Thirsty for change

The untapped potential of women in urban water management

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The urban water challenge

The global community has unequivocally acknowledged that the continued decline in water security—the availability of safe, reliable water as both a commodity and a natural resource—presents an immense risk to poverty reduction and sustainable development in the coming decades. Without measurable efficiency or technology gains, by 2030, the world’s demand for water will exceed the available supply by 40 percent,¹ and an estimated 2.8 billion people will be living in countries or regions with absolute water scarcity.²

Although water availability is often thought of in a rural context, as urbanization continues to raise the population of the world’s cities—from today’s 3.5 billion to an estimated 5 billion by 2030³—stresses on the urban water supply will become increasingly acute. Rising demand in highly concentrated areas will result in less available water per urban household, with profound implications for the health and productivity of all urban dwellers and, particularly, for the urban poor and marginalized communities. Water scarcity will hit hardest in urban centers in developing countries that are already struggling to cope with rapid urbanization, economic constraints, fragile institutions, and an insufficient water infrastructure. For the vast majority of households in these areas, women and girls are the primary providers, managers, and users of water. The more time women and girls spend accessing clean water for their families or caring for relatives inflicted with water-related illnesses, the less time they spend...
learning in school or working in the productive economy.

Preparing cities to address water security before the full weight of these disruptions is upon them requires an accelerated, expansive, strategic effort aimed at strengthening the efficacy of urban water resource management. It will also require the collective action of municipal governments, the private sector, nongovernmental organizations, and civil society—because improving water resource management is not something that city governments can achieve on their own. Water services that are run by local governments, particularly in developing countries, are often beleaguered by deteriorating infrastructure, weak management, high levels of non-revenue water losses, low levels of transparency, and poor communication with stakeholders—especially women.

For more than two decades, the role of women within the water sector has been examined in studies that have found that more substantial improvements in the governance, transparency, and sustainability of water supplies are achieved when men and women are involved in equal measure than when women are involved only marginally or not at all. A World Bank evaluation of 122 projects found that water projects that included women were six to seven times more effective than those that did not. Yet women make up less than 17 percent of the water, sanitation, and hygiene labor force and a fraction of the policymakers, regulators, management, and technical experts.

For international development agencies working to strengthen the water sector and/or address urbanization, this article examines some practical pathways to help increase the number of women working in the urban water sector as formal participants through three specific entry points:

1. Design, operation, and maintenance of water systems
2. Water distribution, both networked and non-networked
3. Policymaking and regulation

While there is a considerable body of research and evidence on the impact of greater inclusiveness in managing rural water supply, there is less documentation of the impact of women’s inclusion in urban settings. We have drawn on rural examples in some cases here for lessons that could have applicability to inclusiveness in an urban context as well.

ENTRY POINTS FOR WOMEN

Design, operation, and maintenance of water systems

In India, where women have been trained and licensed as hand pump mechanics, customers rate female mechanics as more accessible and responsive than male mechanics. As a result, in areas served by female mechanics, there is more preventative maintenance and fewer breakdowns. Many of these women
understand that a broken hand pump results in girls and women having to travel greater distances to collect water, losing productive time and increasing risks to their personal safety. In Malawi, water committees composed mainly of women monitor the condition of the water pipes that lie along the footpaths they use several times a day, reporting water leakages and the need for repairs. Women in the Magelang district of Java, Indonesia, helped their community rethink long-held beliefs that women lack technical skills when they offered technical solutions to design problems in the existing water system. Their solutions became the basis for a complete modification to the water system, and women are now active participants in the management of the community’s water systems.

Many women water users have invaluable insights about the design, operation, and maintenance of water systems, which reflect their needs and preferences as the sector’s primary customers. Applying a user-centered design approach to water supply systems that incorporates end users’ wants, concerns, and cultural contexts offers a number of advantages for consumers, communities, and governments. User-centered designs that make water systems more useful and responsive to consumers’ needs and preferences improve accessibility and customer satisfaction—when satisfaction increases, so too does willingness to pay. For utilities, the benefits can include lower levels of non-revenue water losses, improved cash flow, and more resources for investment in infrastructure and increasing service quality. It can also mean fewer government subsidies, which frees up public funds for other essential services. Key to driving user-centered design improvements and reforms across the urban water sector in developing countries is to create conditions that can attract, retain, and promote women into roles—as engineers, technicians, mechanics, operators, system architects, and utility managers—in which they can shape the design, construction, and rehabilitation of new and existing water supply systems.

Effective user-centered design that yields better market intelligence should be informed by a solid understanding of cultural sensitivities and an insider’s perspective—both inputs that women as primary users, providers, and managers of water can readily supply. Recruiting women to execute market-facing research should include greater involvement in formal
education for women and girls, especially in science, technology, engineering, and math (STEM) programs. Methods of encouraging girls to begin and finish STEM education programs include: targeted scholarship programs that begin in secondary school and help promising STEM students complete secondary and tertiary school programs; performance-based conditional cash transfer programs that incentivize girls to enter and graduate from STEM programs; international exchange programs; and innovations such as prize competitions. Curricula reform and teacher training for vocational, college, and university programs that focus on the design, operation, and maintenance of water infrastructure need to be coupled with incentives that attract greater numbers of women to enroll in and teach these programs. Utilities, local and national governments, and other water providers that vigorously recruit the women graduates and alumni from these programs will encourage even greater enrollment and graduation. Water-focused prize competitions and innovative challenges such as the one sponsored by World Skills in 2014— but targeting urban women in the water sector—can foster promising new ways of designing, maintaining, and delivering water while protecting and conserving the water supply.

While STEM education programs can have a long-term effect in preparing women and girls to fill essential roles in the design, maintenance, and operation of water systems, utilities companies can immediately begin applying the foundations of user-centered design—desirability, feasibility, and viability—by incorporating women’s feedback into water management structures and practices. Focus groups for women can be used to solicit practical ideas and opinions on the usefulness, effectiveness, and adoptability of water infrastructure and management processes.

Studies by a number of international donor organizations validate that there is an increasing number of women on water boards, water associations, and other community-based water organizations in some countries. But these women are not yet widely heard or influential. Training programs can help build the networks and capacities of women involved in civil society organizations and help increase their visibility and influence in consultative processes.

Finally, women play an important role in design and maintenance that helps promote water stewardship and the use of water in socially inclusive, environmentally sustainable, and economically beneficial ways. UN Water estimates that merely involving women can increase the effectiveness of water projects six- or seven-fold. For example, in Baluchistan, Pakistan, researchers—who were initially deterred from consulting with women for a year—were eventually able to collaborate with an all-female team that proposed repurposing
a new water tank on unused land to provide water for nonfunctioning public standpipes. This plan was not only more cost-effective than the original plan developed by an all-male group—it led to better water management and quality-of-life improvements as a result of hygiene education. Four years later, the village built a new school for girls, investing in female empowerment and enrolling more women into the fold of policymaking.15

Water distribution

In emerging markets, urban water is distributed by either networked utility systems or non-networked provision via kiosks or tankers. While networked water systems operated by utilities are the primary delivery mechanism in urban settings, these utilities grapple with exceptionally high levels of nonrevenue water losses.16 These losses are often a result of inefficient administration and collection systems, customer unwillingness to pay, commercial theft, and physical losses stemming from deteriorating infrastructure and poor maintenance. Two important consequences of high nonrevenue water losses are less funding for investment in infrastructure improvements and network expansion. This, in turn, reduces the reach of piped networks and leaves large swaths of urban and peri-urban centers unconnected, including areas containing informal settlements and urban slums.

A 2014 report by the International Water Association found a critical shortage of skills in the water sector in 15 developing countries, particularly in the management, accounting, finance, and engineering professions.17 The report raised practical questions about how these and other developing countries with similar skill shortages will be able to meet the Sustainable Development Goals for water without a greater investment in the skills the sector needs. Women have the potential to fill these human resource gaps—as managers, finance professionals, collection specialists, water engineers, and marketers of a product they know well to a customer base they understand better than their male counterparts.

Increasing the number of women in the talent pipeline can address the human resource shortages and, at the same time, make room for new perspectives and ideas for solving some of the industry’s most intractable problems, such as reducing nonrevenue water losses. In the previous section, we noted that increasing the supply of skilled women through STEM education and vocational training programs is essential. So too is the introduction of formal institutional policies and practices that are purposefully designed to create a conducive environment for the recruitment, retention, and advancement of qualified women. Mandatory training on the attributes and expectations of a gender-friendly work environment for utility management and staff can shift mind-sets and organizational culture over time, particularly when policies and expectations are enforced and tied to performance management and
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reward systems for all employees.8 Peer networks and communities of practice designed specifically for female water practitioners can help ease feelings of isolation and stigma that are often experienced by pioneering women who are the first to enter male-dominated industries.

Households that lack a network connection typically access water via a non-networked water distribution mechanism such as water kiosks and tankers. The resale of water through non-networked water distribution outlets is big business, most of which is owned and operated by men. Greater participation by women as entrepreneurs in this sub-sector goes beyond the obvious benefits of employment, economic empowerment, and equal access to resources and productive inputs. It puts women buyers in direct and continuous contact with women sellers who have information and learnings to share as a result of their unique role as managers of household water. This knowledge often includes safe water storage and usage practices, water conservation, and effective treatments for water-related diseases.

But women’s access to the means to enter the market—start-up capital, basic business management skills, and market information—remains limited in many developing markets and hinders their participation as owners, operators, and entrepreneurs. Local governments can accelerate the rate of inclusion by making the formal business environment more transparent, predictable, and accessible to women water entrepreneurs. Utilities too, can accelerate inclusion by partnering with communities to target, train, finance, and license women entrepreneurs as water resellers in their communities, eliminating layers of intermediary costs in the process.

Within distribution, women can influence the adoption of water stewardship. Their unique role in and their understanding of household water management gives them insights to pragmatically shape conservation efforts through awareness-building around family habits and behaviors, managing water consumption, and auditing household water budgets. As a primary influencer of young children, women can instill the values of a water-saving culture from
an early age and establish the tenets of conscientious water use while actively building social support and expectations for a future generation of water managers. Through roles in distribution, women can organize and participate in networking opportunities and community events that cater to women and girls to encourage them to build and fortify coalitions, providing them with the space and time to share tips and practices to improve water efficiency. These opportunities spotlight the accomplishments of female leaders and can galvanize others to consider community engagement as well. Bolstering women’s involvement in water conservation needs to build on and leverage their uniquely influential relationship with water within their communities.

**Policymaking and regulation**

Many countries have national policies that mandate equal gender representation in the governance of the water sector and gender equity in the access and control of water resources. However, their efficacy depends heavily on where governments place the implementation of these policies within the structure of the government and the degree to which they fund them and measure their impact on women, families, and communities.

Countries such as Uganda, Tanzania, South Africa, and Peru have adopted ambitious national policies aimed at increasing the number of women working in the sector, increasing women’s participation, and changing the way water resources are managed. As important-
ly, these countries have adopted both formal and informal methods for ensuring that these policies do more than just sit on the shelf, with designated gender focal points tucked into HR departments with no budget or buy-in. Kenyan’s national gender policy, of which water policy is a subset, has been cascaded to all public sector institutions at every level of government with a requirement to report on compliance and impact to the country’s National Gender Commission on a quarterly basis. Uganda’s minister of state for water, Maria Mutagamba, was instrumental in leading the formation and implementation of her country’s fully funded five-year water sector gender strategies. These examples highlight how critical it is for inclusive policies to come from the top of organizations to ensure policies are effectively translated into implemented actions.

Greater representation of women in policy and regulatory roles helps generate greater awareness of the concerns and experiences of women constituents among decision makers, which could influence how the sector is governed and by whom and how water resources are accessed and controlled. For example, research from India found that the number of drinking water projects in areas with female-led councils was 62 percent higher than those with male-led councils. In terms of shaping water sector policy and regulations, increased representation can mean more female legislators, civil servants, and appointees in water ministries, and/or equal numbers of men and women on water boards, water associations, and agencies that are active in the urban water sector.

The creation of women’s water caucuses within national and subnational legislatures can serve as focal points for advocating, legislating, and funding policies that promulgate inclusive water policies in all aspects of water resource planning, development, and management. In countries where the legislature confirms appointments to regulatory bodies, a water caucus within the legislature could also be influential in increasing the number of female water regulators. Legislators and ministers can push for reforms in the recruitment, promotion, and performance management practices within water-related ministries and agencies to enable more women to enter and be promoted into roles of increasing responsibility and influence. At the same time, ensuring there are well-funded programs in place to develop women practitioners using mentorship, peer networks, technical training scholarships, knowledge management, and leadership train-

As efficacious as water caucuses are, building more egalitarian representation in legislatures takes time and effort.
As the world’s water demand steadily rises, leveraging the untapped potential of women might make a difference in the world’s collective water security.

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By contrast, cities in India and China, also among the world’s fastest-growing, are making concerted efforts to include women in water resource management with notable results and lessons to impart. For these communities, investing in women is not only prudential—it is good policy that can yield high returns in the form of better-managed resources, increased labor participation and productivity, and abated water shortages.

Although few scholars have studied the linkage of women’s engagement with urban water sector performance, it is worth examining further. International development agencies working with governments, nongovernmental organizations, and the private sector should pioneer pilot programs and collect data to test whether, in fact, inclusive policies and practices engender improvements in the management and governance of water resources that can ultimately result in greater water security—through more efficient water usage, improved reliability, less waste, more and better infrastructure, greater water conservation, equitable access, and safe water. As the world’s water demand steadily rises, leveraging the untapped potential of women might make a difference in the world’s collective water security. DR

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Endnotes


4. Water unaccounted for in real terms, usually in the form of leaky pipes, customers’ failure to pay, or under-collection by utilities and service providers due to unrecorded customers and connections or measuring inaccuracies.


6. Ibid.


12. The Inaugural Water Innovation Challenge was hosted in June 2014 at the Institute of Techni
cal Education, Singapore, bringing together multi-skilled teams from the United States and Australia to design and innovate plumbing and sanitation solutions for communities in Nepal and Bangladesh, www.worldskills.org/what/international-cooperation/innovation-challenges/.


16. Between 30 and 70 percent.


18. Brazil’s Itaipu Binacional, a global leader in renewable energy, was granted the federal government’s Pro-Gender Equality Seal in 2015 for the fifth time and honored by the United Nations in recognition of its application of the Seven Women’s Empowerment Principles. It has doubled the number of women in management positions from 10 percent to 21 percent in a decade by promoting inclusive cultural initiatives, training workshops for women community leaders, and active participation in the Ministry of Mines and Energy Permanent Gender Committee, www.itaipu.gov.br/en/social-responsability/gender-equality.
19. For example, in Tanzania, the National Strategy for Gender Development 2005 is a comprehensive strategy that institutionalizes gender focal points in government ministries, yet interviews with the Ministry of Energy and Minerals (MEM) reveal perfunctory compliance. While MEM theoretically put in place a gender focal point, in actuality there is no training, empowerment, job description, or meaningful activities. In a February 2015 interview, the director of administration and human resources management admitted that perhaps MEM should have some training on what gender is and why it is important, since even he himself was not clear on what it means or why it is relevant. “Frankly speaking, gender issues have not been tackled as they should be,” he said.

