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Sustainable Community-Based Solutions: Source to Tap and Back Again

Amanda Marlin
Water Supply and Sanitation Collaborative Council

Kusum Athukorala
NetWWater, Sri Lanka, kusum@itmin.net

Marcia Brewster
Nautilus International Development Consulting, Inc., brewster@nautilus-international.com

Anizan Isahak
National University of Malaysia

Susmita Sinha
Consortium for DEWATS Dissemination (CDD) Society

See next page for additional authors

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Abstract
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The cases presented reflect the experience and results of projects undertaken by the authors in Asia. The experience of each author brings a broad range of approaches to tackling the challenges faced by water managers in densely populated urban areas. These provide the basis for innovative solutions to expand coverage, strengthen service provision and create new businesses.

The article explores ways for communities to work together more effectively to increase knowledge and understanding of the wide variety of interests that exist in a water basin. In particular, community-based solutions can promote protection of the sources of water, and sustainable water and sanitation management. "Source to tap and back again" speaks to the imperative that all people understand the relationship between upstream and downstream users, and that both women and men be involved in resource management. This article addresses the following issues:

- Watershed management and urbanization;
- Community-based approaches for sustainable sanitation in urban areas;
- The leadership and participation of women in IWRM research and development; and
- Targeting capacity building programs to empower women water professionals in Asia.

Keywords
Water, Sanitation, women, community-based solutions, watershed management, capacity building

Authors
Amanda Marlin, Kusum Athukorala, Marcia Brewster, Anizan Isahak, Susmita Sinha, and Salmah Zakaria

Sustainable Community-Based Solutions: Source to Tap and Back Again

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[1]Programme Manager, Advocacy and Communications, Water Supply and Sanitation Collaborative Council.
[2]Chair of NetWWater, Sri Lanka
[3]Senior Consultant, Nautilus International Development Consulting, Inc, New York, USA
[4]Associate Fellow of UKM/LESTARI, Bangi, Malaysia (Institute for Sustainable Development, National University of Malaysia
[5]Consortium for DEWATS Dissemination (CDD) Society
[6]Senior Officer for Water Resources, UN Economic and Social Commission for Asia and the Pacific, Bangkok
Corresponding author:
Marcia Brewster, brewster@nautilus-international.com

This review summarizes the discussion that took place during a lively session at the International Water Association (IWA) Second Development Congress and Exhibition in Kuala Lumpur, Malaysia, in November 2011. The session was sponsored by the IWA Women in Water Programme Steering Committee, which has started an initiative within IWA to focus on the need to move the water agenda away from one based only on science, technology and engineering, to one that more fully embraces education, equity and social issues. The Steering Committee is motivated by the belief that new relationships between disciplines need to be forged in order to change the world of water – and indeed the world. The future of water on this planet is indeed the future of life on the planet.[7]

The session sought to examine the multiplicity of roles that women can, do and should play in ensuring access to clean water and sanitation in urban settings. The focus was on community-based solutions, and the challenges addressed included watershed management and the need for sustainable sanitation. It included presentations, a panel discussion, and a question and answer session with a broad group of participants. The various roles that women play in the water sector were discussed, including:

- Using and consuming water and sanitation services;
- Providing, managing and safeguarding water resources and facilities;
- Locating the best quality water sources;
- Serving as engineers and technicians;
- Raising funds and collecting fees;
- Constructing latrines and other facilities;
- Managing water points or kiosks;
- Providing preventive maintenance and repairs;
- Providing education, communication and outreach services
- Serving on Water Committees; and
- Being first responders in disaster emergencies.

These roles are discussed briefly in the first part of this article. In addition, the role of women was considered in-depth in the context of specific challenges: watershed protection; community-based sustainable sanitation; research and development regarding integrated water resources management (IWRM); and the creation of professional networks. More detail on each of these issues is provided in the second part of this article.

Part 1: The Many Roles That Women Play

Women and men alike have a basic human need for water. However, women and men have different stakes in water use and management. Panelists and participants were agreed that, as women are 50% of the population, and carry most of the burden of provid-

ing water, sanitation and hygiene at the household level, we cannot afford to ignore them whenever we consider water resources and sanitation challenges. Moreover, in their multiple roles, they can make a tremendous contribution to the management of water and sanitation.

Women as consumers and providers of expert solutions

Women use water to serve their reproductive as well as economic roles, utilizing water for cooking, bathing, cleaning, maintaining health and hygiene, raising small livestock and growing food. As consumers, they are ideally placed to identify the best sources of water, optimal facilities, and the most appropriate locations for sanitation and water services to be delivered and maintained.

An example from Morocco that was offered by a session participant expertly illustrates this point. He described a project that was undertaken in the late 1980s where professionals were responsible for installing a public facility to supply water for a small village. They observed that the local mosque was a vibrant area where large numbers of people came five times per day. Accordingly, they chose to locate the stand post nearby. After some time, however, they realized that only small children were using it. Women were still going to the river, some five miles from the village.

On reflection, the reason was obvious. For cultural and religious reasons, the women did not want to be exposed to men, who were the main attendees of the mosque on a regular basis. Had the professionals consulted the local women early in the process, the decisions made would have been better informed, and the success and sustainability of the project would have increased.

Women as managers of facilities and resources

Women are managers of sanitation and water resources for their families and communities, and also as professionals in the water management field. This remains true in spite of the barriers that women regularly face when it comes to land tenure, access to water, resource control, and affordability of privatized resources, participation and capacity. They play influential roles in water management at all levels, and thus, in the long term, ensuring their participation could hasten the achievement of sustainability in the management of water resources.

Preventive maintenance and repairs

At a household level, women maintain facilities. They also tend to be the caregivers – of the young, the elderly, and those who are sick. As a result, when services are inadequate and sickness results, it is women who tend to bear the burden. In cases where women are trained to maintain the pumps, such as in Rajastan and Gujarat (SEWA, 2003; Panda, 2005) , the supply of water is more reliable.

Women can suffer back and neck problems from carrying heavy water on their heads. *Photo Credit: Sashti Balasundaram*

Fundraising and the collection of fees

Within communities, women often play important roles in the collection of fees and fundraising. In many cases, the provision of microfinance allows them to take on leadership roles in managing facilities, thus creating jobs and revenue generating activities. As leaders within communities, women are crucial and often the younger or shyer women feel more able to approach a female community leader than a male.

Gerard Payen, of Aquafed, which partly sponsors the Women in Water program, explained that his organization's interest in this topic stems from an acknowledgement that involving women in decision-making leads to well-designed and successful projects. Aquafed's sponsorship is also made in recognition of the important role of women in management of its members' companies, most of which are in the private sector.

[7]The Women in Water steering committee has outlined its work program under the following elements: mainstreaming social sustainability through IWA Events; professional development through joint Women in Water and Young Water Professionals (YWP) program; program marketing, communications & networks; recognizing leadership; external partnerships; and future program development.

The particular needs of women professionals

The need to build capacity of all professionals working in the area of sanitation and hygiene in developing countries, including women, was acknowledged. This applies to a range of professional skills including conducting research, developing new technologies such as water saving irrigation systems and capacity building, as examined in more depth in the case study presented by Anizan Isahak.

Part 2: Case Studies of Women's Contributions to Solving Water and Sanitation Challenges

Watershed protection

Salmah Zakaria of UN-ESCAP gave an overview of current trends in urbanization, which indicate that more than 50% of the population of Asia and the Pacific is expected to live in urban areas by 2026. She showed how rapidly urbanization had expanded since 1988 in the area around Kuala Lumpur and noted that in 2010, the Asia-Pacific region had 466 million people lacking access to improved water sources and 1.8 billion who lacked access to improved sanitation.

Considering the female situation within this changing demographic, Zakaria noted that women remain underrepresented in national and local politics in almost all Asian and Pacific countries. Further, at a time when global crises are affecting food, fuel and finance, it is noteworthy that more than 90% of the impacts of climate change are on water-related issues, and these seriously affect the most vulnerable sections of society.

In this context, it was argued that the management and protection of urban watersheds can be most effectively implemented if all stakeholders in each community are involved. Women make up 50% of the available human resources and therefore, to not involve them represents a missed opportunity as it reduces the overall pool of people and expertise available to address crucial problems. Within communities, it has been demonstrated that women can play a critical role when given the opportunity. As users of services, they are contributors to watershed deterioration and thus also need to be involved in any measures to prevent damage. Women in communities have to, and need to, use their collective ingenuity to improve global development and sustainability. For this, we need to strengthen the networks among women.

Community-based sanitation solutions in India

Susmita Sinha noted the central role that women play in providing and managing water and sanitation at the household level in most societies. In order to fulfill this role, they amass a great amount of insight and understanding of the local practices to ensure good health. The community-based solutions (CBS) approach builds on this strength by ensuring that women become an integral part of the implementation process from the planning stage through to the management of the system. The successful contributions of women make the CBS systems sustainable and effective as sanitation solutions.

The CBS approach encourages women to be not just users of the sanitation facilities, but also to be involved in decision making. Involvement of community members, including women, in planning, the selection of technologies, implementation, and operation and maintenance of the sanitation interventions also has broader benefits. It provides them with management skills as well as a better understanding of political processes and strategies to ensure good governance. Self Help Groups (SHGs) or community-based organizations that are formed for sanitation also provide members with exposure to other forms of management such as decision-making, the selection of members for committees, information dissemination, and problem solving.

The new functions that the communities take on strengthen and empower them for community management. The formation of sanitation committees means that organized structures are available that can be used for other forms of community engagement. A sense of ownership and participation in the decision-making process provides a strong basis for the sustainability of the facilities. The involvement of women in the CBS implementation process maximizes the likelihood that their needs and demands are addressed.

A community-based sanitation intervention at East Devadhanam, Tiruchirapalli (Trichy) in Tamil Nadu, India clearly demonstrates that the issue of sanitation has readily become an entry point for a more integrated approach to the provision of a wider set of decentralized services, such as solid waste disposal, improved drainage systems, education and awareness on hygienic aspects (D'Souza et al. 2009). The community-based sanitation system is operated and managed by the local Social and Hygiene Education Team, which in turn is comprised of six Self Help Groups. This team takes responsibility for the operation and maintenance (O&M) of the public sanitation units. The membership of the O&M team is on a rotation basis, thus giving an opportunity to all SHG members to assume responsibility. All the members are women from the community itself.

In the CBS approach, Decentralized Wastewater Treatment Systems (DEWATS) with biogas digesters are also implemented. The digesters use wastewater from a toilet complex and the cheap biogas provides the women in the settlements with new opportunities to generate income from activities such as catering, running small restaurants and producing snacks such as potato and cassava chips. This leads to greater economic autonomy and higher self-esteem. The benefits of access to sanitation are also clearly reflected in the CBS approach, improving the health and well-being of people in general and women in particular.

In a world where more than 2.6 billion people lack access to sanitation, the community-based sanitation approach that was initiated in the late 1990s still remains relevant. Its success derives from its core principles: a simple and robust technology; accessibility of the infrastructure; a representative and accountable sanitation management committee; economic benefits for the community; and

improved health and shared knowledge about sanitation and infrastructure (technology) among all stakeholders. As an example of an effective way to deliver sustainable solutions, community-based sanitation demonstrates the benefits to the community, and to women themselves, of ensuring the strong participation of women.

Research on water management by and for Women in Malaysia

Anizan Isahak presented the Integrated Water Resources Management Research Group of the National University of Malaysia (IWRM-UKM) and spoke about women's role in research and capacity building for sustainable agriculture.

As women play a central part in the provision, management, and safeguarding of water, IWRM-UKM encourages women to lead research in IWRM so that they have access to the latest scientific information and participate fully in water-based research activities. There is a strong representation of women on the IWRM-UKM research team, led by the highly accomplished Prof. Dr. Salmijah Surif, and where more than a third of the 32 members are women. Women researchers lead or feature strongly in research related to water and health, water and education, water and biodiversity conservation, water and sustainable mining, water bio-monitoring and indicators, water saving in agriculture, and water and food security for the urban poor. IWRM-UKM has conducted training courses to develop the capacity of non-governmental organizations (NGOs), government officers, academia and the media for the practical implementation of IWRM in Malaysia. Sustainability forums, workshops, seminars, campaigns, exhibitions and poster competitions have also been held.

Local, national, regional and international partnerships have been forged and the group is active in the local chapter of Global Water

Cleaning a latrine *Photo Credit : Marcia Brewster*

Partnership and Cap-Net, a non-profit international capacity building network for IWRM led by United Nations Development Programme (UNDP). IWRM also addresses the problems of water for agriculture. While women and men are both involved in agriculture, it is mostly the men who control water management in this sector. Among the main water issues of concern are: the inefficient use of water; water pollution caused by over-watering; inefficient irrigation systems; and indiscriminate use of chemical fertilizers and pesticides that pollute the water. Many drinking water supplies are contaminated by such activities, adversely affecting the lives of both women and men. Women are particularly vulnerable as evidenced by the pesticide residues that are now being recorded in the foetuses of pregnant women.

The United Nations Department of Economic and Social Affairs cited the System of Rice Intensification (SRI), an agro-ecological approach, as a green technology that should be put into practice (UN-DESA 2011). Women have played a leading role in spreading the news about the merits of SRI in terms of its low water use, low input, high yields and eco-friendliness. In Malaysia, women researchers of the IWRM-UKM, women officers from the Department of Agriculture and the Ministry of Agriculture and female leaders of NGOs have effectively played their role in raising awareness of the SRI method. Although the role of women and agro-ecology in water security has been recognized at the international level, many developing countries have a tendency to gear their resources for research and development towards the high technology nexus. This position has severely hampered the development of gender-sensitive ecological solutions for the food and water problems of the respective countries.

In the quest for knowledge and leadership in water management, women have to play an important role in leading water research and improving access to water information for women. Taking into account that studies on gender roles in water management are still inadequate, water networks and capacity building at the community level spearheaded and empowered by women need to be emphasized.

Women for Water Network

Kusum Athukorala discussed the importance of targeting capacity building programs to empower women water professionals in Asia. She explained the gender gap in many countries and reiterated that the water crisis in Asia affects women as primary domestic care givers, agricultural producers, conservers of forests and managers of clean water. She discussed the rationale underlying the formation of the Network of Women Water Professionals (NetWwater) in Sri Lanka. The network sees community and professional interaction as essential for the empowerment of both groups and focuses on: upgrading skills and identifying opportunities for women water professionals; promoting inter-generational equity through school and youth programs; looking at ways to promote two-way knowledge linkages between community women and women water professionals; and introducing culturally appropriate mechanisms. Women can be the ideal catalysts in capacity building initiatives for other women, as they can more easily approach other women, especially in conservative Asian cultures. She highlighted the "Crossing Boundaries "project of SaciWATERs as a pioneering

initiative to build up a critical mass of women water professionals in South Asia who could become catalysts to bringing more women into water engineering and similar careers.

Next steps for the IWA Women in Water Programme

This workshop, sponsored by the IWA Women in Water Programme revealed, once again, that participation of women is an essential component to the success of water programmes. In line with the broader involvement of women in the increasingly democratized societies of the countries where water and sanitation needs are greatest, women are making crucial contributions at community level, and as practitioners and researchers.

As a global network for water professionals, the International Water Association has an important role to play in encouraging the growth and development of women. An examination of the composition of IWA's membership reflects the challenge: 60% of members in the young professional category (members aged 35 years and under) are female but this strong female representation is not reflected in older age categories. Women account for approximately 24% of IWA's full membership of almost 5,000. This may mean that IWA's young women professionals do not see opportunities in their career paths. As an organization, and on behalf of the profession, IWA has an opportunity to ensure that the contributions of female professionals are valued. This involves proactive efforts to recognize the contributions being made by individual women. For example through IWA´s Women in Water Award for Leadership Development which is dedicated to the memory of Hei-jin Woo, a Korean female engineer and scientist, and awarded every two years.

Another explanation for the drop-off in female membership of IWA may be that, although women remain in the profession, they do not see the benefit of continued membership. Current discussions tend to be dominated by science, technology and engineering with less of a focus on education, social issues and community capacity building. IWA has an opportunity to shape this debate and ensure that the multidimensional contributions of all members are promoted and valued.

The Second IWA Development Congress and Exhibition in Kuala Lumpur, Malaysia, was the beginning of an initiative to shine a light on these interconnections. The session on community-based solutions attracted a diverse audience, equally divided between women and men. While gender issues are close to the heart of many women, they were demonstrably also important to a number of men. Panelists and participants alike noted that it is not just a gender perspective that is needed but a whole new way of thinking. Many men are passionate proponents of the need to involve and promote women in water and sanitation issues. The Women in Water Steering Committee plans continued contributions to the work of IWA, especially through its various meetings, and welcomes contributions and participation from all interested parties. The goal is to promote an inclusive new way of thinking and to enrich the dialogue, and the strategies needed to advance important initiatives within the water industry. This focus will resonate with young women professionals as well as the IWA membership generally.

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