

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/envsci

Drinking water quality governance: A comparative case study of Brazil, Ecuador, and Malawi



Georgia L. Kayser^{a,b,*}, Urooj Amjad^{a,c}, Fernanda Dalcanale^a,
Jamie Bartram^a, Margaret E. Bentley^d

^aThe Water Institute, The Department of Environmental Science and Engineering, The Gillings School of Global Public Health University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-7431, USA

^bThe Department of Public Policy University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-7431, USA

^cGlobal Research Institute University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-7431, USA

^dThe Department of Nutrition, The Gillings School of Global Public Health University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-7431, USA

ARTICLE INFO

Keywords:

Water governance
Drinking water quality
Comparative case study
Conceptual framework
Technical assistance

ABSTRACT

Human health is greatly affected by inadequate access to sufficient and safe drinking water, especially in low and middle-income countries. Drinking water governance improvements may be one way to better drinking water quality. Over the past decade, many projects and international organizations have been dedicated to water governance; however, water governance in the drinking water sector is understudied and how to improve water governance remains unclear. We analyze drinking water governance challenges in three countries – Brazil, Ecuador, and Malawi – as perceived by government, service providers, and civil society organizations. A mixed methods approach was used: a clustering model was used for country selection and qualitative semi-structured interviews were used with direct observation in data collection. The clustering model integrated political, economic, social and environmental variables that impact water sector performance, to group countries. Brazil, Ecuador and Malawi were selected with the model so as to represent the diversity of the clusters. This comparative case study is important because similar challenges are identified in the drinking water sectors of each country; while, the countries represent diverse socio-economic and political contexts, and the case selection process provides generalizability to our results. We find that access to safe water could be improved if certain water governance challenges were addressed: coordination and data sharing between ministries that deal with drinking water services; monitoring and enforcement of water quality laws; and sufficient technical capacity to improve administrative and technical management of water services at the local level. From an analysis of our field research, we also developed a conceptual framework that identifies policy levers that could be used to influence governance of drinking water quality on national and sub-national levels, and the relationships between these levers.

© 2015 Elsevier Ltd. All rights reserved.

* Corresponding author at: University of North Carolina, The Water Institute, 135 Dauer Drive, Campus Box 7431, Chapel Hill, NC 27599-7431, USA. Tel.: +1 919 966 7319.

E-mail address: gakayser@unc.edu (G.L. Kayser).

<http://dx.doi.org/10.1016/j.envsci.2014.12.019>

1462-9011/© 2015 Elsevier Ltd. All rights reserved.

1. Introduction

Inadequate access to sufficient and safe drinking water is one of the main causes of 842,000 deaths and billions of cases of diarrheal disease per year (Clasen et al., 2014). This has direct impacts on public health, and the effects are greatest on children under-five (Hunter et al., 2010; Haller et al., 2007). Over the past century, many technological advances have been made to improve the protection of water sources and the treatment of water for drinking; however, many countries still face obstacles that reduce their ability to ensure the delivery of safe drinking water over time, and throughout the country (Lee and Schwab, 2005; Hunter et al., 2009; Rizak and Hruday, 2008). Water governance ‘failures’ may explain some of the obstacles (Tortajada, 2010a; Bakker et al., 2008; Rogers and Hall, 2003; GWP, 2000; UNDP, 2010).

After more than a decade of water governance research, water governance is still an umbrella concept and how to improve it is unclear (Biswas and Tortajada, 2010; Tortajada, 2010b; Lautze et al., 2011). Water governance is concerned with how institutions operate and how regulations affect political actions and societal concerns through formal and informal instruments (Tortajada and Biswas, 2011), and is meant to enable practical management tools to be applied (Tortajada, 2010a). The focus of water governance research is often on broad theoretical concepts of transparency, equity, and accountability (Rogers and Hall, 2003), thematic concepts of integrated water resources management (Parkes et al., 2010; Pahl-Wostl et al., 2012; Ison et al., 2007), water security and transboundary water management (Wolf et al., 2003; Allan, 2002; Mirumachi and van Wyk 2009; Zeitoun et al., 2011, Bakker, 2012), and the global effects of climate change on water governance (Bisaro et al., 2010; Kranz et al., 2010). While a few conceptual frameworks and empirical studies provide a basis for analyzing water management policy (Pahl-Wostl et al., 2010; Knieper et al., 2010; Franks and Cleaver, 2007), there is very little theoretical analysis and debate on the core concepts of water governance, (Franks and Cleaver, 2007; Tortajada, 2010a), especially water quality governance. There are numerous studies in the public health and engineering fields on drinking water supply and how to improve it. The research in these fields has focused on the study of technical water management challenges and the study of specific interventions – household water treatment and safe storage, source water protection, and water safety plans – and their impact on public health or drinking water quality for example (Fewtrell et al., 2005). Few studies have attempted to look at governance failures in drinking water supply in single cities or country cases (Bakker et al., 2008; Johnson and Handmer, 2002; Fuest and Haffner, 2007). A recent case study compared the institutions, roles and responsibilities that guide the drinking water sector in nine countries (Rahman et al., 2011). What is missing in the research and policy debate is contextualized analysis of drinking water quality governance (DWQGo) across countries so as to decrease the disease burden, improve public health, and sustain services over time.

In this article, we studied the theory and practice of water governance by examining drinking water governance challenges in three countries—Brazil, Ecuador, and Malawi. Using

mixed methods, water governance challenges and their influence on drinking water management or service delivery are explored. The data were used to develop a conceptual framework for identifying challenges in the governance of drinking water quality on national and sub-national levels, and the relationships between these challenges.

2. Methods

2.1. Ethics

The University of North Carolina Institutional Review board reviewed this study and approved the protocol on 28 September 2011.

2.2. Research design and analysis

A country clustering model was used for country case selection and a snowball sample was used in each country to select interviewees for semi-structured in-depth interviews and focus groups.

To select country cases for study, a country clustering model was used that incorporates variables connected to performance in the water, sanitation, and hygiene sector (WaSH) (Onda et al., 2014). The model groups countries into five clusters based on similarities and differences across variables (political, economic, social and environmental) that impact WASH performance. Variables in the cluster model and the data for each country are represented in Table 1. Brazil, Ecuador and Malawi were selected from three of five clusters in the model. The use of the model is more sophisticated and provides more rigorous reliability than simply using geography or GDP for country case selection. The use of the country clustering model to select country cases, also enhances the representation and generalizability of our study.

After selecting countries and prior to initiation of the field research, a literature review of drinking water quality laws, policies, and governing institutions in the sector was conducted in each country.

Field research took place from February through June 2012. In each country, a snowball sample was used to select individuals for interview. Interviewees included representatives from government, non-governmental organizations (NGOs), international organizations (IOs), and water service providers. Initial contact with government officials, NGOs and IOs in each country capital was made after discussion with researchers who conducted research in these countries (Rahman et al., 2011). Interviews lasted between 20 min and one working day. Interviews with national and provincial level government, NGO and IO representatives included questions about regulations, monitoring and enforcement, and obstacles in the delivery of safe drinking water. To have representation of service provision, provincial and national-level government officials were asked for a list of particularly well-functioning drinking water systems in the country and others with significant challenges in operation and or management. Water systems were then visited and interviews were conducted with water service providers and managers (operators, utility

Download English Version:

<https://daneshyari.com/en/article/7467545>

Download Persian Version:

<https://daneshyari.com/article/7467545>

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