T16P13 / Policy to Sustain Drinking Water

Topic : T16 / Sustainable Development and Policy

Chair : Zigmond Kozicki (University of Detroit Mercy)

Second Chair : Stephanie Baiyasi-Kozicki (Central Michigan University)

GENERAL OBJECTIVES, RESEARCH QUESTIONS AND SCIENTIFIC RELEVANCE

This panel is concerned with identifying policies that sustain drinking water. Only 2.5 percent of Earth’s water is fresh rather than salty, and only 1 percent of that is available to us in rivers, lakes and underground aquifers. And all of those sources are under grave stress worldwide (Spayde, 2011). Water scarcity already affects every continent. Around 1.2 billion people, or almost one-fifth of the world's population, live in areas of physical scarcity, and 500 million people are approaching this situation. Another 1.6 billion people, or almost one quarter of the world's population, face economic water shortage (where countries lack the necessary infrastructure to take water from rivers and aquifers (United Nations, 2015)

The panel should address the idea that drinking water is a limited resource. With the existing climate change scenario, almost half the world's population will be living in areas of high water stress by 2030, including between 75 million and 250 million people in Africa (United Nations, 2015). Policies that promote the management of drinking water and practice conservation of drinking water should be identified. In addition the impact of climate change should be included as a factor in the development of ongoing drinking water policies. Case studies of specific water emergencies should be included for consideration. Just as important are case studies of successful water management experiences. Papers should identify what constitutes acceptable water testing procedures and what should be included in the water quality index used by a community to certify water quality.

CALL FOR PAPERS

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With the existing climate change scenario, almost half the world's population will be living in areas of high water stress by 2030, including between 75 million and 250 million people in Africa (United Nations, 2015). Presenters are encouraged to consider how drinking water policy impacts the world economy. In addition how water policy can promote regional conflict.
Policies that promote the management of drinking water should be identified. The impact of climate change should be included as a factor in the development of ongoing drinking water policies. Case studies of specific economic and political conflict spawned by water emergencies should be provided. Just as important are case studies of successful water management experiences. Papers should identify what constitutes acceptable water testing procedures and what should be included in the water quality index used by a community to certify water quality.
Research Questions: Can government, private industry and the public be incentivized by policy to develop effective methods for maintaining safe and reliable drinking water for both humans and animals? What strategy will encourage private capital and or public taxes to be invested in providing enough drinking water for everyone on the planet?

Spayde, J. (2011). Top four threats to earth’s water. Care2.
United Nations (2015). International decade for action. Water sustains life. United Nations Department of Economic and Social Affairs. Human Development Report 2006. UNDP, 2006 Coping with water scarcity. Challenge of the twenty-first century. UN-Water, FAO, 2007 Retrieved from http://www.un.org/waterforlifedecade/scarcity.shtml

T16P13 / Policy to Sustain Drinking Water

Chair : Zigmond Kozicki (University of Detroit Mercy)

Second Chair : Stephanie Baiyasi-Kozicki (Central Michigan University)

Session 1 This panel is concerned with identifying policies that sustain drinking water.

Thursday, June 29th 10:30 to 12:30 (Block B 3 - 5)

Discussants

Zigmond Kozicki (University of Detroit Mercy)

Stephanie Baiyasi-Kozicki (Central Michigan University)

Survival of mankind requires Water Applied Testing and Environmental Research (WATER) Centers in each country.

Zigmond Kozicki (University of Detroit Mercy)

Stephanie Baiyasi-Kozicki (Central Michigan University)

Abstract

Climate change, increasing water scarcity, population growth, demographic changes and urbanization already pose challenges for water supply systems. By 2025, half of the world's population will be living in water-stressed areas (WHO, 2016).

Each country should now consider operating a Water Applied Testing and Environmental Research (WATER) Center to support public health surveillance of drinking water. The WATER Center should be independent of Government control and provide unbiased results. Each Water Applied Testing and Environmental Research (WATER) Center would enable public health surveillance of drinking water. With the growing scarcity of drinking water worldwide strategic thinking and planning in order to become proactive is necessary. Investing in water quality and water quantity management ensures that the public health and economic benefits for all things related to water is maximized. "While the private sector has a key role to play in making innovation happen, government must provide three key public-good inputs that allow innovation to blossom: investments in human capital, infrastructure, and research"(Pool & Erickson, 2012).

Contaminated water and poor sanitation are linked to transmission of diseases such as cholera, diarrhoea, dysentery, hepatitis A, typhoid and polio. Absent, inadequate, or inappropriately managed water and sanitation services expose individuals to preventable health risks. This is particularly the case in health care facilities where both patients and staff are placed at additional risk of infection and disease when water, sanitation and hygiene services are lacking. Globally, 15% of patients develop an infection during a hospital stay, with the proportion much greater in low-income countries.

· Globally, at least 1.8 billion people use a drinking-water source contaminated with feces.

· Contaminated water can transmit diseases such diarrhea, cholera, dysentery, typhoid and polio. Contaminated drinking-water is estimated to cause 502 000 diarrheal deaths each year.

· By 2025, half of the world's population will be living in water-stressed areas.

· In low- and middle-income countries, 38% of health care facilities lack improved water source, 19% do not have improved sanitation and 35% lack water and soap for handwashing (WHO, 2016)

Pool, S. & Erickson, J., 2012. The high return on investment for publicly funded research. Center for American Progress. www.americanprogress.org/issues/technology/report/2012/12/10/47481/the-high-return-on-investment-for-publicly-fur

World Health Organization (2016). Drinking water. Retrieved from http://www.who.int/mediacentre/factsheets/fs391/en/

Social technologies to guarantee access to water for the rural population living in poverty: the Brazilian experience

Vitor Santana (Ministry of Social Development of Brazil)

The supply of quality drinking water is essential for life, but even today, millions of people around the world still do not have access to this basic need. The reasons are many and varied, but in general the lack of sufficient resources to implement and maintain conventional and technically more complex systems of water supply is the main barrier to the care of certain populations, especially those located more dispersed in the territory. Not surprisingly, in recent years there has been a growing perception that alternative solutions are needed to account for the growing process of water restriction, compatible with socio-climatic and environmental diversity, and involving broad social participation in management.

In this context, in a movement started on a large scale in 2003, the Brazilian government has been betting on social technologies as a solution for the water supply of families living in poverty in rural areas, especially in a context of increasing water scarcity from surface and underground sources. Most of these technologies are used to capture and store rainwater, with ample potential for meeting the demand for water in regions with high water scarcity. There are already more than 1 million families directly benefited, being very probably one of the largest climate coexistence/adaptation programs in the world, which has made possible the supply of both water for human consumption and the development of small production systems, including animal feeds.

Throughout this period, the activity was concentrated mainly in the semi-arid region of the territory, an area of 1 million km², equivalent to almost twice the territory of Spain, with a population of 22.5 million people, 8.5 million residents in the rural area. Even more recently, the process of diffusion of these technologies to other regions, such as the Amazon, has been carried out, proving to be an efficient and effective alternative to solve the lack of access to water of diffuse populations even in regions that do not face water scarcity, but whose service is unfeasible through conventional supply systems.

This is a very decentralized action, and involving broad partnership between the state and civil society, with results and significant impact on the welfare of the Brazilian rural population. Several studies have demonstrated the efficacy and effectiveness of this action, be it a substantial reduction in the incidence of waterborne diseases, reduction in time spent fetching water, a task assigned usually women and children, and reducing social vulnerability and, consequently, of political clientelism.

In this context, the objective of the paper is to present the context from which this governmental action has been developed, discussing the strategies, the legal framework and the political and administrative processes that have made possible the effective implantation of these technologies in such a wide and complex territory.

Watershed Based Policy Tools for Fostering Safe Drinking Water: Addressing Nutrient Enrichment and Harmful Algal Blooms in the United States

John Hoornbeek (Kent State University)

In the summer of 2014, pollutants from a harmful algal bloom (HAB) contaminated the City of Toledo Ohio’s public water supply in the United States. Thousands of people in the Toledo, Ohio area were asked not to use publicly supplied water, and this yielded substantial costs, inconvenience, and potentially negative health impacts for citizens in a country that has become accustomed to relying on what they believe to be “safe” drinking water supplied by public water systems.

The concerns relating to the safety of Toledo’s publicly supplied water in the summer of 2014 were related to cyano-bacteria that are associated with HAB’s, which can develop in lakes and reservoirs where excess nutrient flows occur and lead to water quality degradation. As a result, policymakers are now seeking policy tools to prevent excess nutrient flows to lakes, reservoirs, and other water bodies in the US and elsewhere, as rising temperatures associated with climate change appear likely to yield more significant HAB problems across the globe (O’Reilly et al, 2015). Some scholars have sought to identify policy tools to address a broad range of policy problems (Hood, 1986; Salamon, 2000), while others have identified policy tools to address environmental problems in particular (Alm, 1992; Rosenbaum, 2014). However, policy tools to reduce nutrient flows and their threats to safe drinking water do not yet appear to be well documented and understood.

This paper focuses on identifying water pollution policy tools that are used to reduce nutrient flows. It also identifies existing nutrient reduction policy tools used in water basins around the US, and offers criteria to be used to assess the propriety of their use in differing circumstances. The data and information collected on policy tools come from investigations of major watershed basin programs targeting nutrient controls in the US, including the Ohio Lake Erie water basin, the Chesapeake Bay region, the Long Island Sound, and the Tampa Bay watershed

in Florida. The information compiled is supplemented with information from targeted interviews with key officials from those watersheds. The paper compares nutrient reduction policies in each of these water basins to understand a range of nutrient reduction policy approaches currently used in the United States, and offers observations on the experiences associated with them to date. The paper also identifies potential criteria for applying the policy approaches identified to other settings, based on policy diffusion literature and other sources.

This paper extends current literature by focusing specifically on identifying policy tools for controlling water pollution relating to nutrients and offering (preliminary) criteria for use in applying policy tools to water pollution problems to nutrients. In so doing, it builds upon and extends past work which has focused more specifically on controlling nutrient flows to the Ohio Lake Erie basin (Hoornbeek,et al, 2016)

Water Quality Index (WQI) is a realistic public policy to monitor and prevent drinking water related illness in North America.

Stephanie Baiyasi-Kozicki (Central Michigan University)

Zigmond Kozicki (University of Detroit Mercy)

Abstract

The United States currently does not have a drinking water quality index. The recent crisis in Flint, Michigan, has brought the need for a US drinking water quality index to the forefront of discussion and anticipated action. Flint is located 70 miles north of Detroit in Michigan and has roughly 98,310 residents, 41.6% of which live below the poverty line (CNN, 2016). The median household income in Flint is $24,679 as compared to $49,087 for other Michiganders. Residents in Flint, Michigan, were exposed to high levels of lead and pathogens in their drinking water which resulted in 10 deaths due to Legionella infection and many children exposed to high lead levels in their drinking water.

The Flint, Michigan drinking water emergency demonstrates why communities in the United States need a Water Quality Index (WQI). The EPA should provide a Water Quality Index similar to the Air Quality Index (AQI). The Flint Water emergency demonstrates how vulnerable thousands of people can become when they are not informed of potential health threats in their drinking water. The Flint Michigan drinking water disaster is a result of a flawed National and State policy regarding drinking water testing. The public health disaster could have been avoided by properly conducted regular point of use drinking water testing for contaminants and opportunistic pathogens by local and state health agencies. Each U.S. State should now consider operating a Water Applied Testing and Environmental Research (WATER) Center to support public health surveillance of drinking water. These WATER centers should be independent of State and local agencies and provide unbiased results.

A WQI is a realistic policy in North America as proven by the Canadian Council of the Ministers of the Environment developed a drinking water quality index in 2001 (Government of Newfoundland and Labrador, 2016). A water quality index (WQI) has the intent of providing a tool for simplifying the reporting of water quality data (Government of Newfoundland and Labrador, 2016).

References:

CNN. (2016, December 21). Flint water crisis fast facts. Retrieved from http://www.cnn.com/2016/03/04/us/flint-water-crisis-fast-facts/

Government of Newfoundland and Labrador. (2016, October 20). Drinking water quality index. Retrieved from Drinking Water Quality Index | Water Resources Management