public audience with district municipality, SEDAPAL and the Ministry of Housing, Construction and Sanitation. The private developer or the Municipality of Lima were not involved.

⁶⁹ For instance, in 2002, a private company that developed offices building in Surco experienced water shortcomings once his edifices almost finished as SEDAPAL refused to provide water services, for a lack of capacities, even though it was agreed beforehand. The private developer negotiated for 3 months with SEDAPAL to reach out to an agreement: the developer would finance a derivation of the primary pipelines, connecting the new buildings to another part of SEDAPAL's network

I. Private developers: between opportunistic strategies and internalization

Regarding the new challenges brought by the unreliability of the metropolitan water provider and the materialization of the issue, the private developers have adopted different postures depending on their type of activity and of their economic possibilities. Two main strategies can be outlined: an opportunistic strategy and a strategy of internalization.

For the developer, the opportunistic strategy consists in stopping his activity in the neighbourhood that experiences water shortcomings and develop its projects in another district where the conditions of access to water are directly guaranteed by SEDAPAL or are not too expensive (i.e. requires only the amplification of the pipelines' capacity). Indeed, it is necessary to emphasize that in any case the developer is required by SEDAPAL to amplify and change the existing network at the level of its land. In Surco, once the water situation became unmanageable as it was not only a distribution network issue but a problem of sewage collection, some developers stopped their activity in the district as none of them was ready to finance alternative solutions. *"Edifica [a real-estate promoter] did 6 projects ten years ago in Surco (at the beginning of its activity) but progressively the real estate developers flee as water shortcomings issues arise".* The strategy of exit is often the one of small developers that don't have the capacity to develop an alternative system to the one provided by SEDAPAL or to fulfil the conditions to connect on SEDAPAL's network. Indeed, *"the real estate developer doesn't want to be involved in water issues as it impacts the final prices so what they do is to move from one district to another. First, San Borja, Surquillo. Now Lince."* (interview #18).

The second strategy consists in integrating the development of the required water infrastructure established for their project. (cf. figure #5). The case of Carabayllo illustrates the necessity of the private developer to take care of the building of a temporary water and sanitation solution while waiting for the issue to be sustainably solved by SEDAPAL. If in Carabayllo, this solution resulted from the post-conflict negotiation, there are some cases where developing the water infrastructure is a pre-condition to be connected to SEDAPAL's network. If *"the condition to receive water services relies on the ability of the company to bring the water from another part and extend the normal infrastructure"* (interview #11), the newly built water infrastructure would remain connected to SEDAPAL's network. However, as it increases the costs of its development, the feasibility of the project comes down to its profitability: *"In the end if the project including the work of water and sanitation services is too much, the company doesn't do it"* (interview #11).

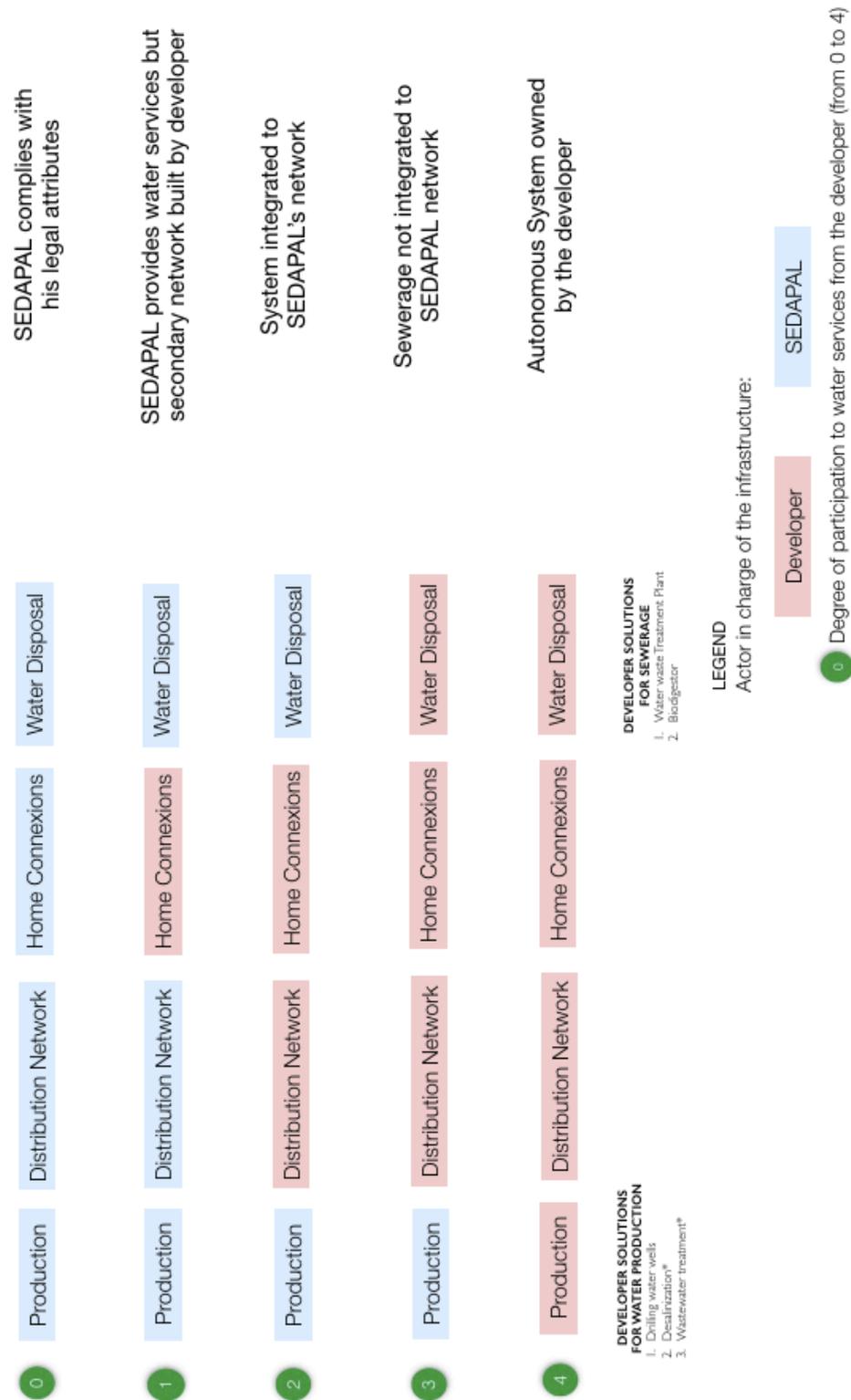


Figure #5: Degree of private developer participation to water utilities according to SEDAPAL legal attributes (cf. figure #1; figure: own elaboration, sources: interviews and case study)

This increase is more substantial in the areas where there is no possibility to obtain water. In this case, the company has to rely on water wells, directly depending on groundwater and has to operate its own potabilization and wastewater treatment plants. In this case, the water utilities become privately operated. However, in some areas of Lima, the level of groundwater is not sufficient and the private developers would have to resort to alternative solutions (such as desalination) in order to be able to build its project. Depending on the expensiveness of this type of solutions and the capacity of the developer, the water utilities situation impacts the former strategies of location of the real estate development or fully restrains its development. Regardless of the strategy adopted, the developer remains associated to the buildout of the water infrastructure. Its involvement depends on the nature of the water problems and its capacity to finance the costs of the required solution.

2. SEDAPAL: renovating their network through urban development?

This paragraph will show how the legal framework defining and regulating water feasibility permits (factibilidad) enables a legal disempowerment of SEDAPAL from providing water infrastructure to the private developer projects and can even be used as a strategy to ensure the renovation of its network.

The *factibilidad* enables SEDAPAL to provide water utilities under any condition it stipulates, giving SEDAPAL legal grounds not to ensure water services. The conditionality was reaffirmed in the decree n°1280⁷⁰, published in December 2016 on the order of the new president Pedro Pablo Kuczynski, that stipulates the following « *exceptionally the factibilidad can be delivered under conditions from SEDAPAL* » (article 21.2). The broadness of interpretation of the terms “conditions” enables SEDAPAL to establish its own terms. As described in the previous paragraph, they can go from the construction of a pipeline by the developer to the conditioning of water utilities provision to the termination of other projects. The possibility to condition its water utilities can be analysed as a strategy to have its network partially maintained and renewed. This is supported by the current legal framework concerning the reimbursement of water infrastructure work executed by the private sector and integrated to SEDAPAL’s network.

One of the main barriers for the developers to integrate the water infrastructure within their project is that the cost of their investment is not shared with the utility provider even though

⁷⁰ This decree revokes the law N° 26338, Ley General de Servicios de Saneamiento. And the Law N° 30045, Ley de Modernización de los Servicios de Saneamiento, except the article 3. It follows the decision of the President to put the water and sanitation services in emergency.

it indirectly participates to the extension and densification of SEDAPAL's existing network. In order to have its building connected to SEDAPAL's network, the private developer concedes the operation and maintenance of the network to SEDAPAL. By law⁷¹, the investment done by the private company should be partly reimbursed by the utility provider "*but in reality it doesn't happen*" (interview #18). Indeed, this reimbursement is conditioned to the presence of the realized extension and/or amplification within SEDAPAL's Optimized Master Plan. Regarding SEDAPAL planning practices, based on the existing demand and only outlining the primary network, they are considered as Aportes Non Reembolsables (ANR)⁷². In this case, the private developer that built the infrastructure while extending or improving SEDAPAL's network doesn't recover part of its investment.⁷³

The current legal framework regulating SEDAPAL's activities hints on the ambivalence of the government through the Ministry of Housing, Construction and Sanitation. On the one hand, it enables SEDAPAL to be legally discharged from its failure to provide water services and to have its network renovated without devolving part of the investment to the private. On the other hand, it acts as a mediator between SEDAPAL and the developers, supporting and promoting the real estate activity.

c. Public action for water issues: promoting a devolution to the private developer

This section will present the possibilities of action from the public authorities to address the water utilities provider inabilities to sustain real estate activity. After highlighting an historical case involving the local government, it will point out the current public actions of the central Government through the Ministry of Housing, Construction and Sanitation.

I. A locally negotiated solution: the historical case of San Isidro

The challenge of water in the formal and privately-led development is not new. However, it happened at a small scale, in the wealthiest district of Lima and was regulated beforehand. The deficiency of water utilities in the sector was addressed through a negotiated arrangement between private developers, SEDAPAL and local governments. In the late 1990s, the mayor Neuhaus was willing to densify the district, which would require a densification of the

⁷¹ N° 26338, Ley General de Servicios de Saneamiento (General Law for Sanitation Services)

⁷² Aportes No Reembolsables are non-refundable contributions

⁷³ Artículo 75 del Decreto Supremo DS-023-2005-VIVIENDA «Las obras que se financien mediante Contribuciones Reembolsables deberán estar comprendidas en los Planes Maestros Optimizados de la EPS». This legal disposition was reaffirmed in the supreme decree VIVIENDA DS-009-2014.

water network and ask SEDAPAL to densify the existing network. Its demand was rejected by SEDAPAL that justified it by arguing a potential collapse of the existing network if it was not amplified but describing the necessary investment as too substantial and out of their priority. In order to densify the network, the mayor impulsed the creation of the non-profit association ACADESI (Asociación Civil Agua de San Isidro) with the main private developers⁷⁴. This enabled, under an agreement with SEDAPAL, the financing of the improvement of the water infrastructure to build higher edifices. In this process, the district municipality modified the administrative process to get a building permit by conditioning it to the proof of payment for the agreed improvements. SEDAPAL's role was to approve the project, supervise and connect the new buildings to its existing network, ensuring the provision of water and collection of wastewater.

This example emphasizes the role that can play the municipality as a coordinator between the private developer and the public utility provider. It hints a governance arrangement of an upstream negotiated solution between public and private sectors enabling an improvement of the current water infrastructure and to overcome the barrier of the shortcomings of the water network. Regarding the regulatory practices highlighted previously in the research results (Chapter 2, part A & B), this type of arrangement relies heavily on the capacity and the resilience of the municipal administration. If this historical example shows the possibility of local policies, the current solutions from the public authorities are at the initiative of the central Government.

2. The Government's initiatives: a new water relationship with the private developer?

"There are cases in which the investment realised in the water sector was integrated within the real estate development but it never became a concrete public policy" (interview #1).

The quote above captures the position of the Government that mainly governs through large-scale one-off projects but doesn't implement a long-term and sustainable policy to address the issue. This section will argue that the MVCS is drifting away from a public coordination with SEDAPAL as the water provider. If the budget of the MVCS was multiplied by 9 between 2002 and 2016, for Guido Valdivia, executive director of CAPECO, *"the problem is not the creation of programs or the money but the issue of coordination and establishment of an integral development plan"* (interview #1). To this respect, it is possible to mention the elaboration of the PESEM 2016-2021 (Plan Estratégico Sectorial Multianual)⁷⁵ that promotes a multi sectoral approach for the

⁷⁴ At this time, the real estate market sector was at its premises and constituted of approximately 5 promoters

⁷⁵ approved by the resolution n°354-2015-VIVIENDA

sector of Housing, Construction, and Sanitation highlighting the necessity to create more urbanized land and improve water and sanitation services. However, this is a national plan in which there is no specificities for the case of Lima nor on the instruments that will be concretely implemented to fulfil the established objectives. Moreover, it was approved in the last six month of the previous government. As to now, there was no implementation of a concrete multi sectoral policy following on this plan. Nevertheless, it is possible to assess a shift in the attitude of the National Government towards water provision in urban development projects, especially for the urban projects of national interest. If the development of water utilities, for large-scale housing projects at the initiative of the Government and built by the private sector, was the responsibility of SEDAPAL, it is progressively becoming included in the competency of the private developer.

When the housing policy was implemented in the early 2000, it was accompanied by a policy of land urbanization at the metropolitan level, initiated by the Vice Ministry of Housing, in order to unlock unused lands for large-scale real estate projects. This policy would aim at concealing the necessary parameters to prepare the land for private development: land titling, zoning, basic services and financing. Regarding water utilities, the Government ordinated SEDAPAL, by supreme decree, to prioritize the extension of the network towards those areas. If some housing initiatives by the Government did work - such as El Agustino, this was mainly due to the presence of those areas within the consolidated network and the realization of the infrastructure work by SEDAPAL prior to the sale of the land. With new developments located in remote parts of the city and that were also promoted by the MVCS, such as in Carabayllo, the prioritisation did not work. To some extent, this was less likely to work as the urbanization promoted by the government would rely not only on the extension of the network but also on a projected increase of water and sanitation treatment plants capacity. The structural deficiency of water utilities in Lima has prevented the upstream planned coordination to function, even more as the area was subjected to a disorganized development, with some lands already belonging to some developers,⁷⁶ and inefficiently regulated at the local level.⁷⁷

In the governmental housing initiatives implemented now, the development of water utilities infrastructure is one of the requirement conditioning the award of the project to the developer. This is the case of a new housing project in Ancon that aims at developing 14.000 houses including its own wastewater treatment plant. This new feature is branded by the developer as a selling-argument highlighting the sustainability of his project.⁷⁸ Anecdotally, this

⁷⁶ This refers to another problem in Lima which is land property and land regulation as a lot of land properties have been acquired following illegal methods, especially after the Agrarian Reform

⁷⁷ This refers to cases in which the municipality delivers building permits without the land having the required zoning

⁷⁸ <http://emotiv.pe/proyectos/gym-somos/una-nueva-ciudad-se-construira-en-ancon/>

shows the complete integration of water utilities competencies to the developer. This project was impelled through the "Programa Generacion de Suelo Urbano" (PGSU)⁷⁹.

This shift symbolizes a change in paradigm in the Government's vision of formal development in which not only the private developer should provide housing solutions but also the water utilities infrastructure. However, this new tendency corresponds to a vision of urban development of the city through mega projects but doesn't address the deficiency of the regulatory framework at a metropolitan level. This type of project does not permit a sustainable and autonomous urban development. Indeed, it mainly relies on the implication of the government in the project and supposes large-scale development projects regarding the high cost to develop alternative and autonomous system at the scale of one building. This reflects the current governance arrangement of the urban development in Lima with a conflict between central Government and local ones.

The second chapter have deconstructed the mechanisms at work in Lima to explain the emergence of water shortcomings in urban projects. First, water issues are due to the uncertainty of the current urban framework and the inadequate managing system of the utility provider to respond to a sustained urban development. The structural discrepancy between water infrastructure and urban project is deepened by the inefficiency of the regulatory instruments that have enabled private developers to carry out projects without a guarantee of water services. To overcome the lack of water utilities, the developer has progressively integrated part of the water utility competency within its real estate activity. This shift in the modes of urban production is strongly motivated by the current legal framework and the position of SEDAPAL towards real estate developments but also promoted by the Government as a solution.

⁷⁹ Urban Land Generation program created by the Decreto Supremo N 003-2012-VIVIENDA

Conclusion

As stated in the introduction, Lima's water issues are often politically framed and academically analysed in terms of access to water in the irregular settlements. This approach is insufficient to provide an accurate assessment of its water shortcomings as they also result from the evolution of the real estate sector. Indeed, the intensification of the urban development led by private developers creates a new challenge for water services provision at the metropolitan level that SEDAPAL doesn't have the capacity nor the will to sustain. Going beyond the idea that urban development follows the network's expansion, this research takes the water infrastructure as an entry point to understand the new urban dynamics impulse by the real estate sector and in turn shed light on Lima's governance.

The deconstruction of water scarcity in urban development showed the inability of Lima's governance to ensure water services in pre authorized projects. Indeed, Lima's regulatory framework is deficient regarding the instrumentation of multiple administrative tools by the different stakeholders. The failure of the public provider SEDAPAL to face the increasing demand for water services creates new modes of urban production in which the developer also becomes the water network provider. As real estate development takes place in a governance that doesn't condition urban projects to the presence of water infrastructure, the developer has progressively internalized water utility competencies to sustain its own development.

This dissertation goes beyond the traditional idea of a double standard of water provision in Lima that justifies the pro-poor water policies implemented by the government. Indeed, in order to solve water issues, the national policy aims at expanding the network to reach universal coverage, bringing therefore water to inhabitants in the informal settlements. Nevertheless, with the new challenge brought by the real estate development, implementing an integral water policy at the metropolitan level is necessary.

Focusing only on the extension of the universal coverage, the national government could suffer from its own contradictions - aiming at being an attractive and productive metropolis while implementing pro-poor policies. Its inability to solve water issues in the new urban development is likely to threaten its engines of growth as the consolidated network in the wealthier and productive neighbourhoods is progressively collapsing. This problem is not specific to Lima as universal coverage is an identified water policy in other emerging countries. This raises questions regarding the implementation of policies that address the water issue partially, taking only one aspect of the problem into consideration and disregarding the negative effects it can have on its economy.

In spite of a public negotiation, the government didn't not specifically address this type of water issues. Its main action to address the deficiencies of urban planning and ensure water provision is to promote large-scale housing developments with the private developer being the utility provider. This urban development by project disregards the necessity to reinforce urban planning capacities at a local level and compensate the deficiencies of the regulatory framework. It illustrates more the central government's will to demonstrate its pro-active social housing policy while sustaining the real estate industry rather than implementing a long-term policy to solve the water issue and reconnect water utilities provision and urban development. It also points out the strong dependency of Lima on the central government to solve this issue as the Metropolitan Municipality doesn't have any power regarding water infrastructure.

The progressive internalization of water utilities competencies within the private developer activity invites to reconsider the modes of urban production and the relation between infrastructure and urban planning. Going beyond the traditional debate on privatization of water utilities, it offers a new type of arrangement in which the privatization is "silent" and progressive, taking place at the project scale, a less obvious and politicized level, in comparison with private participation at the utility provider scale. Moreover, as private developers take over the expansion of the network, they are progressively in charge of water utilities. This echoes the literature on the non-conventional offers of water services (Zaglin, Zérah, 2010) and the likely emergence of a "post-network" society (Coutard, Rutherford, 2009). In this perspective, Lima presents an engaging case as this shift is driven by the real estate sector, integrating de facto water network to the urban production.

Regarding the specific status of the private developer, further research should question the implication of the emergence of autonomous systems - that guarantee the access to water services - provided by real estate developers, for megacities' governance. Also, if the private developer becomes responsible of the water service provision, it interrogates the legitimacy of his new role as provider of a common good. In this sense, it would be interesting to question the new modalities of access to water and its relations with the existing network.

Bibliography

Akrich M., « Comment décrire les objets techniques? », *Techniques & Culture*, 54-55 | 2010, 205-219

Benites E., Coeurdray M. & Poupeau F. (2016) Une promotion immobilière sous contraintes environnementales. Les logiques sociales du périurbain dans les Desert Cities de l'Ouest étasunien, *Revue française de sociologie*, 57(4) : 735-763

Cabrera T. et al., (2010), "La ciudad neoliberal. Nuevas urbanizaciones en Lima Sur" in *Perú Hoy*. Ajustes al modelo económico: La promesa de la inclusión, DESCO

Criqui L. (2014) « Attention ! Travaux en cours : l'extension des réseaux de services essentiels dans les quartiers irréguliers de Delhi et Lima », Thèse de Doctorat de l'université Paris-Est, Villes, Transports et Territoires

Criqui L. (2014) « Controverses sociotechniques dans le secteur de l'eau et de l'assainissement à Lima » (Draft), Séminaire les métiers de la ville, Université Paris-Est

Centeno P., Lafosse S., (2013) La densification récente de Lima et ses défis en matière de logement et de transport, *Problèmes d'Amérique latine*, n°90

Driant J-C., 1991, *Las barriadas de Lima. Historia e interpretación*, IFEA, DESCO, Lima

Dubash N. & Morgan B., *Understanding the rise of the regulatory state of the South*, Volume 6, Issue 3, September 2012, Pages 261–281

Fernández-Maldonado A.M. (2008) "Expanding networks for the urban poor: Water and telecommunications services in Lima, Peru", *Elsevier, Geoforum* 39, p.1884–1896

Fernández-Maldonado A.M., Bredenoord (2010) "Progressive housing approaches in the current Peruvian policies, *Elsevier, Habitat International* 34, p.342-350

Halpern. C et al., (2014) « Introduction/L'instrumentation et ses effets : débats et mise en perspective théorique in Charlotte Halpern et al., *L'instrumentation de l'action publique*, Presses de Sciences Po (P.F.N.S.P) « Académique », p. 15-62

INEI (2014) « Estado de la Población Peruana 2014 », National Institute for Statistics and Informatics

Ioris A., (2012), "The geography of multiple scarcities: urban development and water problems in Lima, Peru", *Elsevier, Geoforum* 43

Ioris A., (2012) "The persistent water problems of Lima, Peru: Neoliberalism, institutional failures and social inequalities", *Singapore Journal of Tropical Geography* 33, p335-350

Ioris A. A. R. (2016) Water scarcity and the exclusionary city: the struggle for water justice in Lima, Peru, *Water International*, 41:1, 125-139,

Jaglin S., Zerah M_H., (2010) « Eau des villes : repenser des services en mutation. Introduction », *Revue Tiers Monde* 2010/3 (n° 203), p. 7-22.

Lascoumes P. & Le Gales P. (2007), Introduction: Understanding Public Policy through Its Instruments — From the Nature of Instruments to the Sociology of Public Policy Instrumentation, *Governance: An International Journal of Policy, Administration, and Institutions*, Vol. 20, No. 1, (pp. 1–21)

LiWa Project (2009) « Análisis de la situación del agua (cantidad y residual) en Lima Metropolitana », Proyecto LiWa/Zim-SEDAPAL, Consulting by M.Sc.Ing. Reinhard Seifert

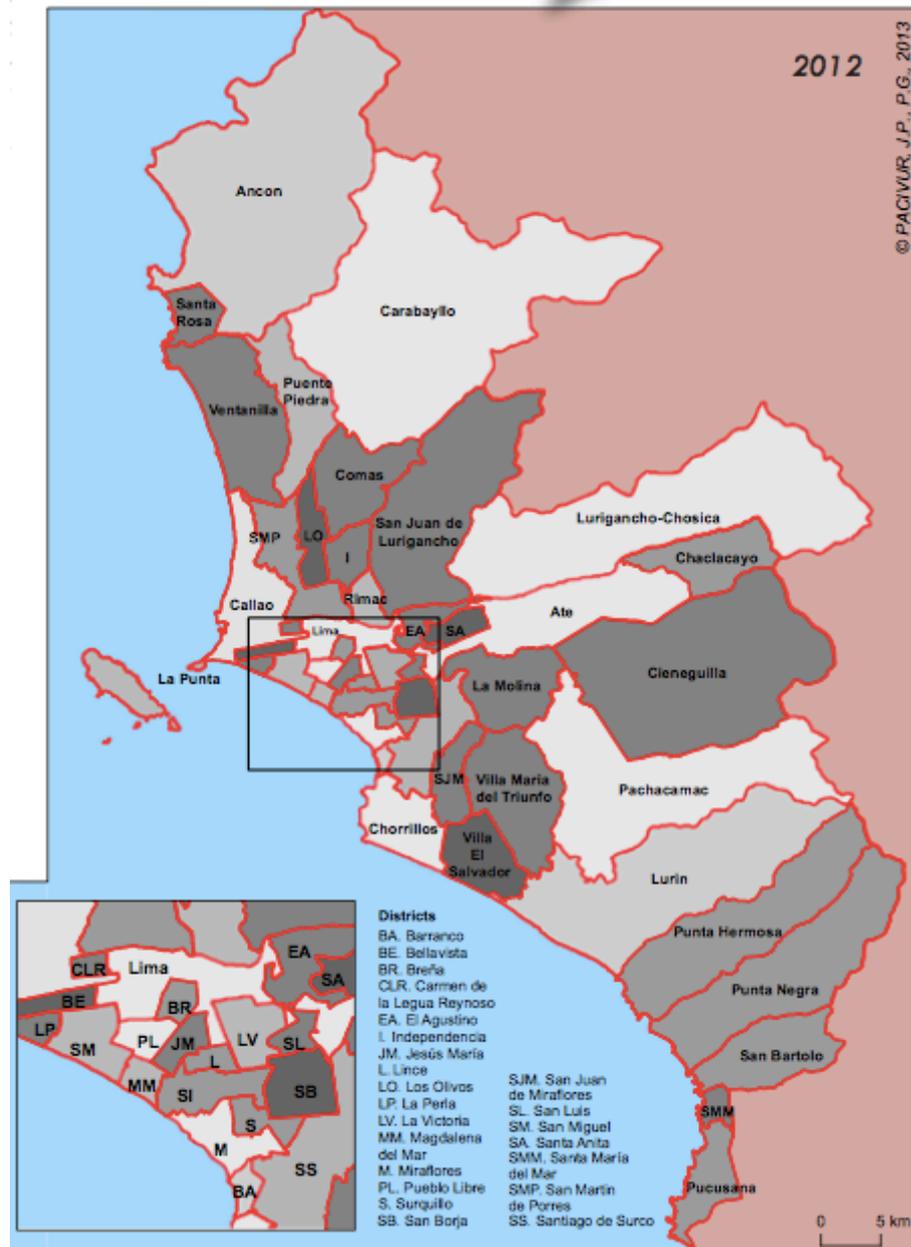
- Lorrain D., Poupeau F., (2014), « Ce que font les protagonistes de l'eau. Une approche combinatoire d'un système socio-techniques », Actes de la recherche en sciences sociales (N°2013), p. 14-15
- Lorrain D., « Introduction. Les institutions de la fabrique urbaine », in Dominique Lorrain, Métropoles XXL en pays émergents, Presses de Sciences Po (P.F.N.S.P.) « Académique », 2011, p. 13-52
- Lorrain D., Mouton M., « Portrait d'Entreprise. Les conglomérats familiaux (5): Ayala Corporation », Flux 2017/1 (N° 107), p. 91-103
- Lukas M., Fragkou M. C., (2017) Conflictividad en construcción, desarrollo urbano especulativo y gestión del agua en Santiago de Chile, Ecología Política, p.67-71
- McFarlane C., Rutherford J. (2008) "Political Infrastructures: Governing and Experiencing the Fabric of the City", International Journal of Urban and Regional Research, Vol 32.3, 363-74
- Metzger P. et al. (2014) Atlas Problématique d'une Métropole vulnérable, Inégalités urbaines à Lima et Callao, In press
- Pollard J., Halpem C., "Les acteurs de marché font-ils la ville ?", EspacesTemps.net, Traverses, 17.06.2013
- Ramiro García Q et al. (2015), « Desarrollo o crecimiento urbano en Lima: el caso de los distritos del Sur », DESCO, Peru Hoy
- Rutherford J., 2009, « Le déploiement des réseaux de télécommunications dans les métropoles européennes : l'emprise des territorialités multiscalaires », Flux 2009/1 (n° 75), p. 6-15
- Riofrío G., Grompone R. (1991) Lima, ¿para vivir mañana?, CIDIAG. FOVIDA
- Riofrío G. (2003), Urban Slums Reports : the Case of Lima
- WWF Perú (2014), "Un frágil ciclo. Agua, Energía y Población en Lima", Riveros J.C., Germaná C., Alvarez C., WWF Perú

Annexes

Annexe #1 – List of interviewees

LIST OF INTERVIEWEES					
Interview	Name	Entity	Role	Date	Type of Actor
Interview #1	Guido Valdivia	CAPECO	Executive Director	14.2.2017	Real Estate
Interview #2	Augusto Mendoza	Independent	Urbanist	23.2.2017	Real Estate
Interview #3	Cesar Bedon Nunura Wilfredo Aldave Valerio	SEDAPAL	Engineer - 'Gerencia Desarrollo e Investigación, Jefe de Equipo Planeamiento Físico y PreInversión'	23.2.2017	Urban Water Services
Interview #4	Rossana Rafo/Sandra Salles	Municipality of Miraflores	Architect - 'Gerente del Desarrollo Urbano'	20.3.2017	Local Government
Interview #5	Alejandro Conza	Agua Limpia	Engineer/Chief of Operations	20.3.17	Water Sector
Interview #6	Ulises Gutierrez Llantoy	SEDAPAL	Engineer - 'Equipo Gestión de Proyectos Norte'	27.3.2017	Urban Water Services
Interview #7	Rafael Alvarez Espinoza	Municipality of Carabayllo	Mayor	3.4.2017	Local Government
Interview #8	Martin Astonistas	Municipality of Carabayllo	Architect - 'Subgerencia Catastro y Habilitaciones Urbanas'	3.4.2017	Local Government
Interview #9	Manuel Loaysa	Municipality of Carabayllo	Subgerencia de Participación Vecinal	3.4.2017	Local Government
Interview #10	Eric Delgado Bravo	Asociación Comprador Villa Club	Leader	4.4.2017	Civil Society
Interview #11	Rafael Miranda Vargas-Fano	Grana y Montero	Gerente de Division Vivienda Social	4.4.2017	Real Estate
Interview #12	Patricia Pareja	SEDAPAL	Equipo Tecnico Norte	5.4.2017	Urban Water Services
Interview #13	Baltazar Ramos Victor Andres	Municipality of Carabayllo	Gerente de desarrollo urbano - rural	5.4.2017	Local Government
Interview #14	Miguel Romero	Corporacion Suyo	Urbanist	6.4.2017	Real Estate
Interview #15	Antonio Amico	Menorca	Director de Nuevos Proyectos	6.4.2017	Real Estate
Interview #16	Alexi	SEDAPAL	Equipe Tecnico Sur - Surquillo	7.4.2017	Urban Water Services
Interview #17	Julio	Asociación Comprador Villa Club	House buyer in Carabayllo	9.4.2017	Civil Society
Interview #18	Carlos Montero	Centenario	Gerente de División de Centenario - Specialist of water issues	20.4.2017	Real Estate
Interview #19	Rose Marie Principe	Edifica	Architect & Project Manager	21.4.2017	Real Estate

Annexe #2 – Map of Lima (source: Metzger et al., 2010)



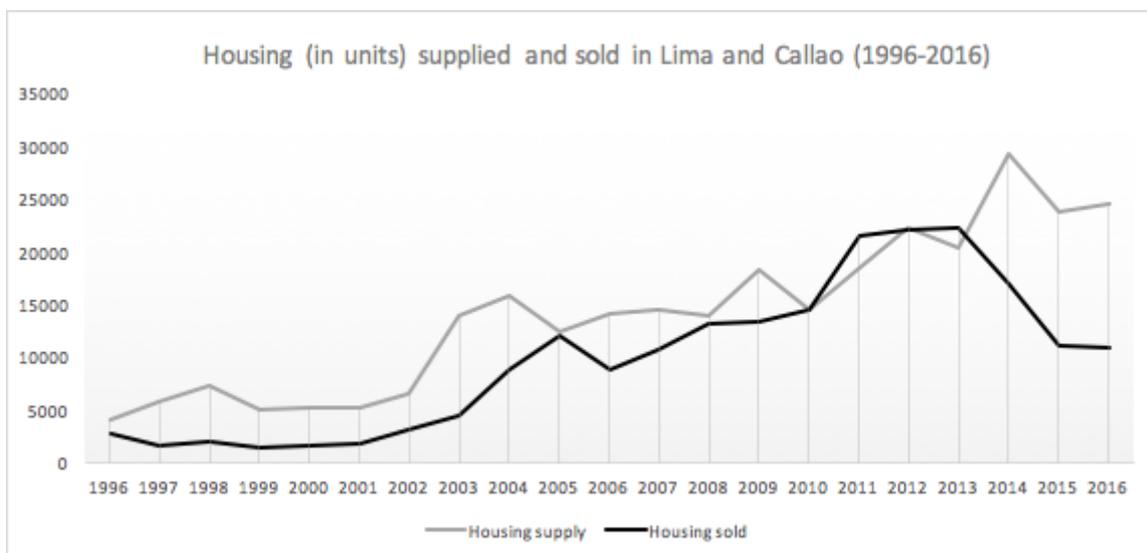
Annexe #3 - Real Estate Sectoring in Lima (source: CAPECO)

1. Lima Top: Miraflores, San Isidro, La Molina, Santiago de Surco, San Borja, Barranco
2. Lima Moderna: Jesus Maria, Lince, Magdalena, Pueblo Libre, San Miguel, Surquillo
3. Lima Centro: Cercado de Lima, Breña, La Victoria, Rimac, San Luis
4. Lima Este: Ate, Cieneguilla, Chaclayo, Lurigancho, Santa Anita, El Agustino, San Juan de Lurigancho,
5. Lima Norte : Carabaylo, Comas, Independencia, Los Olivos, Puente Piedra, San Martin de Porres, Ancon, Santa Rosa
6. Lima Sur: Chorillos, Lurin, Pachacamac, San Juan de Miraflores, Villa El Salvador, Villa Maria El Triunfo, Pucusana, Punta Hermosa, Punta Negra, San Bartolo, Santa Maria del Mar
7. Callao: Bellavista, Callao, Carmen de la Legua, La Perla, La Punta, Ventanilla

Annexe #3bis: Water Consumption in Lima, for each district (source: SUNASS on data from SEDAPAL)



Annexe #4: Evolution of the real estate market in Lima (graph: own elaboration; source: CAPECO)



Annexe #5: Housing programs according to socio-economic levels (source: Maldonado, 2008)

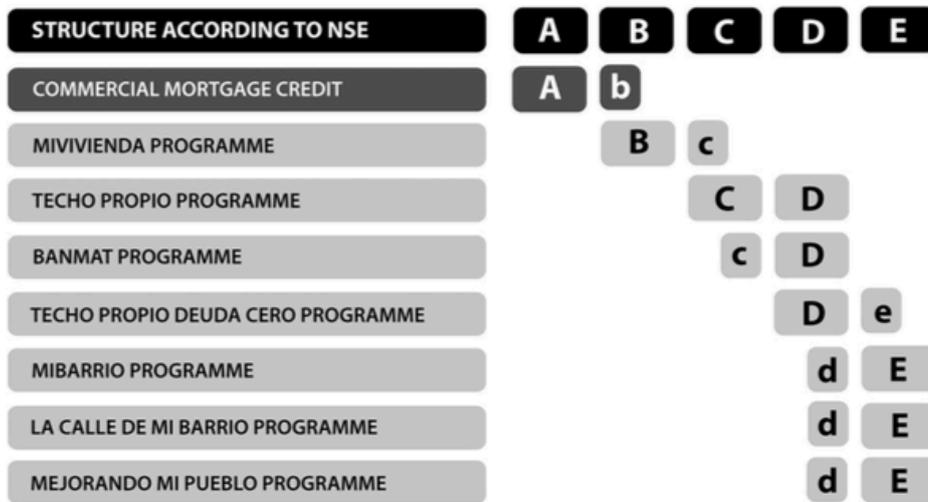
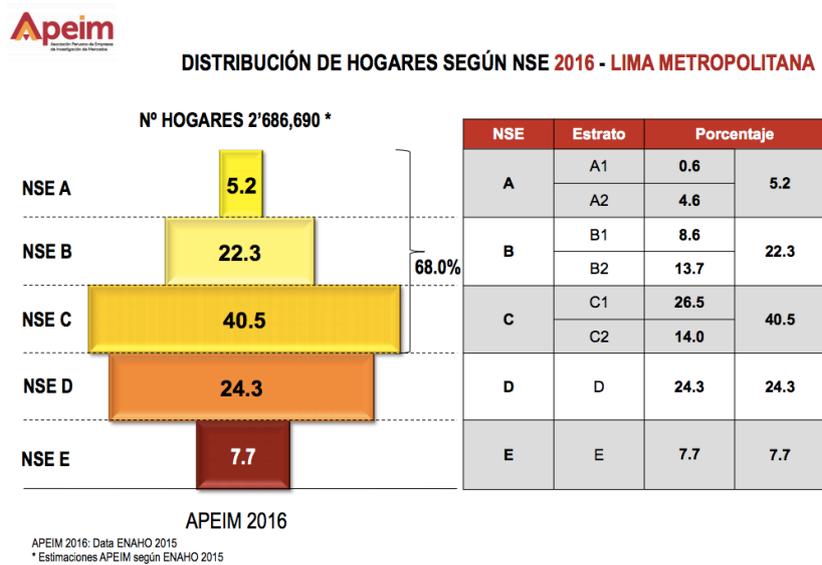


Fig. 7. Finance system according to socio-economic level (NSE). (Source: Ministerio de Vivienda, 2006: 36.)

Annexe #5bis: Distribution of homes according to their socio economic level (APEIM, 2016)



Annexe #6: Ordinances of the district municipality of Surco regarding zoning changes and water utilities related issues (2003-2016) (figure: own elaboration, source: Municipality of Santiago de Surco website)

Ordinances published by the Municipality of Surco (2003-2016)		
Numero	Date	Name
135-MMS	1.4.2003	Suspenden aplicación de excepción establecida en el anexo a la Ordenanza Reglamentaria del Plan Urbano Distrital 1996-2010 para la zonificación R5
148-MMS	14.8.2003	Establecen Procedimiento para la aprobación del Plan Urbano del Distrito
153-MMS	25.9.2003	Modifican la Ordenanza N° 103-MSS que aprobó planeamiento integral de diversas parcelaciones semi-rusticas.
181-MMS	6.3.2004	Aprueba el Plan Urbano Distrital de Santiago de Surco 2004-2010
181-MMS-Anexo	22.3.2004	Anexo Ordenanza 181
185-MMS	24.4.2004	Modifican disposiciones transitorias de la Ordenanza N° 181-MSS que aprobó el Plan Urbano Distrital de Santiago de Surco 2004-2010.
192-MMS	4.6.2004	Ordenanza que prorroga el plazo establecido en la primera disposición transitoria de la ordenanza N° 181-MSS para acogerse al régimen especial para regularización de las edificaciones establecido en la citada ordenanza
200-MSS	23-8-04	Ordenanza que reglamenta el uso del techo, azotea y sus aires en edificaciones de uso residencial
Ordenanza n°704	30/9/2004	Ordenanza moificatoria del palo de zonificación general de los usos del suelo de lima metropolitana a mediano plazo, correspondiente al distrito de Santiago de Surco
ORD N°0736-MML	9/12/2004	APRUEBA REGLAMENTO ESPECIAL PARA LA ZONA DE REGLAMENTACIÓN ESPECIAL LADERAS DE LOS CERROS DE CAMACHO Y CLUB GOLF LOS INCAS SECTOR IV DEL DISTRITO DE SANTIAGO DE SURCO.
220-MSS	18-3-05	Regulan procedimientos de habilitaciones urbana y trámites conexos.
Ordenanza n°837	15/9/2005	que levanta la calificación de zona recreaciones al parque zonal n°22-B -TUPAC YUPANQUI
239-MSS	20-10-05	Suspenden recepción de solicitudes de licencias y certificados en las parcelaciones semirústicas Santa Teresa, Los Granados y El Derby
Ordenanza n°912-MML	4/3/2006	Modifica el Plano de Zonificación
257-MSS	30-3-06	Prorrogan plazo de la vigencia de la Ordenanza N° 239-MSS que establece la suspensión de recepción de solicitudes de licencias y certificados en las parcelaciones semi-rústicas Santa Teresa, Los Granados y El Derby.
259-MSS	26-4-06	Regulan procedimientos de habilitación urbana y trámites conexos.
Anexos 259-MSS	30-4-06	Anexos de la Ordenanza N1259-MSS que Regulo procedimientos de habilitación urbana y trámites conexos.
261-MSS	25-5-06	Aprueban normativa resultante del Estudio Integral de las Parcelaciones Semi-Rústicas Santa Teresa, los Granados y El Derby
265-MSS	19-7-06	Aprueban Plano de Alturas de Edificación correspondientes a lotes ubicados frente a los ejes viales y sectores urbanos de nivel local del distrito.
DA-07-2006-MSS	20-7-06	Reglamento de Parámetros urbanísticos y edificatorios para el Área de tratamiento normativo III
273-MSS	17-10-06	Regulan campaña de facilitación y formalización de las edificaciones y actividades económicas
DA-11-2006-MSS	30-11-06	Establecen precisiones a normas que establecen aportes reglamentarios para habilitaciones urbanas
DA-12-2006-MSS	15-12-06	Precisan disposiciones y modifican artículos del D.A. N° 07-2006-MSS que aprobó el Reglamento de Parámetros Urbanísticos y Edificatorios correspondiente al distrito de Santiago de Surco
DA-006-2007-MSS	14-4-07	Modifican el D.A. N° 011-2006-MSS, que estableció precisiones a normas sobre aportes reglamentarios que corresponden a la Municipalidad
DA-020-2007-MSS	21-12-07	Suspenden efectos del Numeral N° 10.2 del Artículo 10° del D.A. N° 007-2006-MSS, respecto de las Urbanizaciones Integradas a la Urbanización Las Casuarinas (incluye Las Laderas) y el Mirador
DA-001-2008-MSS	23-1-08	Incorporan urbanizaciones dentro de los alcances del D.A. N° 20-2007-MSS
DA-002-2008-MSS	31-1-08	Suspenden ingreso de expedientes y/o documentos respecto a certificados de parámetros urbanísticos y edificatorios, anteproyectos de consulta y licencia de obra de edificios multifamiliares, en las Urbanizaciones El Eucalipto y Laguna de Monterrico.
DA-007-2008-MSS	26-3-08	Establecen parámetros urbanísticos para diversos lotes ubicados en el distrito

Ordinances published by the Municipality of Surco (2003-2016)		
Numero	Date	Name
306-MSS	23-4-08	Modifican anexos de la Ordenanza N° 259-MSS, que regula los procedimientos de habilitación urbana y trámites conexos
309-MSS	22-6-08	Aprueban Ordenanza que dispone el proceso de actualización del Plan de Desarrollo Concertado del distrito de Santiago de Surco
Ordenanza n°1151-	26/6/2008	que aprueba la zonificación de los usos del suelo de los sectores I y II de la urbanización Golf Club Los Incas
DA-020-2008-MSS	23-12-08	Aprueban parámetros urbanísticos y edificatorios de lotes que se encuentran en las Urbanizaciones Los Granados, El Derby, El Cortijo y otros
324-MSS	2-1-09	Aprueban Plan Desarrollo Concertado del Distrito de Santiago de Surco 2009 - 2021
DA-03-2009-MSS	6-3-09	Suspenden la recepción de Solicitudes de Certificados de Parámetros Urbanísticos y Edificatorios de diversas urbanizaciones del distrito
DA-05-2009-MSS	3-4-09	Modifican artículo 12° del D.A. N° 07-2006-MSS que aprobó el reglamento de parámetros urbanísticos y edificatorios correspondiente al distrito de Santiago de Surco
<u>DA-06-2009-MSS</u>	28-4-09	Derogan el Numeral 19.3.4 del Artículo 19° del D.A N° 07-2006-MSS "Reglamento de Parámetros Urbanísticos y de Edificatorios correspondiente al al Sector del distrito de Santiago de Surco conformante del Área de Tratamiento Normativo III de Lima Metropolitana"
DA-07-2009-MSS	5-5-09	Modifican el Reglamento de Parámetros Urbanísticos y Edificatorios correspondiente al Sector del distrito de Santiago de Surco conformante del Área de Tratamiento Normativo III de Lima Metropolitana
<u>DA-08-2009-MSS</u>	26-5-09	Suspenden temporalmente la recepción de Solicitudes de Certificados de Parámetros Urbanísticos y Edificatorios de todos los inmuebles correspondientes al sector conforme del área de Tratamiento Normativo III de Lima Metropolitana
<u>DA-13-2009-MSS</u>	17-7-09	Aprobar el Texto Actualizado del Reglamento de Parámetros Urbanísticos y Edificatorios correspondiente al sector del distrito de Santiago de Surco conforme del Área de Tratamiento Normativo III de Lima Metropolitana
Ordenanza n°1318-MML	9/12/2009	RESTITUYE ZONIFICACION AL PREDIO UBICADO EN EL DISTRITO DE SANTIAGO DE SURCO
Ordenanza n°1339-MML	29/12/2009	PRECISA LA APLICACIÓN DE NORMAS EN EL DISTRITO DE SANTIAGO DE SURCO APROBADO POR ORDENANZA N° 912-MML
DA-02-2010-MSS	20-1-10	Establecer los Parámetros Urbanísticos y Edificatorios del predio ubicado en Jr. El Cortijo N° 595-597, Sub Lote 5, Urbanización Los Huertos de Santa Rosa, Santiago de Surco, siendo los siguientes:
DA-03-2010-MSS	28-1-10	SUSPENDER la recepción de las Solicitudes de Certificados de Parámetros Urbanísticos y Edificatorios, Anteproyectos en Consulta, Licencias de Edificación en sus cuatro (4) modalidades, de los predios ubicados en las laderas de la Asociación Casuarinas de Monterrico integrada por las Urbanizaciones Casuarinas, Panedia de Monterrico, Las Lomas de Monterrico y Las Laderas de Monterrico; así como de la Urbanización Casuarinas Sur, hasta la culminación del Estudio Técnico indicado en la parte considerativa del presente Decreto de Alcaldía.
<u>DA-08-2010-MSS</u>	31-3-10	SUSPENDER la recepción de las Solicitudes de Certificados de Parámetros Urbanísticos y Edificatorios, Anteproyectos en Consulta, Licencias de Edificación en sus cuatro (4) modalidades, Regularizaciones de Edificaciones de los predios ubicados en las Urbanizaciones Los Álamos de Monterrico que comprende 7 etapas (1°, 2°, 3°, 4°, 5°, 6° y 7° etapa), Los Álamos de Monterrico (Álamos I y II), Urbanización Tres Álamos, Urbanización Cooperativa Ingenieros Santa Teresa, hasta el 31.12.2010 y/o hasta que la empresa Servicio de Agua Potable y Alcantarillado - SEDAPAL ejecute las obras de ampliación y mejoramiento de los sistemas de Agua Potable y Alcantarillado para el Esquema Los Álamos de Monterrico y Anexos en el distrito de Santiago de Surco.
358-MSS	16-4-10	Aprobar la Modificación e Incorporación de nuevos procedimientos administrativos, así como los derechos de tramitación correspondientes a las Licencias de Habilidadación Urbana y Licencias de Edificación, de la Ordenanza N° 332-MSS "Texto Único de Procedimientos Administrativos - TUPA de la Municipalidad de Santiago de Surco" ratificado por Acuerdo de Concejo N° 283-MML, en la Unidad Orgánica :Gerencia de Desarrollo Urbano, Unidad: Subgerencia de Licencia y Autorizaciones Urbanas, de acuerdo al Anexo I el mismo que forma parte integrante de la presente Ordenanza

Ordinances published by the Municipality of Surco (2003-2016)		
Numero	Date	Name
DA-13-2010-MSS	23-4-10	Modificar el Numeral 6.1.4. del Artículo 6°, del Decreto de Alcaldía N° 13-2009-MSS que quedará redactado de la siguiente forma: "6.1.4. Los lotes con zonificación RDA o RDM con frente a las vías establecidas en el Literal D.I. del Anexo N° 02 - Consideraciones Normativas de la zonificación correspondiente a un sector del distrito de Santiago de Surco conformante del Área de Tratamiento Normativo III de Lima Metropolitana - de la Ordenanza 912-MML; son compatibles con el uso Comercial "CZ", manteniendo las condiciones urbanísticas (sección de vías, alturas, retiros), que rigen al uso residencial, permitiéndose como máximo los dos primeros pisos para uso comercial (CZ)", siendo el resto de la edificación de uso residencial.
DA-14-2010-MSS	29-4-10	PRORROGAR por 90 días calendarios, el plazo señalado en el Artículo Segundo del Decreto de Alcaldía No. 03-2010-MSS, publicado en el Diario Oficial el Peruano el 31.01.10, plazo que empezará a regir a partir del 02 de mayo del 2010, por las razones expuestas en el presente Decreto.
DA-18-2010-MSS	27-7-10	PRORROGAR por el plazo de 90 días calendarios contados a partir del 31 de Julio del 2010, lo dispuesto por el Artículo Segundo del Decreto de Alcaldía N° 14-2010-MSS; precisando que la suspensión se refiere a las Solicitudes de Certificados de Parámetros Urbanísticos y Edificatorios, Anteproyectos en Consulta, Licencia de Edificación en sus tres (3) modalidades (B, C y D); de los predios ubicados en las laderas de las Urbanizaciones integradas por la Asociación Casuarinas de Monterrico integrada por las Urbanizaciones Casuarinas, Panedia de Monterrico, Las Lomas de Monterrico y las Laderas de Monterrico; así como Casuarinas Sur, de acuerdo a los considerandos del presente Decreto;
DA-21-2010-MSS	7-9-10	APROBAR los Parámetros Urbanísticos y Edificatorios de los predios ubicados en esquina de eje vial Av. Manuel Olguín con Av. El Derby, con áreas mayores a 10,000.00 m2, de acuerdo al siguiente cuadro:
DA-25-2010-MSS	10-11-10	PRECISAR que los administrados que soliciten Licencia de Edificación -Modalidades A, B, C y D de los predios ubicados en las laderas de las Urbanizaciones integradas por la Asociación Casuarinas de Monterrico, integrada por las Urbanizaciones Casuarinas, Panedia de Monterrico, Las Lomas de Monterrico y Las Laderas de Monterrico; así como Casuarinas Sur; deberán presentar
378-MSS	6-1-11	Ordenanza que declara en emergencia los servicios que presta la gerencia de desarrollo urbano de la municipalidad de Santiago de Surco
DA-03-2011-MSS	10-3-11	APROBAR los Parámetros Urbanísticos y Edificatorios correspondientes al sector comprendido por las Urbanizaciones y/o Parcelaciones Semirústicas Las Casuarinas, Las Lomas de Monterrico, Las Laderas de Monterrico, Panedia, Casuarinas Alta, parte de Huertos de San Antonio, el lote rústico denominado la Cumbre de Casuarinas y aquellos predios, con zonificación Residencial de Densidad Muy Baja (RDMB) ubicados en parte del Distrito de Santiago de Surco conformantes del Área de Tratamiento Normativo III de Lima Metropolitana, consignados en el Anexo 01 del presente Decreto.
DA-04-2011-MSS	15-3-11	APROBAR el Nuevo Reglamento de Parámetros Urbanísticos y Edificatorios correspondiente al sector del distrito de Santiago de Surco conformante del Área de Tratamiento Normativo III de Lima Metropolitana.
387-MSS	17-3-11	DECLARAR EN EMERGENCIA los servicios que presta la Gerencia de Desarrollo Urbano de la Municipalidad de Santiago de Surco, conforme a los considerandos expuestos en la presente Ordenanza.
DA-06-2011-MSS	13-4-11	ADMITIR el ingreso de nuevas solicitudes correspondientes a la emisión de los Certificados de Parámetros Urbanísticos y Edificatorios de una parte del Distrito de Santiago de Surco conformante de las Áreas de Tratamiento Normativo I, II y IV de Lima Metropolitana, conforme al plano adjunto como Anexo 1.
388-MSS	18-6-11	Disponer que, vía Decreto de Alcaldía se apruebe el REGLAMENTO QUE ESTABLECE EL PROCEDIMIENTO DE HABILITACIÓN URBANA OFICIO, DE ACUERDO AL ARTÍCULO 24° DE LA LEY N° 29090, PARA EL DISTRITO DE SANTIAGO DE SURCO, y se dicten las normas y disposiciones adicionales que se requieran para implementar la presente Ordenanza.
DA-20-2011-MSS	26-8-11	Aprueban "Nuevo reglamento de Parámetros Urbanísticos y Edificatorios correspondiente al sector del distrito conformante del Área de Tratamiento Normativo III de Lima Metropolitana.
DA-21-2011-MSS	20-9-11	DISPONER se consigne de manera informativa en los Certificados de Parámetros Urbanísticos y Edificatorios que emite la Subgerencia de Planeamiento Urbano y Catastro de la Municipalidad de Santiago de Surco, la facultad de esta Comuna de evaluar las condiciones técnicas de los proyectos de nuevas edificaciones multifamiliares, comerciales e industriales que aseguren el abastecimiento de agua de estos predios, ubicados en los sectores 59, 296 y 297 conforme lo dispone la CARTA N° 1211-2011-GG del 21.07.2011, de la Gerencia General de SEDAPAL.

Ordinances published by the Municipality of Surco (2003-2016)		
Numero	Date	Name
DA-27-2011-MSS	28-12-11	PRORROGAR la vigencia de la Ordenanza N° 399-MSS "Ordenanza que fomenta la Revalorización de predios en parte del Área de Tratamiento Normativo III de Lima Metropolitana, hasta el 31.03.2012.
DA-28-2011-MSS	28-12-11	PRORROGAR la vigencia de la Ordenanza N° 406-MSS que dispone beneficios de regularización extraordinaria para predios Sector 9, cuyo alcance fue ampliado mediante Ordenanza N° 412-MSS a conjuntos urbanos ubicados en el Sector 2, hasta el 31.03.2012.
<u>DA-03-2012-MSS</u>	28-2-12	<p>INCORPORAR el inciso 18.11 en el Artículo 18°, del Decreto de Alcaldía N° 020-2011-MSS, de la manera siguiente:</p> <p>18.11. Excepciones.- Para el caso de terrenos que hayan culminado el proceso de Habilitación Urbana y como producto de ello, o los lotes resultantes sean menores al normativo, serán de aplicación los parámetros establecidos en el inciso 14.3. Cuadro de Parámetros Urbanísticos y Edificatorios, del Artículo 14° del Decreto de Alcaldía N° 20-2011-MSS.</p> <p>Para el caso de predios con zonificación Residencial de Densidad Alta - RDA, ubicados en la Parcelación Semirústica El Vivero, una vez culminado el proceso de Habilitación Urbana, serán de aplicación los parámetros establecidos en el inciso 14.3. Cuadro de Parámetros Urbanísticos y Edificatorios, del Artículo 14° del Decreto de Alcaldía N° 20-2011-MSS.</p> <p>En ambos casos, no está permitido efectuar posteriores subdivisiones sobre los lotes resultantes.</p>
421-MSS	7-3-12	Ordenanza que suspende la recepción de solicitudes de aprobación de anteproyecto en consulta y licencia de edificación para edificios multifamiliares y conjuntos residenciales Multifamiliares en la urbanización cerros de camacho.
<u>424-MSS</u>	25-4-12	SUSPENDER TEMPORALMENTE la recepción de solicitudes de aprobación de Anteproyectos en Consulta y Licencias de Edificación para edificios multifamiliares y conjuntos residenciales multifamiliares en las Urbanizaciones Los Álamos de Monterrico que comprende 8 etapas (1o, 2º, 3º, 4º, 5o, 6o, 1º y 8o etapa), Los Álamos de Monterrico (Álamos I y II), Urbanización Tres Álamos, Urbanización Valle Escondido, Parcela "C-A" (actualmente denominada Urbanización Monte Alto Country Club) y el terreno rústico circunscrito por la Urbanización Álamos de Monterrico, la Parcela "C-A" y la Urbanización Valle Escondido, por el plazo de seis (06) meses, contados desde la entrada en vigencia de la presente Ordenanza.
DA-18-2012-MSS	10-7-12	PRORROGAR la vigencia de la Ordenanza N° 421-MSS "Ordenanza que Suspende la Recepción de Solicitudes de Aprobación de Anteproyecto en Consulta y Licencia de Edificación para Edificios Multifamiliares y Conjuntos Residenciales Multifamiliares en la Urbanización Cerros de Camacho" por 06 meses, contados desde el día siguiente de su publicación.
DA-28-2012-MSS	25-10-12	Prorrogar la vigencia de la Ordenanza N° 424-MSS, Ordenanza que suspende temporalmente la recepción de solicitudes de aprobación de Anteproyectos en Consultas y Licencias de Edificación para edificios multifamiliares y conjuntos residenciales multifamiliares, así como la suspensión de la emisión de Certificados de Parámetros Urbanísticos y Edificatorios, para las Urbanizaciones los Álamos de Monterrico que comprende 8 etapas (1º, 2º, 3º, 4º, 5º, 6º, 7º y 8º etapa), Los Álamos de Monterrico (Álamos I y II), Urbanización Tres Álamos, Urbanización Valle Escondido, Parcela "C-A" (actualmente denominada Urbanización Monte Alto Country Club) y el terreno rústico circunscrito por la Urbanización Álamos de Monterrico, la Parcela "C-A" y la Urbanización Valle Escondido, por el plazo de seis (06) meses, contados desde el día siguiente de su publicación.
Ordenanza n°1644-MML	18/12/2012	Modifica el Plano de Alturas de edificación correspondiente al distrito de Santiago de Surco
<u>442-MSS</u>	9-1-13	Ordenanza que suspende la recepción de solicitudes de aprobación de anteproyecto en consulta, de Licencias de Edificación en las modalidades B, C y D, y de certificados de parametros urbanísticos y edificatorios, así como la emisión de licencias de edificación en las modalidades B, C y D, y de certificados de parametros urbanísticos y edificatorios en la urbanización Cerros de Camacho del distrito de Santiago de Surco.
<u>DA-01-2013-MSS</u>	15-1-13	Aprobar los Parámetros Urbanísticos y edificatorios específicos correspondientes al sector comprendido por las Urbanizaciones Los Álamos de Monterrico que comprende 8 etapas (1º, 2º, 3º, 4º, 5º, 6º, 7º y 8º etapa), Los Álamos de Motenrrico (Álamos I y II), Urbanización Tres Álamos y la Cooperativa de Vivienda Ingenieros Santa Teresa, con zonificación Residencial de Densidad Baja (RDB) ubicadas en la parte del distrito de Santiago de Surco conformantes del Área de Tratamiento Normativo III de Lima Metropolitana, consignandas en los añosos 01 y 02 que forman parte del presente Decreto.

Ordinances published by the Municipality of Surco (2003-2016)		
Numero	Date	Name
DA-02-2013-MSS	25-1-13	Modificaciones al Reglamento de Parámetros Urbanísticos y Edificatorios correspondiente al sector del Distrito de Santiago de Surco conformante del Área de Tratamiento Normativo III de Lima Metropolitana aprobado por Decreto de Alcaldía N° 20-2011-MSS
445-MSS	21-2-13	Ordenanza que modifica la Ordenanza N° 265-MSS, Aprueba y Actualiza el Plano de Alturas de Edificación, del Área de Tratamiento Normativo III del Distrito de Santiago de Surco.
Ordenanza n°1691	26/3/2013	ORDENANZA QUE MODIFICA EL PLANO DE ZONIFICACIÓN DEL DISTRITO SANTIAGO DE SURCO
DA-07-2013-MSS	23-4-13	Prorrogar la vigencia de la Ordenanza N° 424-MSS - Ordenanza que suspende temporalmente la recepción de solicitudes de aprobación de Anteproyectos en Consultas y Licencias de Edificación para edificios multifamiliares y conjuntos residenciales multifamiliares, así como la suspensión de la emisión de Certificados de Parámetros Urbanísticos y Edificatorios, para las Urbanizaciones los Álamos de Monterrico que comprende 8 etapas (1ª, 2ª, 3ª, 4ª, 5ª, 6ª, 7ª y 8ª etapa), Los Álamos de Monterrico (Álamos I y II), Urbanización Tres Álamos, Urbanización Valle Escondido, Parcela "C-A" (actualmente denominada Urbanización Monte Alto Country Club) y el terreno rústico circunscrito por la Urbanización Álamos de Monterrico, la Parcela "C-A" y la Urbanización Valle Escondido, hasta el 31.10.2013.
Ordenanza n°1699	30/4/2013	Rectifica el plano de zonificación del Distrito de Santiago de Surco aprobado por ordenanza N° 912 - MML
DA-10-2013-MSS	10-7-13	PRORROGAR la vigencia de la Ordenanza N° 442-MSS publicada el 13.01.2013, que dispuso SUSPENDER la recepción de solicitudes de aprobación de Anteproyectos en Consulta, Licencias de Edificación en las modalidades B, C y D y de Certificados de Parámetros Urbanísticos y Edificatorios; así como, la emisión de Licencias de Edificación en las modalidades B, C y D, y de Certificados de Parámetros Urbanísticos y Edificatorios en la Urbanización Cerros de Camacho, que forma parte integrante de la Ordenanza, por un periodo de 06 meses, hasta el 13.01.2014.
453-MSS	22-7-13	Ordenanza que aprueba el Planeamiento Integral de las Parcelaciones Semirústicas "Las Casuarinas", "Lomas de Monterrico", "Laderas de Monterrico", y "Panedia".
DA-15-2013-MSS	18-9-13	SUSPENDER, hasta el 31 de diciembre de 2013, la vigencia de los Certificados de Parámetros Urbanísticos y Edificatorios emitidos desde el Decreto de Alcaldía N° 020-2011-MSS hasta la vigencia del presente Decreto de Alcaldía, correspondientes a la Urbanización Valle Hermoso del Distrito de Santiago de Surco.
DA-17-2013-MSS	29-10-13	PRORROGAR la vigencia de la Ordenanza N° 424-MSS, que suspende temporalmente la recepción de solicitudes de aprobación de Anteproyectos en Consulta y Licencias de Edificación para edificios multifamiliares y conjuntos residenciales multifamiliares, así como la suspensión de la emisión de Certificados de Parámetros Urbanísticos y Edificatorios, para las Urbanizaciones Los Álamos de Monterrico que comprende 8 etapas (1ª, 2ª, 3ª, 4ª, 5ª, 6ª, 7ª y 8ª etapa), Los Álamos de Monterrico (Álamos I y II), Urbanización Tres Álamos, Urbanización Valle Escondido, Parcela "C-A" (actualmente denominada Urbanización Monte Alto Country Club) y el terreno rústico circunscrito por la Urbanización Álamos de Monterrico, la Parcela "C-A" y la Urbanización Valle Escondido, hasta el 31.10.2014.
DA-20-2013-MSS	21-11-13	DISPONER que la Gerencia de Obras Públicas y Proyectos, a través de la Subgerencia de Ejecución Indirecta de Obras Públicas emita opinión respecto a las obras que ejecute la empresa de Servicio de Agua Potable de Lima- SEDAPAL, y los inversionistas, en los Sectores 59°, 296° y 297°, para prestar el servicio de agua, conforme a los certificados de factibilidad de servicios emitidos para aprobación de Licencias de Edificación en las modalidades B, C y D, reguladas en la Ley N° 29090, Ley de Regulación de Habilitaciones Urbanas y de Edificaciones.
DA-01-2014-MSS	7-1-14	PRORROGAR la vigencia de la Ordenanza N°442-MSS publicada el 3.01.2013, que dispuso SUSPENDER la recepción de solicitudes de aprobación de Anteproyectos en Consulta, Licencias de Edificación en las modalidades B, C y D y de Certificados de Parámetros Urbanísticos y Edificatorios; así como, la emisión de Licencias de Edificación en las modalidades B, C y D, y de Certificados de Parámetros Urbanísticos y Edificatorios en la Urbanización Cerros de Camacho del distrito de Santiago de Surco, conforme al Anexo 1 - P1 - Plano de la Urbanización Cerros de Camacho, que forma parte integrante de la Ordenanza, hasta el 31.12.2014.
486-MSS	27-5-14	Ordenanza que suspende la recepción de Solicitudes de Aprobación de Anteproyectos en Consulta, de Proyectos de Licencias de Edificación en las Modalidades B, C y D, y de Certificados de Parametros Urbanísticos y Edificatorios, en la Urbanización Club Golf los Incas del Distrito de Santiago de Surco.
491-MSS	23-7-14	Ordenanza que modificación de la Ordenanza N°399-MSS que fomenta la Revalorización de predios en parte del área de tratamiento normativo III de Lima Metropolitana.

Ordinances published by the Municipality of Surco (2003-2016)		
Numero	Date	Name
492-MSS	23-7-14	Ordenanza que promueve la regularización de las Habilitaciones Urbanas ejecutadas en el Distrito de Santiago de Surco
506-MSS	25-11-14	Ordenanza que proroga vigencia de la Ordenanza N° 486-MSS, que suspende la recepción de solicitudes de aprobación de anteproyecto en consulta, de proyectos de edificación en las modalidades B, C, y D, y de certificados de parámetros urbanísticos y edificatorios en la urbanización Club Golf los Incas del Distrito de Santiago de Surco.
DA-31-2014-MSS	11-12-14	PRORROGAR la vigencia de la Ordenanza N° 442-MSS publicada el 13.01.2013, que dispone suspender la recepción de solicitudes de aprobación de Anteproyectos en Consulta, Licencias de Edificación en las modalidades B, C y D y de Certificados de Parámetros Urbanísticos y Edificatorios; así como, la emisión de Licencias de Edificación en las modalidades B, C y D, y de Certificados de Parámetros Urbanísticos y Edificatorios en la Urbanización Cerros de Camacho del distrito de Santiago de Surco, hasta el 31.12.2015.
DA-20-2015-MSS	29-10-15	PRORROGAR la vigencia de la Ordenanza N° 424-MSS, que suspende temporalmente la recepción de solicitudes de aprobación de Anteproyectos en Consulta y Licencias de Edificación para edificios multifamiliares y conjuntos residenciales multifamiliares, así como la suspensión de la emisión de Certificados de Parámetros Urbanísticos y Edificatorios, para las Urbanizaciones Los Álamos de Monterrico que comprende 8 etapas (1°, 2°, 3°, 4°, 5°, 6°, 7° y 8° etapa), Los Álamos de Monterrico (Álamos 1y11), Urbanización Tres Álamos, Urbanización Valle Escondido, Parcela "C-A" (actualmente denominada Urbanización Monte Alto Country Club) y el terreno rústico circunscrito por la Urbanización Álamos de Monterrico, la Parcela "C-A" y la Urbanización Valle Escondido, hasta el 31.10.2016.
DA-26-2015-MSS	29-12-15	PRORROGAR la vigencia de la Ordenanza N° 442-MSS, que suspende la recepción de solicitudes de aprobación de anteproyectos en consulta, licencias de edificación en las modalidades B, C y D y de Certificados de Parámetros Urbanísticos y Edificatorios, así como la emisión de Licencias de Edificación en las modalidades B, C y D y de Certificados de Parámetros Urbanísticos y Edificatorios en la Urbanización Cerros de Camacho del distrito de Santiago de Surco, hasta el 31.12.2016.
DA-21-2016-MSS	27-10-16	PRORROGAR la vigencia de la Ordenanza N° 424-MSS, que suspende temporalmente la recepción de solicitudes de aprobación de Anteproyectos en Consulta y Licencias de Edificación para edificios multifamiliares y conjuntos residenciales multifamiliares, así como la suspensión de la emisión de Certificados de Parámetros Urbanísticos y Edificatorios, para las Urbanizaciones Los Alamos eje Monterrico que comprende 8 etapas (1°, 2°, 3°, 4°, 5°, 6°, 7° y 8° etapa), Los Alamos de Monterrico (Alamos 1 y 11), Urbanización Tres Alamos, Urbanización Valle Escondido, Parcela "C-A" (actualmente denominada Urbanización Monte Alto Country Club) y el terreno rústico circunscrito por la Urbanización Álamos de Monterrico, la Parcela "C-A" y la Urbanización Valle Escondido, hasta el 31.10.2017.
DA-24-2016-MSS	20-12-16	PRORROGAR la vigencia de la Ordenanza N° 442-MSS publicada el 13.01.2013, que dispone suspender la recepción de solicitudes de aprobación de Anteproyectos en Consulta, Licencias de Edificación en las modalidades B, C y D y de Certificados de Parámetros Urbanísticos y Edificatorios, así como, la emisión de Licencias de Edificación en las modalidades B, C y D y de Certificados de Parámetros Urbanísticos y Edificatorios en la Urbanización Cerros de Camacho del distrito de Santiago de Surco, hasta el 31.12.2017.

Annexe #7: Condition and age of the sewerage network in Lima (ordered according to the 7 centres of SEDAPAL)

CONDITION OF THE SEWERAGE NETWORK IN LIMA

Centre of service	Total	State of the network			
		Bad		Critical	
		(Km.)	(%)	(Km.)	(%)
Breña	984	681	69 %	57	6 %
Ate	1186	178	15 %	19	2 %
SJL	786	134	17 %	105	13 %
VES	1209	20	2 %	6	1 %
Surquillo	1363	447	33 %	80	6 %
Comas	1875	916	49 %	250	13 %
Callao	1043	475	46 %	210	20 %
Total	8446	2851	34 %	727	9 %

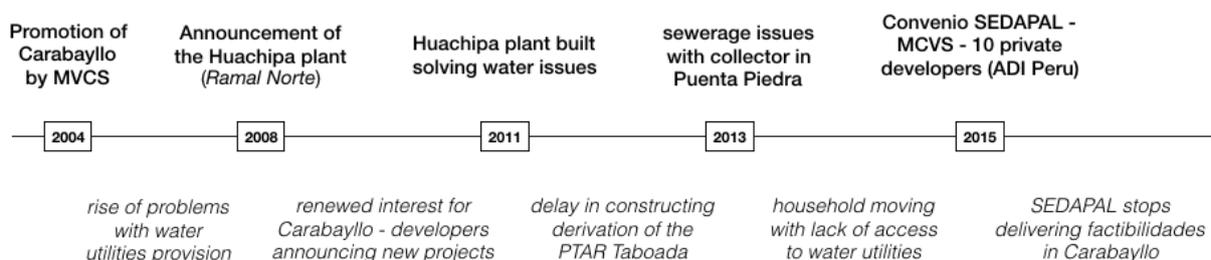
Source: EOMR - Centros de Servicios

AGE OF THE SEWERAGE NETWORK IN LIMA

Centre of service	Length per year period (Km)			Total (Km)
	<0-20>	<20-50>	>50	
Breña	81	859	44	984
Ate	127	N/A	1060	1186
SJL	550	236	N/A	786
VES	64	1145	N/A	1209
Surquillo	231	1063	69	1363
Comas	161	1714	0	1875
Callao	306	693	45	1044
Total	1519	5710	1217	8446
Percentage	18 %	68 %	14 %	100 %

Source: EOMR - Centros de Servicios

Annexe #8: Timeline for Carabayllo case study (source: own elaboration)



Index

Foreword	2
Acknowledgements	3
Abstract	4
List of Acronyms and Entities	7
Introduction	8
Theoretical Framework	8
Research Question	12
Methodology	15
CHAPTER I. THE INCREASE OF FORMAL DEVELOPMENT IN AN UNPLANNED CITY: A NEW CHALLENGE FOR WATER UTILITIES PROVISION IN LIMA	17
A. Facing Lima's urban growth: an impossible planning	17
a. Lima: a metropolis born from a concomitant demographic and urban transition	17
b. Governing arrangements for urban planning	18
1. An unplanned metropolitan area	18
2. An unachieved decentralization: a strong presence of the State	19
3. A weak and politicized metropolitan level in Lima's urban governance	20
B. A consolidated real estate market: a recent feature of Lima's urban development	22
a. Addressing the housing deficit: from permissive policies to public-private solutions	22
1. Former housing policies: regularizing the informal and 'double sided policy'	22
2. New social housing programs: the rise of a new class of buyers	23
b. New real estate expansion dynamics: spatial outcomes	25
1. Lima's real estate sector: features and historical trends	25
2. Vertical and horizontal development	26
C. The real estate sector: a new actor lobbying for water	27
a. Water utilities: a territorial monopoly disconnected from local governments	27
1. Water utilities for Lima's territory: a constrained provision	27
2. Improving water utilities: a long-term challenge	28
3. Water utilities: a competency out of the Metropolitan Municipality of Lima jurisdiction	30
b. The insufficiency of the network: premises of a widespread issue	31
1. Water access in formal development: a late mediatization of the issue	32
2. Water shortcomings in Lima	32
c. The real estate sector: a recent pressure on water utilities	33
1. The discourses of the actors: reflecting a systemic issue	34
2. The real estate sector: economic and symbolic power	35
CHAPTER 2. WATER SCARCITY IN URBAN PROJECTS: DECONSTRUCTING LIMA'S GOVERNANCE	38
A. An unreliable water utilities provider operating in a weak urban planning framework	38
a. The shortcomings of a managing system in the face of Lima's new urban challenges	38
1. A nature of demand out of SEDAPAL's priority	39
2. An inadequate planning to sustain urban projects	40
3. SEDAPAL's shortcomings as a provider	41

b.	The ineffective regulation of zoning in an unplanned city	42
1.	Lack of planning: a recognized feature of Lima	42
2.	An exceptional norm enabling zoning changes easily	43
B.	The inefficiency of administrative tools to ensure water utilities	46
a.	The <i>factibilidad de servicios de agua y desagüe</i> – a conditional authorization	46
1.	Delivering the <i>factibilidad</i> : an uncoordinated management within SEDAPAL	46
2.	The <i>factibilidad</i> : a check within the building permit demand	47
3.	From water services provision to a conditional access to water	48
b.	Building higher: serving both the developer and the district municipality interests	50
C.	Improving water utility through real estate activity?	52
a.	Resolving a conflictual case: water shortcomings in Carabayllo	52
1.	A long-term issue dating back to 2004	52
2.	A first collective negotiation	53
b.	Towards the internalisation of water utilities to the developer's responsibility?	55
1.	Private developers: between opportunistic strategies and internalisation	56
2.	SEDAPAL: renovating their network through urban development?	58
c.	Public action for water issues: promoting a devolution to the private developer	59
1.	A locally negotiated solution: the historical case of San Isidro	59
2.	The Government's initiatives: a new water relationship with the private developer?	60
	Conclusion	63
	Bibliography	65
	Annexes	67
	Index	79