

**Community Water and Sanitation Alternatives in Peri-Urban Cochabamba:
Progressive Politics or Neoliberal Utopia?**

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Legend

APAAS	Association of Production and Administration of Water and Sanitation <i>(Asociación de Producción y Administración de Agua y Saneamiento)</i>
AAPS	Water and Sanitation Oversight and Social Control Authority <i>(Autoridad de Fiscalización y Control Social de Agua Potable y Saneamiento Básico)</i>
ABI	Bolivian Information Agency <i>(Agencia Boliviana de Información)</i>
ASICASUDD- EPSAS	Departmental Association of Community Water Systems of the South and Water and Sanitation Service Providers of Cochabamba <i>(Asociación de Sistemas Comunitarios de Agua de Sud Departamental y Entidades Prestadoras de Servicio de Agua y Saneamiento de Cochabamba)</i>
Asica-Sur	Association of Community Water Systems of the South <i>(Asociación de Sistemas Comunitarios de Agua Potable de la Zona sur)</i>
Ceplag	Centre for Planning and Management <i>(Centro de Planificación y Gestión)</i>
EPSAS	Potable Water and Sewerage Service Providing Entity <i>(Entidad Prestadora de Servicio de Agua y Saneamiento)</i>
EPSA-PDA	Potable Water Service Providing Entity of the Zonal Development Project <i>(Entidad Prestadora de Servicio de Agua del Proyecto de Desarrollo de Área)</i>
CEDIB	Bolivia Centre of Documentation and Information <i>(Centro de Documentación e Información Bolivia)</i>
Coordinadora	Coalition for the Defense of Water and Life <i>(Coordinadora por la Defensa del Agua y la Vida)</i>
FECOAPAC	Water and Sanitation Cooperative Federation of Cochabamba <i>(Federación de Cooperativas de Agua y Alcantarillado de Cochabamba)</i>
FENCOPAS	National Federation of Water and Sanitation Cooperatives and Service Providers

(La Federación Nacional de Cooperativas y Prestadoras de Servicios de Agua Potable y Saniamiento)

IFI	International finance institutions
MMAyA	Ministry of Environment and Water <i>(Ministerio de Medio Ambiente y Agua)</i>
NGO	Non-Governmental Organization
OTB	Grassroots Territorial Organization <i>(Organizaciones Territoriales de Base)</i>
SEDES	Departmental Health Service <i>(Servicio Departamental de Salud)</i>
SEMAPA	Municipal Water and Sewerage Service <i>(Servicio Municipal de Agua Potable y Alcantarillado)</i>

Abstract

This thesis is about the tensions faced by communitarian water service providers in peri-urban Cochabamba, Bolivia, in their continued dependence on private water vending businesses, despite efforts to socialize service delivery. Based on fieldwork conducted in Cochabamba from May-July, 2013, this thesis argues that due in part to a lack of government intervention and regulation, many communitarian water associations in Cochabamba are being held captive by private water vendors who exploit the city's unequal distribution of water resources for profit. It makes this argument by exploring two main points: that communitarian water associations leverage progressive forms of organization to improve service delivery, but are hindered by barriers which lie outside their control; and that small-scale water businesses are able to exploit the failures of the formal state/public and informal communitarian systems by positioning themselves as a necessary operation, in a way which limits the state's ability to regulate their activities.

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Chapter 1: Introduction

In 2010, the UN General Assembly passed a resolution recognizing potable water and basic sanitation as human rights, essential for life and for all other human rights. Today across the world, over 700 million people still lack ready access to improved sources of drinking water, while 2.5 million people do not have access to improved sanitation facilities and 1 billion people practice open defecation (WHO, 2014). In response to widespread public and private failures to extend water and sanitation services to the poor, a multitude of ‘alternative’ forms of service delivery have emerged around the world, encompassing a range of models which can be categorized broadly as communitarian or market-based.

This study focuses on the alternatives models of service delivery found in the peri-urban southern zone of Cochabamba, Bolivia. Cochabamba is best known for the ‘Water War’ of 2000, when its citizens rose up in violent protest against the government’s water privatization policies. Protesters were successful in ending the private contract, and the city’s water utility company was returned to public hands. Since remunicipalization, however, the utility has failed to extend service to much of the poor southern region of the city, while providing sporadic service to those who do have access (Driessen, 2008; Gómez & Terhorst, 2005). In response, Cochabamba’s unserved and underserved populations have worked to strengthen their community systems of provision. At the same time, entrepreneurial citizens are profiting off the unequal distribution of water in the city by extracting and selling groundwater harvested in the city’s northern zones to water-poor¹ areas of the south, while contributing to contamination and depletion of the city’s water resources. Due largely to an inability to secure access to water sources, many communitarian water providers have become heavily dependent on these water vendors, causing tensions and raising questions about the government’s role in regulating the private extraction and sale of water and its responsibilities towards residents living outside the coverage zone of the municipal utility.

Though rich in water resources, water access and distribution in Bolivia is fragmented due to geographic and socioeconomic disparities. This inequality has been

¹ The term water poor refers to those lacking access to sufficient water and adequate sanitation facilities to meet their needs, often expressed in practice as those who spend a significant proportion of their income on water (as defined by Allen, Dávila, & Hofmann, 2006, p.343).

reflected by the ongoing struggles for water resources that have emerged across urban/peri-urban, urban/rural and intra/inter-community groups (COIBO, 2010, p. 3). In 2012, 88% of Bolivia's population had access to improved sources of water (JMP, 2012), while 57% of the Bolivian population had access to improved sanitation facilities (WHO, 2014, p. 54). Across the country, access to these resources is vastly different among different social groups, and the inequality of access to water in the city of Cochabamba is striking. The coverage rate for potable water in the city as a whole was 59.7% in 2012. Rates reached 100% in the city centre, while an average of just 3% of the residents in the southern districts 7, 8, 9, and 14² received access to the municipal network (NDF & IDB, 2013, p. 59). Those unserved by the public system either rely on private water vendors or belong to a community water organization, which may also rely on private vendors or own its own water source. One cubic metre (m³) of water costs up to US\$3.00 for a user in the peri-urban south of the city, while a resident served by the public utility in the wealthy north-centre zones pays approximately US\$0.72 for the same amount. The wealthy population living in the city centre and northern zones pay on average just 1% of their monthly income on water services, while poorer residents in the south pay up to 10% of theirs, for less water of worse quality (Linsalata, 2013, p. 12; Los Tiempos, 2014b). In terms of consumption, users in the south use an average of 20 litres per day, compared to an average of 160 litres per day in the centre-north (Jaldín, 2012). There is also a marked difference between the uses of water in the centre-north areas of the city and the southern zone. In the former, residents can frequently be seen using water from the public system to wash their cars, water their lawns and gardens, and for other non-reproductive activities, while those in the south are forced to conserve and optimize their limited water, both because of scarcity and high costs.

According to Carmen Ledo, director of the Centre for Planning and Management (Ceplag) at the University of San Simón (*Universidad Mayor de San Simón*, UMSS), water is so expensive for those without piped access that it has become like 'blue gold' (Los Tiempos, 2014b). In addition, an attention to sanitation is sorely lacking; public sewerage

² Also considered to be part of the southern zone, Districts 5 and 6 border the city centre and are served by SEMAPA, however, scarcity is still an issue as the taps in these districts typically only operate twice weekly (Grandyier Felipe & Tinta, 2006, p. 240).

coverage rates for the municipality of Cochabamba were 41% in 2012, while access for the 462,855 people living in the southern zone in completely insufficient (MMAyA, 2013, p.9, 30). As a result of this long-standing failure of the formal system, whether publicly or privately owned, over 120 water associations, committees and co-operatives have been formed by residents in Cochabamba (Acra, 2012), and small-scale water vending businesses abound.

Mapping Alternatives to Privatization

Anti-privatization movements have emerged around the globe over the past several decades in response to widespread failures on the part of the private sector to meet the needs of the poor in terms of basic service provision. By the mid-2000s, it became clear that for the most part, private sector concessions for water supply had failed to extend services to the poor, and that their projected investments in infrastructure expansions would not be met (Bakker, 2008, p. 237). While the need for improved levels of access to water and sanitation in poor urban settings is widely accepted, debates exist around several issues, such as who bears the burden of responsibility for financing, building, and maintaining delivery systems, and how to best structure system management. The public/private binary which has dominated these debates for decades has been criticised for recognising only two forms of control, state or market, both of which exclude the community level (Bakker, 2007, p. 440). Only recently have these debates begun to shift from public vs. private towards a more holistic dialogue on ‘alternatives’. As articulated by Adriana Allen (2010), there is a need to move “beyond the rural-urban dichotomy and public-private controversy” in order to look at the “multiple practices and arrangements by which the peri-urban poor actually access water and sanitation on the ground” (p. 27).

Mapping alternative approaches to water service delivery has been of growing concern in the academic community in recent years. This growing body of literature seeks to define the concept of an ‘alternative to privatization’, assess criteria for success, and map achievements and lessons learned from around the world (McDonald & Ruiters, 2012, p. 1). McDonald and Ruiters (2012), the co-directors of the Municipal Services Project, which has been investigating alternatives to privatization in health, water and electricity in the global

South, define alternatives to privatization (hereafter referred to as ‘alternatives’) as either public entities that are entirely state owned and operated, or non-state organizations that operate independently of the state on a non-profit basis and that are oriented to principles of equality and social citizenship (p.3). Partnerships between these two groups are also considered to be a third form of alternative based upon this taxonomy.

This thesis aims to contribute to this discussion by looking at the various ways in which communities in peri-urban Cochabamba have organized independent local-level alternatives of their own, and the challenges which have so far limited their success in improving and expanding service delivery to all. While this research lies outside of the public/private divide and sits in the realm of ‘alternatives’, the relationships and tensions between communitarian actors and small-scale for-profit water vendors which are explored here in many ways mirror the larger debate between public and private service provision. Much academic work has focused on the perils of privatization and pointed to community-led alternatives as a solution, however little attention has been paid to the small-scale private water vendors on whom many of those alternative systems depend:

The understanding of, and interest in, water vendors remains minimal (...) when viewed in light of the vast amounts of research and the heady controversy that has surrounded private sector participation in the piped-water systems, and the involvement of multinationals in particular. (Kjellén & McGranahan, 2006, p. 1)

Bolivia is a particularly interesting case for the study of alternatives to privatization. According to the most recently available study (published in 2004), more than half (54%) of the water systems in the country are managed by water committees, 25% by cooperatives, and only 11% (though general much larger in scale) are managed by municipalities (Viceministerio de Saneamiento Básico as cited in Ramiro Baldarrama Fernández, Rojas Calvimonte, & Vásquez Torres, 2008, p. 122). Because of the global attention on Cochabamba during the Water War, there is an extensive literature on the struggle for water in the city, which serves as a key reference point in the global water justice movement (Spronk, Crespo, & Olivera, 2012, p. 440). As 70% of metropolitan Cochabamba’s 1.5 million people are organized into small-scale community water systems (Cabrera, 2013), the

city is home to a variety of models which are extremely useful in an analysis of localized solutions to water and sanitation problems.

Research Questions, Hypothesis and Structure

This thesis explores the various forms of local-level community water and sanitation provision in Cochabamba's District 14, paying particular attention to the relationships and tensions between communitarian organizations and small-scale private water businesses. The research presented here sought to answer several questions related to the communitarian water associations and the private water vendors, on which much of the city's population is dependent. The three main questions which have outlined this study are as follows:

1. What are the major challenges facing communitarian water organizations in Cochabamba's southern zone in improving water and sanitation service provision?
2. What are the synergies and tensions between communitarian water organizations and private for-profit water vendors in the city?
3. In what ways has the state attempted to address these tensions, and what challenges have they faced in doing so?

My research argues that due in part to a lack of government intervention and regulation, many communitarian water associations such as the committees in Cochabamba's District 14 are being held captive by private water vendors, who exploit the unequal distribution of water resources in the city for profit. The paper will support this finding by exploring the following main points:

1. Communitarian water service providers leverage progressive forms of local-level organization to improve water and sanitation delivery, but many are hindered by barriers which lie outside their control, including the high cost and low availability of local water sources and the resulting reliance on private water vendors;

2. Water vendors, including well owners and water truck operators, are able to exploit the failures of the public and communitarian systems by positioning themselves as a necessary operation, in a way which has limited the state's ability to regulate their water extraction practices, their quality assurance, or their prices.

This research aims to contribute to the growing knowledge on alternatives to privatization by providing insight into the operations and struggles of various communitarian water organizations in the context of peri-urban Cochabamba, and into the role that private business and government actors play in facilitating or hindering these efforts.

The thesis is arranged as follows. Chapter one continues with an overview of research methodology, followed by a literature review which focuses on the theoretical schism between communitarian and market-based proponents in the area of local water and sanitation service delivery. Chapter two provides background information on the neoliberalization of water in Bolivia, the politicization of the city's population through the privatization and re-municipalisation of Cochabamba's water services, and the continued failure of the public system in the city to improve access or incorporate effective social control. Chapter three presents data collected during my field research, covering Cochabamba's current water and sanitation context, with a focus on the city's peri-urban interface. The chapter continues with an exploration of the city's various communitarian and market-based operators, and highlights four case studies of local service providers in District 14. Chapter four includes a discussion and analysis of the research findings, and provide an overview of options for- and limitations to- policy reform, and chapter 5 will conclude the paper.

Methodology

Given the general lack of focus in existing research on the tensions between communitarian and market-based water service delivery in Cochabamba's peri-urban setting, the research conducted for this thesis was largely exploratory in nature. I conducted nine weeks of ethnographic field research in the city of Cochabamba, from May 24th to July 29th, 2013. Research was carried out under the supervision of Dr. Susan Spronk.

The majority of my fieldwork activities took place in Cochabamba's District 14, one of six peri-urban districts considered part of Cochabamba's southern zone. District 14 was selected as the focus of this study for the following reasons: for its reputation for having high levels of successful community participation in water and sanitation management³, and because my local research assistant, Ms. Ida Peñaranda, had experience working with the water committees of District 14 from her former position with the local Non-Governmental Organization (NGO) 'Fundación Abril', and was able to facilitate access to the committees and meetings with community members. Gaining access to the communities in the city's south can be a significant challenge, as the area is notoriously untrusting of outsiders⁴ and because offices are often unmarked and are not staffed at regular hours. While I spent the majority of my time in District 14 in the neighborhood of Central Itocta, I also visited other OTBs (Grassroots Territorial Organizations, *Organizaciones Territoriales de Base*) and water committees in order to gain a better understanding of the variety of alternative approaches and levels of success existing in neighboring communities.

My research was complemented by the presence of another University of Ottawa student, Kate Salimi, who was conducting parallel research on women's involvement in District 14's water committees also under the supervision of Dr. Spronk. As our research interests overlapped, Kate and I sat in on several of each other's interviews and attended many of the same meetings and events. I have included some quotes and information from interviews conducted by Kate, and have cited them accordingly.

The methodology used was primarily qualitative and ethnographic in nature, employing some quantitative data in order to help contextualize and corroborate findings. The field research involved non-participant observation, semi-structured interviews, and analysis of secondary data.

Non-participant observation

Non-participant observation was a key tool used during the field research phase of this project, and included attending local water committee meetings, protests, and other

³ District 14 is home to one of Cochabamba's oldest and most established water committees (APAAS)

⁴ According to several NGO representatives who I interviewed about their work in this area of the city.

public events surrounding water and sanitation themes. This allowed me to gain an understanding of community dynamics and observe the debates and concerns which are most frequently brought up by those impacted by water poverty. I spent a significant amount of time in the Central Itocta community centre, where I got to know the staff and children who are there during the day. The local children were happy to serve as tour guides, with the permission of their parents, taking me to the water tanks and other points of interest in the community.

During one of the first meetings I attended at in Central Itocta, a guest speaker from a well drilling company did not show up. Kate and I were invited to use the time to introduce ourselves and our work to the community members in attendance. The community members asked many questions about the purpose and scope of our research, and gave us feedback on how they felt they had been misrepresented in the past. A major concern voiced during this session was the recurring feeling that their water poverty was often misrepresented as general poverty. The residents of Central Itocta felt that this was a misleading connection, as apart from services such as water, sanitation and garbage collection, the community members are generally satisfied with their wellbeing and are proud, engaged community members with power over their circumstances. I have tried to accurately reflect this sentiment in my research, which will be presented to the community in September 2014 by Dr. Spronk.

Semi-structured interviews

I conducted a series of semi-structured interviews with key informants in order to allow for a focused exploration of the issues related to the project. Interviews targeted those directly involved in- or impacted by- the activities of Cochabamba's various water organizations, and included community members in water-poor neighborhoods, researchers and academics working on water and sanitation issues and/or water politics in Bolivia, management and directors of water committees and associations, representatives of local and national NGOs involved with water and sanitation, and private water vendors.

Contact with informants was initiated through Dr. Spronk's network of contacts in the city and was facilitated by Ms. Peñaranda, who was instrumental in helping Kate and I gain access to the communities in District 14 and make contact with key persons involved in water and sanitation issues in the city. Efforts were made to be representative of the range of people living in the research zone, across gender and class lines and involving people more

and less directly involved with water management.⁵ None of the interview subjects opted for anonymity; therefore real names have been used throughout this study except in the case of controversial statements which may negatively impact the source. Several informal interviews took place during protests at the local water utility, and for those interviews names were not taken. Interviews were conducted in Spanish by me, in some cases with Ida or Kate present. Recordings of the interviews were transcribed by Kirsten Francescone, a graduate of Carleton University who was living in Cochabamba at the time, and translated by me. I have included the original Spanish version of all direct quotations from my interviews as footnotes.

Analysis of secondary data

Analysis of quantitative and qualitative documents from multiple sources was used to provide a more complete account of the dialogue surrounding water issues in the city over an extended timeframe. Documents analyzed included newspaper archives, census data and maps, community records, project documents and academic works on related themes. The archives at the Bolivia Centre of Documentation and Information (*Centro de Documentación e Información Bolivia*, CEDIB) were a key source of data for this project, as their researchers have catalogued hard copies of all local and national newspaper articles relating to water and sanitation for the past 40 years. CEDIB has also published profiles of the Cochabamba's peri-urban districts, and conducted extensive research on water and sanitation issues as one of its key thematic areas.

The above-outlined methods and methodology permitted me to explore my research questions by allowing for engagement with those both involved in the community water and sanitation organizations and those who study them, as well as providing opportunities for the study of the various issues related to water vending and regulation in the city. Data was documented in the form of recordings for the interviews and speeches; field notes during site visits, meetings and for all other observations; photographs of relevant people, infrastructure, places and events for a visual record of the case studies to be used as a supplemental resource for thesis and conference presentations; and photocopies, digital copies and hard copies of

⁵ For a full list of interviews conducted, please see appendix i.

print resources and archives. Data was stored on my password-protected personal computer and backed up on an external hard drive.

A weakness in my methodology includes the fact that Spanish is not my mother tongue. Though my Spanish level is advanced, miscommunication may have affected the quality of some informal interactions. Recordings were used to help mitigate this issue for formal interviews.

Conceptual Framework

The tenets of urban political ecology play a key role in informing my analysis of the tensions between collective water management systems and market-based providers, as I work to dissect the interactions between the political, the economic and the ecological in the city of Cochabamba. Political ecology considers the balance of power behind process of socio-environmental change and the political unevenness that determines inequalities in the access to and distribution of natural resources such as water (Rossotto Ioris, 2011, p. 123). The political ecology approach applies a critical analysis of the distributional and systemic inequities that underlie the societal relationships with nature both worldwide and locally (Keil, 2003, p. 726) In applying the concepts of political ecology to urban environments, urban political ecology examines the interconnections between economic, political, social and ecological processes that interact to produce inequality and oppression in urban landscapes (Rossotto Ioris, 2011, p. 123) Urban political ecology provides a solid basis for an analysis of the myriad forms of interaction through which “the material conditions of urban environments are controlled and manipulated to serve the interests of the elite, at the expense of the marginalized” (Swyngedouw & Heynen, 2003, p. 902). The research will seek to contribute knowledge which supports the ‘political programme’ of urban political ecology, which, as defined by Swyngedouw & Heynen, is “to enhance the democratic content of socio-environmental construction by identifying the strategies through which a more equitable distribution of social power and a more inclusive mode of environmental production can be achieved.” (2003, p.898)

David Harvey’s (2003) concept of ‘accumulation by dispossession’ is another valuable concept through which to analyze the efforts of community groups to control and improve their essential services. In Harvey’s *New Imperialism*, accumulation by

dispossession comes in the form of dispossession, marginalization and impoverishment that crosses the lines of traditional interest groups and can serve to unite vast groups together in far-reaching, albeit less focused, social movements. Many contemporary social movements, such as the Cochabamba Water War, can be classified as struggles against accumulation by dispossession, in that they involve diverse actors, including the most marginalized in the society and middle-class professionals (NGOs), in a territorially-rooted fight against new forms of capitalist enclosure (Spronk & Terhost, 2012, p. 136).

Literature review

As neo-liberal ideology has moved into the mainstream since the 1970s, many social movements around the world have fought to gain and maintain social control over essential services such as water, electricity, healthcare and education. While Cochabamba's 'water warriors' were successful in ousting a global consortium and regaining control over their water supply, their challenge did not end there. The battle against the private, multinational company was in some ways just the beginning of a long struggle to improve and expand water and sanitation service delivery in the city. The public water provider was still plagued with the problems which had always stood as a barrier to improved service delivery, including inefficiency, corruption, clientelism and insufficient resources. The victory marked a starting point of a new debate in Cochabamba, not between public and private, but over how best to manage the water system in a context where the newly-reclaimed public system was still unable to reach a vast portion of the population. The debates expressed over the forms of alternative service delivery in Cochabamba are not unique; alternative forms of service delivery are being tested in many places around the world as communities take back control over their essential services (see McDonald & Ruiters, 2012). The following section will explore the literature surrounding these debates, situating the struggles in Bolivia within this context.

Globally, the current discourse on alternatives in essential service delivery argues for the protection, restoration and promotion of public and community sector water management

(Spronk & Terhost, 2012, p. 146). While populations which have successfully regained control of their services share the common goal of universalizing service provision, tensions persist in terms of ideology and approach. One example is the ongoing debate as to whether the human right to water or the conception of water as a commons (common pool resource) should be promoted. As Karen Bakker (2007) argues, the ‘human right’ approach, which requires states to provide water for all, is limited as a means by which to counter privatization, and can in practice serve the interests of private actors (2007, p. 439). Bakker argues instead that alter-globalization strategies which accept the idea of the commons are more likely to develop successful alternatives. This perspective asserts that the collective management of water by communities is necessary and that “conservation is more effectively incentivized through an environmental, collectivist ethic of solidarity, which will encourage users to refrain from wasteful behaviour.” (Bakker, 2007, p. 442).

At the 2011 Cochabamba Summit on Water and Basic Sanitation (*Cumbre por el Agua y el Saneamiento Básico*), Bakker’s view was echoed by participants, who concluded the the human right to water does not equal an anti-privatization or anti-commercialization concept, and does not provide concrete solutions for problems such as the accessibility of water for the most vulnerable of the population, quality control, or more equitable costing (CeVI, 2011, pp. 4-5). The summit report points out that the concept of a human right to water was not introduced in Cochabamba during the Water War, where activists focused on defending the water system from privatization, but rather was introduced in subsequent years by NGOs and other institutions. A panel during the summit was dedicated to discussing the two main understandings of the concept of the human right to water held in the city; the abstract and academic understanding held by the state and certain institutions, and the understanding held by social organizations which focuses primarily on the problems of access, supply, and protection related to water resources. Participants concluded that the right to water is useful where it guarantees access to a sufficient quantity of good quality water for all, however they felt that the human right concept “is in some ways counter to the concept of a common good, as a common good implicates the absence of rights, meaning that water is for all, and is not exclusive to any one person. In this manner the focus on rights signifies a certain individualization” (CeVI, 2011, p. 5).

While a general consensus does exist that the end goal is to improve access for all, opinions diverge on how this can best be achieved. Specific tensions in Cochabamba surround several issues, including the regulation of groundwater extraction and private water vending. A key division between sides in these debates lies in the contrasting views of whether water services can best be improved and water resources best preserved through market logic (the market-based approach), or whether water, as a life-sustaining necessity, cannot be held subject to economic reasoning and must be managed collectively by the people (the communitarian approach).

Communitarian Approaches to Local-level Water Management

Communality is the foundation of the work being done by the water collectives in Cochabamba's southern zone. The political ideology underlying these organizations, which include water committees, cooperatives and associations, considers natural resources to be a commons, and believes that as such they should be subject to collective management by the people (Olivera, 2004, p. 55). One key feature of communitarian water organizations and the communitarian approach is the democratic management structure employed (Spronk, Crespo, & Olivera, 2012, p. 439), whereby associations and networks are formed, built, managed and maintained by the populations they serve. These organizations mobilize traditional knowledge and group solidarity and work towards the common goal of improving the community as a whole.

According to Spronk, Crespo and Olivera (2012) "there are at least two factors that appear to explain the emergence of communal water systems in peri-urban areas: a weak/absent state, and indigenous / campesino knowledge about water systems that is transferred from rural to urban areas" (p. 439). Communal water systems in Bolivia need to be understood in the context of repeated state failures to address the needs of the poor. Due in part to these failings, it must be noted that many of the citizens involved in cooperative water and sanitation management do not want the state to interfere, wishing instead to remain autonomous. A general mistrust of the state contributed to the organization of Cochabamba's poor in defense of their access to water in the first place (Salman, 2007), and that mistrust is still strongly held in parts of the city. The mistrust is related to fears of losing control over water rates and a belief that water systems are the patrimony of the community, rather than

the state. Bolivia's government has a long history of authoritarianism and racial exclusion, and in poor communities it is still not widely viewed as an entity which has collective interests at heart (Spronk, Crespo, & Olivera, 2012, p. 441). The drastic inequality in service provision highlights the inability of the government to address the power imbalance between different sectors of the population. As articulated by Swyngedouw (2004), "mechanisms of access to and exclusion from water lay bare political economic power relationships and positions of social and cultural power, particularly in cities that lack adequate water supply systems or in environments characterized by heavily contested water usage." (p. 2). By promoting citizen participation in water policies and projects, advocates of the communitarian model hope to reduce the concentration of power which often occurs in representative democracies, and instead try to empower citizens within all stages of policy making and service delivery (Driessen, 2008, p. 93). While citizen participation can democratize service delivery at the local level, it is important to recognize that the issue of scale is a significant barrier to promoting and successfully implementing these forms of participatory management schemes in large cities.

The acknowledgement of the injustice of inequality in the communitarian approach echoes the field of urban political ecology in recognizing that within class-divided societies, the material conditions which comprise urban environments are "controlled and manipulated and serve the interests of the elite at the expense of marginalized populations" (Swyngedouw & Heynen, 2003, p. 902). Urban political ecologists are critical of Malthusian-influenced explanations of environmental degradation and resource depletion, which they say "implicate overpopulation and poor people as the primary cause and culprits" (Cook & Swyngedouw, 2012, p. 1966). Instead, they argue that the "variegated socio-ecological relations that shape capitalist market societies are responsible for the environmental condition the world is in" (Cook & Swyngedouw, 2012, p. 1966). It is therefore crucial to recognize that uneven development is not a product of the natural environment but is created through social, political and economic processes of exclusion such as dispossession (see Harvey, 2003). By acknowledging that environments and environmental transformations cannot be looked at independently from class, gender, ethnicity or other power struggles, the socio-environmental perspective of urban political ecology attempts to uncover the multiple layers of exclusion which contribute to unequal development and distribution of resources

(Swyngedouw & Heynen, 2003, p. 911). Adriana Allen recognizes the validity of this approach by arguing that it is not only technical or financial challenges which lead to water and sanitation poverty in the peri-urban interface, but the exclusion of the peri-urban poor from the ‘right to the city’ (see Harvey, 2008), in what she calls the ‘peri-urbanization of injustice’ (2010, p. 41).

It is important not to romanticize communitarian organizations, as some are more effective than others. While having some comparative advantages, local management does not in any way equal an inherently ‘better’ form of service provision. Complex, multi-layered systems have emerged to solve issues of water and sanitation scarcity in peri-urban areas, and need to be looked at in terms of functionality. This sentiment is well-argued by Boelens, Bustamante and de Vos (2007):

[A] rightful critique to ethnocentric, universalistic or rigid positivist approaches should not mislead us to reify local rules and rights autonomy, and give freeway to a cultural relativist approach or, worse, a revival of the theories that essentialize the ‘noble savage’, assuming that ‘indigenous’ is equal to ‘good’ and ‘local’ is presented as necessarily ‘better’ and ‘more just’; than national or international. (*p. 109*)

Despite state failure, it is also dangerous to ignore the possibility of improving state-run water systems altogether in favour of developing community-run systems. Demands for the basic services necessary for reproduction, such as water supply, must be seen “as attempts to deepen democracy by making claims over material emblems of citizenship...” (Bakker, 2008, p. 246). In the case of Cochabamba and elsewhere, as argued by Bakker (2008), “an endorsement of community involvement risks condoning the cherry-picking of profitable or otherwise attractive cities, neighborhoods, and regions, by both public and private water supply utilities” (p. 245). While community-run systems may serve as an effective alternative where state capacity is limited, they do not excuse the state from attempting to expand basic service delivery to all.

The Marketization of Community Water Provision

While large-scale privatization has proven to be largely ineffective at increasing access to water for the poor, many still promote the idea that small-scale market-based actors

or initiatives can solve the problem of water and sanitation service delivery. The commonality across the market-based approaches, and what differentiates them from the communitarian approaches, is that they believe water should be treated as a commodity. As argued by Allen, Dávila, and Hofmann (2006), “there is a fault line between the idea of the state as guarantor of basic service delivery, which encompasses the notions of social equity and the basic right to resources, and market-based approaches that focus almost exclusively on cost recovery and the financial sustainability of service supply” (p. 337). The commodity view of water argues that water must be treated as an economic good, as specified in the Dublin Principles and in the Hague Declaration, similar to any other economic good which is essential for life (Bakker, 2007 p. 441). Using the definitions of Heynen and Robbins (2005), the commodification of water is marked by its enclosure; “the capture of common resources and exclusion of the communities to which they are linked”, and to its valuation; “the process through which invaluable and complex ecosystems are reduced to commodities through pricing.” (p. 6). While these processes are not unique to the marketization of water service provision, they are a fundamental feature of it.

Some proponents of market-based approaches to local-level water management, led by international organizations such as the World Bank, attempt to make a distinction between large-scale for-profit providers (the ‘private sector’) and small-scale for-profit providers (the ‘other private sector’), insinuating that there is a fundamental difference between the two besides the obvious difference of scale (see, for example, Solo, 2003). These supporters of market-based approaches actively promote the development and support of small-scale, for-profit independent water and sanitation service providers in underserved and unserved areas. The idea driving support for these businesses is that they are supposedly able to fill gaps in service provision for the poor by using cheaper technology, reducing service standards, and allowing flexible payment schemes (Ortiz & Piedrafita, 2006, p. 1), thereby complimenting the public system. Following this line of thinking, Gerlach and Franceys (2010) argue that the solution for cities which are growing faster than the public utility can extend service coverage could lie in “a combination of contracted resellers covering ‘difficult to serve’ informal settlements, and licensed independent providers, who invest in areas beyond the reasonable reach of networks” (p. 1234).

Tova Solo (2003), in a paper published by the World Bank, describes small-scale water and sanitation entrepreneurs as mostly ‘competitive’ rather than ‘exploitative’, framing them in a positive light. She describes entrepreneurial providers as offering services of good quality at prices that are often lower than those of the public utility, and which respond more quickly to consumer demand. The World Bank’s approach, exemplified in Solo’s writing, recommends adjusting the regulatory framework to support small-scale water and sanitation entrepreneurs, which will in turn enable households to “obtain access to water and sanitation services from any actor that is able and willing to meet their needs” (Solo, 2003, p. 4). Solo suggests that small-scale water vendors can and will be a part of the solution to Latin America’s water problems, and that it is up to individual governments to make it easier for them to act as such (Solo, 2003). Conversely, in another World Bank document, it is recognized that “...[small-scale service providers] might not be the panacea for coverage expansion in all cases”, however, it is still assumed that they “represent a good solution for rural areas and a viable solution for underserved peri-urban areas if quality and price are regulated” (Ortiz & Piedrafita, 2006, p. 2).

While advocated by some supporters of market-based interventions, the regulation of small-scale water vending is problematic in a myriad of ways. Through regulation, the government risks legitimizing these forms of service provision. Conversely, as long as they are viewed as a temporary stop-gap, regulation is not seen as a priority and both environmentally and socially exploitative practices continue unchecked. Water vendors have no interest in seeing the public networks expand, and those who are reliant on these businesses are forced to support their exploiters against the regulators for fear of price hikes or exclusion from the service:

...Even the ‘water speculators’ [businesses which buy and sell water, such as aguateros] applaud these [productivist] policies [which focus on increasing production and transmission rather than equitable distribution and consumption], as they provide the best assurance to safeguard their monopoly rent extraction practices. Obviously, as long as the state and elite administration consider private water vending to be only a temporary ‘emergency’ condition that will disappear as soon as the ‘master plans’ are implemented, there is no need to regulate, control, or

institutionalize this alternative water delivery system in the interest of the poor.
(Swyngedouw, 2004, p. 126)

Beyond government disinterest in regulating these forms of service provision, regulation can be made problematic by the service providers themselves, and is therefore often dependent on their acceptance of the regulation as 'reasonable' for the controls to be effective (Rees, 1998, p. 103). Solo's (2003) claim that small-scale water vendors have been successful in building and operating small networks which challenge the belief that fixed water networks are a natural monopoly is flawed, in that it ignores the ability of these independent providers to band together in opposition against regulation and price competition, leaving the government with few options for intervention beyond expanding the public system.

In much the same way that community-led service provision should not be exalted uncritically, many would argue that water vending can serve the social good under the right circumstances. As noted by Kjellén & McGranahan (2006), water vendors should not be viewed as inherently inadequate, so as not to make it more difficult for the water-poor to access the resource or miss important opportunities for improvement, but they should also not be viewed as inherently desirable. Instead, the authors argue that water and sanitation services should be improved through whatever means is more effective, including water vending where appropriate (p. 1). This point of view, while not claiming that water vending is the ideal option, argues that it is better to support small-scale water vendors than risk having segments of the population unable to access water at all:

Great differences within low income cities give room for parallel systems and variegated supply conditions. It is the urban poor who have to make do with the worst options, and it is tempting to dismiss these options as irrelevant to the future city that all should be aspiring to. There may be cases, however, where improving services from unacceptable options (including water vendors) can make a bigger difference to the well-being of the most deprived than can striving for 'ideal' solutions, such as universal piped water connections. (Kjellén & McGranahan, 2006, p. 2)

The approach of supporting small-scale entrepreneurs as a compliment to the public system is also advocated by the Water and Sanitation Programme (WSP), an independent donor-

funded program administered by the World Bank. Somewhat confusingly, WSP (2008) categorizes everything from communitarian water organizations to private for-profit water vendors as ‘small-scale local operators’ (*Operadores Locales de Pequeña Escala*)⁶ in their study of alternative water and sanitation service provision in Latin America. While the study does sub-divide this category into communitarian and private operators, it groups them together when providing statistics on satisfaction indicators, despite the likelihood that those surveyed would have different opinions about the two forms of service provision.

From the perspective of critical urban political ecology, a major critique of market-based approaches is that they ignore the fundamental socio-political issues underlying the inequalities in service provision. By suggesting that the role of government should be to support private water entrepreneurs so as to allow the “virtues of a competitive market system” to improve services (Solo, 2003, p. 30), proponents of these approaches make several assumptions about market forces and their ability to rectify social inequalities and injustices. The focus of this approach on economic ‘efficiency’ and the potential of the market overlooks what Susan Spronk (2010) calls ‘social efficiency’; meeting the social goals of water and sanitation provision and countering the negative impact of privatization on citizenship rights. As noted by Oscar Olivera (2004); “water distribution should take into account the needs of the population. It should be designed not from the point of view of mercantile logic and the pursuit of profit, but rather from a perspective that clearly subordinates the business aspects- investment criteria, expansion plans, and rates- to the common interest” (p. 11).

In reality, small-scale private vendors are no different than large private firms in that they will only provide services based on ability to pay, rather than need. The idea of using a market-based approach as a path to greater equality is fundamentally flawed in that it assumes “that the interests of the service provider (profit) are not only compatible with social objectives (universal access to clean water), [but] that institutions organized by the profit motive are more likely to achieve social objectives” (Spronk, 2008, p. 160), when, in reality,

⁶ WSP’s definition includes water trucks and tankers, community water organizations and associations, small private businesses which manage systems or buy water in bulk, and public cooperative businesses where management includes the city and NGOs (and may include a user association) (WSP, 2008, p. 18)

“the equal allocation of urban resources among the urban population is made problematic by the uneven nature of the capitalist system” (Swyngedouw & Heynen, 2003, p. 911). In addition, the public sector still regards small independent providers with suspicion in terms of both quality and cost, particularly because unorganized vendors are “too many, too small and too dispersed for effective regulation” (McCarney, 2010, p. 290).

As in Swyngedouw’s analysis of Guyaquil, Ecuador (2004), in which he explored the dynamics of a “complex network of those that hold control over the water tap, water infrastructure, and water distribution (...) in order to unearth the relations of power that infuse and eventually organize the intermittent flow of water”, Cochabamba’s middle and upper classes are served by the public system, while many of the city’s poor lie at the mercy of the private system in the form of water vendors, well owners, and contractors. In this way, “the elites enjoy subsidized water supplies, but the poor are caught in the monopolistic squeeze of the private vendors” (p. 126). While it can be argued that market-based solutions may have some short-term and practical benefits in this context, it is unlikely that they will make progress in extending (improved) services to all. Conversely, cooperatives and other communitarian organizations show much promise for advancing strategic social goals, but it remains to be seen in what ways increased democratic participation can actually improve service provision in the face of limited access to financial and water resources.

Chapter 2: Background

Cochabamba is located in central Bolivia in a 55,631km² administrative department of the same name, where it lies in a mountain valley at an altitude of 2,558 metres. The city was founded in 1571 by a group of approximately 40 families of Spanish origin, under the name Villa de Oropeza, and remained under Spanish rule until Bolivia's independence in 1825 (Ramiro Baldarrama Fernández et al., 2008, p. 35). The name Cochabamba comes from the Quechua name '*Kochapampa*', meaning 'the place of the lakes', and its inhabitants benefited from the region's comparatively rich water sources for many generations. For the past 55 years or so, however, Cochabamba has been marked by water scarcity as its principal source, the glaciers in the Tunari mountain range, have become less able to meet the needs of the region's growing population (Grandydie Felipe & Tinta, 2006, p. 239). Cochabamba has a semi-arid climate which sees less just 350-500mm of rain annually, and has limited superficial water resources (Alarcón Rodríguez, 2013). As in many parts of the world, Cochabamba's water resources suffer from contamination and over-exploitation (Los Tiempos, 2013a).

The 2013 population of metropolitan Cochabamba was just over 1.5 million, including the municipalities of Cochabamba (known as the *cercado*), Sacaba, Quillacollo, Colcapirhua, Tiquipaya, Vinto and Sipe Sipe. Currently around 919,000, the population of the *cercado* is expected to reach 1 million by 2016 (MMAyA, 2013; Instituto Nacional de Estadística, Bolivia, 2012, p. 5). Like many cities around the world, Cochabamba has two faces. On one side it is the 'city of eternal spring', known for its warm weather, consistently sunny days, sprawling gardens and green parks. On the other side lies the dusty, sprawling peri-urban zone, located just a few kilometres from the city core. While there is no official distinction between the urban and peri-urban in Cochabamba, I use the term peri-urban to refer to the marginalized neighborhoods on the southern outskirts of the city (Quiroz, 2006, p. 23). The peri-urban areas of Cochabamba are marked by water poverty, stemming from a lack of accessible and potable ground water and exclusion from the municipal water system.

Growth and Service Inequality in Cochabamba

Cochabamba's water troubles are connected to a population that has long since outgrown the easily accessible water supply in the region. The department's central valley experienced a process of socioeconomic transformation and rapid population growth from the 1970s to the 1990s, while the authorities struggled to keep pace in terms of service provision. In the 1980s, the population grew exponentially as a result of the migration of more than 25,000 migrants from rural areas in Bolivia's occident, many of whom relocated to the area following the closing of the tin mines in the mid-1980s, and because of extreme poverty, a lack of opportunities, and environmental factors that devastated the agricultural region in the 1980s (Assies, 2003, p. 18; Dávila & Gutiérrez, 2012, p. 17). Between 1976 and 1992, Cochabamba's population more than doubled from 205,000 to 414,000, however this population growth was not met with a corresponding expansion of public services. (Assies, 2003, pp. 18-19). Between 1987 and 1992, 13,000 migrants arrived in Cochabamba each year, mainly coming from the departments of La Paz, Oruro and Potosí. While the centre and north of the city were equipped with basic infrastructure and services, the rapidly-growing southern area of the city was largely developed without any form of central planning or in accordance with technical standards, making its integration into existing urban services complicated. Still, as Ramiro Baldarrama Fernández et al. (2008) note, the municipal government played a large role in creating the segregation between the have and have-nots of the city, by providing infrastructure and social services to the north and not attempting to support the development of the peri-urban area, much of which was deemed to be illegal settlements (p. 37). In 1999, just before the privatization of the municipal water supply, connection to the potable-water network was just 57%, while sewerage coverage was at 48% (Assies, 2003, pp. 18-19).



Photo 1: Garbage-filled creek bed in District 14



Photo 2: Botanical gardens in the city centre

The Neoliberal Agenda in Bolivia

The neoliberal restructuring in Bolivia which led to Cochabamba's Water War occurred in the context of overwhelming international pressure and support for the privatization of industries traditionally managed by the state. In the early 1980s Bolivia suffered a major economic crisis, with inflation skyrocketing at one point to over 12,000% (Spronk, 2009, p. 401). The need for loans from international financial institutions (IFIs) opened the doors for the imposition of neoliberal reforms in many sectors. These changes came in 1985, when the first structural adjustment programmes were implemented in Bolivia by the World Bank and other IFIs. In 1994, President Sanchez de Lozada launched the 'Plan de Todos' (Plan for Everybody); a major neo-liberal restructuring program which turned Bolivia into a market-democracy and included the 'Law of Capitalisation'. This law laid the groundwork for the sale of 50% of state industries to private corporations, affecting the hydrocarbons, telecommunications, transportation and electricity sectors (Otto & Bohm, 2006, p. 309). In 1998, the IMF issued a loan to Bolivia which was conditional upon the privatization of a variety of state enterprises, including Cochabamba's water supply system (Bakker, 2008, p. 328).

It was in this context that Bolivia initiated two large-scale privatization experiments, in La Paz (1997) and in Cochabamba (1999). In 1997, water services in La Paz and the neighbouring city of El Alto were privatized by the consortium Aguas del Illimani; managed by the French company Lyonnaise des Eaux. The concession was intended to increase and

improve service in the poorest communities of El Alto, but after several years in operation the projected expansions had not been realized and rates had climbed 20%. Widespread protests in 2005 were successful in their calls for the cancellation of the contract, which was finally rescinded in 2007 (COIBO, 2010, p. 6, see also Spronk, 2009). In 1999, as will be explored below, the privatization of Cochabamba's water system led to four months of conflict and the successful return of the system to public hands.

The changes made in Bolivia were not unlike other large-scale neoliberal restructuring programmes that were implemented by the IFIs in developing countries throughout the 1980s and 1990s, backed by a growing belief in the developmental power of the free market. In 1992, the Dublin Statement on Water and Sustainable Development marked the beginning of an era of international support for the commercialization of water systems, by proclaiming within its guiding principles that "water has an economic value in all its competing uses and should be recognized as an economic good" (The Dublin Statement on Water and Sustainable Development, 1992). Throughout the 1990s, high-level international meetings in Rio de Janeiro (1992), Uruguay (1986-1994), and Marrakech (1995), along with the World Water Forums, spread the increasingly accepted view that water was an economic resource, best managed by market logic and private participation (COIBO, 2010, p. 5). The underlying ideology of these policies became deeply entrenched in mainstream development discourse in the 1990s and persists in many ways today, though it has been challenged by a growing number of anti-globalization and anti-privatization movements.

Despite the overwhelming failure in developing countries of privatized water systems to extend services to the poorest of the poor, support for neoliberal restructuring in the water and sanitation sectors has maintained prominence in mainstream development circles at a global level. While the rhetoric may have changed to appear more inclusive and/or participatory⁷, the central process of system privatization supported by some institutions remains the same. The organizers of the 2003 World Water Forum in Kyoto responded to alarming data on water scarcity by drafting an inter-ministerial declaration based on the idea

⁷ See Spronk (2009) for an analysis of the exploitative nature of 'participatory' neoliberal water projects.

that the commercialization was the best response to state failures in service delivery, and called for increased private sector involvement in the management and provision of water services (Bakker, 2007, p. 130). Despite large-scale protests by an international alliance of anti-privatization, environmentalist and other civil-society organizations, the declaration was accepted and championed by various IFIs, governments, and of course, the private sector. The Kyoto Declaration exemplifies what Bakker (2004) terms ‘market environmentalism’, the belief that “environmental goods will be more efficiently allocated if treated as economic goods - thereby simultaneously addressing concerns over environmental degradation and inefficient use of resources” (Bakker, 2007, p. 432). Put into practice, market environmentalism in itself has widely failed to succeed in either expanding services to the poor or protecting the environment, as environmental degradation is increasing at unprecedented rates.

Cochabamba’s Water War

Long before the events that were to occur in 2000, residents of Cochabamba had suffered from insufficient and unequal water services. The public water utility, SEMAPA, was widely known for its corruption and clientelist practices, its inefficiency and its lack of capacity to expand services to the poor. Solutions proposed by the state to address the water scarcity in the region continued to fail to meet the needs of the city’s ever-growing population. The most enduring of these proposals, the MISICUNI integrated water supply and hydroelectric dam project, was first conceived during the Barrientos government (1966-1969). Construction of the multi-phase and high-cost project had been put off several times for political or financial reasons⁸ until 1996, when the first phase of the project was undertaken. Before the project could make significant headway, however, a growing national debate on privatization brought the future of MISICUNI into question (Laurie & Marvin, 1999, p. 1407).

⁸ The MISICUNI project has been widely criticized for the extremely high costs that have delayed its development for five decades. Critics have pointed to more practical alternative water sources such as the CORONI hydroelectric dam as better options. The three phases of the MISICUNI dam construction are expected to total US\$368.2 million (HydroWorld, 2009).

In continuation of the neoliberalization process in Bolivia, and after many years of failed development of the MISICUNI project and poor performance on the part of SEMAPA, the first Sanchez de Lozada administration (1993-97) opened both SEMAPA and MISICUNI to bidding for privatization. The only serious bidder was Aguas del Tunari, a multinational consortium whose major shareholder was the California-based Bechtel corporation; one of the world's largest water companies⁹ (Otto & Bohm, 2006, p. 310). Rather than opening a new round of bidding, the government authorized negotiations, laying the groundwork for Aguas del Tunari to "impose conditions on a government anxious to proceed" and secure an extremely favourable contract (Assies, 2003, p. 21). In September 1999, Aguas del Tunari was granted the concession for supplying water to the city of Cochabamba and implementing the MISICUNI project.

In order to legalize the contract with Aguas del Tunari, the Bolivian parliament piloted a new law on water and sanitation two months after the contract had been signed. Law 2029 allowed for concessions and licences for the private supply of potable water for periods of 40 and 5 years respectively. The law gave concessionaires exclusive rights over all water in the concession area, meaning that existing local water committee and cooperatives would have to enter into contracts with private operators. It also gave the contracted enterprise control over all the privately drilled wells in the Cochabamba Valley, and the right to install water metres at the user's expense. The criteria used by the Law to establish a rate structure and support the rate hike that followed were tied to the principles of financial sufficiency in guaranteeing cost recovery and return on investment for the concessionary. Aguas del Tunari's contract guaranteed them a return on equity of 15 percent (Assies, 2003, pp. 17-23). This law was one of the key points of contention in the Water War that soon followed.

When the arrival of water bills in January 2000 confirmed citizens' fears of rate hikes, for some reaching up to 300 percent¹⁰ (COIBO, 2010, p. 6), the population of Cochabamba was ready to take action. A coalition of activists known as the *Coordinadora*

⁹ Bechtel's revenues in 2000 exceeded \$14 billion, in comparison to Bolivia's national budget of \$2.7 billion (Otto & Bohm, 2006, p. 310).

¹⁰ Aguas del Tunari maintained that the average rise in prices was just 35% (Bakker, 2008, p. 238)

por la Defensa del Agua y la Vida (Coalition for the Defense of Water and Life, hereafter referred to as the *Coordinadora*) formed in response, headed by union leader Oscar Olivera, and led protests over the following months. Conflicts left 175 protestors injured and a seventeen year old boy dead (Otto & Bohm, 2006, p. 300). After four months of struggle, the protests came to a successful end on April 10th, 2000, when an agreement was signed between the government and the *Coordinadora*, returning responsibility for the city's water supply to SEMAPA. Law 2029 was amended and the modified law, No. 2066, was put into effect on April 11th, ending monopoly rights in concession areas, recognizing the '*usos y costumbres*' (uses and customs; customary rights to water) of community water systems, and guaranteeing municipal-level popular participation in the establishment of rate structures (Assies, 2003, p. 30). Notably, the *Coordinadora* also succeeded in changing a critical discourse for social movements in Bolivia, by constructing a movement around 'the people' which recognized the population as agents for decision-making in terms of how public services should be governed and run (Otto & Bohm, 2006). The memory of the Water War remains strong in Cochabamba, where water is always a topic of discussion and a leading theme in the news. The efforts to dispossess the city of its water, as an expression of David Harvey's (2003) work on accumulation by dispossession, had affected citizens from various interest groups, including those served by the public system, self-managed peri-urban community organizations, rural farmers, and well owners, serving to politicize and unite these groups in a coherent social movement in defence of their water. The lasting effects of this politicization are evidenced by the fact that community groups continue to actively lobby the state to improve and expand public service provision, and remain poised to oppose any action that would threaten the progress they have made.

Cochabamba's Water War was considered a significant victory by anti-privatization movements around the world, following fifteen years of structural adjustment policies and the suppression of popular protest movements. The events were also considered significant as they were largely led by neighborhood associations and water committees (Assies, 2003, p. 15). While access to water and sanitation has not greatly improved in the years since the Water War, the protesters succeeded in stopping the large-scale expropriation of their water resources and have since passed several important pieces of legislation at the national level, including the amendment of Law 2029, as an important part of the process of securing water

for all. In 2006, the Morales administration created the Ministry of Water (now the Ministry of Environment and Water) to, among other goals, improve the management of and access to water and sanitation resources throughout the country (COIBO, 2010, p. 7). In 2009, the human right to water and the fundamental right to water for life were enshrined in Bolivia's new constitution. The constitution states that the government is responsible for the management, regulation, protection and planning of the sustainable and adequate use of water resources, and with popular participation, must guarantee access to water for all¹¹. Under the constitution, water resources cannot be subject to concessions or privatisation¹². While a step in the right direction, the constitution also opens the possibility of administering services through private-public partnerships or "mixed businesses"¹³, which opens the door for multinationals to privatize the water system informally (COIBO, 2010, p. 8).

SEMAPA and Cochabamba's Ongoing Public System Failures

Save for the few months between November 1999 and April 2000, SEMAPA has been responsible for the provision of water and the collection and treatment of wastewater in the city of Cochabamba since 1967. Since the Water War, the municipal water system has made little headway in improving or expanding services for the city's poor, and has struggled to build efficient, democratic and transparent services. Residents served by the public system complain of poor water quality and those on the outer limits of the service area cite insufficient supply and sporadic delivery. Those not served by SEMAPA continue to struggle to secure water from other sources, such as private water vendors or through community organizing.

As noted by Karen Bakker (2008), the Coordinadora's "initial demands for 'social control' of the water utility following Bechtel's departure were eventually diluted into a proposal for social 'representation' on the board of directors, previously staffed exclusively by professionals and politicians" (p.239). As part of this process, 'citizen directors' are

¹¹ Article 374

¹² Article 20

¹³ Article 309

elected territorially by the population and serve on SEMAPA's management board. The citizen directors, for whom the city had high hopes following the Water War, have so far unfortunately been limited in their capacity to effect change. A low level of social control has been evidenced by little participation in the citizen director elections, financial corruption scandals, clientelism, and nepotism (CEDIB, 2008, p. 23). As a result, the belief in social control as a useful tool for strengthening the public system has faded. In the words of Carlos Crespo,

What happens with civil representation? (...) once again the representatives begin to make social decisions without taking into account the social base that elected them ... then these representatives begin to make decisions and begin to articulate the company's structure of corruption. (Communication with Kate Salimi, June 2013)¹⁴

At a wider level, Crespo argues, this same process can be seen in other forms of popular participation, in that the presence of representatives of social organizations is met with a tendency to incorporate those representatives into the chain of corruption, while legitimizing the dominant order.

The Cochabamba Valley contains several alluvial fans, a spring zone, confined aquifers, two rivers, a lake and a playa zone. (Stimson *et al.* 2001, as cited in Wutich, 2009, p. 181). Despite efforts by SEMAPA to improve their water system following the water war, industrial and domestic pollution have "seriously degraded the surface water resources, and over-abstraction and pollution now threaten the aquifer system" (Wutich, 2009, p. 181). In many of the city's southern districts, water sources are already disappearing permanently, are contaminated, or lack sufficient supply for the growing populations. Additional stressors, including rapid population growth, desertification, drought and climate change are creating a grim outlook for the ecological sustainability of these urban zones (Wutich, 2009, p. 182). In water-rich areas of the city, unregulated land purchases by private citizens is also

¹⁴ ¿qué pasa con las representaciones civiles? (...) y otra vez representante que se empieza a tomar decisiones sociales sin tomar en cuenta la base social en la cual ha sido elegida... entonces estas representantes empiezan a tomar decisiones y empiezan a articularse a la estructura de corrupción de la empresa.

contributing to the loss of aquifers, green areas and agricultural lands, creating serious ecological and social problems for the future (Los Tiempos, 2014c).

In terms of SEMAPA's water network, little has changed in the last fourteen years. The utility uses both superficial and subterranean water sources, which provide 40% and 60% of the city's water supply respectively. Superficial sources include the Escalerani and the Wara-Wara systems, and provide 40% of SEMAPA's water. The most-exploited underground sources are accessed through 30 wells which are located primarily in Vinto and El Paso. SEMAPA's main wastewater treatment plants are in Cala Cala, Aranjuez, and Alba Rancho (Ramiro Baldarrama Fernández et al., 2008, pp. 121-123). According to SEMAPA's website¹⁵, the average rate for water service in 2013 was 5.05 bolivianos (bs)¹⁶ per cubic metre. Coverage of municipal water service extended to 82% of the *cercado*'s population in 2012, while 41% were connected to SEMAPA's sewerage network (MMAyA, 2013).

It is important to note that many people served by SEMAPA, especially those on the fringes of the coverage zone, only receive water a few times a week for a limited number of hours. SEMAPA serves as an example of a situation where public services are limited to the elite (Bakker, 2008, p. 239). As such, the utility falls into the same regressive subsidization trap as many other public utilities in the developing world, in that it does not benefit the poorest consumers, who are excluded from the service (NDF & IDB, 2013, p. 6). In addition, the SEMAPA system is notoriously inefficient, losing around 47% of water extracted, during the transportation from the source and because of the poor state of the decaying pipe network in the city. Every month, the lost water, amounting to at least 6 million cubic metres, could serve 20,000 people (Mena M., 2012). SEMAPA's system suffers from severe technical problems such as network deterioration, and a low level of new connections (CEDIB, 2008, p. 23). In the years since the Water War, SEMAPA has remained unresponsive to the lack of service delivery in much of the city, and its current manager, Marco Antonio Barriga, has stated that until new sources of water are secured, service coverage is unlikely to expand. Much of the hope for increased service lies in the completion of the MISICUNI project. The dam, parts of which are still under construction, brings water from the Misicuni, Viscachas,

¹⁵ www.semapa.gob.bo/

¹⁶ Bs (bolivianos) is Bolivia's national currency. 1bs is equivalent to US\$0.14.



and Putucuni watersheds to the city, through a 20km system of tunnels and aqueducts, and supplies water for the city, irrigation for agricultural areas, and hydroelectric energy (Assies, 2003, p. 19; Marston, 2014, p. 83).

The tunnel for transporting water has been completed, while the dam and hydroelectrical infrastructure is under construction and is expected to be completed in 2015 (Alarcón Rodríguez, 2013).

Despite the progress made in recent years on the MISICUNI project, it is now considered by many to be a distant hope for the expansion of water services to all. Many community water organizations in the city face their greatest challenge in securing new water sources, and see MISICUNI as a potential solution that will likely only benefit those already served by the municipal system. MISICUNI has been providing water to SEMAPA since 2005, however, the utility has so far done little in the way of expanding service provision to the city's southern zone. MISICUNI currently supplies SEMAPA with 218 litres of water per second (lps), and projects provision of 4000 lps upon the completion of the final phases of the project (MMAyA, 2013, p. 7). In a 2013 interview with local newspaper *Los Tiempos*, the president of Cochabamba's Water Cooperative Federation's monitoring committee (*Comité de Vigilancia de la Federación de Cooperativas de Agua de Cochabamba*), Jesús Salzar, has said that their organization is seeking to negotiate the bulk sale of water from the MISICUNI dam to cooperatives, so that the water can be sold directly to the users. In response, MISICUNI general manager Leonardo Anaya has stated that clients have not yet been determined, and that for now the only certainty is that SEMAPA will receive MISICUNI water through a piped network (Alcócer Caero, 2013). While these decisions remain up in the air, unserved and underserved Cochabambinos are looking to more immediate solutions for their water needs. It is in the context of SEMAPA's failure to extend services to the poor since the Water War that we are able to examine the wealth of alternative service providers in the city. Accepting that SEMAPA and elite-backed projects such as MISICUNI are unable to meet the goals of adequate, safe and affordable water and sanitation coverage for all in foreseeable future, the people of Cochabamba have continued to

developed and maintain a plethora of community-level alternatives in order to meet their needs.

Chapter 3: Alternative Water Service Providers in Cochabamba's Southern Zone

Home to approximately half of the city's population (some 462,855 people according to MMAyA's 2013 data), Cochabamba's southern zone is made up of six districts; 5, 6, 7, 8, 9 and 14. Apart from districts 5 and 6, which border the city centre, rates of coverage by the municipal water utility do not exceed 6.8% in this area of the city (see table 1).

Table 1: Population, area, and population density of Cochabamba's Southern Districts¹⁷

Zone	Population (2012)	Area (ha)	Density (pop/ha)	SEMAPA coverage (%)
Municipality	918,844	10,605	87	59.7
District 5	76,580	638	120	100
District 6	80,661	459	176	80.8
District 7	31,028	318	98	0
District 8	69,453	1,289	54	6.8
District 9	157,011	2,636	60	2
District 14	48,122	409	118	3.2

As of October 2012, There were an estimated 611 water service providers in metropolitan Cochabamba, including SEMAPA, however only 60% of these providers are registered with the national Water and Sanitation Oversight and Social Control Authority (*Autoridad de Fiscalización y Control Social de Agua Potable y Saneamiento Básico*, AAPS) (El Diario, 2012). Several types of organizations may be responsible for water and sanitation service delivery in Cochabamba, including water committees, cooperatives, associations, unions, rural indigenous community groups, municipalities and neighborhood councils.

¹⁷ Adapted from MMAyA, 2013 and *NDF & IDB, 2013

Cochabamba's southern zone, like many peri-urban landscapes, is characterized by widespread lack of resources and elevated rates of poverty, along with rapid population growth, unregulated housing construction, and a lack of urban planning. The southern zone also suffers from a lack of groundwater, and contamination of existing water sources (Canedo, 2013, pp. 28, 30).



Photo 4: Cochabamba's peri-urban landscape

In the peri-urban interface, access to water and sanitation services is largely needs-driven and informal (Allen, Dávila, & Hofmann, 2006, p. 333). In order to secure water, residents of these districts are organized into water collectives or buy directly from private vendors. According to Quiroz (2006), there is a lack of support in terms of investment and capacity building for the water collectives of Bolivia's peri-urban zones for two reasons; firstly, because the priorities of international cooperation agencies are focused on rural projects, and secondly, because historically the state has not viewed peri-urban committees as an efficient alternative for water and sanitation service provision (p.40). There is, however, hope that the government is now starting to recognize and include this segment of the population in their policies and planning:

The periurban areas of Bolivia were not made visible before this government. For past governments, and [in] previous policies, there was only rural and urban, and the urban area [was home to] large water and sanitation services providers. The rest did not exist, in part because of the policies implemented, but partly because there was no will or interest to cover these needs. And somehow, social organizations [and] social movements have planted and made visible the importance of peri-urban areas. So there now exist policies and interventions in peri-urban areas which have undoubtedly benefited much of the population with some of their greatest needs. (Oscar Campanini, CEDIB, personal communication, July 2013)¹⁸

¹⁸ "...el área periurbana en Bolivia, no estaba visibilizado antes de este Gobierno. Para Gobiernos anteriores, políticas anteriores, existía el área rural y existía el área urbana, y el área urbana estaban los grandes prestadores

District 14, Villa Pagador

The case studies examined for this research are located in the southernmost district of Cochabamba, District 14, which was formerly and is still commonly known as Villa Sebastian Pagador (or simply Villa Pagador). The history of Villa Pagador is well documented in Ramiro Baldarrama Fernández et al.'s 2008 study of the district. According to Villa Pagador's founders, interviewed by the authors, the district was created in 1977 by migrants from Oruro, who wanted a place to call their own. It was their dream to create a 'New Oruro', and the combination of price and proximity to a market where many worked led them to the area then known as Valle Hermosa. This area was desolate, with the nearest access road a two hour walk away. The first years were especially difficult for the residents, who, as one of their first organized activities, worked to clear streets so that water trucks could service the area after the well they had initially built could no longer serve the growing community. After 37 years, Villa Pagador has grown considerably, but still suffers from a lack of basic services. There are still neighborhoods within the district that lack electricity, water, sanitation, and access to public transportation (2008, pp. 38-43).



Photo 5: Streets of Central Itocta, District 14

Since 2001, Villa Pagador has been recognized officially as District 14 of the municipality of Cochabamba. District 14 is located in Cochabamba's south-east, where it covers 69.39 hectares and is bordered by a hill known as Kiri-Kiri to the east, the ENDE electrical plant to the north, the Gualberto Villaroel refinery to the west, and the Tuna

de servicios de agua potable, alcantarillado. El resto no existía, en parte por las políticas que se implementaban, pero en parte porque no existía voluntad ni interés de poder cubrir estas necesidades. Y de alguna forma, las organizaciones sociales, movimientos sociales son los que plantean, visibilizan la importancia de las áreas periurbanas. Entonces, ahora existan políticas y existan acciones en área periurbanas que sin lugar a dudas tiene beneficio a una gran cantidad de gente de la población con algunas de las mayores necesidades.”

Sanimayo ravine to the south. The city's Metropolitan Master Plan indicated that Villa Pagador had 48,122 residents as of 2012 (MMAYa, 2013), more than double its recorded population of 21,784 in the 2001 census. Still very much a community of migrants, half of the residents of Villa Pagador were born outside of the municipality (Ramiro Baldarrama Fernández et al., 2008).

In terms of development, District 14 is characterized by the persistent marginalization common to the southern region of the city. Average household incomes in the district fall between 2,323-2,587bs per month (US\$325-362), compared to 4,470-6,504bs (US\$626-910) in the city centre (NDF & IDB, 2013, p. 55).¹⁹ Teen pregnancy rates in the district are double those in the centre-north areas of the city, at 10%, and the birth rate is the third highest in the municipality at 3.95. Childhood mortality is also high, with 97 of every 1000 babies born alive dying before the age of one. This rate is the highest in the municipality and twice that of the rate in District 12, the city centre (Ramiro Baldarrama Fernández et al., 2008, pp. 45-60). District 14 is also one of the driest areas of Cochabamba, therefore getting water, either by extraction or delivery, is more expensive than in other parts of the city. As of 2008, 67.24% of the population of District 14 bought water directly from water vendors while 32.76% belonged to some form of water committee (Ramiro Baldarrama Fernández et al., 2008, p. 126).

Much of Cochabamba's southern zone, including most of District 14, is not serviced by any form of piped sanitation network. Many households rely on septic tanks, which they have emptied at their own expense when full.²⁰ Others practice open defecation on hillsides, drainage ditches, or in creek beds. The one municipal wastewater treatment plant located in the city's south, Alba Rancho, has become a symbol of the failure of sanitation efforts in the city. The plant's capacity is far insufficient to treat the quantity of wastewater that passes through its system on a daily basis, and it has become a source of contamination and putrid smells that have negatively impacted the lives of those living in the area. For this reason,

¹⁹ Districts 11 and 12

²⁰ The frequency of filling a tank depends on the size of the tank and how many people use it, but most people I spoke with had theirs emptied around once per year.

residents of other areas of the southern zone are hesitant to embrace decentralized treatment plant projects near their homes (Dávila & Gutiérrez, 2012, pp. 26-27).

The Role of NGOs in Southern Cochabamba's Waterscape

While not direct service providers, many NGOs and international cooperation agencies have been instrumental in providing financing and technical assistance for local water organizations in Cochabamba, and play an important role in the city's waterscape. There are many NGOs working on water issues in the city, some of which assist in the development of technical solutions and capacity building, for example AguaTuya, CeVI, Fundación Pro Hábitat and Water for People (Agua para el Pueblo, WFP), while others, such as Agua Sustentable and Fundación Abril, focus more on activism and community engagement in water issues.

A successful example of technological innovation by a local NGO can be seen in WFP's eco-toilet project, which lowered the cost from 420bs to 250bs by re-designing the toilets in collaboration with a local ceramic maker. The initiative led to the purchase and installation of the redesigned toilets in 140 homes in the city's south. Since 2009, Water for People has taken several approaches to Cochabamba's peri-urban water poverty in districts 9, 8, and 14, supporting community organizations in building water networks, working with families who wish to build ecological toilets, constructing low-flow bathrooms, and providing training in the operation, maintenance and administration of water systems, operation and maintenance of toilets, and institutional strengthening of the water committees for the better management of their systems. In their early projects, WFP invested funds into these projects, but as municipal support has increased they have moved into providing technical assistance to municipally-funded projects.

While many of the city's NGOs have made notable efforts to improve water and sanitation services in the southern zone, the water-poor are not always the only ones to benefit from their work, and it is important to keep in mind the power relationships at play in any development project. For example, AguaTuya is a non-profit organization created by the private, for profit business PLASTIFORTE, in collaboration with the municipal government of Cochabamba. AguaTuya works as a demand-based initiative, under which the municipal government makes '*Coparticipation Tributaria*' funding available to PLASTIFORTE to

build water delivery systems and decentralized wastewater treatment plants in unserved areas. PLASTIFORTE completes the project through AguaTuya and is awarded the construction contract. In the likely case that this money isn't sufficient to cover the costs of the project, the community members are responsible for covering the rest. (Zuna & Torrico, 2009, p. 43). While AguaTuya acts as an NGO, its roots as the foundation for a private business which benefits financially off its activities raises some concerns about conflict of interest.²¹

Communitarian Water and Sanitation Service Provider Models

In order to understand the current politics of community water and sanitation management in Cochabamba, it is important to understand the history and logic of the water committees, cooperatives and other community-led groups that manage water resources in areas not covered by the public system. These groups have long been on their own in building and managing alternative local-level water systems in the face of public and private failures to expand services to their communities. While communitarian service providers differ in their structures and operations, they share a common goal: to provide communities with universal and affordable access to quality water services:

In these [community-led organizations] that employ member cooperation for the resolution of common problems, the logic governing the provision of services produced for the community is not individual profit and capital accumulation, but use-value, the satisfaction of real needs, and the welfare of the community.

(Linsalata, 2013, p. 24)

The communitarian service providers of Cochabamba's southern zone have their roots in the western part of Bolivia, where migrants to the city, largely made up of miners and rural farmers, applied their organizational and technical experience to the issue of water scarcity in their new communities. The farmers brought their strong Andean traditions of communitarianism and solidarity, with everyone pitching in labour and financial contributions to communal projects (*ayni* and *cuota*, traditional indigenous cultural practices

²¹ Research on AguaTuya's conflict of interest has been conducted by Andrea Marston (forthcoming)

related to communal work). The miners contributed their vast union experience, their experience in the implementation of technical projects, their organizational structure, and their understanding of infrastructure construction for the transportation of water (Grandyier Felipe & Tinta, 2006, p. 241).

Today, approximately 70% of the metropolitan area's 1.5 million people are organized into small-scale local water operators (Cabrera, 2013). The collective, local-level forms of water management found in Bolivia are progressive in that they are built, managed and maintained by and for the populations they serve, operating for the social good rather than profit, and are managed democratically, allowing for greater social control over service delivery alongside many other community-level benefits:

Local water management permits a democratizing decentralization of decision and accountability. Well done, it empowers people (particularly the poor and otherwise disadvantaged) to take part in the decisions that define their own futures. And it encourages the integration of traditional knowledge with innovative science to promote fair and efficient supply management. In these ways, water degradation and shortage can be transformed into sustainable sufficiency. (Brooks, 2002, pp. 5-6)

Collective local-level systems stand in contrast to centralized and hierarchical systems, both public and private, which “enable monopoly control and, given the commodity character of water, permit the extraction of monopoly profits in addition to the powerful social and political control that goes with monopolistic control over vital goods” (Swyngedouw, 2004, p. 1). As noted by Rocio Bustamante, one of the main differences between the communitarian models and the public (state) model is that the members of communitarian systems are tied to the system in ways which extend beyond the user-provider relationship and include a system of entitlements, rights and obligations for decision making. These entitlements, rights and obligations come from having invested time and energy in the creation and maintenance of the system itself rather than from simply paying fees for service access (personal communication, June 2013).

The high level of collective organization in Cochabamba shows promise for further development, however, the communitarian model of service management currently provides

coverage for just 30% of Cochabamba's southern residents, while the majority of the remaining population buys their water at a higher cost from private vendors (Gerlak & Wilder, 2012, p. 10). Most small-scale cooperatives lack the sophisticated monitoring systems and water-purification technology required to guarantee service quality, which often depends on the quality of crude water that supplies such systems (Spronk, Crespo, & Olivera, 2012, p. 444). In addition, few communal systems provide sanitation sewerage services, which are the least profitable area of service delivery and are usually a lower priority for members. This can result in untreated waste contamination of water supplies (Spronk, Crespo, & Olivera, 2012, p. 444).

As mentioned in the literature review, there is also a concern that supporting communitarian water organizations legitimizes the vendors on which many of these collectives depend, and excuses the government from having to extend service provision to their zones:

Wealthy areas of Cochabamba receive government-subsidised services of high quality, whereas residents of poorer areas of the city must directly engage with donors and mobilise volunteer labour to create more expensive systems whose operating costs must also be borne by these poorer communities. The Cochabamba case thus presents us with a dilemma: in celebrating community resourcefulness, we risk condoning both government inaction and corporate misconduct. (*Bakker, 2008, p. 239*)

Another key disadvantage of the communitarian systems, as noted by Rocio Bustamante, is that they can become quite exclusive, in the way that there is no legal requirement for them to extend services or legal recourse for persons who are refused membership. The public system is required by law to provide service to everyone, and though it does not achieve this, there are actions that can be taken to demand services (personal communication, June 2013). In the case of the water committees, cooperatives and associations in Cochabamba's south, their inability or unwillingness to extend services to new residents most often stems from the limited supply of water available to them. As SEMAPA faces similar issues of inadequate supply, many people in the city who are excluded from both the public and communitarian

systems are left with no choice but to buy water directly from private vendors and store it in barrels or household tanks.

Water Committees and Associations

Water committees (also referred to as associations) are member owned and operated systems, and are the most common form of community water organization in Cochabamba. In Bolivia as a whole as of 2004, 56% of all water service providers were committees (Viceministerio de Servicios Básicos, 2004 as cited in Quiroz, 2006, p. 27). The committees are similar in structure to the water cooperatives which operate in other areas of the city and around Bolivia, but are typically much smaller in scale and less likely to own a water source. The committees are also less ‘formalized’ than the water cooperatives, and are therefore not subject to regulation or taxation by the government. Each committee or association is a territorially-based organization through which members participate in the decision-making processes related to water governance. Today there are approximately 200 community water systems operating in the Cochabamba’s southern zone alone, each serving anywhere from 50 to over 900 families (CeVI, 2013, p. 89). The majority of the peri-urban water committees are still not recognized by the state, which has not traditionally viewed them as a viable long-term solution due to their (perceived) technical and economic deficiencies (Quintana, 2005 as referenced in Ampuero, Faysse, & Quiroz, 2006, p. 260).

While not new, Cochabamba’s water committees have strengthened their political position since the Water War. According to Marston (2014), the committees have employed a range of scalar strategies to transform their organizations from informal to ‘quasi-formal’ structures, and are now a more visible component of the city’s waterscape. These strategies have included the formation of an umbrella organisation; affiliation with state-sanctioned units of decentralised governance (OTBs); engagement with local and international NGOs; and the elaboration of a multi-scalar co-management plan that aims to involve SEMAPA and the MISICUNI dam as equal partners alongside the water committees (p. 73).

Upon formation, new committees leverage their existing resources to construct their water systems, with members volunteering physical labour and distributing management responsibilities on a rotating basis according to their needs. In some cases committees have contracted private companies to dig wells or perform other large-scale construction projects;

however the majority of the water committees in the south are reliant on private water vendors to fill their tanks. Frequently operating under a cooperative management structure, the water committees of Cochabamba's south are made up of elected directorates, core staff (technical and administrative), associate members known as 'socios', and regular members known as 'vecinos' (neighbors). Associate members are typically defined as original members who volunteered their time and work in building or establishing the system in place, by digging, laying pipes, installing equipment, or who have paid some agreed upon amount of money. As noted by Ramiro Baldarrama Fernández et al. (2008), to be a 'vecino' constitutes a new political identity in that it creates new actors with the capacity to affect change according to their rights and obligations, imbuing them with a new social identity beyond that of a migrant, miner or union worker (p. 158).

The organizational structure of the directorates varies, but they are typically comprised of 5-6 elected volunteers who serve for two-year terms. The committee may function in coordination with or as part of an OTB, or completely independently. The directorate is accountable to the committee members, who, assembled together, have the final say on all decisions:

A community association is an organization where the population, assembled together, is the maximum authority. We have regulations that we have developed ourselves, without the guidance of an attorney. We have made our regulations so that we can be successful. Our association is a necessity for us, it is an initiative of our own, where we can decide for ourselves. (Don Filemón, former president of water association 22 de Abril, July 12, 2010, cited in Linsalata, 2013)

Democratic participation is a central theme in the water committees, and socios who do not attend committee meetings are fined 10-20bs. Regardless, not all members are automatically seen as equals. Those who have dedicated more time and energy into community projects are considered right-holders and may be considered associate members, while newcomers must prove themselves as valued community members through active participation in committee activities as regular members (Dávila & Gutiérrez, 2012, p. 19).

Each community water system works to secure basic elements such as a water source, a water storage system, a distribution network, and occasionally a water treatment system (Mercado Guzmán, 2013, p. 37). A 2009 calculation by UMSS's Carmen Ledo asserts that the residents of Cochabamba's southern zone had invested some US\$16 million in the construction and improvement of community water systems (as referenced in Linsalata, 2013, pp. 16-17). In many cases, the committees have accessed financial or technical assistance from development cooperation agencies, NGOs, or the municipality, as a means to complement their financial contributions and community work in developing their water and sanitation systems. According to Ramiro Baldarrama Fernández et al. (2008), there are several benefits to forming a water committee to manage service delivery in Cochabamba's south, including social control over the quality of water exerted through storage in tanks and in some cases through performing some type of treatment before distribution; securing better prices through group bargaining with water vendors; lowering costs through collective work on the water network; access to a greater quantity of water; and social control over the use of water (p.135).

Unfortunately, no matter how organized a water committee is, there are factors which fall outside their control, such as drought or a lack of funds available to secure a water source. The lack of access to and ownership of water resources is a major challenge facing many of the water committees of Cochabamba's south, who are left to the mercy of private water vendors who operate on a for-profit basis, provide water of questionable quality and do not guarantee delivery (Canedo, 2013, p. 35). Another challenge facing all community water systems is high operating costs, including administrative costs (accountants, secretaries etc.), technical personnel (plumbers, engineers), energy costs (water pumps), and the cost of transporting water if using water trucks. Smaller systems are especially challenged in meeting these costs, resulting in extremely high fees for members (Grandydier Felipe & Tinta, 2006, p. 242).

Grassroots Territorial Organizations (OTBs)

Since its origins, Villa Pagador was organized into neighborhood councils (Juntas Vecinales), which worked to provide basic services and respond to local needs. The implementation of the municipal OTB structure in 1994 served to ratify the pre-existing organizational structure of the councils, allowing them to be recognized legally as

representative organizations, and as a result has allowed them to share in municipal benefits and resources (Ramiro Baldarrama Fernández et al., 2008, pp. 153-154). OTBs, much like the neighborhood councils that preceded them, generally work to regulate and improve the urbanization process in their zone, in terms of road works, basic services such as water and sanitation (where these services are not provided by another entity), electricity, and other neighborhood infrastructure and concerns. A key benefit that the OTBs have over informal organizations is their increased ability to access government funding for development projects. While water and sanitation services are often the independent responsibility of one or more water committee, cooperative or association, some OTBs operate their own systems.²²

The legal process that governs the OTBs is subject to the Law of Popular Participation²³, under which the entire country was divided into OTBs and districts (Dávila & Gutiérrez, 2012, p. 16). The municipality of Cochabamba is made up of 463 OTBs (Los Tiempos, 2013b), which are territorially defined with membership being predicated on zone of residence. As of August 2013, Cochabamba's District 14 was subdivided into 29 OTBs (Honorable Concejo Municipal de Cochabamba, 2013). One characteristic of the OTB structure in District 14 which differentiates it from the other districts is the way in which territories are continually redefined according to needs. In one example, OTB Trafalgar split into the three OTBs of Lomas del Pagador, Bello Horizonte and Nuevo Milenio, in the face of a growing population and a rift in needs where some areas were still trying to secure basic services which other areas already had. In this situation, those without lights, water, and sanitation felt that they could better move their agenda forward as an independent OTB (Ramiro Baldarrama Fernández et al., 2008, pp. 155-156). This fragmentation of OTB territories has meant that District 14 has grown from 21 to 29 OTBs in the period from 2001 to 2013 (Honorable Concejo Municipal de Cochabamba, 2013).

As noted by Grandylier Felipe & Tinta (2006, p. 242), a challenge facing OTBs charged with water service provision can be effective management, as the OTBs are not only responsible for water services but must also care for many other community projects and

²² Including two of the case studies explored below, OTB Central Itocta and OTB Lomas del Pagador

²³ Ley de Participación Popular, N° 1551

events. It is important to maintain separate accounts for these activities, and easy to spend money destined for a future water project on an emergency road repair, or the like.

Asica-Sur / ASICASUDD-EPSAS

Until recently, community water organizations in Cochabamba's southern zone were backed by an umbrella organization known as Asica-Sur (Association of Community Water Systems of the South, *Asociación de Sistemas Comunitarios de Agua Potable de la Zona Sur*). Asica-Sur was founded in August, 2004, following a six month process of training and work spearheaded by the directors of SEMAPA (Grandydie Felipe & Tinta, 2006, p. 243). The association served as an umbrella organization for all forms of water and sanitation service providers in Cochabamba's southern zone, and played a central role in advocating for the committees following the Water War.

In 2010 Asica-Sur's name was changed to ASICASUDD-EPSAS (Departmental Association of Community Water Systems of the South and Water and Sanitation Service Providers of Cochabamba), after receiving legal recognition through a departmental decree,²⁴ a move which served to formalize the organization and make it one of the most important actors in the city's water sector (Marston, 2014, p. 79). According to their website, ASICASUDD-EPSAS is a civil society non-profit organization, serving to unite and represent all community water systems in Cochabamba's southern zone. ASICASUDD-EPSAS is directed by a volunteer executive, and hosts assemblies where associates decide on political issues, resolutions, demands, project management and cooperation (ASICASUDD-EPSAS, 2013). Despite this information provided on their website, sources in Cochabamba informed me that their leadership became disillusioned with community water management and that ASICASUDD-EPSAS no longer works directly with service providers: "AsicaSur²⁵ had great potential and now the committees are alone, so if you aren't connected because you don't have time to connect with the other [committees], it is a small, lonely and independent fight" (Ida Penaranda, personal communication, July 2013).²⁶

²⁴ No. 2457

²⁵ Despite being renamed in 2010, many people in the city still refer to the organization as Asica-Sur.

²⁶ "AsicaSur tenía grandes posibilidades y ahora los Comités están solos, entonces si no estás conectados porque tampoco tienes tiempo para conectarte con el otro, es una pelea chiquita, sola, autónoma."

One issue on which Asica-Sur/ASICASUDD-EPSAS had focused much of their attention is that of system co-production; an idea that has carried on as a viable option for the future of water governance in the southern zone and a possible solution to the problems of poor water quality, insufficient quantity, and high prices faced by community providers. Co-management, based on Asica-Sur's proposed model, is the process of joint management of water and sanitation, with co-responsibility on the part of all involved actors in terms of obligations and commitment. According to AsicaSur (2008), a typical co-management structure would involve the use of SEMAPA's water sources, extraction resources and their wastewater treatment facilities. Individual committees would be responsible for basic infrastructure for service provision (such as tanks and distribution networks), and AsicaSur would serve as the representative of all the committees in the southern zone, through which multiple local actors can come together to make collective decisions about service provision in their areas. According to Asica-Sur, this form of co-production, or co-management, is necessary in the following circumstances: when an entity is not sufficiently efficient, transparent, or does not involve the active participation of all users; when it requires services or support from another entity, and; when it does not have the resources to secure a proper water source that is able to meet the needs of the population (CeVI, 2010, p. 20). At the Third International Water Fair in 2010, ASICA-Sur put forward a set of principles under which co-production models should operate:

- Water is life, and is a human right;
- The distribution of responsibilities must be equal according to development and capacities;
- Service delivery should cost the least possible amount for the end-user;
- Service management should be transparent, with free access to information;
- All decisions must be decided in a participatory manner, where participation is not only symbolic but effective. (CeVI, 2010, p. 21)

Without a functioning umbrella organization, the water committees of Cochabamba's south have few means of coordination. It is unclear as to whether the members of ASICASUDD-EPSAS will be able to strengthen the organization in a way which allows it to act on its mandate, or if a new representative body will emerge, but for the time being water

committees are moving forward independently and separately, petitioning SEMAPA, the government, and funding bodies directly as community units.

Market-based operators

Standing in contrast to the communitarian practices of the above models are the market-based water and sanitation providers operating in Cochabamba. These businesses work to fill a gap in service provision using market logic, setting prices according to demand. While the government has made small steps in attempting to regulate these operators, the heavy reliance on them for service provision by much of the southern zone's population has meant that there is little that can be done without negatively affecting the end-users. Though there are many types of businesses profiting off the unequal distribution of water in Cochabamba's south (contractors such as PLASTIFORTE, foreign engineering firms, etc.), the following sections outline the characteristics of the two main categories of private water vendors to whom the residents of district 14 are inextricably tied; water truck operators (aguateros) and private well owners.

Aguateros

Aguateros, or water truck operators, are water delivery businesses which transport water from private sources to sell in unserved and underserved areas. While some community organizations own their own tanker trucks and hire personnel to drive them²⁷, the majority of these operators function privately and for-profit. Some aguateros sell directly to the end-users, while others sell to committees or OTBs, filling their cisterns several times daily for the water to be distributed through a piped network. Many aguateros are affiliated with unions, through which they articulate their demands or opposition to issues such as government regulation initiatives. Most aguateros are also tied to a management organization, to which they pay a monthly fee for affiliation in addition to the cost of the truck and gas. Aguateros typically make 4-5 trips per day from the water sources in the north of the city to the water-poor southern zone.

Our union has 25 affiliates, we have a telephone and we sell water where people ask us to. The water is from a spring, and the affiliates have to pay 50bs per month and

²⁷ As in the case of the water association ESPA-PDA, covered later.

have to meet a quota of four trips per day, from four in the morning until six in the evening. (Adhemar Escobar, Sindicato Manantial “Tunari”, quoted in Ballivián, 2010)

The quality of water purchased from private sources is of great concern in the southern zone and the municipality as a whole, where six of every ten people rely on untreated and untested well water (Unzueta Pérez, 2013). The water is further contaminated in the old model aguatero trucks which, until recently, were not required to meet any health safety requirements. Studies have shown that water contamination is common in Cochabamba’s southern zone, from the source to the point of consumption at the



Photo 6: Typical water truck used by aguateros

household level. One study found that 41% of community systems presented a high risk of contamination (Mercado Guzmán, 2013, pp. 37, 48). In another study, conducted by Ceplag (UMSS), Water for People and the UMSS Faculty of Medicine and Toxicology, it was determined that contaminated water in the southern zone caused increased cases of renal and gastrointestinal damage. The study found cadmium and other heavy metals in the samples (Los Tiempos, 2014b).

In order to improve the quality of water delivered by private vendors, over 200 aguateros have recently been brought into the formal system through registration with the Environmental Health Unit (Unidad de Salud Ambiental) of the Departmental Health Service (Servicio Departamental de Salud, SEDES). As part of the registration process, inspections are performed on the internal and external state of the vehicles and hoses, in order to identify potential sources of contamination (Los Tiempos, 2014a). A sticker on the water truck identifies them as being registered with SEDES. The purpose of the registration is to reduce the risk of contaminated water through establishing minimum conditions for certification, but regulation is difficult as SEDES can only give training and work with suppliers to increase

education on health measures, and then it is in the hands of the individual aguateros. In fact, SEDES had wanted to close several privately owned water sources which were contaminated with E-coli, but were unable to do so as it would have cut off access for people with no other way to secure water (Claudia Cossío, personal communication, July, 2013). The logic behind this is that access to contaminated water, which can at least be boiled, is better than not having access at all. Unfortunately, leaving contaminated sources open for exploitation poses a significant health risk, compounded by the fact that the aguateros are under no obligation to disclose the results of quality testing. In addition, there is no guarantee that consumers would know how to minimize the risk of contracting the various illnesses from contaminated water even if they were informed.

For those families that receive water directly from aguateros, the water is stored in barrels where it is at high risk of further contamination. For some, the water is delivered directly to their home, while others who live in areas with poor access (such as steep hillsides or with no roads), the barrels are kept elsewhere and water must be transported on foot to the home, often over several trips. A very small proportion (0.34%) of District 14's population has been able to secure expensive household water tanks in which to store the water purchased from the aguateros, the principle difference being that water stored in tanks is less likely to become contaminated without the oxidization which occurs in the metal barrels, and because it is not exposed to dust or sunlight (Ramiro Baldarrama Fernández et al., 2008, pp. 126-127). The cost per barrel is approximately 4bs, with families consuming an average of two barrels per week (Ramiro Baldarrama Fernández et al., 2008, pp. 127). For other residents of the south, water is bought from aguateros by the various water committees and associations which do not have their own water source. It is then stored in the organization's tanks until it is redistributed through a piped network to the members' homes. In both cases, where water is bought directly or through an intermediary community organization, the aguateros serve to fill a gap in service provision. While access to some water is better than no water at all, the aguatero system is by no means an ideal solution to the southern zone's water poverty and negatively impacts the level of consumption. Estimates put the supply of water through aguateros at 250 litres per second, while the optimal requirement is 500 litres per second. This signifies that the amount of water getting to the southern zone is insufficient to cover needs (Los Tiempos, 2014b).

The necessity of buying water from private vendors at marked-up prices also impacts the residents of the southern zone financially. The cost of transporting the water from the north of the city to the south is reflected in the price charged to the city's poorest residents. The wells and the customers are on opposite extremes of the city, approximately 14km apart (Grandydier Felipe & Tinta, 2006, p. 242). As a result of a lack of regulation on prices charged by aguateros in combination with high costs of un-subsidized delivery, the price of water for the city's poorest residents is often three times higher than it is for those served by the municipal service. It is also widely believed that the prices charged by aguateros are not necessary reflective of the cost of delivery, and that these businesses have large profit margins.

Among those who have seen their privileged situation increase, the vendors of such a vital resource stand out, led by tank trucks owners who act as intermediaries between the owners of the water and those who have no choice but to pay black market prices for the water they consume. (*Los Tiempos*, 2012)

There is a lack of data, however, on just how much money these water vendors are earning from the sale of water in the south, and whether or not the prices charges are exploitative or reflective of real delivery costs and modest wages:

I don't know how this business (water vending) works. It's another area that hasn't been studied because it is very difficult to gain access to the sector, they are not very open to giving information, and usually turn away people who want to study their work. So it is very difficult to know what is going on there. But, it is one of the sectors that yes, operates for profit and that I believe does very well. But we don't know how well, or what exactly happens with them. (Rocio Bustamante, personal communication, June 2013)²⁸

²⁸ No sé cómo funciona este negocio [aguateros]. Es otra de las áreas que no ha sido investigada porque es muy difícil entrar al sector, o sea, ellos no son muy abiertos a dar información, rechazan usualmente a la gente que quiere trabajar con ellos para investigar. Entonces es difícil saber qué está pasando allí. Pero... es uno de los sectores que sí, tiene fines de lucro y que le va muy bien, creo, acá. Pero no sabemos cuan bien, ¿qué pasa exactamente allí? Datos, es difícil conseguir.

Adding to these concerns is the fact that the local communitarian water organizations have few options to question or protest the prices charged by aguateros, at the risk of being cut off from service. As put by one community water association member; “you can’t protest the prices that the aguateros charge. Need obligates us to pay according to what they say” (name withheld, personal communication, July 2013)²⁹.

Well Owners

Other major players in Cochabamba’s water vending world are the private well owners of the northern districts. In light of the water scarcity in the southern zone of Cochabamba, many entrepreneurial families have invested in private wells to extract water on their property, which they sell to aguateros, who in turn sell the water to ‘consumers’ in the south. The number of these private water vendors has grown considerably in the past decade; starting with around four operators in the northern zone after the water war (Oscar Campanini, personal communication, July 2013). Today, approximately thirty households in District 12 alone have constructed tanks to store water that they extract from their wells for sale, in addition to the families who own properties with watersheds that can be exploited for profit (Nava B., 2012):

Families with more resources, living mainly in the north where underground aquifers are abundant, pay almost laughable amounts for the water they consume and often waste. That is to say that the [water] bills paid in the wealthiest neighborhoods are low, and worse still, in many cases these people sell water to the aguateros as a very profitable source of income. For the money they earn from the sale of water, it is certain that they do not pay a penny to anyone, much less to [SEMAPA]. (*Los Tiempos, 2012*)

According to the study “El Parque Tunari y el agua en Cochabamba”, there are approximately 10,000 wells³⁰ in the municipality of Cochabamba. Many of these wells are

²⁹ “No se puede [hacer protestas por el precio que nos cobran los aguateros], o sea, la necesidad nos obliga los que ellos dicen es comprar...”

³⁰ This estimate is difficult to verify, and varies substantially by source. Estimates range from 1,400 in the Metropolitan water plan (Cabrera, 2013) to 18,000 as referenced in one newspaper article (Unzueta Pérez,

operated only to supplement the water supply on the property where they are located, but all are extracting water without limitation from the aquifers sitting under the city and contributing to the growing issues of water scarcity and contamination. While the state has made little effort to address the distribution inequality in the city, citing a lack of water resources as the primary cause of their poor service coverage, it is a sad truth that thousands of residents are pumping unlimited quantities of water out of their properties for personal use and/or for private sale. The report concludes that in only 10 years, the water from these sources will begin to dry up, and that much of the water being extracted is already contaminated (As referenced in Nava B., 2012). This is alarming considering that 70% of the metropolitan area's water committees, associations and cooperatives rely on well water³¹ (Cabrera, 2013). According to CEPLAG's Carmen Ledo, 40% of the land sitting on aquifers in metropolitan Cochabamba has already been urbanized, and projected show that if unregulated and unorganized growth continues, 70% of the aquifers will be sitting under privately owned land by 2036. Ledo and other researchers in Cochabamba are calling for immediate regulatory action to protect the 29,000 hectares of potentially exploitable aquifers sitting under lands likely to be urbanized in coming years (as referenced in Soria, 2014).

These figures demonstrate the significant impact that the lack of regulation on urban extraction and sale of water has on the city's hydroscape. As explained by Blaikie and Brookfield in their foundational book on Political Ecology, political, economic and ecological realities may reinforce one another (1987, p. 23). When the Cochabamba Valley aquifers dry up from over-use, it is those who depend on these city sources, the poor and marginalized, who will suffer most. In this way, the exclusion that has created opportunities for the private sale of water (the political and the economic) has both caused and will be reinforced by the degradation of the city's water resources (the ecological).

2014). CEDIB estimates that there are 9000 semi-deep wells (80-100m) in the metropolitan area. A lack of regulation contributes to the lack of hard figures.

³¹ Not all the wells the service providers depend on are privately owned by individuals. Cooperatives own their own wells, while several committees and associations do as well.

The drilling of wells in the northern zone is not currently regulated³², as it is widely believed that regulation would negatively impact the residents of the south who rely on these water sources (Nava B., 2012). A recent move by the municipal government and SEMAPA to tax well owners 2.50bs for each cubic metre of water they extract is being heavily contested by well owners and the population that relies on them. The sentiments echoed by the well owners focus on three main arguments: that the government has no right to tax them on something that they themselves have invested the money in to develop; that water is not the sole property of the government, therefore it has no right to charge for its extraction; and finally, that they are providing a social service by delivering water to the southern zone, and that the cost of the tax will be passed on to people of the south in the form of rate hikes. I spoke with one well owner who was protesting outside of the SEMAPA head office:

Why would we pay SEMAPA? Are they our partner? Have they invested capital to drill tubes and pumps? No. Why are they going to charge 2.50bs? As I said to the director “You are looking for a serious problem, not just you, but the mayor, the governor, up to the federal government”. The government goes to international forums and says “if possible, we must give free water to the people”. And now, what are they doing? Far from thanking us... thanks to us SEMAPA doesn't have any problems (...) Does SEMAPA put the water in the wells? “Look”, I said, “you take control over my well and see what you can do, give me back the \$15,000 that I spent on drilling, and you take over”, I said. “No” they say, “we are following the law.” And what will happen to the southern zone? To the eastern zone? If they pay 5bs per barrel now, it is going to double. (private well owner, personal communication, July 2013)³³

³² Certain cases, such as hotels who exploit private wells in order to bottle and sell water, will be regulated by SEMAPA in the future through metres installed on the mouth of the well, however only sixteen businesses would currently fall under this category (Nava B., 2012).

³³ “¿Porque vamos a pagar a Semapa? ¿A caso es socio nuestro? ¿Ha invertido capital Semapa para perforar tubos y bombas? No. ¿por qué van a cobrar 2,50? Y yo digo, ya le planté al Gerente “usted se va buscar un problema serio, no solo usted, el Alcalde, el Gobernador hasta el mismo Gobierno” le dije. El Gobierno va a los foros internacionales y dice “si es posible hay que darles gratis el agua al poblado. Y ahora ¿qué están

This discourse has positioned well owners in an almost ‘untouchable’ space. The private operators have openly stated that to regulate them is tantamount to raising the already exorbitant prices paid for water by the water-poor population, as any additional fee or tax charges to them will be passed on to the end user. Those in the southern zone who are reliant on private water services have no choice but to side with the vendors in this debate:

We have been forced to support the well owners, who provide us with water.

However, we do not share the mindset that they have been usurped by SEMAPA by being charged a fee... SEMAPA is right to demand that they normalise, according to the rules of the city and SEMAPA. But the aguateros came to us as direct users, to ask for our support, [saying that] our prices will be raised without our prior knowledge. (name withheld, personal communication, July 2013)³⁴

While difficult, improved regulation is much needed in order to protect the population from water of insufficient quantity, quality and exploitative pricing. As articulated by CEDIB researcher Gaby Zuna, “the state has to fix this. For some, they have said that water is free, water is life. So the state, both the mayor and the governor must find a way to achieve this and not allow people to enrich themselves with wells.” (Gaby Zuna, personal communication, July 2013)³⁵

haciendo? Lejos de agradecernos a nosotros, gracias a nosotros no tiene problema Semapa, ...Yo digo ¿Semapa nos da el agua a los pozos? “Mire” le dije, “hágase cargo de mi pozo y vea lo que hace con mi pozo, me devuelve los 15,000 dólares que he gastado en la perforación, hágase cargo usted”, le dije. “No”, dice, “nosotros somos los que hacemos cumplir la ley”. Y ¿qué va a pasar con la Zona Sur? ¿Con la Zona Este? Si ahorita pagan 5 Bs por turril va a doblar eso.”

³⁴ “a nosotros nos han obligado que apoyemos los poceros, a los que nos están trayendo agua. Pero, sin embargo, nosotros no tenemos ese conocimiento de que ellos han tenido esa usurpación como Semapa les quiere poner una tarifa... Entonces, Semapa tenía razón de poder exigirles a ellos que normalice, o sea, de acuerdo debido digamos de que las normas de la Alcaldía, y Semapa quiere que cumpla. Pero los aguateros a nosotros nos han venido, como directos usuarios, nos han venido diciendo, pidiendo de que nosotros apoyemos, que a ustedes se van a subir el precio, pero sin previo conocimiento.”

³⁵ “el Estado tiene que solucionar eso. Para algo han dicho que el agua es gratuita, el agua es vida. Entonces el Estado, tanto la Alcaldía como la Gobernación debe haber una forma de soportar eso y no permitir que gente que tiene también a costa de sus pozos se enriquezcan.”

Another important area of regulation pertaining to the extraction of well water for profit relates to environmental concerns. Since the Water War, regulations have been in development with respect to the need for some form of control over private wells to mitigate the environmental impacts of unrestricted exploitation and the health impacts of a lack of quality control mechanisms. AAPS has given formal service providing entities nation-wide, such as SEMAPA, the faculty to control all wells located in their areas, in terms of information, water quality and costing. This mandate includes the right to put metres on private wells and charge a fee for water extraction. At first, metres were used only to collect information on the quantity of water extracted and the quality of the water source, but are now going to be used to charge for extraction. This has already stated to happen in the case of industrial uses of water, and conflicts have arisen in some circumstances, notably between the government and the Bolivian National Brewery, makers of the beer *Paceña* (Oscar Campanini, CEDIB, personal communication, July 2013).

Case Studies: District 14

In order to solidify the generalized overviews of the communitarian water systems provided above, and to demonstrate the extent to which dependence on private water vendors can affect pricing for communitarian service providers, the following case studies will highlight the specific structures, activities, achievements and challenges of two water committees and two OTBs in District 14. While the four case studies have many similarities, including their communitarian organizational structures, they differ in their financial and water resources, their delivery systems, their expenses, and their fees. Both water committees; AAPAS (Association of Production and Administration of Water and Sanitation, *Asociación de Producción y Administración de Agua y Saneamiento*) and EPSA-PDA (PDA, Potable Water Service Providing Entity of the Zonal Development Project, *Entidad Prestadora de Servicio de Agua del Proyecto de Desarrollo de Área*), provide service to more than one OTB zone and own their own wells, however PDA transports its water using its own tanker truck while AAPAS has a fully piped network to transport water from the source to the end users. The OTBs, Central Itocta and Lomas del Pagador (Lomas), are reliant on private water vendors to fill their tanks, however, Lomas has an exploitable spring during rainy season and has secured a decentralized wastewater treatment plant. The following sections outline data gathered on each of these groups, focusing in particular to

their relationships to water vendors and other private sector actors. Table 2 outlines the main characteristics of the four community organizations and SEMAPA, to allow for simple comparisons.

Table 2: Comparison of Case Study Service Providers

Provider	Source	Delivery	Access	Cost/m ³	Sewerage	Members
SEMAPA	Various superficial and underground sources	Piped system	Varies by zone, 24 hours in central and northern zones	5.05bs (\$0.73)	Yes (not all covered by water network)	819,479 connections
EPSA-PDA	Their own wells and water intake system in northern zone.	Their own water truck, to piped system	Rolling by group, two days a week for two hours	12.50bs (\$1.81)	no	478
APAAS	Their own wells and water intake system in northern zone, supplemented by aguateros in the dry season.	Piped system.	24 hours, metred	7.50bs (\$1.09)	Half hooked to SEMAPA, other half mostly use septic tanks	612 (Zibechei, 2009)
OTB Central Itocta	Aguateros	Piped network from storage tanks	24 hours, metred	15bs (\$2.17)	No (built but not hooked up to any treatment plant)	1,900
OTB Lomas del Pagador	Aguateros	Piped network from storage tanks	24 hours, metred	15bs minimum plus 15bs per extra m ³	Yes, and decentralized wastewater treatment plant	450

OTB Central Itocta³⁶

OTB Central Itocta is a community organization in District 14 that encompasses the community water committee as well as performing many other functions. Founded in 1995 and operating under the leadership of Don Daniel Flores for the past eleven years, the OTB is managed by 350 associate members and serves 1,900 community members. In addition to infrastructure projects, the OTB runs several progressive programmes including a

³⁶ Non-cited information provided by members of OTB Central Itocta, including members of the directorate, administration and the general community from June-July 2013.

cooperative daycare and a lunchroom for schoolchildren. The water committee component of the OTB is one of the newest service providers operating in the district. In terms of investment in water and sanitation, a government-subsidized project in 2005/06 has provided the community with a piped network that delivers water 24 hours per day from the community's water tanks, which are filled by aguateros, to the individual households. While the project was subsidized, 235 associate members contributed US\$168 each to the project to make it a reality. AguaTuya was responsible for construction of the network, which has lowered the cost of water for the community from 25 or 30bs/m³ to 15bs/m³ by allowing the community to buy from private vendors in bulk and distribute water from a centralized storage tank. While the cost has been halved, 15bs is still three times more than SEMAPA's rate, and close to or above the daily income for many residents. The average consumption in Central Itocta per family is 4m³/month (Daniel Flores, personal communication, July 2013; Mercado Guzmán, 2013, p. 45).



Photo 7: View of Central Itocta from the water tanks

While the OTB management operates on a volunteer basis, there are four paid positions within the OTB, including an administrator, an assistant who tracks metres and performs other duties such as supervising road works, a plumber and an occasionally-contracted information technology professional. There are few other administrative fees for the OTB. As mentioned above, the OTB buys their water from independent aguateros, on whom they are dependent. Each cistern costs 150bs (14bs/m³) to fill, and the community goes through approximately five cisterns of water per day. Because of storage and transportation limitations, the aguateros must return to fill the cisterns 5 to 6 times daily, and the community members are dependent on their schedule. The OTB pays the aguateros on a weekly basis, while community members are charged monthly based on their usage, which is tracked through meters installed at each house. As the quality of the water is often poor due

to contaminated sources and unsafe transportation and storage infrastructure, members of the community must boil their water before consuming it.

The main priority in terms of water and sanitation for Central Itocta is securing a water source in order to lower the cost of water. In general, any underground sources of potable water in Cochabamba's southern zone are located deep underground, under layers of rock. Drilling wells to the necessary depths is expensive and technically challenging, therefore several water organizations have drilled their wells in the city's northern zones and transport the water from there. Some neighborhoods, however, choose to look for accessible groundwater closer to home. As of July, 2013, OTB Central Itocta had contracted a Korean company to drill a well in their neighborhood. The well, if successful, has the potential to cut the cost of water by up to 50%. The company was chosen for its ability to drill rock, as the identified aquifer is located 180 metres underground. The project will cost approximately US\$35,000, or 850Bs per member, in addition to the costs of future distribution and the energy required to extract water. The process is risky, as water in the zone is sometimes salinated. Technical issues can also prove to be a challenge. A previous attempt to build a well in this location was not successful, after it became obstructed when an electric pump failed (Daniel Flores, personal communication, July 2013).

Another key priority for Central Itocta is getting hooked up to SEMAPA's sanitation network. In July 2013, approximately 60 members of OTB Central Itocta gathered outside SEMAPA's headquarters to demand that the utility finish construction on a sewerage network that they had left half-complete for the past four years, despite taking money from the community members to fund the project. The OTB has purchased toilets for every home in the community, and is waiting for the people to build spaces for the toilets so that they can be installed. Those who already have toilets use septic tanks, which are emptied by private septic services. Fees for this service were reported as being 350Bs (US\$50.65) just to have the company show up, plus 50Bs/m³ (US\$7.34) for extraction. Depending on the number of people in the household using the tank, this might be a yearly or more frequent expense. From there, none of the community members seem quite sure where the wastewater is taken, as all wastewater treatment plants in the city are operating at or above capacity with intake from the municipal system. Some concerned residents claim that these septic services are

dumping untreated wastewater into the river that flow through Cochabamba, adding to the city's contamination crisis.

For the time being, Central Itocta is fully dependent on private water vendors and sanitation services. Until they can secure a sufficient water source, which will hopefully be the case with the completion of the well project, they will have to continue to back the aguateros and well owners against SEMAPA and the municipal government in order to keep their already high prices from skyrocketing, and will continue to operate at the mercy of individual entrepreneurs who set their own prices and schedules.

APAAS³⁷

In operation since 1991, APAAS was one of the first water committees in Cochabamba, and the first in District 14. Its first water delivery system was built by community members, with support from the World Bank, and was inaugurated in 1993.

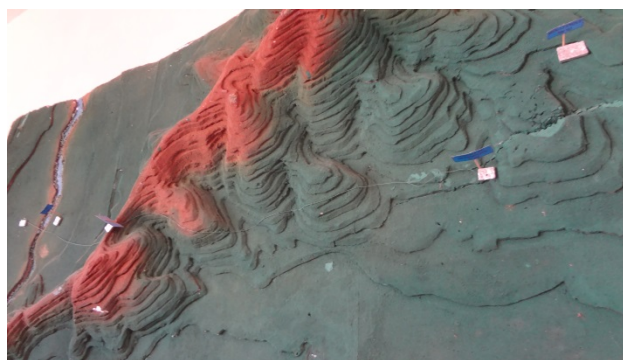


Photo 8: A model of APAAS's piped network from their wells in the north to the community

Initially designed for 400 people, demand required that the network be extended over subsequent years. As of 2008, APAAS served 600 users. Today, APAAS is widely seen in Cochabamba as having an exemplary level of technical and administrative management capacity (Linsalata, 2013, p. 22; Ramiro Baldarrama Fernández et al., 2008, p. 129). Despite being an efficient water

provider, the committee does not deal with sewerage. More than half of the community members in APAAS's territory are not hooked up to SEMAPA's sewerage network, and rely on septic tanks or other non-network options.

APAAS transports water from their privately owned wells in the north of the city through a piped network to members in four OTBs; 1^{er} Grupo, 2^{do} Grupo, part of Alto de la Alianza, and part of SPR. APAAS members boil their water before consuming it, though the

³⁷ Non-cited information provided by APAAS secretary, Claudia Toro, personal communication, July 2013.

well being used is considered to produce relatively clean water. Water is stored near the community in a ‘mega-tank’ and three regular cisterns, before being distributed through a secondary pipe network to users. Committee members pay 7.50bs/m³, half what those in neighboring Central Itocta pay. This is a testament to the fact that ownership of a water source, and the subsequent freedom from reliance on private vendors, makes a substantial difference in price, despite having to transport water the same distance. Though APAAS’s system enjoys success through much of the year, during the dry season (August to October), residents still rely on aguateros to supplement the water supply at both the household and committee levels. APAAS also uses aguateros to fill their tanks when the water pressure drops due to system ruptures.

APAAS employs three plumbers; two based in the community and one based near the water source. The committee also employs two administrative staff, and has a volunteer



Photo 9: APAAS office in District 14

directorate of seven people. The directorate is voted in for a period of two years, but may be re-elected. The current president has held the position for ten years. Meetings are held at least once per month, and are attended by all associate members.

Associate members who miss a meeting are fined 20bs, which is automatically charged to their account through the collection

system. Directorate meetings are held once or twice weekly, and a 5-person commission elected from the associate members meets when necessary to manage issues related to the well.

Where the contributions of associate members are unable to cover the cost of a given project, new socios are accepted into the system. This has contributed to a growing number of associate members throughout the years. New members pay an affiliation fee of US\$550, which includes hook up and all necessary equipment including metre, pipes, and valves. The growing member base has also meant that APAAS needs to secure new water sources. A proposed well project to increase the water supply is expected to cost \$35,000, or 350bs per

associate member. Unfortunately, APAAS's 20 year old pipe system is starting to fail and must be repaired before services can be expanded. The committee is currently working to replace old pipes before roads are covered with asphalt.

EPSA-PDA³⁸

EPSA-PDA (PDA), in operation since 1996, is a water committee responsible for service provision across the territories of three separate OTBs; 3^{er} Grupo, 12 de octubre, and Alto de la Alianza. Originally operating as part of OTB 12 de octubre, the committee is now completely independent. The committee is managed by 396 associate members, and serves a total of 478 users. PDA gets their water from their own wells and a water intake system, which are located in the northern zone of Cochabamba. A driver that the committee employs transports the water five times per day using a water tanker truck that the committee bought in 2002-03. Recipients pay 12.50bs per cubic metre of water, and consume an average of 5m³/month per family (Mercado Guzmán, 2013, p. 45). The 478 service recipients are divided into five groups, with each group receiving water service two days a week for two hours. Recipients must use that time to fill barrels and other containers with water to last half the week.



Photo 10: PDA office and water truck



Photo 11: Founder and plumber Corina Vásquez with secretary Shirley Morejón Flores in the PDA office

³⁸ Non-cited information provided by EPSA-PDA administrator, Shirley Morejón, personal communication, July 2013.

Much of the infrastructure used by PDA has been paid for with support from AsicaSur. A lack of water is the primary challenge for the committee, as articulated by PDA's secretary Shirley Morejón; "What we need are more water sources. Right now, this is our greatest need, because how will new networks or storage tanks serve us if we don't have water?" (personal communication, July 2013).³⁹ Funding has also continued to be a significant issue for PDA, with many recipients not making payments, and with tariffs covering only operating costs and not the much needed improvement projects, such as netting the two above ground water storage tanks. In order to cut services for those who do not pay their bills, the committee would have to hire a dedicated person, for which they do not have the funds. The committee employs only three people; the secretary, the tank driver, and one technician/plumber. Currently, PDA is fighting for SEMAPA to sell them water in bulk, so that they can provide their members with better service and expand service to those neighbors that aren't yet connected.

OTB Lomas del Pagador

The history of OTB Lomas del Pagador's (Lomas) water and sanitation services is documented in Dávila and Gutiérrez's (2012) independent evaluation of the impacts of a wastewater treatment plant built by AguaTuya in that neighborhood. Like most of the district, it is mostly populated by migrants from indigenous communities and miners from Oruro, Potosí y La Paz. The Neighborhood Committee (*Junta Vecinal*) was formed in 1998, and was officially recognized as an OTB in 2002. The water committee was formed after years of what community members called "times of great suffering and sacrifice" (*momentos de mucho sufrimiento y sacrificio*), which involved walking long distances to fill drums with water from wells, waiting for and chasing after water trucks that rarely arrived more than once weekly, and finally waiting in long lines to access their first well, which only provided water in the rainy season. All community members were involved in building the water system, volunteering approximately 31 days of work each. Men, women and even whole families contributed labour, which involved excavation for the construction of a water

³⁹ "Lo que nosotros necesitamos son más fuentes de abastecimiento. Eso es ahorita la gran necesidad porque ¿de qué nos sirve que tengamos nuevas redes, de qué nos sirve que tengamos tanques de almacenamiento, si no tenemos agua?"

storage tank and digging trenches for laying the pipe network, along with financial contributions of US\$155 per connection. This project, executed in 2007, was subsidized by the municipal government and AguaTuya (Dávila & Gutiérrez, 2012, pp. 21-22; CEDIB, 2008, p. 15), and today serves the 450 members of the OTB.

The Lomas water system currently works as follows. The storage tank is filled with water from a local spring during the raining season and by aguateros during the rest of the year, in order to ensure 24-hour availability of water. The piped network carries the water to the households, where consumption is controlled by metres. Members pay a base rate of 15bs for one cubic metre, which must be paid regardless of consumption, plus 15bs for each additional cubic metre consumed. Though the community agreed on the price, there are complaints about the cost by some residents, who say that paying up to 200bs (US\$28.95) for water greatly affects their monthly household income, which averages just 2,323-2,587bs (US\$336-374) in District 14 as a whole (Dávila & Gutiérrez, 2012, p. 23; NDF & IDB, 2013, p. 55). While The United Nations Development Programme suggests that water costs should not exceed 3% of household income (United Nations, 2010), these numbers indicate that those living in Lomas pay upwards of 7%.

As in much of the southern zone, Lomas residents suffered from a lack of sewerage until recently. The local creek served as a public toilet and was heavily contaminated by wastewater, as were household lots, streets, and ravines in the community. In the best of cases, some households with more resources had septic tanks, but the general level of



Photo 12: Decentralized waste water treatment plant in Lomas del Pagador

contamination had adversely affected the health of community members, especially children. Despite these issues, when the community was consulted on the idea of constructing a decentralized wastewater treatment plant, there was much scepticism that the project would turn into an “Alba Rancho” scenario, by being coopted by SEMAPA and used to treat wastewater from all surrounding

communities at levels above its intended capacity (Dávila & Gutiérrez, 2012, pp. 26-27).

After addressing citizen concerns through community consultations, AguaTuya constructed the treatment plant in Lomas in 2010, at a total cost of US\$90,202. The plant can process 58m³ of wastewater per day, and has a retention time of 7 days. The treated water contains salts and nitrogen and can be used for irrigation, forestation and urban parks. In the case of plant failures, the untreated water is bypassed to the nearby creek so that it is not used for agricultural purposes (AguaTuya, 2012). The projected life span of the plant is 30 years, and it has the capacity to serve 220 families; an estimated 1,100 people (Dávila & Gutiérrez, 2012, p. 29). The treatment plant was constructed with funds from the municipal government, UN-Habitat, and community members, along with technical assistance and in-kind contributions from AguaTuya. Installation of the sewerage network was completed by the business Balcos, while the construction of the treatment plant was carried out by PLASTIFORTE (Dávila & Gutiérrez, 2012, p. 29).

The water treatment plant has had a positive impact on the community and in particular on the lives of its women, through providing training and education on sanitation, personal and family hygiene, environmental care, and the management of the treatment plant itself. Most importantly, the sewerage network has given community members privacy, security and free time, improving quality of life for many (Dávila & Gutiérrez, 2012, pp. 5-6). In terms of water, Lomas' reliance on private water vendors much of the year has kept fees high. This will continue to be the case until the OTB can secure a more sufficient water source.

Case Study Findings

Upon looking at these four collective service providers in District 14, and gathering information on other providers elsewhere in the city, what becomes clear is that perhaps the most important characteristic of a successful⁴⁰ communitarian service provider in the context of Cochabamba is having ownership of a sufficient water source, or access to a source which

⁴⁰ when assessed in terms of their ability to provide affordable water of adequate quality and quantity

is not controlled by a for-profit entity.⁴¹ This is primarily due to the high cost and unknown quality of the water delivered by private vendors, and the fact there is little that can be done by those committees reliant on water vendors in terms of lowering costs or guaranteeing sufficient supply. The aguateros have the power to cut off supply, and for that reason many water collectives without access to a water source are obligated to meet any and all of the vendors demands; including joining with them against the government in protest of regulations that would otherwise be in their favour.

In terms of sanitation, connections to non-municipal sewerage systems are limited to neighborhoods which have constructed decentralized wastewater treatment plants, as in the case of Lomas del Pagador. While many community organizations, including OTB Central Itocta, view wastewater treatment as a responsibility of the state and are pushing for SEMAPA to connect them to the municipal wastewater treatment, other communities are exploring decentralized options with the support of NGOs such as AguaTuya and CeVI.

⁴¹ As evidenced by the case of PDA, the water source must produce sufficient water to meet demand, or the network is weakened.

Chapter 4: Discussion and Findings

The Challenges of Regulation

It is clear that a lack of regulation has contributed to both the problem of water scarcity and contamination, and the ability of private vendors to charge high prices for untreated water to residents of unserved and underserved areas. It is equally clear that regulating the use and sale of water in this context is as complicated as it is necessary. Unionized water vendors with near-monopolistic control over the water supply in the southern zone have limited the ability of communitarian groups to take any action that would challenge the status quo, save for acquiring their own water sources. The pressure exerted by the water vendors over those dependent on them has left few to openly protest to the government, which appears to be unwilling to address these issues:

Despite all the government discourse that water is not private, as in the constitution, this sector (private water vending) still remains untouched. No one has tried to change that here. They serve a function that the state believes can't be replaced for the time being, and they know that they suppress it they will have more problems. I think it's a bit of that logic. I think it is on the agenda but [the government] is still unwilling to touch the sector until they have an alternative to replace what [the private vendors] are doing right now. (Rocio Bustamante, personal communication, June 2013)⁴²

There is a huge gap on [the issue of] water sources. There have been big problems over water sources, between communities, between neighbors, between many people. (...) But the government doesn't dare intervene, especially [with regards to] the wells in the northern zone, not for fear of the people in the northern zone but because the

⁴² “A pesar de todo el discurso que hay del Estado, para que el agua no es privada, está en la constitución, todavía se mantenga ese sector sin tocar. Nadie ha intentado cambiar eso aquí. Si es que tiene una función que el Estado ha visto que no puede reemplazar por ahora y que sabe que si la suprime va a tener más problemas (...). Creo que es un poco esa lógica. Creo que está en la agenda pero todavía no lo están queriendo tocar hasta que lo tenga una alternativa para reemplazar a lo que están haciendo ellos ahorita”

southern zone would be the first to rise up in protest. (Ida Peñaranda, personal communication, July 2013)⁴³

As noted by Swyngedouw (2004, p. 126), as long as the state holds the perspective that private water vending is a temporary emergency measure that will be addressed through the implementation of their ‘master plans’, they will see no real need to regulate, control or institutionalize the vendors in a way which serves the interest of the poor. This idea rings true in the context of Cochabamba, where the manager of SEMAPA has been quoted as stated that “this service [private water vending] is a temporary fix, while we complete water and sanitation networks.” (Los Tiempos, 2014b). In the case of Cochabamba, it is not just that the government does not see a *need* to regulate, but that they don’t see any viable options to do so without negatively impacting the city’s water poor. This regulation stalemate is articulated well by Kjellén & McGranahan (2006):

If governments take a negative attitude towards water vending, and enforce strict regulations, they are likely to reduce the amount of water available on the market, driving high prices up still further. But if they take a positive attitude towards water vending, this may be seen as condoning a situation in which the poorest segment of the population has to pay the highest prices for water and sanitation. It is hardly surprising that many governments just ignore vendors altogether. (*p. 19*)

By legitimizing these private forms of service provision through regulation, the government also risks taking the pressure off of the public system to improve its coverage in a more equitable manner. As pointed out by Rossotto Ioris (2011) in his case study of water management in a wetland area near Rio de Janeiro, in situations of precarious water supply, state interventions tend to favour certain groups and areas, which only intensifies the politicisation of water management. In the case of Cochabamba, the city’s most vulnerable and those who hold power over the water both impact and are impacted by the ecological

⁴³ “Hay un vacío enorme sobre las fuentes de agua. Ha habido problemas muy grandes por las fuentes de agua, entre comunidades, entre vecinos, entre un montón de gente. (...) Pero el Gobierno no se anima hacer una intervención, creo, sobre todo estos pozos de la Zona Norte, no por el miedo de la gente de la Zona Norte sino porque la Zona Sur es la primera que se va a levantar.”

realities around them. Some profit while others suffer from a lack of sufficient and quality water sources, while many contribute to the increasing contamination and depletion of the water sources needed to sustain the city.

Despite these challenges, governments which are not necessarily able or willing to assume the responsibility of service production can play an important role in ensuring that fair and safe water is provided by establishing and enforcing policies and standards of service (Allen, Dávila, & Hofmann, 2006, p. 338). In general, there are two categories of regulation which need strengthening in the context of Cochabamba: exploitation of water resources by private citizens, and the sale of water for profit. Regulatory policies need to target both those who operate private wells for personal use and private sale, and need to take into account environmental, public health, and social justice concerns. First and foremost, it seems that the government needs to address the distributional inequality in the city and control the unlimited extraction of groundwater by private citizens. Limiting the uses of potable water for non-reproductive purposes such as washing a vehicle, watering grass, or filling a swimming pool would seem reasonable in a city marked by water scarcity; however, this is not something that is likely to be addressed beyond campaigns to encourage behavioural changes. Unfortunately, many conservation education campaigns which have been piloted in the city have been directed at the poor, who already conserve their limited water supply, rather than the wealthy, water-wasting population. Regardless, as noted by McCarthy and Prudham (2004), there is a need for a “discourse of restraint as a response to mass consumerism” as a means to connect environmentalism and social justice issues;

In very simple terms, the conviction that the pie cannot grow indefinitely—whether ultimately theoretically defensible or not—logically points to questions of distribution and equity, precisely the questions that defenders of neoliberalism attempt to dismiss with assertions of rising tides raising all boats. While many environmentalists have not pursued this line of thinking along what we see as its logical path, the connections between environmentalism and social justice are nonetheless there to be made as a powerful counter to neoliberal agendas. (p.279)

While conservation is important in order to ensure the continued availability of water resources, it is also important to note that in the current context of Cochabamba, a limited

production and distribution capacity on the part of the public utility would prevent any conserved water resources from reaching those most in need. This is because, as explained by urban political ecologists, environmental degradation and resource depletion are not caused by a lack of balance between the population and available resources, but are the result of the socio-ecological relations of capitalist market societies that lead to inequality and exploitation. If we accept that these problems are a result of poor policy and management rather than absolute resource scarcity, there may be some viable options to address these distributional inequalities at the level of the municipal utility. For example, by ramping up production levels as the MISICUNI project comes to completion, SEMAPA could nationalize or contract 'official' aguateros to deliver subsidized water resources to the city's southern zone until piped networks can be expanded, or until other permanent solutions can be arranged in agreement with the various water collectives. By taxing water extracted from private wells beyond a personal-use amount, SEMAPA could fund this subsidization campaign and equalize water prices in much of the city. For the time being, however, there does not seem to be any significant action being taken by the state against the persistent inequality in the city in terms of water cost, supply or quality.

Looking Forward

A question that arises again and again with respect to local-level water systems is what will happen to them in the case that the public system is willing and able to expand services into their areas. Looking forward, the water committees seem to agree on one thing, they have no interest in being absorbed by SEMAPA:

[The water committees] learned that a large business, although it may be the property of the state (and not private), can't be controlled since it has an enormous bureaucracy with its own interests [that] are not compatible with those of the residents of poor communities. The history of SEMAPA is one of corruption and inefficiency, even when the water communities were able to name their own directors in the organization. For this reason, they don't want the power of the state to enter into water provision and they hope to maintain equal footing in the community water systems and perhaps, maintain their own power base. (*Zibechi, 2009*)

The city's cooperatives are also in agreement that maintaining their independence is preferable to municipalisation of their services. The president of Cochabamba's Water Cooperative Federation, Jesús Salazar, argues that they will never accept municipalisation. Salazar states that as all the resources invested in the creation of their systems were invested by the populations they serve; "[it is] too much money, [SEMAPA] would have to buy the shares from the cooperatives and the shares are worth between 500 and 600 dollars each. For 50,000 members, that is more than 30 million dollars" (Alcócer Caero, 2013). Salazar also stated that the proposal would never be accepted because the organizations he represents prefer self-management and do not want to wait for SEMAPA to decide when improvements or repairs need to be made;

We have the cheapest water in the region. As cooperatives we perform a social function, we are not profit-making entities, so our water is cheap, but the government has never wanted to invest even a cent in our organizations even though we are providing a public service. That is why so we won't give the city what belongs to the community. (Jesús Salazar as quoted in Alcócer Caero, 2013)⁴⁴

There is, however, an important debate that remains once the option of municipalisation is off the table. As outlined by Ramiro Baldarrama Fernández et al. (2008, pp.136-137), water committees are left with two options in the case that SEMAPA is able to extend services to their zones. The first is to remain autonomous, and the second is to co-manage the system with the state. Those looking to remain completely independent view community management as reinforcing local identity and traditional forms of organization, and view co-management with SEMAPA as opening their doors to corruption and a loss of control over a resource which they view as belonging to the community. The co-management proponents believe that cooperation with SEMAPA could offer significant benefits, such as access to sewerage and waste water treatment, without threatening the forms of community water management in existence.

⁴⁴ Tenemos el agua más barata de la región. Las cooperativas cumplimos una función social, no somos entidades de lucro, por eso el agua es barata, pero el Gobierno nunca ha querido invertir ni un centavo en nosotros a pesar de que estamos brindando un servicio público, por eso no pueden entregar a las alcaldías lo que es de los vecinos.

The arguments for co-management or independence become complicated further when the implications of the completion of the MISICUNI project are taken into account. Who will control MISICUNI's water, and who will have access to it? Will the water only flow through SEMAPA's system, or will it reach independent providers in the south? While MISICUNI remains a beacon of hope for many of those who remain without adequate water service, there is much discussion on how this water will be distributed and managed. The representative of the municipality of Quillacollo on MISICUNI's board, Gualberto Canchari, has stated that SEMAPA does not have the capacity nor the will to increase the amount of water that is processed, and advocates instead for continued community self-management: "We don't need an intermediary for water, it would be better if the water could go straight to the end-user through a self-managed organization controlled by the residents of each zone" (Los Tiempos, 2014b). In the coming years, these debates will surely take prominence in Cochabamba's waterscape, as every service providing entity fights for a piece of MISICUNI.

Chapter 5: Conclusion

While the privatization of Cochabamba's water led to the politicization of the city's population in defence of their public systems, the ongoing failure to improve access or incorporate effective social control in SEMAPA has continued to leave unserved and underserved communities to their own devices fourteen years after the protesters' victory. The situation in Cochabamba is not unique, in that communities that are excluded from public and private systems of water provision across the globe have been forced to build and maintain their own systems. As explored in previous chapters, these alternative systems can be broadly categorized as communitarian or market-based. The theoretical break between communitarian and market-based alternatives is expressed in post-Water War Cochabamba as a struggle between communitarian service providers in the city's southern districts, which view water as a commons and fight for accessible, affordable, safe and sufficient water services, and the small-scale private water businesses, who exploit the water inequality in the city for profit and operate beyond the reach of regulatory authorities as a result of their near monopoly provision of water in the otherwise unserved southern zone. Viewed through the lens of critical urban political ecology, the waterscape in Cochabamba is controlled and manipulated by the elite to further their own interests (profit and supply), at the expense of the poor and water-poor in the southern zone of the city, and to the detriment of the city's hydrological resources in terms of supply and quality. This situation has created tensions between the residents of the southern zone, the public utility SEMAPA and the state, and raised questions about the state's role in regulating the private extraction and sale of water in order to protect the marginalized population from exploitative pricing, contaminated water supplies and precarious service delivery.

In this thesis I have made several claims, which I have substantiated with data from my field research and a wealth of second-hand sources. First, I claimed that communitarian water associations such as the committees in Cochabamba's District 14 are being held captive by private water vendors that exploit the city's unequal distribution of water resources for profit. I demonstrated how communitarian water organizations in Cochabamba's south leverage progressive forms of highly democratic local-level community organization to improve water and sanitation service delivery. The forms of collective water management found in the city are progressive in that they are built, managed and maintained

by and for their members, operate for the social good, and are managed democratically so as to allow for greater social control over service delivery. While these communitarian organizations are capable of managing highly complex and functional water provision systems, they are hindered by barriers which lie outside their control, such as the prohibitive cost of securing a safe and reliable water source. My research findings have shown that those communitarian service providers who are able to secure ownership over adequate water sources are able to lower the cost of water for their members, while those providers who are dependent on private vendors for their supply were less able to influence price or monitor quality. It is important to recognize that this uneven access to water resources in the city is not a product of the natural environment, but has been created through social, political and economic processes of exclusion such as dispossession (Swyngedouw & Heynen, 2003, p. 911).

Second, I argued that this exploitation is made possible, in part, by a lack of government intervention, support and regulation. I explored the operations of the private vendors on which many communitarian groups rely, determining that these vendors are largely operating outside of any regulatory framework that would protect consumers from usurious practices, while their monopoly over the supply obligates their customers to support them against any attempts by the government to control or regulate their operations for fear of further raising the price of water. In contrast to the World Bank's rationale for state support of small-scale water service providers, as outlined in Solo's work (2003) which waxes eloquent about these providers as 'entrepreneurs', water vendors in Cochabamba do not offer services of better quality or price than those of the public utility. The result is that private water vendors continue to supply a service that is wholly inadequate in terms of cost, quantity and quality. Water vendors, such as well owners and water truck operators, are able to exploit the failures of the public and communitarian systems by positioning themselves as a necessary operation, in a way which has limited the state's ability to regulate their water extraction practices, their quality assurance, or their prices. As long as the state continues to view private water vending as a temporary emergency measure that will be disappear when the 'master plans' are implemented, they will see no real need to regulate the vendors in the interest of the poor (Swyngedouw, 2004, p. 126).

While the Morales government (2006 to present) has made some small steps towards regulating private water vendors in their recent moves to register aguateros and tax private well owners, the heavy reliance on them in the southern zone has meant that little can be done without negatively affecting the city's poor. Future research could add valuable insight to these issues by delving further into pro-poor options for the regulation of small-scale water vendors and private well owners at the municipal level.

While private water vending in Cochabamba does fill an important gap in service provision in the city's current context, the vendors are far the mark in providing accessible, affordable and quality water services, and the options for improving this situation are limited. For every community organization that secures a water source of its own, there are new associations forming as the city expands. By regulating the private vendors of the north, the government faces the fallout from increased water prices in the city's south, and risks legitimizing these forms of service provision. If they fail to regulate, they risk further depletion and contamination of the water supply. It the most reasonable solution to this conundrum that the government finds itself in is to free the districts of the south from the monopolistic grasp of the water vendors, by offering some form of subsidized alternative supply (through SEMAPA, official water vendors or directly from MISICUNI).

For the city's various communitarian and market-based service providers, tensions have arisen over their forced obligation to support those who exploit them; their cooperative vision verses their dependence on private enterprise; and their goals of communitarian solidarity verses their inability to be inclusive of all. Until these tensions are resolved and water truly becomes part of the public domain in Bolivia's peri-urban areas, there will be those who take advantage of water poverty and those who have no choice but to be taken advantage of.

...it would appear that water, as a right, is only a metaphor against a prevailing mercantilist and lucrative logic. Our everyday water is an extremely scarce resource, and has almost become blue gold. (Carmen Ledo, as quoted in Jaldín, 2012)

For the time being, Cochabamba's communitarian water collectives, such as the four organizations highlighted in chapter 4, both exercise progressive forms of political

organization and, through no fault of their own, inhabit a space which could be defined as a neoliberal utopia, in which private actors operate outside of any government control. The city's elite continue to enjoy subsidized public water, while the poor are forced to buy water of lower quality, in lesser amounts, at the higher cost. At the same time, these forces contribute to the ever more threatening contamination and depletion of the city's underground water sources. As the city of Cochabamba looks toward the future and as the completion of the MISICUNI dam project draws near, it is clear that difficult decisions and changes must be made in order to bring the reality of water and sanitation service provision in line with the needs and the rights of the population.

Appendices

i. Interviews:

Name	Position	Organization	Date of Interview(s)
Betty Soto	Director	Water for People / Agua para el Pueblo	July 2013
Carlos Crespo Flores	Director of Environment Area	Centro de Estudios Superiores Universitarios (CESU), Universidad Mayor San Simón (UMSS)	July, 2013 (interviewed by Kate Salimi)
Claudia Cossío	Periurban Programme Director	Water for People / Agua para el Pueblo	July, 2013
Claudia Toro	secretary/cashier	APAAS	July, 2013
Corina Vásquez	founder and plumber	EPSA PDA	July, 2013
Crispín	member	OTB Central Itocta	July, 2013
Daniel Flores	president	OTB Central Itocta	June-July, 2013
Gaby Zuna	researcher	CEDIB	July, 2013
Ida Peñaranda	local consultant	Formerly Fundación Abril	June-July, 2013
Marie Claude Arteaga	communications specialist	AguaTuya	July, 2013
Oscar Campanini	researcher	CEDIB	July, 2013
Roberta Aguilar	Administrator	OTB Central Itocta	June-July, 2013
Rocío Bustamante	researcher	Centro AGUA, UMSS	June, 2013
Shirley Morejón Flores	secretary	EPSA PDA	July, 2013
Stefano Archidiacono		CeVI	June, 2013
Vladimir Diaz	Researcher (former)	CEDIB	July, 2013
Name withheld	Private well owner		July, 2013

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