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Scrutinizing water politics: lessons from Bolivia, Chile, France, and Spain

Vol. 7, N° 3

(In English and Spanish)

Newcastle upon Tyne, UK, September 2020

Cover picture: Usseira Aqueduct, built in the late Sixteenth Century to supply the town of Obidos, Leiria, Portugal, Photography taken on 4 August 2019.

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Thematic Area Series

Thematic Area 3, Urban Water Cycle and Essential Public Services

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(in English and Spanish)

Jose Esteban Castro (Ed.)

Newcastle upon Tyne, UK,

September 2020

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Cuadernos de Trabajo de la Red WATERLAT-GOBACIT

Vol. 7, N° 3

Serie Áreas Temáticas

Área Temática 3, Ciclo Urbano del Agua y Servicios Públicos Esenciales

Examinando las políticas del agua: lecciones de Bolivia, Chile, Francia y España

(en español e inglés)

José Esteban Castro (Ed.)

Newcastle upon Tyne, Reino Unido,

septiembre de 2020

Thematic Area Series

TA3 – Urban Water Cycle and Essential Public Services

Title: Scrutinizing water politics: lessons from Bolivia, Chile, France, and Spain (in English and Spanish)

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Serie Áreas Temáticas

AT3 – Ciclo Urbano del Agua y Servicios Públicos Esenciales

Título: Examinando las políticas del agua: lecciones de Bolivia, Chile, Francia y España (en español e inglés)

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Presentation of the Thematic Area and the issue

This issue is a product of the WATERLAT-GOBACIT Network's Thematic Area (TA) 3, the Urban Water Cycle and Essential Public Services. TA3 brings together academics, students, professionals working in the public sector, workers' unions, practitioners from Non-Governmental Organizations, activists and members of civil society groups, and representatives of communities and users of public services, among others. The remit of this TA is broad, as the name suggests, but it has a strong focus on the political ecology of urban water, with emphasis on the politics of essential water services (both in urban and rural areas). Key themes addressed within this framework have been the neoliberalization of water services, social struggles against privatization and mercantilization of these services, the politics of public policy and management in the sector, water inequality and injustice, and the contradictions and conflicts surrounding the status of water and water services as a public good, as a common good, as a commodity, as a citizenship right, and more recently, as a human right.

In this issue we feature five articles focused on experiences from Bolivia, Chile, France, and Spain, presenting research results, some originated in doctoral dissertations. Article 1 was authored by Christelle Pezon, from the National Conservatory of Arts and Crafts (CNAM), at the Interdisciplinary Research Centre in Action-oriented Sciences (LIRSA), Paris, France. The paper presents a synthetic historical overview of the changing institutional arrangements for the provision of water and sanitation services in France. The focus is on the expected far-reaching impacts of the 2015 NOTRe Law, which prompted a historical reform by transferring the responsibility over water services from 36,600 municipalities to 2,000 urban and rural communities. The author argues that the reform presents unprecedented challenges for rural areas and small towns but may also end the long-standing dichotomic choice between public and private management of water services facing local governments since the 19th century and induce the development of more complex arrangements dependent on political negotiations between local authorities, service providers, and users.

Article 2 was written by Cristian Flores Fernandez from the Integrative Institute of Research on Transformations of Human-Environmental Systems (IRI THESys), and Department of Geography, Humboldt University, Berlin, Germany. The paper addresses the Chilean model of privatized urban water and sanitation services, and presents a critical assessment aimed at exposing the "myths" associated with this experience. The author provides a historical overview of the Chilean model of privatization and uses the 2019 sanitary crisis that affected over 140 thousand people in the city of Osorno as an empirical example of the failures and risks associated with the privatization of essential water and sanitation services. The Chilean case is also the object of Article 3, by Melissa Bayer, from the Institute of Geography, University of Münster, Germany. The author examines the situation affecting informal settlements in the city of Antofagasta, one of the wealthiest regions in Chile, measured by *per capita* income, but also presenting the highest levels of inequality. These settlements are not included in the formal system of water provision, which is run by a public water utility from Colombia operating in Antofagasta as a private concessionaire. The author examines how the alternative arrangements developed by people in these informal settlements to get water is associated with the search for social inclusion, and the recognition of their citizenship

rights.

In Article 4, Francesca Minelli, currently an Independent Research in Munich, Germany, presents a synthetic analysis based on her recent doctoral dissertation completed at the University of Glasgow, United Kingdom, on the histories and prospects facing water cooperatives in Cochabamba, Bolivia. The paper places emphasis on the role played by cooperatives in developing water services in areas of Cochabamba that lacked formal access to essential services, and how they established legitimate forms of control over their territories and water sources. The article also discusses the diversity of challenges facing the cooperatives in rapidly changing circumstances, including a consideration of the threats and risks to their survival owing to a decline in the active participation of members in several cooperatives, the increasing competition with other actors over water sources, and the financial pressures posed by maintenance and replacement of ageing infrastructures.

Finally, Article 5, by Noelia Rodriguez Prieto, from the University of Alcala, Spain, examines the links between water politics and nationalism from a historical perspective. The author discusses the significant role played by water politics after the "1898 Disaster" derived from the war between Spain and the United States that accelerated the end of the Spanish Empire with the loss of its main remaining colonies, Cuba, Puerto Rico, and the Philippines. Establishing control over water sources through large-scale infrastructures became a central strategy in the search to reorganize Spanish society, rebuild its economy, and reinvent its national identity. The paper provides a synthetic analysis of the contrasting forms of "nationalism" associated with this water-management-based transformation of Spanish society between the late 19th century and the 1970s. The argument focuses on the contrast between the modernizing water politics proposed by the intellectual, professional, and political elite of "regenerationists" (*regeneracionistas*) after 1898 and the extremely conservative nationalism grounded on the construction of large-water infrastructures developed by the Dictatorship of General Francisco Franco (1940-1975).

We are delighted to present this issue of the Working Papers, which includes results from recent and ongoing research projects on the politics of water in Europe and Latin America. The articles provide excellent evidence-based material and examples that will be useful for researchers, students, activists, practitioners, and decisions makers, among other actors engaged in current debates about the challenges and opportunities facing the substantive democratization of the politics and management of water and essential water services. We wish you all a pleasant and fruitful reading.

Jose Esteban Castro

Editor

Newcastle upon Tyne and Buenos Aires, September 2020

Presentación del Área Temática y del número

Este número es un producto del Área Temática (AT) 3, Ciclo Urbano del Agua y Servicios Públicos Esenciales, de la Red WATERLAT-GOBACIT. El AT3 reúne académicos, estudiantes, profesionales que trabajan en el sector público, sindicalistas, especialistas de Organizaciones no Gubernamentales, activistas y miembros de grupos de la sociedad civil, y representantes de comunidades y de usuarios de los servicios públicos, entre otros. El alcance temático de esta AT es amplio, como lo sugiere el nombre, pero su foco central es la ecología política del agua urbana, con énfasis en la política de los servicios públicos esenciales (en áreas urbanas y rurales). Algunos de los aspectos clave que abordamos en este marco han tenido que ver con temas como la neoliberalización de los servicios relacionados con el agua, las luchas sociales contra la privatización y la mercantilización de estos servicios, las políticas públicas y la gestión en el sector, la desigualdad y la injusticia en relación al agua, y las contradicciones y conflictos que rodean al agua y a los servicios relacionados con el agua considerados como bien público, como bien común, como mercancía, como un derecho de ciudadanía y, más recientemente, como un derecho humano.

Este número incluye cinco artículos que tratan experiencias de Bolivia, Chile, Francia y España y presentan resultados de investigación, algunos de los cuales se originan en tesis doctorales. El Artículo 1 fue escrito por Christelle Pezon, del Conservatorio Nacional de Artes y Oficios (CNAM), Centro Interdisciplinario de Investigación en Ciencias Orientadas a la Acción (LIRSA), París, Francia. El trabajo presenta un sintético repaso histórico de los cambiantes arreglos institucionales para la provisión de servicios de agua y saneamiento en Francia, enfocando los impactos de largo alcance esperados de la implementación de la Ley NOTRe de 2015, que ha iniciado una reforma histórica al transferir la responsabilidad por los servicios de agua y saneamiento de manos de 36,600 municipalidades a 2,000 comunidades urbanas y rurales. La autora argumenta que la reforma presenta desafíos sin precedentes para las áreas rurales y los pueblos pequeños, pero que también podría poner fin al viejo dilema que enfrentaban los gobiernos locales desde el siglo diecinueve ante la opción dicotómica entre gestión pública o gestión privada de los servicios de agua y saneamiento, e inducir el desarrollo de arreglos institucionales más complejos, dependientes de negociaciones políticas entre las autoridades locales, los proveedores de servicios y los usuarios.

El Artículo 2 está a cargo de Cristián Flores Fernández, del Instituto Integrativo de Investigación sobre Transformaciones en Sistemas Humano-Ambientales (IRI THESys) y Departamento de Geografía, Universidad Humboldt, Berlín, Alemania. El trabajo aborda el tema del modelo privatizado de servicios de agua y saneamiento de Chile y presenta una evaluación crítica orientada a exponer los "mitos" asociados con esta experiencia. El autor ofrece un repaso histórico del modelo chileno de privatización y utiliza la crisis sanitaria que afectó a más de 140 mil personas en la ciudad de Osorno en 2019 como un ejemplo empírico de los fracasos y riesgos asociados con la privatización de servicios esenciales de agua y saneamiento. El caso de Chile es también el objeto del Artículo 3, escrito por Melissa Bayer, del Instituto de Geografía, Universidad de Münster, Alemania. La autora examina la situación que afecta a los asentamientos informales en la ciudad de Antofagasta, una de las regiones más ricas de Chile, medida por su ingreso *per capita*, pero que también presenta los niveles más elevados de desigualdad. Estos

asentamientos no están incluidos en el sistema formal de provisión de servicios de agua, que están en manos de una empresa pública colombiana de agua y saneamiento que opera en Antofagasta como un concesionario privado. La autora examina cómo los arreglos alternativos desarrollados por los habitantes de estos asentamientos informales para obtener acceso al agua se relacionan con la búsqueda de inclusión social y de reconocimiento por sus derechos ciudadanos. En el Artículo 4, Francesca Minelli, actualmente Investigadora Independiente basada en Munich, Alemania, presenta un análisis sintético basado en su reciente investigación doctoral concluida en la Universidad de Glasgow, Reino Unido, sobre las historias y las perspectivas que enfrentan las cooperativas de agua en Cochabamba, Bolivia. El trabajo enfatiza el papel que cumplieron las cooperativas en el desarrollo de servicios de agua en áreas de Cochabamba que carecían del acceso a servicios esenciales, y cómo lograron establecer formas legítimas de control sobre sus territorios y sus fuentes de agua. El artículo también discute la diversidad de desafíos que enfrentan las cooperativas en un contexto de circunstancias rápidamente cambiantes, incluyendo una referencia a las amenazas y riesgos que enfrentan para sobrevivir debido a la tendencia declinante en la participación activa de los miembros en varias cooperativas, la creciente competencia con otros actores por las fuentes de agua, y las presiones financieras que enfrentan ante la necesidad de mantener y reemplazar infraestructuras envejecidas.

Finalmente, el Artículo 5, a cargo de Noelia Rodríguez Prieto, de la Universidad de Alcalá, España, examina los vínculos entre la política del agua y el nacionalismo, en perspectiva histórica. La autora discute el rol significativo que tuvo la política hídrica tras el "Desastre de 1898", derivado de la Guerra entre España y los Estados Unidos, que aceleró el fin del Imperio Español con la pérdida de las principales colonias restantes, Cuba, Puerto Rico, y Filipinas. Establecer el control sobre las fuentes de agua mediante la construcción de grandes infraestructuras se convirtió en una estrategia central en la tarea de reorganizar a la sociedad española, reconstruir su economía y reinventar su identidad nacional. El trabajo provee un análisis sintético de las formas contrastantes de "nacionalismo" asociadas con esta transformación de la sociedad española basada en la gestión hídrica que ocurrió entre fines del siglo diecinueve y la década de 1970. El argumento enfatiza el contraste entra las políticas hídricas modernizantes propuestas por la élite intelectual, profesional y política del "regeneracionismo" a partir de 1898 y el nacionalismo conservador extremo, fundado en la construcción de grandes infraestructuras hidráulicas, desarrollado por la Dictadura del General Francisco Franco (1940-1975).

Con gran placer presentamos este número de los Cuadernos de Trabajo, que es resultado de proyectos de investigación recientes y en marcha sobre la política del agua en Europa y América Latina. Los artículos presentan excelente material y ejemplos, basados en evidencia empírica, que serán de utilidad para investigadores, estudiantes, activistas, especialistas y tomadores de decisiones, entre otros actores involucrados en los debates sobre la democratización substantiva de la política y la gestión del agua y de los servicios de agua esenciales. Les deseamos una placentera y fructífera lectura.

José Esteban Castro

Editor

Newcastle upon Tyne y Buenos Aires, septiembre de 2020

Article 4

The significance of shared history and sense of ownership over their waterscapes among members of water cooperatives in Cochabamba, Bolivia[1]

Francesca Minelli[2], Independent Researcher, Munich, Germany.

Abstract

This article is based on a case study of the water cooperatives operating in peri-urban areas of the Cochabamba conurbation, Bolivia. Water cooperatives were created by the local population to cater for their water needs when their neighbourhoods remained unserved. I analyse how water cooperatives established and then maintained effective forms of control over their waterscapes over time by exploring the significance of the members' shared experiences, focusing on the histories of the cooperatives and the continued active participation of their members. I argue that the cooperatives exercise both discursive and material forms of control over their territories and water systems, and that the relationship between the cooperatives and their members is fundamental to maintain control over their waterscapes in the rapidly changing conditions of the Cochabamba conurbation.

Keywords: waterscapes, cooperatives, participation; Cochabamba; Bolivia.

Received: August 2019 Accepted: June 2020

1 This article is based on the author's doctoral dissertation titled "Communitarian water providers in peri-urban areas: the case of Cochabamba water cooperatives" (Minelli, 2018). The research was carried out with the support of the College of Social Sciences, University of Glasgow, United Kingdom, and the Autonomous Province of Trento, Italy.

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Resumen

El artículo se basa en un estudio de caso de las cooperativas de servicios de agua que operan en las áreas periurbanas del conurbano de la Ciudad de Cochabamba, Bolivia. Las cooperativas de servicios de agua fueron creadas por la población local para suplir sus necesidades en un período cuando sus barrios aún no contaban con este servicio. Analizo cómo las cooperativas de servicios de agua establecieron y mantuvieron formas efectivas de control sobre sus paisajes hídricos a lo largo del tiempo, explorando la importancia que tuvieron las experiencias compartidas de los miembros de las cooperativas, enfatizando las historias de las cooperativas y la participación activa y continua de sus miembros. Argumento que las cooperativas de agua ejercen formas discursivas y materiales de control sobre sus territorios y sistemas de servicios de agua, y que la relación entre las cooperativas y sus miembros es fundamental para mantener el control sobre sus paisajes hídricos en las condiciones rápidamente cambiantes del conurbano de la Ciudad de Cochabamba.

Palabras clave: paisajes hídricos; cooperativas; participación; Cochabamba; Bolivia.

Recibido: agosto de 2019 Aceptado: junio de 2020

Introduction

This article is based on a case study of the water cooperatives operating in peri-urban areas[3] of the Cochabamba conurbation, Bolivia. The water cooperatives considered in the study were created by members of one or more neighbourhoods that came together to organize the provision of domestic water supply services at a time when their areas were unserved. The article draws on in-depth interviews with the leaders of 21 cooperatives, which I conducted between September 2013 and September 2014[4]. I explore how water cooperatives were able to establish and maintain control over their waterscapes, exploring the importance of the shared experiences and sustained participation of their members throughout the history of the cooperatives. I argue that the forms of control that the cooperatives exercise over their waterscapes have both material and discursive aspects. The material aspects include their capabilities to shape the waterscape, particularly establishing control over their water sources, infrastructures, and service areas. The discursive aspects refer to their ability to create their own shared understandings and visions of their waterscapes, including their appeal to legal arguments and customary rules, and the sense of belonging and ownership of their waterscapes. I argue that both aspects of the forms of control they establish over their waterscapes are fundamental for the survival of the cooperatives. Furthermore, I underline how the active, sustained participation of the cooperatives' members is fundamental to ensure the survival of the cooperatives and their continued control over their waterscapes in the changing conditions facing the Cochabamba conurbation.

The article starts with a brief discussion of the conceptual aspects of the research. I consider the concepts of "waterscape" and "hydro-social territory" and argue that the two can be used to understand how different forms of control exercised over a territory co-create each other. In the second section I present an overview of the role of water cooperatives in Cochabamba, in geographical and historical perspective. In the third section I examine how leading members of the cooperatives recall the histories of the material creation of their water services, and how members developed such a strong sense of ownership and legitimacy to claim the right to control their waterscapes. In the fourth section I analyse in more detail how different forms of control are used by the cooperatives to maintain ownership over the territories, both assuring the participation of the members and defending the cooperatives against external threats, in rapidly changing circumstances. I close the article with brief conclusions summarizing the main findings.

Conceptual aspects: the interaction between waterscapes and hydro-social territories

To explore the development of water services by independent providers in peri-urban neighbourhoods of Cochabamba, I decided to draw on the concepts of "hydro-social territory" and "waterscape". These two concepts make it possible to connect social processes and their relations with their material base, that is, water infrastructures,

3 In this article, I use the term "peri-urban" to refer to neighbourhoods that went through processes of self-construction outside the reach of State planning, where water services have been mostly developed by independent providers.
4 The interviews cited in the article have been anonymized.

water sources and, more generally, the landscape of the Cochabamba conurbation. Both concepts derive from political ecology, which seeks to transcend the nature/culture binary underlining the co-determination of environmental and social changes (Heynen *et al*., 2006: 5, 11). Political ecologists use a diversity of terms to explain the way in which water, society, and power interact with the material landscape, but the concepts of waterscape and hydro-social territory are particularly useful for my study and should "be viewed as complementary and even mutually reinforcing" (Karpouzoglou and Vij, 2017: 2), even if they might, at times, overlap. "Waterscape" is defined as the result of the ever-changing interactions between society and water, that take place at different scales, in different times, and are influenced by power, which allows for an analysis of the connection between water, power, and governance (Norman *et al*., 2012: 55). Therefore, I use the concept of waterscape to analyse how lands, water sources, infrastructures, human actors, and their institutions, in my case focusing mainly on water cooperatives, interact and co-create each other in processes take place at different scales, potentially producing a multiplicity of waterscapes (Karpouzoglou and Vij, 2017: 2-4). I use this concept to analyse the small-scale waterscapes resulting from the historical development of the water cooperatives, a process that is enmeshed in and influenced by the development of the broader waterscape of the Cochabamba conurbation.

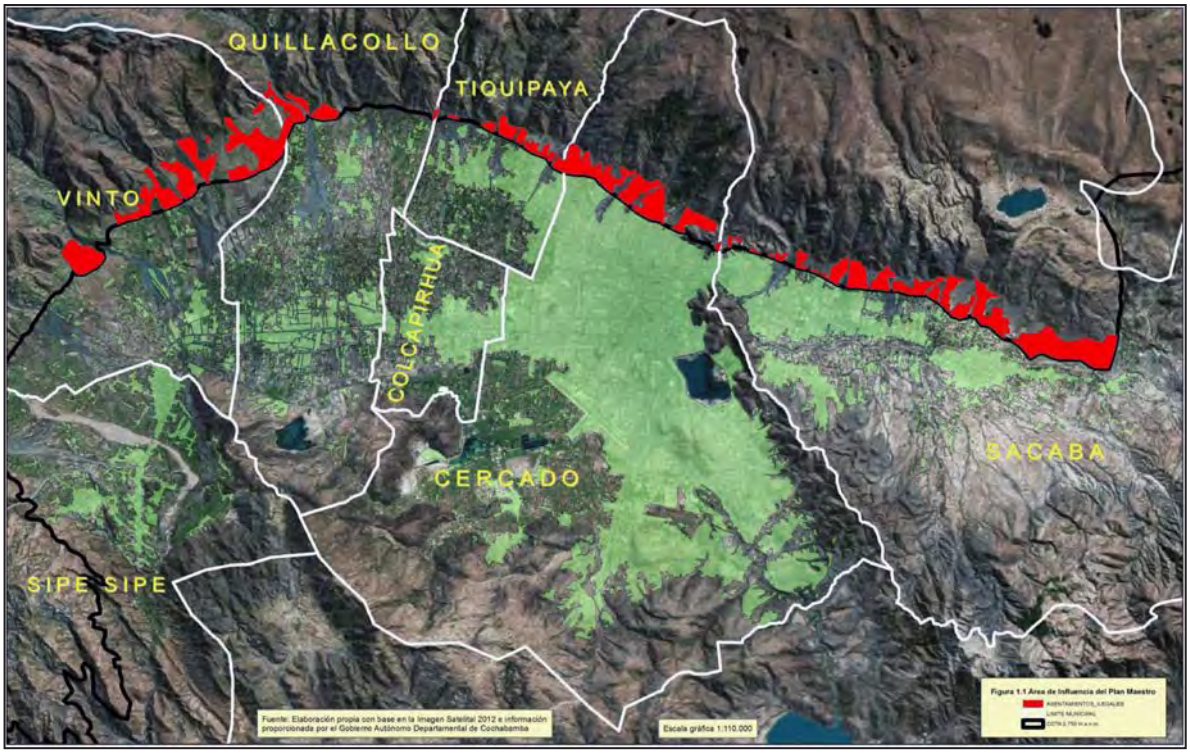
The concept of hydro-social territory allows me to analyse the cooperatives' control over their territories from a different point of view. This concept enables us to see how water spaces are represented by different groups, and how such conceptions can coexist or conflict with each other (Boelens *et al*., 2016; Hoogesteger *et al*., 2016: 5). In this article, I use this concept mainly to understand how different actors "see" the waterscape, and how such conceptions influence and are influenced by material and institutional aspects. Together, the concepts of waterscape and hydro-social territory allow me to explore how spaces are modified, shaped, and conceived, but furthermore allows me to understand how such actions relate to the physical landscape, and specifically to water, and how the cooperatives exercise and justify their control over their territory. I explore how the control over the waterscape is created through the interrelation between the physical construction, re-construction, and defence of the territory and the perceptions and understandings developed by the communities, particularly the cooperatives' members, particularly their sense of ownership over their territories and its water sources, and over the cooperative water services they created.

Background: Cochabamba water cooperatives

In industrialized countries, since the early twentieth century access to safe water became a basic domestic urban service, leading to the assumption that this was the model to which all cities would eventually conform (Kaïka and Swyngedouw, 2000: 133-135; Gandy, 2004: 368). Large cities in Latin America underwent a similar transformation as large-scale infrastructures brought water to urban areas and contributed to the development of water services. However, such processes were often controlled by local elites, which had exclusionary consequences. While water service networks initially kept up with the expansion of the urban population, since the second half of the twentieth century urban growth, largely propelled by rural-urban migration processes, and the sharp decrease of public investment in urban services infrastructures since the 1980s, led to a

significant increase of the unserved population (Swyngedouw 1995). These reductions of public investment in the infrastructure of essential services were complemented by the policies of privatization of water services that were accelerated in the 1990s, initiatives that were induced through the structural adjustments programs supported by the World Bank and the International Monetary Fund (IMF) (Goldman, 2007: 788). After a sharp rise of private sector participation in the provision of water services in Africa, Asia, and Latin America in the 1990s, social and financial problems finally brought to a "partial retreat" of privatisation policies in many low-income countries (Bakker, 2013: 254; 2010: 94). In perspective, the growing crisis affecting urban water services worsened and, particularly, the peri-urban poor were largely left "underserved" (Allen *et al.*, 2006: 333). Lack of adequate provision of essential services led people in these peripheral areas to find alternative means to access water, which include buying water from water trucks and small-scale water sellers or the construction of basic infrastructures like drilling individual or community artisanal wells or building small-scale water networks. These alternative arrangements for water provision are widespread in the Global South (Allen *et al.*, 2006: 334; Bakker, 2010: 23-24), and community and small-scale organizations have a fundamental importance in providing water services in areas that have been neglected by the State, often due to disordered processes of urbanization. Such is the situation in the Cochabamba conurbation, located in the Cochabamba valley, Bolivia (Map N° 1).

Map Nº 1: The Cochabamba Conurbation*



*In red the areas where the conurbation has grown outside the allowed altitude for construction.

Source: TYPSA *et al.*, 2013.

Like in the case of other Latin American cities, Cochabamba went through a process of disordered, horizontal, low density growth, which left large areas outside the reach of municipal services (Ledo García, 2013: 14–17). The privatization of essential water services was forced on the city in 1999, but the decision was strongly rejected by the population. In the year 2000, few months after the government had signed the concession contract, massive popular mobilizations led to the cancellation of the contract with the private company (see footnote N° 6). Under the government of President Evo Morales (2006-2019), the water sector underwent significant transformations, aimed at (re)nationalising and centralising state control over the provision of water services, whilst also officially acknowledging the role of community providers (Walnycki, 2013: 121-123). This ambiguity was central to the tensions in water governance arrangements that I identified in Cochabamba during my research. At the time, many water activists and community leaders feared that the government aimed to encroach, and eventually dissolve, community providers (Walnycki, 2013: 132–133).

In the absence of a cohesive water policy, the Cochabamba waterscape remains strongly fragmented and unequal. Community suppliers remain a fundamental means through which the population access water services, but there are important differences in service quality and coverage across the different providers (Zegada *et al.*, 2015: 5). Although in principle there are no sharp differences between the "served" urban centre and the "unserved" outskirts of the conurbation, the difficulties in accessing potable water facing the poorest sectors of the population in the peri-urban areas are significantly worse, which prompted Ledo García to define Cochabamba as a "dual city" (Ledo García, 2013: 151). In the seven municipalities that compose the Cochabamba conurbation, over 600 community organizations supply potable water to approximately 58 percent of the population, while four municipal operators cover only 26 percent of the population (TYPSA *et al.*, 2013: 55). These community providers have been fundamental in offering the service in a sprawling conurbation where large peri-urban areas have never been reached by a municipal water utility. People lacking access to piped water usually resort to privately-run distribution by water trucks that provide an expensive service of unreliable quality. Differences in the internal organization, economic resources, age, and histories of the neighbourhoods help to explain the high variability in the availability and quality of water services in different areas of the city (Zegada *et al.*, 2015: 22).

Community providers in the conurbation assume different organizational forms. Some systems are managed through formally recognized neighbourhood councils or independent water committees, while a minority operates through a water cooperative. 25 cooperatives are registered in the Cochabamba's Federation of Water and Sanitation Cooperatives (FECOAPAC) as operating in the conurbation (more cooperatives probably exist). Cooperatives tend to be well organized, some providing services in well-established neighbourhoods, and use to have access to adequate water sources. In this sense, their service is on average better in comparison with other community organizations (Lavrilleux and Compere, 2006: 52). This is not due to qualitative differences between cooperatives and other organizations. What emerged from my interviews is that many well-established community water providers at some point make the decision to officially register as cooperatives. There are, however, variations amongst the cooperatives, and some are rather fragile organizations due to a range of problems including lack of access to quality water sources, shortage of economic resources or infrastructural problems. However, most cooperatives are relatively longstanding, having existed for 20-30 years,

and therefore, from a research perspective offer a window for the observation of the wider patterns of urban development in the conurbation over time, including the levels of informality, the processes of auto-construction of housing and infrastructures led by neighbourhood organizations, and the physical evolution of the waterscape, among other aspects. Exploring their history in a context of changing patterns of unequal urban development helps to better understand the co-construction of local waterscapes whereby cooperatives have established control over their territories.

In this connection, to understand the current characteristics of the cooperatives requires exploring their history within the overall development of the conurbation. Thus, only few cooperatives are in the marginal peri-urban areas that have been created more recently due to the informal occupation behind the expansion of the conurbation. These cooperatives operating in the newer peripheral neighbourhoods tend to face economic difficulties, not least because they serve a low-income population, experience problems to access adequate water sources, and provide less reliable water services in terms of quality and availability. Thus, in historical perspective, the emergence of the water cooperatives has been part of the wider processes of urbanization, which in turn have contributed to shape their current characteristics. The control that water cooperatives exercise over local waterscapes is always directly or indirectly influenced by wider processes. Clearly, the fact that some community providers have access to good water sources is directly related to the fact that their neighbourhoods were established when quality water resources were still available and could be appropriated by newly arriving settlers. These older neighbourhoods have often assumed "urban" characteristics, achieving legal status and regular access to essential services, including water (Durán, 2007). In turn, these characteristics have become an attractor for well-off social groups that choose to settle in these established neighbourhoods. However, over time the ongoing process of informal urban expansion has been driving poor families into the poorer land left available for new settlements, which among other problems tends to lack adequate water resources. Furthermore, growing water scarcity in the region worsens the competition between users over the control of water sources, particularly between the organizations of agricultural users and the newly established peri-urban neighbourhoods (Walnycki, 2013). Therefore, examining the cooperatives in the wider historical context of the conurbation is fundamental. However, the more "intimate" and small-scale history of the cooperatives, as told by their members, is also very important to understand how the cooperatives were able to establish and maintain control over their territory.

Retelling history: the importance of shared struggles

Because of the disordered process of urbanization, large parts of the Cochabamba conurbation were excluded from access to public services and were built in areas which were not covered by municipal urban planning. This void led to the foundation of community organizations which proceeded to build their own water infrastructure, often together with other essential services, in a process that provided the ground for the control that they now exercise over the waterscape. As described by one interviewee,

> since 1989 we drilled the wells as we needed, and there were approximately 80 families at that time, and with the help of the international cooperation [...]

> and with our work, with our contributions, we built the first well, that delivered one litre per second. That well is now out of service, it is 20 years old. In this sector, in our neighbourhood, no government agency helped us, neither the prefecture, nor the municipality, all that we have is the fruit of the sacrifice of the people, the schools, the cooperative, all that we have (President, Primero de Mayo Cooperative, 21 November 2013).

This retelling of the cooperative's history by the interviewee is remarkably like the accounts provided by representatives of other cooperatives whom I interviewed during the research. I argue that examining the ways in which members of the cooperatives see their history is fundamental to understand how they have managed to establish and keep control over their territories and respective waterscapes. Their historical representations allow us to comprehend the material and discursive ways through which communities exercise control over their cooperatives' service areas and their water sources, which might overlap or not depending on whether the water sources are placed within the service area of a given neighbourhood or are shared by several communities and their respective cooperatives. The historical processes of co-production of the cooperatives' waterscapes, including the work, efforts and economic resources invested by their members, help to explain why they conceive the territory of the cooperatives as "belonging" to them. This feeling of ownership is often an important driver behind the members' willingness to protect their waterscape. The discourse of ownership achieved through the members' hard efforts is often supplemented with legal arguments, but these are often secondary, used to defend publicly an already deeply felt sense of legitimate ownership. In a related study focused on the Southern areas of Cochabamba, Cielo explored how local people refer to the efforts and resources they invested in building their neighbourhoods to claim ownership of the land, even if legal rights are absent (Cielo, 2010). In addition to land rights, in my study I found that local people also refer to their efforts and investments to claim the ownership over infrastructures and the right to use water sources in their territories. As mentioned earlier, during the interviews with representatives of cooperatives I found significant similarities in their stories. Interviewees were keen to emphasise the contributions made by community neighbours (*vecinos*) and members (*socios*) of the cooperatives in their joint efforts to build the infrastructure and organize the water service, remarking that everything they have now came from "our pockets". In their talks there was an expression of respect for those who had contributed to the creation of the cooperatives.

The participation of the cooperatives' members contributed to the co-production of the existing waterscapes and, therefore, to establishing the material control of the cooperatives over their territories. However, in the interviews it became evident that the importance of these processes for the members of the cooperatives goes beyond the physical aspects and involves collective memories of the human costs paid by people in the building of community works, which some described as "exhausting" or even "dangerous". This was the case, for example, when two people died during the construction of a cooperative's water system, as remembered by one interviewee:

> We went to the mountain to search for water sources, and we found two sources. We went together to work as a group. We called the people and started with the two sources, but already in our first attempt one person died, because it is very steep, the mountain is very steep. And the following year, another person died because he fell, so that it was very costly for us to do

> this work. Firstly, we started laying some pipes, and later we found some resources and started to get members. That is, everything that we have done comes from our pockets. Thus, if we needed a contribution, we put it ourselves for the pipes, for everything, because no one asked to be paid for their work. Because we did it, everyone, we worked during weekends, every Sunday we worked. We succeeded, and after that, we did all the documents. We did all of that, and now, here it is, everything is legal now, right? (President, Candelaria Cooperative Ltd., 30 November 2013).

Exploring the cooperatives' histories is therefore necessary for understanding how the existing local waterscapes were conceived, imagined, and built, as well as the values that people associate with the efforts and resources that they invested in these processes[5]. These issues are explicitly stated in the following quote:

> Eh, I believe that our members [...] they care about the cooperative because they worked with shovel and spade [...]. They did it personally. We have all done it, isn't it right? Men, women, children, we all worked. When we did not have resources, we went to the mountain with trucks and other things. And we dug the trenches, we buried the pipes. Others brought stones; others did other things ... The ladies cooked [...]. So, I believe that there was more will [...]. Eh, more will wanting to have something. And it was for that reason, when during the Water War they told us that we would be affected, that people started to get out. And we took part in it with Oscar, Omar[6], and other comrades, we took part in it (President, Arocagua-Puntiti, Cooperative, 11 August 2014).

The President of the Arocagua Puntiti Cooperative then underlined how the physical construction of the territory created a feeling of ownership and "care" in the members. This was the reason why they were ready to physically defend their waterscape against the external threat posed by the attempted privatization of water resources and services in the region.

Thus, community organizations, including cooperatives, materially defend their territory against perceived external threats (e.g., through obstructing the building of infrastructure works, blocking streets or participating in public protests). However, this exercise of physical control over the territory can be problematic and sometimes have exclusionary effects, as sometimes other community organizations may claim control over the same territory or over shared water resources, which may lead to clashes between communities. For example, some cooperatives tap water sources located outside their area of the service, which requires them negotiating agreements with those

5 Although most cooperatives received some external help from international cooperation agencies, international NGOs, religious organizations, and public agencies to build their systems, in most cases the original initiative to develop their own water systems came from the people. According to the information gathered in my interviews, only in one case, the San Lorenzo Cooperative, the initiative to build the system came from an external source.

6 Oscar Olivera and Omar Fernandez, two of the figureheads of the Coordinator in Defence of Water and Life (*Coordinadora en Defensa del Agua y la Vida*), an organization that played a central role during the internationally known "Water War" that took place in Cochabamba in the year 2000. The Water War was a popular revolt against the privatization of Cochabamba's municipal water and sanitation utility, which threatened to put community water providers under the control of the private international consortium that had been granted the privatization contract in 1999.

communities that control the water sources. Agreements with external actors are one of the means through which the cooperatives exercise material and discursive control in areas outside their areas of services. However, this control is often fragile.

An example is the attempt of the Primero de Mayo and Nuevo Amanecer cooperatives to dig wells outside their service areas. Both cooperatives operate on rocky hill that makes drilling for water very difficult, and they attempted to build a well on a lower terrain controlled by an agrarian union. One of the cooperatives, Primero de Mayo, failed in the attempt. The cooperative's president argued that the use of water by the agrarian union was illegal, given that underground water is owned by the state, but did not manage to get support from the regional authorities, and without that support the cooperative could not dig in an area that was outside its jurisdiction. In contrast, the Nuevo Amanecer cooperative reached an agreement with the landowners who controlled the underground water resources, who allowed the cooperative to dig a well in exchange for a provision of free water services. This example shows how the cooperatives, and other community organizations appeal to a diversity of legal frameworks (e.g., to frame the behaviour of the agrarian union as illegal; calling on the support of a departmental authority), informal agreements or the exercise of physical control, among other issues, to protect their waterscapes. It also underlines how the State itself does not have complete control over the territory and its resources, and sometimes hides away from dealing with territorial disputes between local communities.

The discursive control of the cooperatives over their waterscapes involves legal aspects but it is primarily based on the discourses of the community organizations asserting their "ownership" over them. This aspect emerged during the interviews when cooperative leaders were asked about the ownership of water sources. The cooperatives acknowledge that underground water sources are in the public domain, under State control, and therefore the permission for drilling wells is normally granted by the regional authorities. However, there is a prevailing sense among members of the cooperatives that the communities have rights of access and control over water sources located within their territories. Therefore, while cooperative leaders recognize State control over the water sources, they claim the right of the communities and their cooperatives to access these waters. Even in the absence of formal or legal recognition, they understand that the right to access water in their service areas is grounded on the shared sense of community ownership over their territory and its resources. Thus, although at the time of my fieldwork in Cochabamba in 2013-2014 the right of community providers over their water sources was undergoing a process of formalization by the authorities, from the interviews it emerged that the appeal to legal discourses is a secondary means of control over their waterscapes, which they use to secure in the legal domain what in their view is already a legitimate right. Also, legal arguments are used by the cooperatives when they need external support, for example to defend their access to water sources against external threats posed by rival users or other actors.

As these examples show, community participation, and particularly the participation of members of the cooperatives, has been central in the co-construction of shared waterscapes and hydro-social territories in their local areas. However, sustained participation over time is fundamental if the cooperatives are to maintain their material and discursive control over their waterscapes. This is explored in the next section.

The importance of members' participation

From an analytical perspective, there are active and passive forms in which members participate in the cooperatives, for example active participation assemblies or the basic commitment involved in paying water bills in time. Although both active and passive forms of participation contribute to the cooperatives' discursive and material control over their waterscapes, the research identified that there exists a diversity of combinations and changing patterns in the forms of member participation across different cooperatives. I observed that the relationships between cooperatives and their members are undergoing significant changes driven by a "process of professionalization" undergoing the cooperatives, which is transforming the ways in which they exercise control over their respective waterscapes. Such changes can have a weakening effect on the cooperatives. To discuss this in greater detail let us first examine the conditions entailing common membership and the election of members to play official roles in the cooperatives.

In this connection, membership generally requires buying a share and becoming a partner (*socio*). The members' General Assembly is the highest authority, and it makes the most important decisions (e.g., changes in water prices; construction of a new infrastructure, etc.). The assembly elects the Board of Directors, and only members can be elected to this governing body. In contrast to the prevailing model of centralized service provision, the role of the cooperative's members is not limited to paying the bills as customers. They contribute with the payment of a share for the right to join the cooperative, occasionally provide fixed monetary contributions to fund infrastructure projects, participate in the construction of community works and in meetings of the General Assembly, elect the Board of Directors, participate in civic community events and, in times of political action may also participate in public protests and other events. Not all forms of participation are mandatory (Table N° 1) but when they are, failure to participate due to negligence or other unacceptable reasons is usually punished with fines. These and other forms of passive and, particularly active participation ultimately contribute to the control of the cooperatives over their waterscapes.

Table Nº 1. Duties and responsibilities of the cooperatives' members

Monetary contributions (passive)	Active participation (mandatory)	Active participation (discretionary)
Payment of service bills. Payment of cooperatives' shares. Payment of contributions to fund infrastructure projects. Payment of fines.	Participation in the cooperatives' assemblies. Participation in the construction of community works. Participation in protests, streets blockades, civic events, various neighbourhoods' events[7], etc.	Acting as elected officials in the cooperatives' Boards of Directors. Gathering information and monitoring the functioning of the cooperatives. Offering professional support to the cooperatives.

Members' participation has paramount importance for the cooperatives from a practical point of view, as it allows the consolidation, maintenance, and protection of the physical aspects of their waterscapes, but it also has a powerful symbolic function. Member participation reaffirms and extends the feeling of community belonging within the cooperatives and the sense of ownership over their waterscapes, and therefore also strengthens the discursive control of the cooperatives in their hydrosocial territories (Photograph Nº 1).

Photograph Nº 1. Members of a cooperative participate in a civic celebration (2014).

Source: author's collection.

7 When made mandatory by the cooperatives.

The payment of cooperative shares is one example. Shares have practical importance for the maintenance of the physical waterscape, as infrastructural works are often supported through the payment of new shares. The share's price is generally quite high: it can vary from around US$ 300 to US$ 850 for a water connection, while the sewage connection is cheaper, varying from US$ 200 to US$ 300[8]. The payment of shares has more than a monetary significance. Through its payment, the members contribute to the construction of the waterscape, as well as acknowledging the efforts made by preceding members. In this way, both legally and symbolically share payment reaffirms the fact that the cooperatives are also owned by new members and not only by those who participated in the early construction of their waterscapes. For example, the Arocagua-Puntiti Cooperative makes this explicit in their internal regulations: new members pay an amount considered to be the monetary equivalent to the labour contributed by the founding members.

The price structure of water services also contributes to the cooperatives' discursive and material control over their waterscapes. Cooperatives usually establish a "basic monthly tariff" for a given amount of water, which increases as a function of the level of consumption, with the tariff becoming progressively more expensive as consumption rises. This structure allows for charging lower prices for the consumption of a basic amount of water, discourages water waste and the uses of water for-profit making activities, and demands a greater contribution from the wealthier members of the community, who are usually those with higher levels of consumption. Special treatment is often reserved for water services provided to public or community institutions such as schools. As commented by one of the interviewees,

> Therefore, we have 10 consumption categories, we do not want to make everyone pay a lot. There are poor people, elderly people, but there are other people who are living in big houses. So, let them pay more. The tariff depends on usage because we have meters. The basic consumption for a family is around 15 m3. If you are using more, I think, what are you doing? You are either selling water or you are profiting. This is to make sure that the water is used by those who need it (President, Cooperative San Lorenzo, 11 December 2013).

This arrangement reaffirms the material aspects of the cooperatives' control, as they exercise their right to regulate water consumption, either through tariff setting or through discouraging or even forbidding certain usages, especially when water is scarce. It also asserts their principle that water is not to be treated as a commercial good, but as a service that must be managed to benefit the entire community. In this way, the cooperatives reinforce both their communities' ownership over their water services and their discursive control over their respective waterscapes. However, it has emerged that the tariff structures used by many cooperatives are insufficient to guarantee their survival, as often have remained unchanged since their foundation 20 or 30 years earlier, when need to maintain and upgrade the infrastructure was not adequately considered. In one of my interviews, a water services consultant argued that tariffs set by community organizations are usually too low and that community providers rely too heavily on the contributions of new shares by members to fund infrastructural works:

8 For comparison, the minimum wage in 2014 was 1,440 Bolivian pesos (BOB), equivalent to US$ 208 (INE, 2020).

> They believe that they are all right, but they are a time bomb. And that time bomb is the infrastructure (Cochabamba water projects consultant, 6 December 2013).

In the long term, problems with water tariffs damage the cooperatives' control over their physical waterscape. Most interviewees among the cooperatives' members stated that they had enough financial resources to cover running costs, but most had problems to fund the long-term maintenance of the systems and build new infrastructures, such as drilling new wells. To finance emergency repairs and new infrastructure works some cooperatives revealed to have a reliance on members' special contributions (cuotas). This is a heavy burden, especially because this practice is more common (although not exclusive) in poor neighbourhoods, recently established cooperatives, or those with a poor infrastructure (features that are often correlated).

There is a growing awareness about the need to consider covering long-term maintenance and infrastructure renewal in the tariff structures, and some interviewees confirmed that their cooperatives had already commissioned professional assessments to set new tariffs. However, tariff increases must be approved by the members in the General Assembly, and some cooperatives find this process difficult. A few cooperatives that increased their tariffs stressed the importance of maintaining good communication with their members in doing so. The President of the Arocagua-Puntiti Cooperative stated that since their members participated in the construction of the water system, and continue to contribute with much community work, they think that water services should be cheap. Lack of adequate or sufficient communication with their members to induce a clearer understanding about the actual cost of running the water system, therefore, may explain the failure to increase tariffs in some cases. This is another example of how the relationship between the cooperatives and their members influence their capacity to control and maintain their physical waterscapes.

However, as mentioned before financial management, payment compliance, and monetary contributions are not the only forms of participation. Active participation, for example in assemblies and community works, is also fundamental, and failure to participate is often penalized with fines. Different forms of participation correspond to different requirements for controlling the waterscape. In some cases, however, a reduction in participation can weaken the cooperatives' control, and active participation varies between different cooperatives. Poorer and younger cooperatives often require more intensive participation in community works, for practical reasons. Well-established cooperatives often need less member participation in the material construction and protection of the waterscape. In some cooperatives, the role of the members now approximates the role of a customer, shifting most of the work to employees and elected officials. We can then speak of a growing "professionalization" of cooperatives. However, member participation is also necessary in the assemblies and in the boards of directors, where weak participation might lead to a decline in the legitimacy of decision-making activities and/or place a heavy burden on the few members willing to participate. Furthermore, active participation in community works and in the active defence of the waterscape against external threats, like those posed by rival water users competing for the same water sources, remains fundamental in certain cooperatives. While some of the younger cooperatives placed in more disadvantaged neighbourhoods often

maintain a high level of participation, this is a problem for older and better-established cooperatives, which nonetheless need the active participation of their members. This is particularly true for cooperatives with water sources placed outside their area of service, which need active maintenance and defence of their resources. A few interviewees complained that some members expected the cooperative to take care of all the manual work while others might prefer to pay a fine for non-participation. In some cases, this change in attitude from members was attributed to socio-economic transformations in their neighbourhoods. One of such cases affects the Arocagua-Puntiti Cooperative, whose President described in the interview how they needed to actively rebuff members' attempts to avoid participating in community works. Their water sources are placed in the mountain range that surrounds Cochabamba, outside their area of service. As such, they need to be protected from rival users, including other communities, and from legislative changes that may threaten their control over these sources; the continued use of these distant water sources also requires intensive work to carry out maintenance. Lack of involvement could seriously compromise the capability of the cooperative to control and maintain their waterscape, as explained by the President:

> The local people, the people who were from the beginning, they are very hard-working. They do not care about the rain, they go, they work and do everything else that is needed. But the people who arrived from the city [to live here], they came and said "I did not pay [the member share] to have to do this work". So, they believe that if one pays, that is enough [...]. That is, they want to behave [with the cooperative] as it were a private enterprise. "I pay, and I demand that they do all this" (President Arocagua-Puntiti, Cooperative, 11 August 2014).

The participation of the members is then fundamental for the cooperatives to maintain both material and discursive control over their waterscapes, but participation is dwindling in some cases. As different forms and levels of participation are required according to the specific needs of different cooperatives, some are more able than others to adapt to the ongoing transformations. In the extreme, unless they manage to maintain a minimum level of active participation, some cooperatives already run the risk of losing control over their waterscapes and hydrosocial territories.

Conclusions

In this article, I discussed how the communities located in the peri-urban areas of the Cochabamba conurbation developed forms of control over their local territories co-constructing waterscapes by developing cooperative institutions to secure rights of access to water sources and build, manage, and maintain water services. Although they acknowledge that water sources in their territories are in the public domain and under State control, these communities understand that they have a legitimate right to access these waters for essential uses. In the process, they constructed not only material waterscapes but also particular ways of understanding and establishing relationships with the territory, its water sources, and other actors, the different levels of government, other communities, etc. Through their experiences in building cooperative systems, they have acquired a sense of ownership over their waterscapes and the conviction that they have the right to decide how the waterscape should be managed, preserved,

or modified.

Such strong sense of ownership has helped to reinforce over time the willingness of the cooperatives' members to actively participate and contribute to their maintenance and development, strengthening their capability to sustain a discursive and material control over their waterscapes. Members' participation is also required to protect and defend their territory and its water sources from rivals, particularly when water sources are located outside the service areas of individual cooperatives and become the object of clashes with external actors, like agricultural producers or other communities who may also claim access rights to the same water sources. However, there is diversity between the cooperatives operating in the Cochabamba conurbation, and they ability to respond to challenges and adapt to changing circumstances is also diverse. Well-established cooperatives, some 20-30 years old, are experiencing the difficulties caused by their own success, as they are undergoing processes of "professionalization" where the early practices of strong member participation grounded on the shared community experience of co-construction are being weakened. The increasing influence of newly arrived members that bring with them urban expectations and may not share the sense of ownership and responsibility that used to drive the active participation in previous periods is one important factor in this development. In some cases, the weakening or even lack of participation could threaten the existence of the cooperatives in their current form, while others seem to be better prepared to adapt to the changing circumstances.

Another significant development is that in recent years the State has sought to reinforce its territorial control, including the control over water sources. During the period of my field work, in 2013-2014, the cooperatives were responding to these new developments by simultaneously trying to affirm their right to maintain a certain autonomy and to receive State support for the maintenance and development of their water services. In this process, the Cochabamba's Federation of Water and Sanitation Cooperatives (FECOAPAC) was becoming an important actor representing the interests of the cooperatives in their negotiations with relevant government departments. In this changing context, the future of the cooperatives depends both on their internal strength, cohesion, and active member participation, and on their ability to adapt to the new circumstances and present a unified position to defend their hard-won rights to have a voice in the co-construction of the wider Cochabamba waterscape.

References

Allen, Adriana, Julio D. Dávila and Pascale Hofmann (2006), "The peri-urban water poor: citizens or consumers?", Environment and Urbanization, Vol. 18, N° 2, págs. 333–351.

Bakker, Karen (2010), Privatizing Water: governance failure and the world's urban water crisis, Ithaca, New York: Cornell University Press.

Bakker, Karen (2013), "Neoliberal versus Postneoliberal water: geographies of privatization and resistance", Annals of the Association of American Geographers, Vol. 103, N° 2, págs. 253-60.

Boelens, Rutgerd, Jaime Hoogesteger, Erik Swyngedouw, Jeroen Vos, and Philippus Wester (2016), "Hydrosocial territories: a political ecology perspective", Water International, Vol. 41, N° 1, págs. 1-14.

Cielo, Maria Cristina Malong (2010), The City Effect: urban institutions, peripheries and political participations in Bolivia, Berkeley, CA.: University of California.

Durán, Nelson Antequera (2007), Territorios Urbanos: diversidad cultural, dinámica socioeconómica y procesos de crecimiento urbano en la zona sur de Cochabamba, La Paz: Plural Editores.

Gandy, Matthew (2004), "Rethinking urban metabolism: water, space and the modern city", City, Vol. 8, N° 3, págs. 363-379.

Goldman, Michael (2007), "How 'Water for All!' policy became hegemonic: the power of the World Bank and its Transnational Policy Networks", Geoforum, Vol. 38, N° 5, págs. 786–800.

Heynen, Nik, Maria Kaïka y Erik Swyngedouw (Eds.) (2006), In the Nature of Cities: urban political ecology and the politics of urban metabolism, London and New York: Routledge.

Hoogesteger, Jaime, Rutgerd Boelens and Michiel Baud (2016). "Territorial pluralism: water users' multi-scalar struggles against state ordering in Ecuador's highlands", Water International, Vol. 41, N° 1, págs. 91-106.

INE – Instituto Nacional de Estadística (2020), "Bolivia – Salario Mínimo Nacional, 1991 – 2019". Available at: https://www.ine.gob.bo/subtemas_cuadros/salarioMinimo_html/SalarioMinimo_41201.htm. Consulted in June 2020.

Kaïka, Maria and Erik Swyngedouw (2000), "Fetishizing the modern city: the phantasmagoria of urban technological networks", International Journal of Urban and Regional Research, Vol. 24, N° 1, págs. 120-38.

Karpouzoglou, Timos and Sumit Vij (2017), "Waterscape: a perspective for understanding the contested geography of water", Wiley Interdisciplinary Reviews: Water, Vol. 4, N° 3, e1210.

Lavrilleux, Yann, and Pierre Compère (2006), Sistemas independientes de agua potable del Área Metropolitana de Cochabamba: descripción de sistemas, identificación de problemas, necesidades y demandas, París y Cochabamba, Bolivia: Instituto Nacional Agronómico de París y Centro Andino para la Gestión y el Uso del Agua, Universidad Mayor de San Simón (UMSS).

Ledo García, María del Carmen (2013), El agua nuestra de cada dìa. Retos e iniciativas de una Cochabamba incluyente y solidaria, Cochabamba: Centro de Planificación y Gestión (CEPLAG), Universidad Mayor de San Simón (UMSS).

Minelli, Francesca (2018), "Communitarian water providers in peri-urban areas: the case of Cochabamba water cooperatives", Thesis, PhD in Social Sciences, School of Social and Political Sciences, College of Social Sciences, University of Glasgow, Glasgow, United Kingdom.

Norman, Emma S., Karen Bakker, y Christine Cook (2012), "Introduction to the themed section: Water governance and the politics of scale", Water Alternatives, Vol. 5, N° 1, págs. 52-61.

TYPSA – Empresa Técnica y Proyectos S.A. Sucursal Bolivia, Consult Gmbh, sucursal Bolivia (GITEC), Land and Water Bolivia y Aguilar & Asociados (2013), Plan Maestro Metropolitano de Agua y Saneamiento Cochabamba (PMMC), La Paz: Ministerio de Medio Ambiente y Agua de Bolivia.

Swyngedouw, Erik A. (1995), "The contradictions of urban water provision: a study of Guayaquil, Ecuador", Third World Planning Review, Vol. 17, N° 4, 1995, págs. 387-405.

Walnycki, Anna M. (2013), "Rights on the edge: the Right to Water and the peri-urban drinking water committees of Cochabamba", Thesis, PhD in Development Studies, Institute of Development Studies, University of Sussex, Brighton, United Kingdom.

Zegada, Alejandro, Gustavo Heredia, Rocío Bustamante, and Anna Walnycki (2015), "Water justice city profile: Cochabamba, Bolivia", in Translocal learning for water justice: peri-urban pathways in India, Tanzania and Bolivia (WatJust), London: The Bartlett Development Planning Unit, University College London. Available at: https://www.ucl.ac.uk/bartlett/development/sites/bartlett/files/cochabamba_report.pdf. Consulted in June 2020.

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