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Monitoring the Progressive Realization of the Human Rights to Water and Sanitation: Frontier Analysis as a Basi to Enhance Human Rights Accountability

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Abstract and Keywords

The human rights to water and sanitation have developed dramatically under international human rights law over the past forty years, with international political declarations leading to specific state obligations. Yet despite this evolution of human rights under international law, there are few mechanisms to monitor the progressive realization of those rights in national practice. The Water, Sanitation, and Hygiene (WaSH) Performance Index employs frontier analysis to monitor human rights to water and sanitation, across countries and over time. Tracking rates of change in water and sanitation coverage, the WaSH Performance Index allows for measurements of the progressive realization of human rights, publishing quantitative indicators reflective of the human rights to water and sanitation. Such external monitoring of outcome measures, correlating national implementation efforts with water and sanitation coverage data, provides a basis for future research and advocacy to facilitate rights-based accountability for water and sanitation policy.

Keywords: human rights to water and sanitation, international human rights law, human rights, accountability, indicators, water, sanitation, hygiene, WaSH performance index

Given the pressing implications of safe drinking water and adequate sanitation, underlying a wide array of global development and public health goals, the United Nations has looked to human rights as a means to address these crucial entitlements. As human rights have expanded in scope and influence, water and sanitation have come to be codified as independent human rights under international law. First elaborated through interpretations of core human rights treaties, the UN General Assembly’s 2010 Resolution on the Human Right to Water and Sanitation has proclaimed international

political recognition of this distinct right. These efforts to develop international law have created a policy basis by which the implementation of human rights can frame water and sanitation systems under the Sustainable Development Goals (SDGs). As these rights take hold in national efforts, monitoring mechanisms can ensure state accountability for progressively realizing rights to water and sanitation.

However, monitoring the progressive realization of water and sanitation rights necessitates a fair comparison of country rates of change at different levels of water and sanitation development. Such comparison is challenging because as countries approach 100 percent coverage, it becomes increasingly difficult for them to reach the remaining underserved populations, leading rates of change to fall as coverage increases. Frontier analysis, a method applied to study best-in-class performance, provides a monitoring approach to assess the progressive realization of the human rights to water and sanitation. Applying frontier analysis to assess human rights realization, country rates of change in water and sanitation coverage can be compared to best-in-class performance among countries at similar levels of water and sanitation development, enabling rigorous assessments of the progressive realization of human rights.

This chapter reviews the development of the Water, Sanitation, and Hygiene (WaSH) Performance Index as a data source to monitor water and sanitation coverage, facilitating rights-based accountability for public policy reforms. Part I outlines the political evolution of international human rights law to develop the human rights to water and sanitation. From the development of international law to the implementation of state obligations, Part II examines the role of external monitoring as a basis for assessing state implementation at the country level and thereby facilitating accountability for the progressive realization of the rights to water and sanitation. Part III discusses the role of frontier analysis in monitoring progressive realization across countries and over time, accounting for the ways in which rates of change in water and sanitation coverage develop in practice. Operationalizing frontier analysis to monitor the progressive realization of water and sanitation rights, Part IV highlights the creation of the WaSH Performance Index, using frontier analysis to assess rates of change in water and sanitation coverage and publishing quantitative indicators reflective of the progressive realization of the human rights to water and sanitation. This chapter concludes that the WaSH Performance Index provides the indicators necessary to assess the links between rights-based reforms and water and sanitation realization, influencing the data necessary to assure the required human rights foundation for SDG implementation.

The Evolution of the Human Rights to Water and Sanitation

Human rights offer a universal framework to advance justice in water and sanitation policy. Rather than viewing safe drinking water and adequate sanitation as only basic needs, human rights implicate specific responsibilities to realize water and sanitation as legal entitlements. Examining deficiencies in water and sanitation as "rights violations" offers international standards by which to frame government obligations and evaluate public policies, shifting social justice debates from political aspiration to legal accountability (Steiner et al. 2008). With a state duty-bearer accepting resource-dependent obligations to "progressively realize" rights, the government is pressed to implement national structures, processes, and outcomes "to the maximum of its available resources, with a view to achieving progressively the full realization of the rights" (UN GA 1966).

Policymakers have increasingly framed water and sanitation—both instrumental to the realization of a wide range of human rights—as interdependent human rights under international law, developing explicit legal standards in the pursuit of international accountability for state obligations (Gupta et al. 2010). Through normative evolution within the UN human rights system,[1] human rights to water and sanitation have found authoritative clarification, as seen in figure 1 in the recent development of international legal standards.

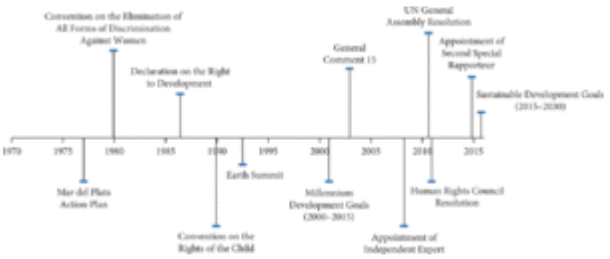

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Figure 1 Development of the rights to water and sanitation

Where water and sanitation were not addressed in the early years of the UN human rights system—never raised in drafting either the 1948 Universal Declaration of Human Rights (UDHR) or the 1966 International Covenant on Economic, Social and Cultural Rights (ICESCR)—a human right to water was not explicitly considered in international policy until the 1977 UN Water Conference in Mar del Plata. As delegates addressed issues of clean water supply and wastewater management, the Mar del Plata Action Plan proposed what would become the United Nations' First Water Decade (1981–1990), recognizing that "all peoples, whatever their stage of development and their social and economic conditions, have the right to have

access to drinking water in quantities and of a quality equal to their basic needs" (UN 1977).

Over the next decade, the UN General Assembly adopted a series of international treaties and declarations that extended this recognition of human rights to water and sanitation, alternately derived from:

- The Human Right to an Adequate Standard of Living, with the 1979 Convention on the Elimination of All Forms of Discrimination Against Women promulgating a state obligation to "ensure to [rural] women the right … to enjoy adequate living conditions, particularly in relation to housing, sanitation, electricity and water supply" (UN GA 1979);
- The Human Right to Development, with the 1986 Declaration on the Right to Development finding a "mass violation of human rights" where many in the developing world are prevented from accessing basic resources and prerequisites for development, "denied access to such essentials as food, water, clothing, housing and medicine in adequate measure" (UN GA 1986); and
- The Human Right to the Highest Attainable Standard of Health, with the 1989 Convention on the Rights of the Child linking water and sanitation to the child's right to health, reinforcing state obligations to "combat disease and malnutrition … through the provision of adequate nutritious food and clean drinking-water" and ensuring that individuals are "informed, have access to education and are supported in the basic knowledge of … hygiene and environmental sanitation" (UN GA 1989).

Yet even as nongovernmental advocates continued to proclaim water as a universal human right into the 1990s, states moved away from a rights-based approach to water and sanitation policy, with governments agreeing at the 1992 Earth Summit that beyond the "satisfaction of basic needs," "water users should be charged appropriately," ignoring human rights attributes of accessibility, affordability, and quality (UN 1992). As advocacy for access to safe drinking water became interwoven with debates on water system privatization (see Bakker, this volume), advocates began to call for the explicit international legal codification of a human right to water (Gleick 1998).

The UN Committee on Economic, Social and Cultural Rights (CESCR)—an independent UN treaty body with a mandate to monitor implementation of the ICESCR—took up this call in November 2002, seeking to codify an independent human right to water. Through the CESCR's adoption of General Comment 15, it defined the scope and content of this newly identified human right, holding that "the human right to water is indispensable for leading a life in human dignity. It is a prerequisite for the realization of other human rights" (UN CESCR 2002). Building upon the water and sanitation targets in the 2000

Millennium Development Goals (MDGs), commitments criticized for neglecting rights-based approaches to equality in development (WHO 2003), General Comment 15 delineates the core obligations of a right to water, proscribes violations of those obligations, and outlines a policy roadmap for states to progressively realize the right through water systems (Hunt 2007). Where water was not mentioned in the original text of the ICESCR, the CESCR would interpret water as implicit in the ICESCR, derivative of the existing human right to an adequate standard of living (ICESCR, Article 11) and the human right to the highest attainable standard of physical and mental health (ICESCR, Article 12) (Riedel 2006). The CESCR reasoned that "an adequate amount of safe water is necessary to prevent death from dehydration, to reduce the risk of water-related disease and to provide for consumption, cooking, personal and domestic hygienic requirements," concluding that "the human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses" (UN CESCR 2002: paragraph 2). Framed by overarching obligations to respect (not interfere), protect (from third party interference), and fulfill (take positive steps to facilitate, promote, and provide for) the right to water, General Comment 15 articulates discrete state obligations:

> to "ensure access to the minimum essential amount of water that is sufficient and safe for personal and domestic uses to prevent diseases" and
>
> "to take measures to prevent, treat, and control diseases linked to water, in particular ensuring access to adequate sanitation."
>
> (UN CESCR 2002: paragraph 37).

These state obligations would be assessed on the basis of the availability, accessibility, acceptability, affordability, and quality of water, examining both the systems and services by which states guarantee water for personal and domestic use (UN CESCR 2002: paragraph 11).

To facilitate accountability for human rights implementation, monitoring the progressive realization of the right to water, the Committee advocated the development of indicators, finding that

> right to water indicators should be identified in the national water strategies or plans of action. The indicators should be designed to monitor, at the national and international levels, the State party's obligations … [and] should address the different components of adequate water (such as sufficiency, safety and acceptability, affordability and physical accessibility), be disaggregated by the

> prohibited grounds of discrimination, and cover all persons residing in the State party's territorial jurisdiction or under their control.
>
> (UN CESCR 2002: paragraph 53)

Following from the CESCR's interpretation of the right to water in the context of the ICESCR, the UN Human Rights Council directed the Office of the High Commissioner for Human Rights (OHCHR) to clarify the larger set of human rights obligations related to equitable access to safe drinking water and sanitation, linking drinking water with adequate sanitation (UN HRC 2006). With the August 2007 report of OHCHR concluding that "it is now time to consider access to safe drinking water and sanitation as a human right" (UN OHCHR 2007), the Human Rights Council created the position of Independent Expert on the issue of human rights obligations related to access to safe drinking water and sanitation (UN HRC 2008), with the Independent Expert devoting her first report to the theretofore neglected sanitation obligations necessary to ensure dignity (de Albuquerque 2009).

Building from these evolving standards within the UN human rights system, the UN General Assembly's July 2010 Resolution on the Human Right to Water and Sanitation[2] solidified political support for the legal reasoning of General Comment 15, memorializing international consensus on the scope and content of a distinct human right to water and sanitation (Meier et al. 2013). In accordance with this Resolution (adopted by a vote of 122–0, with 41 abstentions), the UN General Assembly

> **1.** Recognizes the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights; [and]
> **2.** Calls upon States and international organizations to provide financial resources, capacity-building and technology transfer, through international assistance and cooperation, in particular to developing countries, in order to scale up efforts to provide safe, clean, accessible and affordable drinking water and sanitation for all (UN GA 2010).

As this resolution was introduced with little advance notice by Bolivia (joined by a small group of developing states), it quickly raised the objections of state representatives from developed countries, who found this unexpected push for a General Assembly resolution to "take a short-cut around the serious work of formulating, articulating and upholding universal rights" by states in the UN Human Rights Council prior to advancing the right to the entire UN General Assembly (Sammis 2010). These procedural objections were compounded by substantive concerns that the resolution did not fully reflect the current state of international law, leading sponsoring states to replace the word "declares" with

"recognizes" in an effort to achieve consensus on the opening paragraph. Despite these objections, the resolution was approved with no formal objections, with states opting to abstain from this vote rather than vote in opposition to a politically popular consensus (Crook 2010).

The UN General Assembly's 2010 Resolution on the Human Right to Water and Sanitation has proven a fountainhead for future efforts to substantiate these rights. States have since developed an international imperative to implement the human rights for safe water and adequate sanitation, reaffirming their 2010 resolution through a series of declarations in both the UN General Assembly and Human Rights Council (UN GA 2013, 2015a; UN HRC 2010, 2013, 2014). With the 2030 Agenda for Sustainable Development proclaiming "a world where we reaffirm our commitments regarding the human right to safe drinking water and sanitation and where there is improved hygiene" (UN GA 2015b), the resulting SDGs overcome human rights weaknesses in the MDGs, with SDG 6 seeking to "Ensure access to water and sanitation for all" through several targets reflective of human rights norms:

> **6.1** By 2030, achieve universal and equitable access to safe and affordable drinking water for all
> **6.2** By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations
> **6.3** By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
> **6.4** By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity. (UN GA 2015b)

These repeated political pronouncements, the culmination of advocate efforts over forty years, have further legitimized the rights to water and sanitation across the global community while consolidating a new set of international legal commitments for water and sanitation.

This international political recognition of interconnected rights to water and sanitation has provided a basis for expanded state obligations to realize human rights through water and sanitation systems, transitioning policymaking from international human rights development to national rights-based policy implementation. Facilitating accountability

for implementing the human rights to water and sanitation, such advancements are framing efforts to monitor national implementation efforts to secure the progressive realization of these rights.

An Imperative for Monitoring Progressive Realization

As global governance is translated into national practice, this rights-based agenda has laid the groundwork over which an expanding implementation movement is being established at the intersection of human rights law and water and sanitation policy. To realize rights, states must implement human rights obligations through commitments under national law, actions in public policy, and results for people's lives. Given that many national water and sanitation systems remain disconnected from international human rights frameworks (Meier et al. 2014a), implementation of the rights to water and sanitation begins through codification under national law, with these structural changes leading subsequently to reformed policy processes and then to improved health outcomes (Staddon et al. 2012). This implementation process, from the acceptance of international norms to the improvement of individual welfare, does not occur automatically (Palmer et al. 2009) and is contingent on a long chain of programmatic steps, necessitating examination of the national policy reforms at each stage of human rights implementation (Getgen and Meier 2009).

External monitoring has become necessary to facilitate accountability for the implementation of human rights (O'Flaherty and Tsai 2012). Despite a dramatic increase in state support for human rights, studies have continued to show an ambiguous relationship between treaty ratification and human rights realization (Landman 2004), leading to the conclusion that human rights accountability requires an independent means to monitor the influence of international law on national practice (Hathaway 2002). With states accepting specific obligations to implement human rights, external monitoring seeks to facilitate accountability in the absence of a global judiciary, overcoming an "enforcement problem" in human rights through state reporting and outside assessment (Hafner-Burton 2008). As part of an overlapping system of national and international accountability mechanisms—including local political advocacy, national litigation, and international human rights treaty bodies—external monitoring interacts with and supports these other forms of accountability to assure the implementation of human rights (Morijn 2011).

Such monitoring provides an independent assessment of national efforts to implement human rights obligations, holding states accountable for meeting their human rights obligations through, among other things:

- Information Diffusion—with external monitoring serving as a conduit for transferring information from state governments to civil society (Hafner-Burton 2014), and
- Policy Persuasion—with monitoring influencing government perceptions of human rights implementation, "naming and shaming" states that have failed to meet obligations, identifying needed policy reforms, and compelling shifts in national practice (Simmons 2009).

This monitoring process seeks to deter violative behaviors, encourage implementation efforts, and enable policy reforms by national governments (Crawford 2000); however, such external assessments fail to provide accountability where they do not reflect human rights norms or national data availability (Hafner-Burton 2012).

External monitoring has particular relevance to economic, social, and cultural rights, which, bound by the principle of progressive realization, necessitate guidance to states on the pace and extent of human rights implementation. In accordance with the principle of progressive realization, the ICESCR outlines that:

> Each State Party to the present Covenant undertakes to take steps, individually and through international assistance and co-operation, especially economic and technical, *to the maximum of its available resources, with a view to achieving progressively the full realization of the rights* recognized in the present Covenant by all appropriate means, including particularly the adoption of legislative measures. (UN GA 1966, emphasis added)

The principle of progressive realization is a formal recognition that, beyond specific obligations of immediate realization, the full realization of economic, social, and cultural rights will be resource-dependent and that states will differ in their rates of progress in human rights realization based upon those resources (UN CESCR 1990). As each state is obligated under international law to "progressively realize" rights "to the maximum of its available resources," such a resource-dependent obligation gives flexibility to states in implementing rights through limited national resources (UN OHCHR 2012) and "it remains difficult to establish a universal methodology that would allow authorities to perform a fair assessment of all States' efforts to realise the HRtWS" (Brown et al. 2016).

Quantitative Measurement of Progressive Realization

Monitoring the progressive realization of water and sanitation rights remains limited to qualitative indicators and country-specific analyses, undercutting the comparisons that are necessary, over time and across countries, to conduct a rigorous assessment of state implementation efforts. To support the time-bound water and sanitation targets of the SDGs (Satterthwaite 2014), scholars and advocates have sought quantitative measures reflective of human rights norms for equality and non-discrimination (Winkler et al. 2014). With an evolving understanding of the value of quantitative indicators to monitoring the progressive realization of economic, social, and cultural rights, the OHCHR is seeking to develop these specific indicators, beginning a process with the CESCR to develop universal indicators for the human rights to water and sanitation (Meier et al. 2014b).

Through systematic analysis of the rate and extent of human rights implementation, such a quantitative assessment must independently examine the relevant norms of the human rights to water and sanitation:

- Looking to the availability, accessibility, acceptability, affordability and quality of water and sanitation services and systems; and
- Considering cross-cutting principles to assure non-discrimination and equality, participation, accountability and sustainability (de Albuquerque 2014).

Framing policy measurements through a normative lens, the human rights practice community has embraced the promise of quantitative assessments as part of a larger drive to monitor state obligations for the realization of human rights, especially economic, social, and cultural rights (Rosga and Satterthwaite 2009). While there are existing mechanisms for international monitoring of the rights to water and sanitation, as seen most prominently in government self-reporting to the CESCR on treaty implementation, political constraints have kept states from reporting consistent water and sanitation indicators to international human rights treaty bodies, undercutting efforts to compare implementation across states and over time (Meier and Kim 2015). Analogously, while there are widely used quantitative data that measure water and sanitation coverage, these data have not been linked to human rights norms, limiting state accountability for their realization (Baquero et al. 2015). To monitor progressive realization, there is a need to tie water and sanitation data to human rights norms through quantitative indicators of the human rights to water and sanitation.

Quantitative Indicators of the Human Rights to Water and Sanitation

It is possible to monitor the progressive realization of the human rights to water and sanitation, comparing nations over time and across countries through indicators that describe select human rights norms, including availability, accessibility, quality, and non-discrimination and equality:

- Availability refers to the quantity of water, sanitation, and hygiene facilities available to meet individual needs and whether enough water exists in a geographic area to supply the population (UN CESCR 2002).
- Accessibility refers to whether people can physically access water and sanitation facilities readily and whether there are informational or financial barriers to obtaining water (de Albuquerque 2014).
- Quality refers to the safety of water for consumption (de Albuquerque 2014) and whether water services, sanitation facilities, and hygiene practices prevent human excreta from contaminating water supplies and harming public health (UN CESCR 2002).
- Non-Discrimination and Equality refer to the principle that water and sanitation services must be provided without discrimination of any form, requiring affirmative measures to be taken to provide services to those who are excluded, at risk, or not able to provide for themselves (de Albuquerque 2014).

Under the MDGs, indicators of availability, accessibility, and quality were reflected in data on “use of an improved drinking water source” and “use of improved sanitation facilities.” The “improved” indicators for water and sanitation were two of the most widely used quantitative measures of water and sanitation coverage, as they differentiate between types of sources that provide some protection against contamination (improved) and those that do not (unimproved). Data on improved water and sanitation have been collected through censuses and household surveys since the 1960s (Bartram et al. 2014).

However, the “improved” indicators for drinking water and sanitation have been criticized for failing to reflect human rights norms and levels of service (de Albuquerque and Roaf 2012). For example, systematic reviews show that improved sources are not always free of fecal contamination (Bain et al. 2014a, 2014b; Kostyla, Bain, Cronk, and Bartram 2015; Shields, Bain, Cronk, Wright, and Bartram 2015). Drinking water systems in low- and middle-income countries are often non-functional or provide water discontinuously (Rural Water Supply Network 2009; Van den Berg and Danilenko 2011). Excreta is not always safely managed from improved sanitation facilities (Baum et al. 2013). Water and sanitation in non-household settings, such as schools, workplaces, and

health care facilities, were not included in the MDGs and coverage in these settings is low (Bartram et al. 2015; Cronk, Luh, Meier, and Bartram 2015; Cronk, Slaymaker, and Bartram 2015; UNICEF 2015; UNICEF/WHO 2015; WHO and UNICEF 2015).

The WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation monitored water and sanitation under the MDGs, is now conducting monitoring for the SDGs, and is addressing these concerns in the SDG era. The JMP has proposed indicators for safely managed drinking water, safely managed sanitation, and basic handwashing facilities. These new indicators are improvements upon the improved water source/ sanitation facility indicators. Safely managed drinking water, for example, accounts for drinking water quality, water available at the home, and water available at all times. The JMP has also proposed WaSH indicators and monitoring in schools and health care settings (WHO/UNICEF JMP 2015).

Having been used to assess the MDGs, disaggregated by urban and rural setting to account for certain aspects of non-discrimination and equality, the improved/unimproved indicators that have long been used are being supplanted by other indicators for monitoring the SDG and measuring progressive realization of human rights.

Frontier Analysis as a Basis for Monitoring Progressive Realization

Structuring quantitative data collection on current national coverage levels, the principle of progressive realization focuses on whether a state has taken steps in practice to implement the human rights to water and sanitation. To assess whether a state is progressively realizing the rights to water and sanitation, rates of change in coverage over time can be used as a measure of national progress (Fukuda-Parr et al. 2013). However, rates of change do not allow for comparisons across states, as rates of change depend upon the initial level of coverage, as seen where coverage levels begin to plateau as countries approach 100 percent (and therefore rates of change also begin to decrease). Figure 2, which shows coverage of improved drinking water and sanitation in the United States from 1940 to 2010, demonstrates the plateau effect over that period, where coverage began to plateau (and rates of change approached zero) when water and sanitation coverage was greater than 95 percent. This phenomenon is seen with other technologies, such as the uptake and adoption of the radio, television, and the Internet (Hannemyr 2003). Accordingly, the rate of change in water and sanitation coverage for a country with 50 percent coverage cannot be fairly compared with the rate of change for a country approaching 100 percent coverage. Methods to monitor progressive realization

of water and sanitation rights should therefore take into account this nonlinear trend in coverage over time.

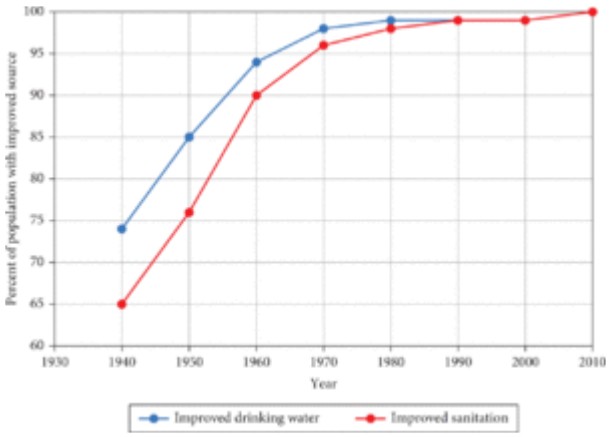

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Figure 2 Coverage of improved drinking water and sanitation in the United States (1940–2010)

Source: US Census data 1940−1990; AHS 2011.

Frontier analysis, a method used in operations research and econometrics, can account for such nonlinear trends in coverage, providing a rigorous basis to monitor progressive realization of the rights to water and sanitation. As a measure of performance, frontier analysis has been used to measure the performance of schools, factories, and hospitals and has been applied to assess human rights realization (Fukuda-Parr et al. 2009) and to monitor the progressive realization of rights over time and across states (Luh and Bartram 2016).

The application of frontier analysis to assess the progressive realization of the human rights to water and sanitation was demonstrated using the non-discrimination and equality norm (Luh et al. 2013). Comparing a state's rate of change in water coverage to the rate of change of the best performing country at a similar level of coverage, the resulting comparison is a unit-less index that enables a fair quantitative comparison of state performance. The best performing states in this index constitute a performance frontier, or the maximum rate of change that a state could potentially achieve at different levels of coverage, as illustrated in figure 3.

Click to view larger

Figure 3 Country performance on WaSH using frontier analysis to describe the performance frontier

By providing a benchmark for how fast a state could progressively realize rights, frontier analysis enables existing quantitative data to be used as a basis for comparisons over time and across countries (Seiford and Thrall 1990). Through this method—described in

greater detail elsewhere (Luh et al. 2016)—it is possible to understand how differing government structures and processes allow a state to approach the performance frontier in water and sanitation outcomes, providing a data source to monitor the progressive realization of the rights to water and sanitation (Luh and Bartram 2016).

The WaSH Performance Index

The WaSH Performance Index was developed to capture indicators of the human rights to water and sanitation and to provide quantitative data for monitoring progressive realization. States can be compared with each another, and a single country can be assessed over time. The Index can thus be used to facilitate accountability for state obligations to progressively realize access to water and sanitation to the maximum of available resources, ensuring that governments focus their implementation efforts on the public policies and financial resources necessary to improve water and sanitation outcomes.

Drawing on MDG data on improved/unimproved water sources and sanitation facilities, the WaSH Performance Index examines how rapidly states are progressing in both coverage for, and equity in, improved water and sanitation, relative to the performance frontier (indicative of best-in-class performance). To assess the normative content of availability, accessibility, and quality, the rate of change in coverage for use of an improved source was taken as an indicator of rights realization. For non-discrimination and equality, the rate of change of the gap in coverage for use of an improved water and sanitation source between rural and urban settings served as an indicator of these rights-based principles (where the gap in coverage is the difference in coverage between rural and urban settings).

Using frontier analysis, state performance was monitored on the basis of four indicators: water access performance; water equity performance; sanitation access performance; and sanitation equity performance. Frontier analysis generates a comparable, normalized score for each indicator—between −1 and 1 for each country. The composite index for each country is the sum of the four indicators, ranging from −4 to 4.

Applying these scores across the 117 states with relevant coverage data, the 2015 WaSH Performance Index[3] highlights that:

- High-performing states in the 2015 rankings were those that achieved significant improvements in coverage in recent years, including El Salvador, Niger, Egypt, Maldives, and Pakistan. Low-performing states were those that showed stagnation or

decline in recent years, such as the Dominican Republic, the Gambia, Ghana, Samoa, and Timor-Leste.

• Despite sub-Saharan Africa persistently being the region with the lowest water coverage in the world (figure 4), rates of change in water access performance varied widely among states in sub-Saharan Africa, with both high and low performers (figure 5).

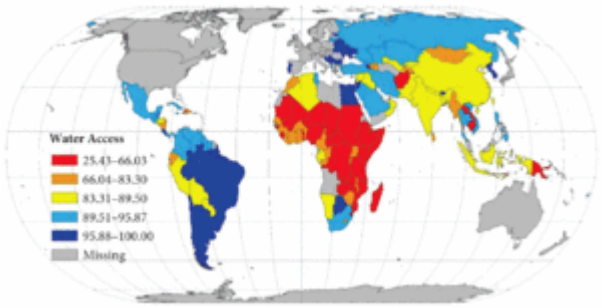

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Figure 4 Global improved water coverage by country (percent coverage)

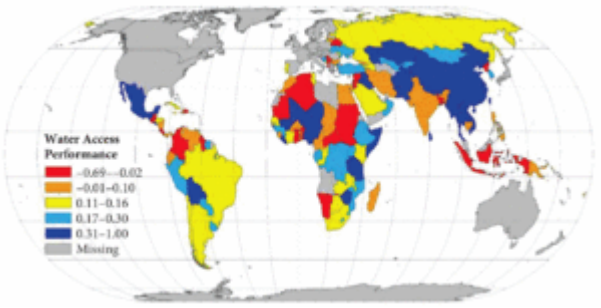

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Figure 5 Country performance in rates of change for improved water access (Index values between −1 and 1)

• Among the most populated countries in the world (those with populations above 50 million), Pakistan, China, and Nigeria were high performers (ranked 5, 11, and 18, respectively, of the 117 countries), while Russia, the Philippines, and India were low performers (ranked 72, 83, and 92, respectively, of 117 countries).

• Despite the widespread assumption that countries with higher gross domestic product (GDP) will perform better in progressively realizing the human rights to water and sanitation, GDP was not significantly correlated with performance, indicating that even countries with limited economic resources can make great strides if they have an enabling policy environment in place.

The WaSH Performance Index generates value from existing quantitative data to enable monitoring of the progressive realization of the human rights to water and sanitation. This evidence-based monitoring can inform the decisions of policymakers, planners, and donors; assess national progress in realizing the rights to water and sanitation; and frame how to make best use of available resources through policy reforms and national budgeting. The Index can therefore provide external monitoring to inform formal

mechanisms of human rights accountability, employing quantitative indicators to advance national discourse through political advocacy and provide civil society with the rights-based standards and public health data necessary to further human rights progress in water and sanitation (The Rights to Water and Sanitation 2016).

Building from this Index through new data collected under the SDGs—with these new goals moving beyond the improved source indicator of the MDGs through additional data on safely managed drinking water and sanitation, improvements in service levels, and WaSH in non-household settings—future versions of the Index will account for the complexities of water and sanitation services and more fully represent the normative content of the human rights to water and sanitation. Refinements and improvements in data collection in the SDG era, and subsequent frontier analysis of these new data, may lead to changes in the frontier of best-in-class country performance, encouraging countries to address deficient areas, such as in water quality or safe excreta management.

Conclusion

With the human rights to water and sanitation achieving widespread acceptance under international law, there is a need for quantitative indicators to monitor the progressive realization of these rights in national policy. Quantitative indicators are needed to compare state implementation efforts and to complement existing qualitative data to ensure that states are meeting their human rights obligations. The WaSH Performance Index provides a quantitative data source to monitor the progressive realization of rights, with applications for these comparable data throughout the UN human rights system and across nongovernmental organizations. Engaging human rights implementation through this innovative monitoring design, it is possible to see the potential of rights-based structures and processes to affect water and sanitation outcomes, and additional research will be necessary to analyze the policy determinants of the outcomes presented in the WaSH Performance Index. By understanding the role of rights-based reforms in leading to water and sanitation outcomes, such external monitoring at each stage of human rights implementation can facilitate accountability for progressively realizing the human rights to water and sanitation.

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Notes:

([1]) The UN human rights system refers to the constellation of UN bodies that are primarily concerned with the promotion and protection of human rights (Steiner, Alston, and Goodman 2008).

([2]) While the UN General Assembly initially referred to a singular “human right to water and sanitation” in its 2010 Resolution, the UN human rights system—following the lead of the Committee and the Special Rapporteur—has since come to address water and sanitation as interconnected but distinct rights (de Albuquerque 2014; UN GA 2015a). Except in the specific context of the 2010 Resolution, this chapter refers to these rights in the plural: “human rights to water and sanitation.”

([3]) The full WaSH Performance Index report is available online at http://waterinstitute.unc.edu/wash-performance-index-report/.

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