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# Issues associated with drinking water supply in cities

## Introduction

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- 1 While the majority of the global population lives in cities, supply and access to water in sufficient quantity and quality for all urban dwellers sits at a crossroads between environmental issues, through the question of available resources, for instance, and development issues, through the implied social, economic and sanitation challenges.
- 2 This feature starts by questioning the relevance of comparative approaches between the urban contexts in the North and South. The main difference relates to the equipment and universalisation of the drinking water supply service. This has been completed in cities in industrialised countries, which are now managing infrastructure renovation and maintaining a certain sanitation quality, whereas supplying all city dwellers remains a major challenge in developing countries, especially in the outskirts (Jaglin, 2012; Carré, 2015). Many stakeholders are questioning whether the development model for drinking water supply services in the North can be transposed in the South, especially in the context of urban service liberalisation (Barraqué, 2008; Baron and Peyroux, 2011). Many publications have compared case studies by centring their discourse on networks (Bousquet, 2006; Crombé and Blanchon, 2010; Lavie and Marshall, 2019), governance or the sustainability of urban drinking water services (Schneier-Madanes, 2014; Barraqué, 2018). Generally, research has looked at drinking water access in cities using a quantitative approach and by looking at the service's spatio-temporal continuity. However, it is rarer for studies to also consider the qualitative dimension. Taking into account both the quantity and quality of water in the definition of the urban drinking waterscape is a way of encompassing reflections on water access in both the North and South. Whether or not drinking water services are "consolidated" (Jaglin, 2012), they are being challenged by distrust and discontent associated with water quality (Turgeon *et al.*, 2004; Montginoul & Waechter, 2007; Lavie *et al.*, 2020). The purpose of this feature is to underline the relevance of spatial

approaches for defining issues shared by cities in industrialised countries and developing countries with regard to drinking water supply.

- 3 The first issue identified is the management of mobilised or available resources in cities to meet their drinking water needs. The supply of water for urban consumption by territories raises a number of questions: which water resources contribute to water drinking supply in cities? Are they endogenous or exogenous? In which geographical and historical contexts are they or have they been mobilised and according to which criteria? Is the choice of these resources dependent on institutional decisions or makeshift solutions by sometimes marginalised populations (Hardy, 2009)? What are the technical, financial, health, social, political and environmental challenges associated with their current or projected exploitation? As part of efforts to secure water supply, special attention has been paid to the relationships between cities and the territories at varying distances from which they abstract resources. These relationships are multifaceted and include cooperation, solidarity and tensions, such as for water transfers (Lasserre, 2005; Hommes *et al.*, 2019; Resch *et al.*, 2020a).
- 4 The first article in this feature addresses drinking water supply in the Dijon metropolitan area (France). Sandrine Petit, Marie-Hélène Vergote and Emmanuel Dumont analyse the city's water supply policies through the notion of borders, which becomes a negotiation issue. By studying stakeholders over time, the authors demonstrate how the borders of the city centre and then metropolitan area have been established, blurred and shifted. The city of Dijon coped with the shortages of the 20<sup>th</sup> century by deploying infrastructure outside of its perimeter to extract water from the Saône alluvial aquifer. Mobilising this surplus resource extended the city's area of influence as it was able to sell water to the surrounding municipalities. Recent decentralisation laws have reinforced the metropolitan area's role in managing the large water cycle. The power relationships that accompany these spatial recompositions are explained in the light of institutional changes that have occurred in the past century and current climate issues.
- 5 Jérémy Robert and Sébastien Hardy have attempted to compare two South-American capitals: La Paz (Bolivia) and Lima (Peru). These agglomerations are facing a risk of water shortages and are pursuing an "aggressive" policy to abstract new resources by deploying major infrastructure. The authors underline the tensions generated by this model in the absence of any real solidarity with the "interface" territories from which water is abstracted. Their article also presents the alternatives deployed by residents to build a more flexible domestic water supply system than the official network. The authorities do not recognise (or barely recognise) these strategies as an integral part of the centralised network. However, research has shown that private and community systems do contribute to building the main system. This alternative model is based on territorial and community solidarity, but sometimes comes up against local hydrocracies in the creation of the right to the city by public services.
- 6 The question of coordination between the main system and alternatives links into the second issue explored in the articles in this feature, which looks at new ways of thinking about drinking water access in cities. The centralised network model has shown its limitations in many urban contexts in developing countries (Jaglin, 2012). The existence of multiple alternative water supply systems, especially micro-networks in the outskirts (Crombé and Blanchon, 2010), has resulted in designing a "post-network" city (Coutard *et al.*, 2014). In what ways do these alternative systems facilitate

or impede the social and territorial universalisation of water access (Bousquet, 2006)? Post-network solutions encourage thinking about the sustainability of urban services, including in industrialised countries (Féré and Scherrer, 2010).

- 7 Research by Ismaël Maazaz highlights the co-existence of multiple drinking water systems in N'Djamena (Chad). The author shows us everyday makeshift solutions for water access, including water abstraction and then distribution in more or less urbanised neighbourhoods in the Chad capital. The overlap of the public water supply network and private and charitable practices has helped create a very disparate urban service. Analysis of this hybrid system reveals its fragility above all else. In this sense, description of the working conditions for employees at the Chadian Water Company (STE) is especially enlightening. Many factors contribute to maintaining this makeshift water system. Nevertheless, the article demonstrates that the various water access and distribution systems co-exist more than they compete with one another, which tends to be recognised by projects to extend the centralised network.
- 8 While the question of water access for all has mainly been addressed in developing countries or in the outskirts of emerging countries, Xavier May, Pauline Bacquaert, Jean-Michel Decroly, Léa de Guiran, Chloé Deligne, Pierre Lannoy and Valentina Marziali contribute to discussion on service universality in the European capital of Brussels, or more precisely, the Brussels-Capital Region. Their research focuses on access to domestic water used for washing, cleaning clothes and flushing toilets, which they call “hygiene water”. The authors question the concept of water precarity that only reflects difficulties in paying water bills. They propose a more encompassing concept of “water vulnerability” to take into account “the diverse circumstances that lead to being deprived of an essential right”. The mapping analysis demonstrates spatial disparities in accessing public facilities, in a context of increasing poverty for Brussels households. From a methodological standpoint, the authors also mention difficulties in quantifying the number of people facing water vulnerability.
- 9 Finally, as drinking and domestic water supply is not dissociated from other territorial issues, such as land ownership, agriculture, transport networks and environmental protection, the final issue outlined in this feature looks at connections between drinking water policies and other policies, and how they are territorialised (Charbonneau and Poinot, 2018). Discussion is extended to include policies for urban planning, development, public health and food. In each case, it is a matter of identifying what sets water policies apart within public policy as a whole. Coordination between decision-making levels is also questioned: how are urban projects integrated into regional, national and supranational regulations? How are they perceived and applied by the spaces and territories involved (whether inside or outside the city)?
- 10 Angela Osorio’s article considers a community network for drinking water supply in the outskirts of Bogotá (Columbia). The administrative surface of the capital primarily consists of rural zones, thereby highlighting the diversity of realities covered by the term “city”. In these spaces, alternative water supply systems compensate for the insufficiency of centralised services. The author shows that the community network plays a positive role, not only for water access, but also for the conservation of *páramos*, a high-altitude tropical ecosystem that the Colombian authorities are seeking to protect. Paradoxically, this water supply system is managed in accordance with the principles set out by Elinor Ostrom (1990), but is not officially recognised as complementary to the public networks. Through this observation, the article also

presents the social dimension of resource use and ecosystem conservation, which is a dimension often forgotten in public policy.

- 11 Finally, the sixth and last article in this issue studies the linking of drinking and agricultural water policies through the emblematic case of the City of Paris (France). Audrey Vincent and Philippe Fleury observe how the city has tackled the issue of protecting water resources by developing organic agriculture outside of the territory under its jurisdiction, in Vallée de la Vanne. Their research highlights gradual changes to the scale of intervention of the Paris municipality, beyond the scope of the groundwater recharge area. Territorial coordination now also includes support for business development to provide local, national or even international job creation for farmers. Supplying Parisian canteens demonstrates the political drive to establish a link, at least symbolically, between the quality of drinking water and food, and between the production and consumption territories. While the Parisian policy is presented as a success, the mixed reception by some authors encourages critical distance and comparison with other contexts (Grolleau and McCann, 2012; Resch *et al.*, 2020b).
- 12 The articles can be organised according to these three issues of a) territories with raw water resources, b) alternative systems that contribute to creating the city, and c) integrating drinking water supply policy into overall environmental protection and territorial development policies, but the body of this feature is marked, above all, by cross-cutting issues. Many authors question the way in which uncentralised networks are recognised institutionally and/or how they can be integrated into development projects in a context of environmental and climate transition. They all present theoretical information for discussion. These six research articles also draw on sound empirical evidence, using first-hand data acquired in the field. Surveys were carried out before the health crisis, leading some authors to question potential changes to water management and distribution systems due to increased poverty following the crisis.
- 13 Now they just need to get back out into the field!
- 14 The editors of this feature would like to offer their sincere thanks to the reviewers for their help in this publication process.

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## INDEX

**Subjects:** Sur le Champ

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