

Working Paper No. 38, 2013

Flows of Water, Flows of Capital
Neoliberalization and Inequality in Medellín's
Urban Waterscape

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Working Paper Series



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López Rivera, Diana Marcela 2013: "Flows of Water, Flows of Capital: Neoliberalization and Inequality in Medellín's Urban Waterscape", **desiguALdades.net** Working Paper Series No. 38, Berlin: **desiguALdades.net** Research Network on Interdependent Inequalities in Latin America.

The paper was produced by Diana Marcela López Rivera during her doctoral scholarship at **desiguALdades.net** from 07/2010 to 07/2012.

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Flows of Water, Flows of Capital

Neoliberalization and Inequality in Medellín's Urban Waterscape

Diana Marcela López Rivera¹

Abstract

Over the past two decades, Colombia has witnessed a significant shift in the overall legal and policy domain in the water sector in order to adjust to the demands imposed by neoliberal economic reforms. Particularly in urban areas, this reform model has been deeply contested as it failed to provide low-income population with access to affordable and adequate water supply services. This paper explores how the implementation of market-driven reforms in the water supply sector has become a key factor in reproducing patterns of unequal access to water. By drawing upon case-study research conducted in Medellín, Colombia, this study investigates the causal interconnection between the commercialization and transnationalization of the city's public multi-utility company as a strategy to be competitive in a globalized environment on the one hand, and the increasing number of households disconnected from the formal water supply networks particularly in low-income areas for non-payment of bills, on the other hand. By bringing together work on urban political ecology and neoliberalization of nature, this paper illustrates how inequalities in access to water in Medellín's waterscape are facilitated by governance structures which are articulated to neoliberal strategies, whose social power relations are simultaneously sustained by an intertwined set of socioeconomic mechanisms, discursive practices as well as technological infrastructures.

Keywords: neoliberalization | waterscape | inequalities

Biographical Notes

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¹ I would like to thank Dörte Segebart, Imme Scholz and Kristina Dietz for their assistance and constructive comments. Thanks to Barbara Göbel and Paul Talcott for their final comments. I also express my deepest gratitude to those who supported me during field research: Ecological and Cultural NGO Penca de Sábila, Corporación Jurídica Libertad (CJL), Personería de Medellín and the roundtable of disconnection.

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1. Introduction

“Waters flows in the direction of power”
(Boelens and Dávila 1988: 447)

The purpose of this paper is to investigate how neoliberal transformations in the water supply sector are closely intertwined with power and inequality. I seek to accomplish this task by analyzing how the commercialization and transnationalization of one of the most successful public multi-utility companies in Latin America, Empresas Públicas de Medellín (EPM), is reproducing unequal patterns of access to water in Medellín, Colombia's second largest city. Over the last two decades, EPM has increasingly been required to behave in ways comparable to privately owned operators by adopting a competitive and profit-driven logic despite remaining publicly owned. The transformation of the water supply sector from a public service to a business organization is largely the result of two key changes in the economic and spatial organization of the company. First, the company initiated in 1997 a process of commercialization through the implementation of cost recovery policies into both economic and environmental regulation. The second key spatial and economical change of the company has been the transnationalization of operations into other geographical areas. In late 2010 and early 2011, EPM began to search for new frontiers in order to expand its networks of capital accumulation to other Latin American countries.

While EPM successfully integrates into the global market, the city reports rising levels of non-payment of bills as consequence of the steady increase in water tariffs. In response, the company embarked on measures to disconnect those households from the formal water supply network in order to ensure full cost pricing. By 2011, company reports estimate that around 46,000 households were disconnected for non-payment, representing 7 % of the total households in the city. Although prepaid water technologies and a free basic allowance program of 2.5 m³/person/month have been deployed as solutions to ameliorate the current water crisis, locally such strategies have encountered social resistance, as they tend to benefit the water company by recovering unpaid water bills (EPM 2011).

Over the last decades, the implementation of neoliberal logics in the water supply sector has been closely associated with improvement of water quality, increment of economic performance and efficiency in service provision, however, insufficient scholarly attention has been paid to the social impacts, especially in urban areas characterized by high levels of inequalities (with the exception of Loftus 200 and Smith and Hanson 2003). This paper intends to address this gap by exploring how the recent spatial

and economic transformation of the Medellín's multi-utility company has significantly contributed to the growing inequalities in access to water, focusing on the case of water disconnection due to non-payment.

In contrast to the explanations provided by the municipality and the water company, which tend to interpret disconnection as a problem associated to a "culture of non-payment" and to unsustainable water consumption patterns, I argue in this paper that water disconnection epitomizes a particular spatial-temporal moment in the process of insertion of the city's multi-utility company into transnational networks of capital accumulation. In other words, the uneven circulation of water within Medellín's urban waterscape might productively be viewed as an expression of unequal power relations inherent of dynamics of accumulation. These social power relations are evident not only from socioeconomic patterns and discourses that incorporate certain values and meanings to water but also from new technological advances that facilitate or hinder the flow of water over the landscape.

By analyzing the local effects of neoliberal restructuring in the water sector, I seek to contribute to the current academic debates over neoliberalism in urban geography, through a better understanding of how these policy reforms are being experienced in specific local contexts and how they are affecting low-income households and the environment. Additionally, this study contributes to the understanding of inequalities in access to water not simply as a function confined to purely technical development or economic growth but as an outcome of wider processes of political and economic interests operating within transnational circuits of capital.

2. Theoretical Foundations

To capture relations of power and the politics influencing access to water in urban contexts, this paper draws on urban political ecology and neoliberalization of nature literatures. An urban political ecology perspective interrogates the relationships between nature and society, centering on power relations that underlie processes of urbanization. Scholars working in this research field call for a critical engagement with the theorization of urban processes as socio-natural processes (Gandy 2002; Kaïka 2005; Swyngedouw 2004). This conceptualization opens up possibilities to recognize urbanization as one of the driving forces behind many environmental issues and as a place where socio-environmental problems are experienced more intensely, a field that has been largely ignored by the literature on the "sustainable city" (Swyngedouw and Kaïka 2000).

While sustainability frameworks tend to center on purely technical matters of proper planning and design, leading to a highly aesthetic and deeply ideological understanding of urban nature (Braun 2005), they have become largely silent on questions of social inequality and injustice as well as patterns of inclusion and exclusion. This interpretation is largely attributed to the desire of protecting a pristine and untouched nature that is constantly under threat and in danger of disappearing. Powerful arguments like this have significant implications for the way we perceive urban environmental change, since nature is commonly interpreted as an entity separated and excluded from human relations.

In order to overcome this impasse, this paper employs the notion of waterscape, a constructed landscape that continuously changes and transforms by sustaining a complex assembly of institutional frameworks, discursive practices, technical choices and struggle over meanings that usually surpass a fixed scale. Through the lens of the waterscape, it is possible to avoid the limitations of thinking about water in purely biophysical terms and as a static object that is subject to human manipulation (Budds and Hinojosa 2012). While flowing through the waterscape, water is not considered anymore to be a passive and politically neutral object lacking agency. Rather, water becomes productively framed as socio-nature, which both shapes and becomes shaped by the uneven power relations inherent in the process of urbanization.

This conceptualization offers an alternative vantage point from which to evaluate how the flow of water becomes part of a strategy of capital accumulation, while at the same time sustains inequalities in access. The transformation of water into urban nature would be impossible to conceive without the development of infrastructure networks. While these physical artifacts might appear as simple and invisible technical measures to effectively organize the continuous flow of water through the city, they can also be understood as instruments that embody power relations that go in line with a capitalist mode of production. As urban infrastructure networks support the simultaneous circulation of flows of water and flows of capital, they become a productive field for understanding the way in which this double circulation constructs and reconstructs uneven urban waterscapes. Drawing on the “splintering urbanism” thesis elaborated by Stephen Graham and Simon Marvin (2001), it is argued that the reshaping of urban infrastructure networks is primarily rooted in recent waves of neoliberal reforms.

Consequently, neoliberal restructuring in the water supply sector has significant implications for the way in which water is accessed, controlled and managed. In order to understand how market principles have been increasingly articulated to biophysical resources such as water, this paper engages with recent work on the neoliberalization

of nature, an area of research which has been undertaken in the majority of cases by critical geographers (e.g. Bakker 2005; Castree 2008a, 2008b; Heynen et al. 2007; Mansfield 2008; McCarthy 2005). To add analytical precision in understanding how processes of neoliberalizing nature unfold, Bakker (2010b) suggests that neoliberalism and nature need to be treated as two complex and variegated categories. The author calls for making a clear distinction between different types of neoliberal reforms such as privatization and commercialization in order to avoid the pitfalls of assuming that neoliberalism is a hegemonic and singular project. Privatization involves a change in ownership, or a transfer of management from public to private control, while commercialization involves institutional change towards the introduction of market principles, competition and profit-maximization in resource management practices (Bakker 2005). These modalities of neoliberal practices vary significantly depending on the biophysical qualities of the natural resources under consideration.

Sensitivity to the materiality of nature, therefore, opens new possibilities for the neoliberalization of nature literature to examine how different types of neoliberal reforms articulate to specific socio-natures. Framed in this way, neoliberalism is at some level dependent upon the non-human world for its success as the biophysical and spatial characteristics of a specific resource pose challenges, opportunities and barriers to different types of neoliberalism (Bakker and Bridge 2006; Castree 2010). Acknowledging this aspect, therefore, offers a helpful starting point to find explanations on why movable resources such as water (Bakker 2005) or ocean fisheries (Mansfield 2007) resist being fully incorporated into networks of capital accumulation, compared to immobile resources such as gold (Bridge 2007).

This paper adds a governance perspective to the analysis of the concept of neoliberalism in urban political ecology, by analyzing how socio-natures become reconstituted by the implementation of market-oriented policies. Governance in this case becomes analytically useful to understand the institutional arrangements that frame decisions regarding nature distribution in a neoliberal economy. In this paper, institutions are interpreted not only in the narrow sense of norms, rules and regulations but also as cultural norms and practices (Bakker 2010a). This conceptualization opens up possibilities to transcend the conventional formal institutions (e.g. water rights, laws, rules etc.) to include informal practices and strategies (e.g. bargaining and negotiation) through which socio-natural relations are governed. As inequalities are often a predictable outcome of institutional frameworks through which natural resources and societies are governed, the conceptual framework of governance failure provides a useful lens through which to examine how the institutional dimension of urban water supply neglects to take effectively the needs of low-income households

(Bakker 2010a). As such, this framework allows for a detailed empirical examination of the main factors (economic and non-economic) that undermine low-income household capability to pay water bills and encourage securing access to water through illegal practices. This aspect will be elucidated through the case of water disconnection due to non-payment in Medellín.

3. The Neoliberal Transformation of Medellín's Urban Waterscape

Water services in the city of Medellín are supplied by Empresas Públicas de Medellín (EPM), a multi-utility company created in 1955 and owned by the municipality to which it pays 30 % of its utility revenues. In 2011, the company transferred to the city USD 245 million for the improvement of health and educational services, provision of facilities such as parks and libraries as well as payment for street lighting. EPM has been praised both nationally and internationally for its efficiency and quality of services and as a model to follow in other Latin American countries. The company enjoys a "natural" monopoly condition not only by providing water but also sanitation, electricity, natural gas and telecommunication services to over 4 million people in Medellín's metropolitan area. Water demands in the city are met through an extensive distribution system comprised of 11 plants, 34 pumping stations, 110 storage tanks and a complex network of 3,599 km of pipelines which transport 288.5 million cubic meters of water on a daily basis during 24 hours to 971,755 customers. With this sophisticated technical infrastructure, the company guarantees an urban coverage of almost 100 % (EPM 2011).

Over the last two decades, however, the flow of water through the city's waterscape has become an accumulation strategy as the company has adopted a competitive and profit-driven logic in the provision of water services. The neoliberal restructuring that comprises Medellín's waterscape is largely the result of two key changes in the spatial and economic organization of the multi-utility company. First, the company initiated in 1997 a process of commercialization under the auspices of the World Bank. In compliance with the Public Utilities Law (Law 142) of 1994², EPM adopted a new institutional model by transforming from a *Compañía Municipal* (municipal company) into an *Empresa Industrial y Comercial del Estado* (state-owned industrial and commercial company). The rationale for commercialization has been the creation of competition for providing public services, increased organizational flexibility and financial viability, and the generation of new market opportunities (Ibid.).

2 This law governs decision making concerning the delivery of municipal services in Colombia.

Commercialization initiatives in the water sector have been consolidated through the introduction of market mechanisms such as cost-recovery measures into both economic and environmental regulation. Regarding prices, economic equity is prioritized over social equity. In other words, water is no longer considered to be a public good that is provided to citizens as a right, but rather, it is substituted by the economic notion of willingness to pay, instead of the more social notion of ability to pay. In the last couple of years, the city has registered one of the most expensive water tariffs in the country. In 2007, EPM's average operative income per cubic meter in Medellín registered USD 1.43 while the operative costs per cubic meter represented USD 0.64 (Fernández et al. 2009). Consequently, the company reported the highest gross margin between total revenues and total costs in Latin America: 39 % (ibid.).

The appropriation of nature within the urban fabric has been facilitated by environmental initiatives aiming at privileging aesthetic qualities such as the protection of public fountains and green spaces, construction of water screens that combine architectural lighting as well as implementation of the Medellín River Sanitation Program. As the river and its tributaries registered high levels of municipal and industrial pollution by the early 1990s, the company initiated the construction of two wastewater treatment plants with loans provided by the Inter-American Development Bank (IDB) to partially treat sewage emitted by the city. The San Fernando plant initiated operations in 1999 with an investment cost of USD 87.2 million and a capacity of 1.8 m³/s. For the second phase of the program, the Bello plant will be constructed by 2015 with a loan of USD 225 million and a capacity of 5 m³/second (EPM 2000). In stark contrast to the high levels of pollution in Medellín's river, the company provides among the highest quality drinking water in the world, surpassing the standards established by the World Health Organization in terms of turbidity, color, odor, taste and pathogenic bacteria (EPM 2000). Numerous campaigns have been deployed by the company to encourage consumers to drink water directly from the tap.

Conservation initiatives have undertaken a pivotal role as the company has embarked in educating consumers on the importance to treat water as a fundamentally scarce commodity. Several programs have been introduced to re-educate poor consumers into a "payment culture" and to appreciate water as a scarce ecological resource, even though the city is located in an area of high water availability. Public campaigns such as "*pagar por el servicio y no por el desperdicio*" ("pay for the service and not for the waste") have proved to be successful in reducing consumption patterns and in providing new meanings and cultural values to water. Partly as a result, water consumption reported a decline from 26.3 m³ per month in 1996 to 20.6 m³ per month in 2001. Strategies for promoting conservation are being reinforced through pedagogical displays of nature in

the recently opened Museo del Agua (Water Museum) and the future establishment of a water research center aiming at investigating the potential impacts of climate change on water availability (El Colombiano 2012a).

The second key spatial and economical change of the company has been the transnationalization of operations into other geographical areas. In late 2010 and early 2011, EPM has launched itself on a path of accelerating the expansion of its networks of capital accumulation. Nowadays, the company has become the leading energy provider in Central America after taking over the electric regulated utilities ENSA (Panama), DELSUR (El Salvador), as well as Gesa and DECA II group (Guatemala). Telecommunication services have been introduced in North America and Spain to serve the Latin American diaspora population and its next goal is to extend new investment opportunities in the water sector, in which Mexico and Puerto Rico are possible candidates for cooperation. In Mexico, the company might engage in the construction and operation of 142 sewerage treatment plants while in San Juan there is the prospect of a deal to operate one-third of the city's water supply system (El Colombiano 2012c).

Outside the country, the company behaves as a private multinational, operating in a highly competitive environment with an increasingly internationalized capital structure. EPM has stipulated a target of USD 5 billion in sales for the year 2015, 60 % of which should be generated in Colombia and 40 % abroad (EPM 2012). Thus, not only has the city's waterscape undergone a process of commercialization, it has also been integrated into transnational networks of capital accumulation. The costs and benefits of the recent neoliberal restructuring of Medellín's waterscape have been distributed highly unevenly in the city and have impacted consumers differently according to their economic, social and spatial condition. This paper centers on those users that have been affected the most by the recent transformation of EPM and the concomitant implementation of policies of disconnection for non-payment, a subject that will be analyzed in the following section.

4. The Institutional Dimension of Water Disconnection

As part of this study, I conducted a survey of 66 households in 16 different neighborhoods in Medellín that report high rates of water disconnection during the period September to November 2011. Although the sample size is not large, it is an exploratory study in areas highly relevant for the phenomena of water disconnection, and therefore is able to develop preliminary explanations with respect to service provision that permit further research on disconnection patterns. The study areas were selected in consultation with

municipal government officials, NGOs representatives and community leaders based on statistics of water disconnection provided by the water company. Surveys were conducted door-to-door with the assistance of community leaders and three students from local universities.

The results of my survey provide a valuable source of information concerning the institutional dimension of water disconnection. Using the central characteristics of governance failure, it was possible to identify the main difficulties faced by low-income households to participate in programs of reconnection offered by the water company and to understand why illegal practices become in many cases the only feasible solution to regain access to water, despite the strict sanctions imposed by the company. Additionally, the results served to examine the concrete ways in which disconnected households experience new strategies offered by the municipality and the water company to redress inequalities in access such as prepaid systems and a free water allowance program. This information was complemented with other sources of published data including municipal statistics, articles in local newspapers, reports and interviews.

4.1. Economic and Non-Economic Factors Leading to Disconnection

4.1.1. Inability to Pay

The reasons contributing to non-payment are multiple and complex. Unsurprisingly, according to a survey developed by the author, the most common reason for non-payment of water bills is inability to pay. From the 66 households surveyed, 71 % affirmed that they did not have enough economic resources to afford their bills. This problem goes beyond the level of a single household, however, and is linked to structural inequalities in the city, such as low educational levels, exclusion from employment opportunities, strong dependence on the informal economy, high levels of violence and large size of the families. In 2011, the unemployment rate stood at 17.9 % and the population depending on work in the informal sector represented 47 % (Alcaldía de Medellín 2011).

In the survey conducted, 77 % of households reported living on less than a minimum wage salary (USD 288 per month) and experienced fluctuating income. These problems were compounded with extremely low education levels (73 % reached only the primary school level) and the size of families usually exceeded the city's household average of 4 members, according to the 2011 Medellín census. Between 1998 and 2003, the lowest

socio-economic strata in the city (Strata 1, 2 and 3)³ reported the highest increment in water prices corresponding to 948 %, 413 % and 335 % respectively while the commercial and industrial sector reported the minimal increment of 63.4 % (Contraloría General de Medellín 2003). Although water is delivered at subsidized rates to low-income areas, consumers continue paying a relatively high proportion of their monthly income for water bills. Studies have documented that households located in the lower socio-economic strata spend more than 30 % of their income on water instead of the average of 3 to 7 % (Contraloría General de Medellín 2003). According to the World Bank, household expenditures on essential services above 5 % of monthly household income are considered not affordable for the poor. Clearly, consumers who earn less than a minimum wage are struggling to pay their bills as they absorb a significant proportion of their earnings (Kommives et al. 2005).

4.1.2. Unawareness of Legal Mechanisms to Reclaim the Right to Water

The institutional framework governing access to water in Colombia provides insights into the tensions and contradictions inherent in processes of capital accumulation. The paradoxical character of these policies can be seen, on the one hand, in aggressive cost-recovery policies and disconnection practices, and, on the other hand, on a language of rights, inclusion and social equity. The impact of full cost-recovery pricing on low-income households is supported by Law 142 of 1994, which grants water utilities the power to disconnect a household for non-payment of services. This law may conflict with a duty to protect the right to water. Although the National Constitution does not explicitly mention the right to water, it recognizes the right to health and clean environment. According to the Article 366 of the Constitution, the state is required to find solutions for the unmet needs in terms of education, health, environmental sanitation and water provision. In addition, Colombia supported the resolution adopted by the United Nations on 28 July 2010, which declares that access to clean water and sanitation is a fundamental human right (A/RES/64/292 of July 2010).⁴ The recognition of these rights, therefore, imposes certain responsibilities on both state and non-state actors that may be enforced by courts.

3 With Law 142 of 1994, the state introduced a cross-subsidy policy in order to avoid restriction of access to water services for low-income households. It consists of charging higher water tariffs to residential users from the wealthier socio-economic strata (Strata 5 and 6) and commercial and industrial users in order to charge below average rates to households located in low socio-economic strata (Strata 1, 2 and 3). Strata 4 remains neutral with respect to cross-subsidy in the sense that users in Strata 4 pay no more than the marginal costs of water provision.

4 For further information, see: UN General Assembly, A/RES/64/292, "Human right to water and sanitation" [28/07/2010].

In Colombia, the Constitutional Court plays an important role in enforcing the human right to water by enabling individuals and communities to regain access to the service through legal means after being disconnected. It does so by prohibiting any service provider from disconnecting a household when it is inhabited by individuals under special constitutional protection such as children (Constitutional Court Decision T-546 of 2009), Internally Displaced People (IDPs) (Constitutional Court Decision T-717 of 2010) and elders and single mothers (Constitutional Court Decision T-092 of 2011)⁵. *Desconectados* are provided with official sanctioned mechanisms such as *acciones de tutelas* (tutelary actions), *derechos de petición* (right of petition) and *acciones populares* (popular actions), which enable direct requests to any judge in the country for the protection of fundamental rights when they are violated.

To put this in context, an applicant, Mrs Borja, living in the *barrio* El Limonar, installed a tutelary action with the assistance of a local NGO after three months of being disconnected for non-payment. In the claim, Mrs Borja stated that she was unemployed, her husband had an accident and he was unable to work. She was also responsible for her daughter who was also unemployed and her two-year-old granddaughter. She requested to be immediately connected to the service and to have access to a minimum amount of water free of charge. Additionally, she expressed the willingness to enter into an agreement with EPM and pay her debts according to her economic capacity. In her case, a judge found a violation of the constitutional right to water as follows:

Water disconnection undermines the fundamental right to health and human dignity of the applicant and her family. The lack of adequate water services in her home might produce personal difficulties, which could trigger the deterioration of health conditions of the entire family members. (Municipal Criminal Court Decision of Medellín, 2010, translated by author)⁶

An interim injunction was issued on 5 October 2010 ordering EPM to restore the service and the Municipality to include the applicant and her family into a program that provides a minimum free basic water allowance.

The case introduced above, however, represents one of the few successful examples where a disconnected household via tutelary actions obliged the company to re-connect

5 For further information, see: República de Colombia, Corte Constitucional, Decision T-546 of 2009 [M.P. María Victoria Calle]; Decision T-717 of 2010 [M.P. María Victoria Calle]; Decision T-092 of 2011 [M.P. Alejandro Martínez Caballero].

6 For further information, see: República de Colombia, Rama Judicial de Poder Público, Juzgado Treinta y Dos Penal Municipal, Medellín, “Borja v. Empresas Públicas de Medellín y Municipio de Medellín” [Juez Alvaro Diego Quintero Giraldo, 05/10/2010].

the service. However, the extent to which the right to water is realized depends on the level of access to legal advice and representation, which for the case of *desconectados* it is minimal. Analysis of household survey data indicates that household involvement in decision-making is very limited. The majority of the respondents replied that they have little community organization and poor participation to address their concerns about debts and fears of water disconnection. A significant number of respondents also expressed that high levels of debt leave them with culpability even if they are able to reclaim their rights. As one respondent from the *barrio* Buenos Aires expressed: “Queda muy duro no pagar y encima ir a exigir derechos” (“it is hard not to pay and additionally demand rights”). The increasing levels of anxiety and guiltiness of disconnected households might be interpreted as a result of the so-called “culture of non-payment”, which has been broadly used by the water company and the municipality as the cause of the non-payment of bills.

4.1.3. Complexity in Bill Formats

One other problem for households located in low-income areas is the implementation of a sophisticated water bill format which has proved to be too complex for consumers to understand (El Colombiano 2012b). A bill contains detailed information on the amount of water consumption and sewage disposal registered in cubic meters on a monthly basis, costs related to consumption, rate structure according to the socio-economic strata, a fixed monthly rate, debts with the company, interests, credits from subsidy schemes and additional charges (e.g. for field visits). Moreover, the company offers its customers the possibility to pay their bills in person at company’s offices or through a variety of electronic payment options such as Internet, interactive voice response (IVR) systems, telephone payment which requires the use of a debit card and direct transfers in cash machines. Ironically, low-income households, which represent 65 % of the total users of water services, have very low levels of Internet connections, a large proportion of them do not own a debit card and also have had their energy services disconnected. From 27,256 households, which experienced energy disconnection in the city in 2011, 82 % are located in low-income areas.

In my survey, many respondents expressed having literacy skills too low to interpret monthly consumption and debt management. The complexity in reading the bills has led to numerous misunderstandings and significant mistrust between consumers and the company. According to my survey, for many of the households it is unclear how tariffs are established, and in the majority of the cases they presume that the company is charging more than it should or is charging for a service that has not been provided. This situation has generated resentment among households who feel that disconnection

is partly attributable to incorrect metering or higher bills without proper justification. For instance, one of the household owners in the *barrio*, Manrique, claimed that in order to minimize her water bills, she collects rain water, flushes the toilet and cleans the floors with water from the washing. However, she does not understand why her efforts to reduce water consumption are not being reflected in the bills, which continue to absorb a significant part of her monthly income. She also expressed a sense of injustice at paying excessively high prices for a service that was not used while the company reports exorbitant profits.

The findings in this survey also illustrate that a large proportion of households are unable to properly communicate with local authorities and employees of EPM. This is due to the inability to understand the criteria used to calculate bills. One of the respondents of the survey located in the *barrio* La Cruz claimed that he was very confused by the method used to determine tariff structures. He could not understand which percentage of the total price was designated to pay current consumption, interest rates, debts and sanctions. He expressed discontent for simply having to pay for a bill regardless of understanding its content.

4.1.4. Inflexible Payment Programs

The water company has established diverse mechanisms that facilitate *desconectados* to pay off a portion of their debts in order to continue having access to the service. Among the programs offered by the company include *EPM a su servicio* (EPM at your service), *paga a tu medida* (pay according to your needs) and *reconciliemonos* (let's reconcile). Although these programs are being designed to fit the different abilities of low-income households to pay for the service, they are leaving many of users feeling helpless in how to deal with their accumulated debts, while simultaneously paying their monthly bills. The majority of survey respondents expressed the opinion that the company does not offer suitable solutions for legal reconnection, that the programs established to refinance the debts do not fit with their actual economic conditions and that they are too strict. When a household is unable to keep up with payments, it is automatically excluded from the program and falls again into a situation of disconnection. This evidence is backed by studies developed by the water company, which demonstrate that a household reconnected through these programs has a high probability to be once more disconnected (Vélez 2008).

A majority (66 %) of the households surveyed replied that they have approached the company to make an arrangement in order to pay their previous bills. However, they expressed that despite the motivation to pay, their actual economic condition makes

paying off their debts simply unaffordable. They admitted that their debts with the company are a result of the “inability to pay” and not to the “unwillingness to pay”; the latter has been commonly employed by EPM to justify policies of commodification driven by the neoliberal paradigm. A large proportion of the households felt that the company adopts rigid approaches for debt management, which makes it difficult to become debt-free. The findings in this survey illustrate that 71 % of households reported to have debts with the company that range from USD 150 to USD 600, a relatively high amount compared to a minimum wage salary.

In the absence of fair and affordable tariffs that adjust to users’ socio-economic conditions, many households find themselves obliged to use illegal mechanisms to re-connect regardless of the strict sanctions imposed by the water company. According to the author’s survey, 27 % of the households surveyed declared to have access to water services gained through illegal methods. The majority of respondents claimed that disconnection for non-payment is an injustice, and therefore, defended their illegal re-connection as the only way to secure access to a basic right that is being denied by the water company and the municipality. EPM, in return, severely punishes illegal practices when discovered by proceeding with strict economic sanctions and confiscation of equipment that makes it nearly impossible for a household to re-connect illegally. Disconnection activities are being outsourced by the company which sends contractors to remove portions of pipes or water meters. As contractors are often employed on a temporary basis, they have little expertise in consumer relation protocols and are unaware of the legal implications involved in water disconnection. This situation has led to the erosion of the human right to water and an increase of conflicts between the company and users.

4.2. Prepaid Water Systems: From Disconnection to Self-Disconnection

The water company has begun to introduce “smart” metering technologies (Guy and Marvin 1997) as part of its strategic plan to reduce water disconnection rates and prevent illegal consumption patterns. These technologies have taken the form of prepayment meters that have been initially imported from South Africa, a “pioneer” country in the development of pre-payment technologies for the delivering of basic public services (Ruiters 2007). Between 2007 and 2011, EPM installed 79,120 pre-payment energy meters – 68 % of them in previously disconnected households and 98 % in households in the lowest socio-economic strata. More recently, a pilot project for prepaid water was implemented in 350 disconnected households with the aim to institutionalize the service in a manner considered to be operationally efficient, and financially viable as well as socially acceptable (El Mundo 2011). Thus, the company

expects to introduce prepaid water systems to 35,000 disconnected families in the next five years and thereby to recover USD 2.7 million in debts. The technological and infrastructure costs are expected to be borne by the users.

As noted above, pre-payment systems are being widely offered in areas with a low-payment capacity and that are associated with non-payment, debts and disconnection, all of which raise substantial transaction costs for the company. In the energy sector, the company offers prepaid meters as part of a loan, and the installation is free of charge. Customers are required to purchase a set amount of energy in advance by obtaining prepaid credits from licensed vendors in denominations that are available from USD 1 to USD 10. A PIN number is introduced and the meter is recharged; 90 % of this electricity purchase is used for consumption while the remaining 10 % is redirected toward paying down debts (for which no interest is charged).

Although prepaid water systems may be presented as a socially and ecological progressive policy to reduce water disconnection and formalize illegal consumption, it has become a subject of a heated debate about the possible negative impacts on low-income consumers. For some, prepaid interventions represent a mechanism used by the company to obscure one of the darkest sides of the provision of water in the city. With pre-payment technologies, EPM avoids the political implications of disconnecting households that are too poor to pay their bills by giving them the “freedom” to self-disconnect from the network when they run out of money. Thus, the water company reduces conflicts and restores its social corporate responsibility image as customers silently and individually self-disconnect.

Another aspect that questions the feasibility and efficiency of the prepayment system is that it might be associated with widening inequalities in the city. For some sectors, this mechanism constructs socially and spatially differentiated consumption practices while failing to resolve the underlying tensions and contradictions inherent in the process of disconnection. It is argued that prepayment provides more advantages to the water company as the system is used as a strategy to make money out of the urban poor by recovering debts and avoiding transaction costs involved in debt management and disconnection policies (Interview, Javier Gaviria, President of the League of Public Service Users of Antioquia). Prepayment systems might be seen as an attempt of the company and the municipality to re-educate low-income consumers into a “payment culture” by inserting them into modern forms of rationality.

Nevertheless, for many, the introduction of prepaid meters is associated with a positive change. The company claims that prepaid technologies allow customers to monitor

and control their water expenditures easily, avoid receiving unaffordable monthly bills, legalize their consumption, reduce their debts and repair water leakage on their property. For the director of the Water Management Department of EPM, Francisco Piedrahíta, the introduction of prepaid water systems represents an important step towards the rationalization of the services as consumers no longer have to worry about their monthly bills, but instead, they become more aware of their daily consumption and more cautious about water use (El Mundo 2011). For energy, the company has reported a reduction in consumption of 60 % while the average energy bill fell between 20 and 25 %. It is also expected to have a significant decline with the introduction of prepaid water. According to a survey conducted by the water company to evaluate customer perceptions on prepaid energy, 93 % of respondents reported high levels of satisfaction with the service. They claimed that prepayment is a user-friendly technology, it facilitates consumption control, reduces debts with the company, prevents illegal connections and helps users acquire a “saving culture” (Vélez 2008). The company has teamed up with community leaders to pursue the use of prepaid systems and has involved families in educational programs to change their behavior towards consumption. These programs have been structured around topics such as budget management, *self-esteem*, family motivation, efficient cooking and maintenance of electrical appliances.

The findings of this survey also showed that 42 % of households have access to energy through prepayment and claimed to be supportive of the technology. Most households expressed strong satisfaction with the use of prepaid energy meters as it provides an alternative to regain legal access, avoid sanctions, reduce fear of being disconnected and progressively pay their debts to the water company. Furthermore, they perceived the prepaid system as a positive solution to improve health and quality of life. As a respondent of the survey put it, “pasar de no tener nada de agua a tener algo hace mucha diferencia” (“passing from not having water to have some, makes a significant difference”).

Although the introduction of prepaid energy meters was found in the survey widely welcomed among consumers, the question remains whether prepayment is morally and ethically acceptable or water, as it is a non-substitutable resource essential for life. In South Africa and Namibia, for example, the implementation of prepaid water meters has proven to be a contested issue as it continues to perpetuate inequalities created through apartheid laws (Harvey 2005; LaRRI 2005; Loftus 2006; Ruiters 2007). While EPM justifies the relative merits of prepaid water and households do recognize that this system is the only immediate solution to avoid disconnection, its social implications for the low-income population are troubling and should be observed over the medium and long-term.

4.3. Program “*Litros de Amor*”: A Minimum to Live with Dignity or a Maximum to Survive?⁷

The introduction of the program “*Litros de Amor*” (Liters of Love) or minimum amount of water free of charge has been another strategy deployed in the city to reduce disconnection rates and prevent illegal re-connections. The free water policy was introduced by the municipality in cooperation with the water company, in which the municipality finances the costs involved in the program and transfers them to EPM. In 2010, the municipality reported a payment of USD 1.21 million to the water company to cover the cost associated to the implementation of the program. Thus, Medellín became the first city in Colombia to guarantee a free basic water allowance of about 2.5 m³ of water per person per month for those unable to afford access on their own. This amounts to about 10 m³ per household per month for a household of four people. The free water became regulated in 2011 by the Municipal Agreement 06 of 2009 and was implemented through the city’s development plan (Interview, Mauricio Valencia, Administrative Planning Department).

The initiative to introduce a free water policy was initially proposed in 2006 by the Comité Nacional en Defensa del Agua y de la Vida (National Committee for the Defense of Water and Life), one of the largest social movements in the country. Although the National Congress rejected the initiative in 2010, the Municipality of Medellín adopted such a free water allowance policy as a way to move towards the progressive realization of the human right to water. In order to qualify, families must be categorized as internally displaced people (IDPs) or be part of the anti-poverty program *Medellín Solidaria*.⁸ Additionally, beneficiaries must own their home, must have a connection to the formal infrastructure network and must not have debts with the water company. In 2009, the program registered 17,098 beneficiaries and by September 2011, the number of households included in the program reached 32,591, representing some 162,955 people (Ibid.).

With the provision of a free water allowance, it is expected that beneficiaries cover their essential necessities and therefore help them to maintain adequate levels of hygiene

7 Information presented in this section was gathered from public documents and informal interviews with program officials in Medellín.

8 *Medellín Solidaria* is a program established by the Municipality of Medellín to assist those families living in extreme poverty. The program offers health and educational services and provides training on improving social relations and job opportunities. Based on the 2010 census figures, 22 % of the total population lives below the poverty line, representing approximately 520,000 people. *Medellín Solidaria* benefits 45,000 families, or approximately 180,000 people. These figures show that the scope of the program is still limited, since only a small percentage of the population living in poverty actually has even the chance of access to a minimum amount of water free of charge.

and avoid negative public health effects. According to the World Health Organization, 50 liters per person per day is required to cover basic needs (WHO 1993). Following this recommendation, the program complies with the standard and serves as a platform to instruct beneficiaries on how to distribute the free monthly basic allowance according to the following household tasks: 500 liters for personal hygiene, 500 liters for consumption including food preparation and hydration, 833 liters for domestic cleanliness and 667 liters for laundry. Additionally, educational programs have been targeting schools in order to train children in saving water practices (Interview, Mauricio Valencia, Administrative Planning Department).

Although it is recognized that the initiative represents a significant effort to progressively realize the right to water and to reduce inequalities in access, it has been questioned by many social groups for several reasons. First, the minimum amount of water provided by the program can quickly turn into a maximum for low-income households. The minimum amount of water offered by the program (2.5 m³/person/month) is around half of the average household water consumption in Medellín. Secondly, this apparently progressive policy reform seems to serve the interests of the company by facilitating debt recovery, since beneficiaries are required to pay their water bills completely or make an arrangement to begin paying off their debts before gaining eligibility for the program. Third, the program has become too narrowly targeted as debt payment becomes a precondition to access the basic allowance. As a result, disconnected households are automatically excluded. Fourth, it is expected that individual households limit their water consumption as the program largely operates via a combination of educational campaigns aiming at promoting an environmental responsible behavior while water is increasingly framed as a fundamentally scarce resource.

For the reasons discussed above, the program has proven to have a limited impact on reducing disconnection rates. In 2011, only 60 disconnected households (less than 0.2 % of the total households disconnected from water services) have been included in the program. Their accessibility to a free basic water allowance was achieved in the courts via tutelary actions, which in turn obliged the company to provide the service. However, for these families, access to a minimum amount of water free of charge depends on a flow limiter, which is installed by the water company to guarantee a maximum volume of 50 m³ of water per day, and therefore, users avoid surpassing this amount. Additionally, the program has not been adequately promoted in areas where rates of disconnection are high. This evidence is supported by the results of the household survey, which reveal that 80 % of the households were not aware of the existence of the program. To conclude, rather than offering a direct solution to the problem of disconnection, “*Litros de Amor*” might be perceived as an alternative for those households that are in high

risk of falling into permanent disconnection (Interview, Fabian Mazo, Administrative Planning Department).

5. Conclusion

The implementation of neoliberal reforms in the water supply sector has proven to be inextricably interwoven with the form and shape of the city's waterscape. The urban political ecology of Medellín is best captured through the dual character of its waterscape. On the one hand, the city's waterscape is being efficiently organized to facilitate the simultaneous circulation of water and capital. On the other hand, it has produced negative social outcomes for low-income households as the water company has implemented punitive measures of disconnecting customers from the formal water supply network for non-payment of bills. Whilst the neoliberal transformation of the water supply sector has brought significant costs to low-income households, the environment seems to be the receptor of the benefits. Drinking water directly from the tap has been promoted by the company while the implementation of Medellín River Sanitation Program has upgraded the quality of the river and its tributaries, although the absolute degree of pollution is still very high.

Analyzing the institutional dimension of water disconnection as governance failure opens up new possibilities to understand inequalities in access to water beyond economic determinism. This evidence is backed by findings from the household survey which indicate that reasons for non-payment are numerous and complex and go beyond the inability to pay. Manifold causes undermine a household's capability to pay for the service including complexity in bill formats, distrust in the government, little information on legal mechanisms to reclaim the right to water, inflexible payment programs as well as low communication skills and participation. The "culture of non-payment" has been widely used by the company to blame the non-payment of bills, thus, leaving many *desconectados* with high levels of culpability to reclaim their rights. Many of the respondents admitted that their debts with the company are a result of the "inability to pay" and not to the "unwillingness to pay". This claim is supported by numerous households expressing that they have approached the company to pay their debts; however, they were unable to keep up with the payment, as programs to refinance debts did not fit their economic conditions. In such circumstances, *desconectados* justify illegal reconnection as the only mechanism to secure access to water.

The rationale for disconnection has been supported by powerful discourses such as the "culture of non-payment" argument and the emergence of water as a scarce commodity. The concept of a "culture of non-payment" is widely used by the municipality and the

water company to defend and legitimize policies of disconnection, while the discourse on scarcity has been deployed to facilitate commercialization strategies and to reduce unsustainable consumption patterns. Public campaigns such as “*pagar por el servicio y no por el desperdicio*” (pay for the service and not for the waste) have proved to be successful in reducing consumption levels and in providing new meanings and cultural values to water. Policies of disconnection in the city have been also facilitated by material infrastructures. The material flow of water through the waterscape has been supported by urban infrastructure networks such as pipes while simultaneously interrupted by flow restrictors and prepaid meters. While these physical artifacts might appear as simply technical measures to effectively organize the continuous flow of water from distant reservoirs to the household tap, they can also be understood as instruments that embody power relations that accompany and enable strategies of capital accumulation.

As a response to the mounting pressure from civil society organizations to find concrete solutions to the problem of disconnection, the municipality and EPM introduced a free basic water policy or “*Litros de Amor*” program and a prepaid water system, which is currently in the pilot phase. Although “*Litros de Amor*” and pre-payment methods might be presented as socially and ecological progressive policies to reduce disconnection and formalize illegal consumption, their effects on low-income consumers are far from being neutral. These two policies might exacerbate inequalities of access to water as they intend to insert *desconectados* into a capitalist market and turn them into self-disciplining capitalist subjects. Pre-payment strategies establish suitable conditions that enable EPM to manage its financial debts and to avoid the political implications of disconnecting those households that are too poor to pay their bills by giving them the “freedom” to self-disconnect from the network when they run out of money. The free water allowance program has been considered to be a significant effort to progressively realize the right to water; however, it falls into the trap of reducing access by quickly turning the minimum amount of water of 2.5 m³ per person per month into the maximum amount available for survival. Moreover, the program has become narrowly targeted, as beneficiaries are required to pay their debts to the company in order to be able to qualify. These two “progressive” policies illustrate how the paradoxical flow of water as both a commodity and a human right through the waterscape embodies the tensions and contradictions inherent in the process of capital accumulation.

To summarize, the findings from this case study show how the implementation of neoliberal strategies in the provision of water services has dramatically altered the socio-spatial patterns of its distribution. The progressive and successful insertion of EPM into transnational networks of capital accumulation and the commercialization

of operations through cost-recovery methods have shaped the circulation of water through the city's waterscape in unequal ways. Accumulation by threat of disconnection turns into a pivotal tactic in the spatial and economic transformation of the company as access to water becomes increasingly dependent on market mechanisms. This study, therefore, suggests that the problem of inequalities in access to water should be understood beyond technical and managerial discourses. Water disconnection is a fundamentally political issue and if water needs are to be met in a socially just manner, water requires to be approached in these holistic terms.

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