



Review

Urban growth and water access in sub-Saharan Africa: Progress, challenges, and emerging research directions



S. Dos Santos^{a,*}, E.A. Adams^b, G. Neville^c, Y. Wada^{d,e}, A. de Sherbinin^f, E. Mullin Bernhardt^g, S.B. Adamo^f

^a Institut de Recherche pour le Développement, Laboratoire Population-Environnement-Développement (IRD/AMU), Marseille, France

^b Global Studies Institute, Department of Geosciences, Georgia State University, Atlanta, Georgia

^c Department of Geography, Royal Holloway, University of London, London, United Kingdom

^d International Institute for Applied Systems Analysis, Laxenburg, Austria

^e Center for Climate Systems Research, Columbia University, New York, USA

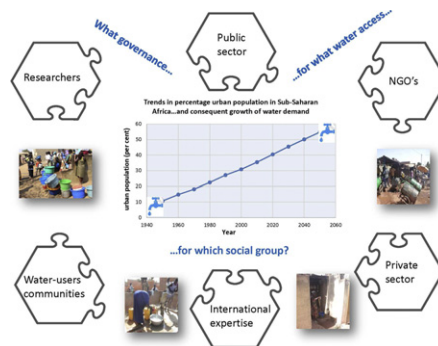
^f Center for International Earth Science Information Network (CIESIN), Columbia University, New York, USA

^g UN Environment, Freshwater Ecosystems Division, Nairobi, Kenya

HIGHLIGHTS

- Urban growth in Sub-Saharan Africa (SSA) is evolving without adequate access to safe water.
- Urban water management should pay attention to both engineering and governance.
- Future research should include how alternative arrangements are driven by the modalities of participation.

GRAPHICAL ABSTRACT



ARTICLE INFO

Article history:

Received 15 February 2017

Received in revised form 19 June 2017

Accepted 19 June 2017

Available online xxx

Editor: D. Barcelo

Keywords:

Urban dynamics
Water scarcity
Water access
Governance
Sub-Saharan Africa
Population

ABSTRACT

For the next decade, the global water crisis remains the risk of highest concern, and ranks ahead of climate change, extreme weather events, food crises and social instability. Across the globe, nearly one in ten people is without access to an improved drinking water source. Least Developed Countries (LDCs) especially in sub-Saharan Africa (SSA) are the most affected, having disproportionately more of the global population without access to clean water than other major regions. Population growth, changing lifestyles, increasing pollution and accelerating urbanization will continue to widen the gap between the demand for water and available supply especially in urban areas, and disproportionately affect informal settlements, where the majority of SSA's urban population resides. Distribution and allocation of water will be affected by climate-induced water stresses, poor institutions, ineffective governance, and weak political will to address scarcity and mediate uncertainties in future supply. While attempts have been made by many scientists to examine different dimensions of water scarcity and urban population dynamics, there are few comprehensive reviews, especially focused on the particular situation in Sub-Saharan Africa. This paper contributes to interdisciplinary understanding of urban water supply by distilling and integrating relevant empirical knowledge on urban dynamics and water issues in SSA, focusing on progress made and associated challenges. It then points out future research directions including the need to understand how alternatives to centralized water policies may help deliver sustainable water supply to cities and informal settlements in the region.

© 2017 Elsevier B.V. All rights reserved.

* Corresponding author.

E-mail address: stephanie.dossantos@ird.fr (S. Dos Santos).

Contents

1. Introduction	498
2. Urban dynamics and water supply and demand in sub-Saharan Africa	499
2.1. An unprecedented urban growth.	499
2.2. Challenges of concentration and spatial distribution of people.	500
3. Access to water in urban settings: progress and challenges	501
3.1. Progress and limitations of conventional indicators	501
3.2. The need for in-depth research in urban areas	503
4. Water governance and urban planning in mediating urban water demand and supply	504
4.1. Trade-offs between water as an economic value and water as a common good	504
4.2. Towards community-based arrangements?	505
5. Conclusions: lessons and looking forward	506
Acknowledgments and data	506
References.	506

1. Introduction

For the seventh year in a row, the *Global Risk Report* places water crises in its top five global risks in terms of impact on society. In the latest report, water comes after weapons of mass destruction, extreme weather events, and ahead of major natural disasters and climate change (World Economic Forum, 2017). However, for the next decade, the water crisis remains the risk of highest concern, and ranks ahead of other risks such as climate change, extreme weather events, food crises and social instability. Absolute water scarcity is not the only issue. In sub-Saharan Africa (SSA), there are growing concerns about the distribution and allocation of water resources, water pollution, poor institutions, ineffective governance and weak political will to address growing water scarcity.

Water availability in relation to population size and growth has been the subject of a number of studies going back more than a decade (Vörösmarty et al., 2000). Even though water scarcity has historically been more acute in rural areas, emerging trends point to worsening availability and quality in urban areas due to changes in freshwater resources (caused by climatic shifts, land use change and other factors), increasing demand owing to population growth, poor sanitation and lack of water treatment facilities, as well as mismanagement (Muller, 2016; Romero-Lankao and Gnatz, 2016). In SSA, these challenges affect urban dwellers, who experience difficulties in meeting daily water needs. Moreover, agricultural and industrial sectors in the region will be confronted with increasingly limited supply of water. In light of climate change and continued growth of urban populations, there is concern that the gap between the availability, supply and demand for fresh water will widen even further in SSA, and disproportionately affect informal settlements where the majority of urban populations reside. Access to adequate improved water supplies in the expanding informal settlements in SSA is particularly worrying considering the consequences for public health, livelihoods, food production, wellbeing, and gender disparities. Municipal governments, as a result, are constantly struggling to reconcile available water supply with growing demand (Clifford-Holmes et al., 2014). Across the globe, 663 million people are officially recognized as currently being without access to an improved drinking water source (WHO/UNICEF, 2015b).

Significant progress has been made towards reducing the global population without access to improved water sources, with an estimated 91% of the total global population having access to improved water sources in 2015. However, some research shows that given the difficulties and shortcomings associated with accurately measuring the proportion of the global population without access, it is probable that the proportion thought to have access is grossly overestimated (Nganyanyuka et al., 2014; Satterthwaite, 2016; Adams, 2017). In addition, conventional indicators used to estimate progress made on clean water access, especially by WHO/UNICEFs Joint Monitoring Program (JMP), conceal intra-urban, intra-rural and other pressing disparities

within the water sector (WHO/UNICEF, 2015a, 2015b). It is therefore important to refine data collection methodologies to better understand disparities in everyday water-access and practices across different scales—especially urban and rural spaces in SSA.

The numbers are even more staggering for sanitation. The JMP estimates that as of 2015, 2.4 billion people (nearly one in three worldwide) still lacked access to safely managed sanitation (WHO/UNICEF, 2015a, 2015b). Poorly managed sanitation facilities expose water resources to contamination. Currently, >80% of all wastewater worldwide is estimated to go directly back into water bodies without treatment (WWAP, 2017). There is tremendous scope for reusing wastewater as a means to improving both water availability and quality. According to UNEP (2016), declining water quality reduces suitability of water use in drinking, agricultural, and industrial sectors.

Major water policy initiatives—notably the Millennium Development Goals (MDGs) in 2000, the United Nations International Decade for Action, “Water for Life” 2005–2015, and the 2030 Agenda for Sustainable Development driving the new Sustainable Development Goals (SDGs)—remain central to the global water-sector agenda to improve access. The MDG 7 on environmental sustainability included a target to reduce by half the proportion of people without improved drinking water access, by 2015. While the global MDG target on water was achieved by 2010, five years ahead of the target deadline, SSA and Oceania were the only regions that failed to attain their goals. With few exceptions, most countries in the SSA region failed to meet both rural and urban targets under the water goal. During the “Water for Life” Decade 2005–2015, the United Nations recognized water as a human right, and explicitly stated through a resolution in 2010 that “clean drinking water and sanitation are essential to the realization of all human rights” (UN, 2010). Unlike the MDGs which subsumed water and sanitation under Goal 7 (to ensure environmental sustainability), the SDGs explicitly recognize water and sanitation as a standalone goal (number 6) that includes more expansive targets focusing on other dimensions of water such as management and governance, wastewater, and ecosystem resources (UN-Water, 2015). While attempts have been made by scientists to examine and present empirical findings on different dimensions of water scarcity and population dynamics in urban areas (e.g. de Sherbinin and Dompka, 1998), there have been no recent comprehensive reviews that synthesize findings, highlight important gaps, and provide recommendations for future research especially focused on the particular situation of urban SSA. There is a subsequent dearth of available information about strategies that can be deployed to increase water access in urban areas and informal settlements of SSA in the context of continuing population growth. Many research questions still remain at the interface of population growth and water scarcity in SSA, not least the social (socioeconomic and demographic characteristics) that are most often associated with problems of water access, and biophysical processes (e.g., climate change) threatening water availability. Thus, the core objective of this article is to synthesize

Download English Version:

<https://daneshyari.com/en/article/5750007>

Download Persian Version:

<https://daneshyari.com/article/5750007>

[Daneshyari.com](https://daneshyari.com)