Social and Health Issues of Water Access in an Urban Area: Rethinking the MDG indicator.

A case study in Ouagadougou's informal settlements (Burkina Faso)

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Introduction

At the most recent World Water Forum, held in Marseille (France) in March 2012, officials was declared that the world is on track to meet the Millennium Development Goal (MDG) drinking-water target to "reduce by half the proportion of people without sustainable access to safe drinking water by 2015" (reference date is 2000). But even if the MDG does achieve its expected results in terms of drinking water access, that would still leave 700 million people with an unimproved supply (WHO/UNICEF, 2010) according to the definition given in the MDG. This definition identifies two broad categories of water supply: (1) improved sources (water piped into the dwelling, plot, or yard; public taps, protected springs, hand pumps, and rainwater harvesting); and (2) unimproved sources (open water, unprotected from contamination).

In terms of water access, sub-Saharan African cities are some of the worst off in the world, with only 80% of their populations supplied by an improved source. This broad statistic, however, belies the wide diversity of experiences within cities, where proper neighborhoods are lumped in with informal urban settlements, although their infrastructure and access to basic urban services vary widely. In Africa, a great part of the urban population is often concentrated in informal settlements60% of Nairobi's official population, for example, lives in slums (Syagga, 2001). It is expected that the African urban population will be triple by 2050 (United Nations, 2012). In view of this expected growth, there is concern that the gap between the supply of and demand for clean water will only widen.

While concerns about water source abound, there is yet another issue that merits attention: the measure based on the type of water supply in itself is not sufficient to address properly the health risks of water access (Dos Santos, 2012). This measure is based only on the source of water, and does not include aspects of accessibility like the distance and/or time required to collect water, the cost, or the quality and quantity used, even though all of these factors affect health outcomes. For example, having a tap in the dwelling does not necessary mean that the quantity of water available for households is sufficient to meet the hygienic needs of all residents (estimated at 20 to 50 liters per capita par day depending on the author) (Howard & Bartram, 2003) or that the water consumed is safe to drink. Indeed, recently, the 2011 report on

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MDG water target progress acknowledges that the indicator does not guarantee the quality of the drinking water consumed by the people (WHO/UNICEF, 2011, p. 33). Indeed, 10% to 55% of the water coming from an "improved" source does not comply with the WHO quality standards (WHO/UNICEF, 2011).

A broad measure is not sufficient to accurately address health issues because there is no standard use of water even when tap water is available in the house. Issues related to domestic water management (abundance/control) or use (priority, quantity for each usage, storage, etc.) are important in and of themselves; quite apart from having data on availability (infrastructure, quantity and quality of water distributed) at the macro (the city) or meso (residential area) level (Dos Santos, 2011). For example, just because a tap exists in a dwelling, this does not necessarily mean that inhabitants do not draw water from other sources. Due to intermittent flows and long outages of supply at home, residents might seek water from other sources, such as informal vendors. In addition, clean water may not always be safe. Even if the water is clean when it leaves the processing center, fissures in the pipes and water cuts can lead to water that is contaminated when it comes out of the tap. Moreover, water can become contaminated during home storage in the house, even if it is obtained from a tap in the dwelling (Wright, Gundry, & Conroy, 2004). Finally, the distance to the source from the dwelling is also a key variable, since this determines the quantity available for domestic purposes (Howard & Bartram, 2003). According to a rough estimation from 2002 in two areas in Ouagadougou, the capital city of Burkina Faso, the real rates of water access (taking into account the quantity available at home and distance to the water point) are only half of the MDG measure(Dos Santos, 2012).

Though water-borne diseases have largely been eliminated in developed countries, they remain a major cause of death in developing countries, responsible for more than five million deaths annually, and for the death over 4,000 children under five each day. Water-related issues are further exacerbated in a context of poor urban planning and management. Furthermore access to water is indicative of social equity principally in terms of gender.

Using very detailed longitudinal data from a water project located in the Ouagadougou Health and Demographic Surveillance System (O-HDSS) (Rossier, Soura, Baya, Compaoré, Dabiré, Dos Santos et al., 2012), this paper first seeks to describe the precise accessibility of water in three informal neighborhoods by outlining the daily difficulties many households face accessing this vital resource. An emphasis will then be placed on the seasonal variability of this access and the link between the modalities of water accessibility and some health and social outcomes.

Context

The capital city of one of the world's poorest countries (ranked 161th of 169 countries by the Human Development Index in 2010), Ouagadougou is located in the Sahel region that receives little rainfall and is

characterized by high population growth (estimated at 5% to 6% annually). This population growth has brought about a rapid expansion of urban areas and has severely tested the capacity of the *Office National de l'Eau et de l'Assainissement* (ONEA – the National Office for Water and Sanitation) to expand the water supply network enough to meet growing need. In light of the water shortage, the ONEA has developed an unusual water management system called "shared water management" (Jaglin, 1995). Until recently, the ONEA system was based on a pragmatic approach that placed priority on the provision of clean water to the greatest number of the population through public water taps or protected boreholes located in neighborhoods, rather than through semi or fully private water connections. As a result of this policy, in 2000, Ouagadougou had the lowest access to piped water in dwelling units of all capital cities in the West African sub-region[2], with only 23% of households enjoying access to piped water at home, compared to 40% in Bamako (the capital of Mali) and 33% in Niamey (the capital of Niger) (Dos Santos, 2006). Since 2006, considerable efforts have been made to enhance water access for all, especially through water piped on the premises. As a result (according to the definition used by the MDG), 99% of households in Ouagadougou had access to an improved source of water in 2010 (DHS, 2012)[3]. This situation is a real counter-example. given the level of poverty at the national scale (Hewett & Montgomery, 2001), and as compared with the capital cities of neighboring countries(table 1).

Table 1. Distribution of households by access to water in some sub-Saharan African capital cities

	Improved access			Unimproved	TOTAL
	Piped on the premises	Other improved	Total		
Ouagadougou [1]	47	52	99	1	100
Bamako [2]	41	54	95	5	100
Cotonou [4]	48	51	99	1	100
Dakar [3]	76	16	92	8	100
Niamey [5]	42	52	94	6	100

Sources : 1. DHS 2010; 2. DHS 2006; 3. DHS 2005; 4. DHS 2006; 5. DHS 2006.

Data and Methods

Data come from the Var2O Project (Climatic variability, water resource and access in informal settlements in Ouagadougou) conducted by the Institut Supérieur des Sciences de la Population (ISSP) of the University of Ouagadougou in collaboration with the French Institut de Recherche pour le Développement (IRD), supported by the Canadian International Development Research Center (IDRC).

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[2] All over the text, "piped water" refers to at least one tap in the house, in the plot or in the dwelling.
[3] The issue of the definition is really at stake: in the latest JMP Report, it is specified that the category of water vendors does not count as 'improved', due to concerns over water quality (WHO/Unicef, 2012, p. 10). However, the statistic given for Ouagadougou includes this category that count for 20 % of the water access.

One of the objectives of this multidisciplinary project is to implement a surveillance system to monitor water resources and access. These data can be used to describe in details the accessibility of water resources for households who live in informal settlements, and the variability of this accessibility. The entire population of three informal settlements on the urban periphery (about 38,000 people) is interviewed every 3 months, The questionnaire covers a number of topics including primary and alternative mode of obtaining water, the quantity available in the dwelling, the distance and time spent collecting water, the quality of the water, the different purposes of the water use, the storage of the water in the household, the treatment, etc. A health questionnaire is also used to monitor the main water-related diseases for each child under 10 years old.

This project is coupled with the Ouagadougou Demographic Surveillance System (Rossier et al, 2012) that allows longitudinal analyses of the relation between water accessibility, child health and household characteristics.

Preliminary Results / Conclusion

At first glance, Ouagadougou seems to be a shining example of improvements in access to water, with an official total of 99% of the population having access to an improved source of water. Yet looking past this initial measurement of access to examine the types of access, the distance and time necessary to collect water as well as the hidden costs in the purchase of water, a much more complicated reality is revealed, with great inequalities clearly visible. In addition, there is great variability of water access in informal settlements in Ouagadougou, that the indicator used in the MDG target does not reflect. This variability compromises the health and social benefits of the so-called "improved water sources." As the issue of global water scarcity, combined with rapid urbanization, will become worse in coming years, accurate water data at the household level are increasingly necessary to support effective policymaking efforts. There is also an urgent need to reformulate statistical measure of access to water to better address the social and health issues. More generally, effective urban health policies cannot be based on averages alone. Disaggregation is fundamental if policies are to be properly formed and health programs targeted to those most in need.

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