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A Gender Perspective on Water Resources and Sanitation*

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I. Introduction: Gender, water and sanitation

Women's lives all around the world are closely connected to and affected by use of and access to water resources. In most societies, women have primary responsibility for management of water supply, sanitation and health at the household level. Water is necessary not only for drinking but also for food production and preparation, care of domestic animals, personal hygiene, care of the sick, cleaning, washing and waste disposal. All these activities are – in most cultures - largely undertaken by women. It is women who are often the caregivers for those who fall ill, who have to fetch and manage water for both the family and productive purposes, and who have the greatest need for private and safe sanitation facilities. Because of their dependency on safe water, women have accumulated considerable knowledge about water resources, including location, quality, and storage methods. They are often the most motivated to ensure that water supply and sanitation facilities are in good order, as they know from experience the vital contribution that both water and sanitation make to their well-being.

Yet, despite global commitments made in the areas of water supply and sanitation, and recognition of women's concerns, the equitable divisions of power, work, access to and control of resources between women and men are hardly ever addressed. Rather, in efforts to improve management of the world's finite water resources and extend access to safe drinking water and adequate sanitation, the central role of women in water management is often overlooked. Women often have no voice in decisions about the kind of services they receive. This is unfortunate, because women bear the greatest burden when it comes to inappropriate technologies or inadequate access to safe water and adequate sanitation. Women also suffer disproportionately from water-related disasters such as floods and contamination, as they often do not receive warnings or other information about possible hazards and risks.

The importance of involving both women and men in the management of water and sanitation has been recognized at the global level, since the 1977 United Nations Water Conference at Mar del Plata and during the International Drinking Water Supply and Sanitation Decade, 1981-1990. Among the guiding principles adopted at the International Conference on Water and the Environment in Dublin (January 1992), principle No. 3 explicitly recognizes the pivotal role of women as providers and users of water and guardians of the living environment. At the same time, it acknowledges that this pivotal role "... has seldom been reflected in institutional arrangements for the development and management of water resources." Dublin was followed by the United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992, which outlined

approaches to the management and use of water resources (Chapter 18 of Agenda 21) and referred to the participation, capacity building, education and mobilization of women as decision makers and managers of water resources and sanitation. In the Johannesburg Plan of Implementation of the 2002 World Summit on Sustainable Development (WSSD), para 25(a), governments agreed to: "... support capacity-building for water and sanitation infrastructure and services development, ensuring that such infrastructure and services meet the needs of the poor and are gender-sensitive." In December 2003 at the end of the International Year of Freshwater, the General Assembly proclaimed, building on all these commitments, in its resolution 58/217 the time span from 2005 to 2015 as the International Decade for Action, 'Water for Life', and called on all levels to focus on the implementation of water-related programmes and projects, "whilst striving to ensure women's participation and involvement in water-related development efforts ...". The Millennium Development Goals, which have the same timeframe as the 'Water for Life' Decade, include 2015 targets on gender equality and empowerment of women, as well as on safe water and sanitation.

In order to be truly effective and sustainable, it is, first, crucial to mainstream gender perspectives into water resource management and sanitation policies to ensure that the specific needs and concerns of women and men from all social groups are taken into account. Second, it is vitally important to determine what people (consumers of water and sanitation) want, what they can and will contribute and how they will participate in making decisions on the types and levels of service, location of facilities and operation and maintenance. For reaching this second goal, it is indispensable to analyse a given target group from a gender perspective.

Drawing on case studies from Latin America, Africa, the Middle East, Europe and Asia, the objectives of this article are to analyse the central role women play in providing, managing and safeguarding water resources and sanitation as well as their specific needs and vulnerabilities. The authors examine the issues of particular concern to men and women, and provide recommendations for strategies to mainstream gender in water resources management and sanitation.

II. Issues of particular concern to women and men

A. Equitable access to water supply

Access to safe drinking water is a basic human right and essential for achieving gender equality, sustainable development and poverty alleviation. In spite of its paramount importance to human well-being, water is not mentioned in the Universal Declaration of Human Rights, adopted in 1948. Article 25.1 states: "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services", but water is not mentioned explicitly. Since lack of access to freshwater is one of the most serious threats for mankind in the 21st century, the United Nations Committee on Economic, Social and Cultural Rights adopted in 2002 the General Comment No. 15, which states: "The human

right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses.”

Yet, at the end of 2002 still some 1.1 billion people, or 18% of the world’s population, lacked access to safe drinking water, while 2.6 billion or 40% of the world’s population lacked access to improved sanitation services. At the Millennium Summit in 2000, Heads of State pledged to halve the proportion of people who are unable to reach or to afford safe drinking water by the year 2015. This “Millennium Development Goal” (MDG) was reinforced by a similar goal for sanitation contained in para 8 of the Johannesburg Plan of Implementation (JPOI) agreed to at WSSD in 2002. The additional investment required to meet the Millennium Development Goals for safe drinking water and basic sanitation is estimated at approximately \$30 billion a year, twice the amount of what is currently spent in those countries that have large numbers of people without access (Devarajan, Miller & Swanson, 2002).

Even though the water and sanitation goals seem ambitious to some, they are very modest. First, they only consider to halve the population without these basic amenities, and second, the definitions of access include the most basic facilities -- certainly not a tap and a latrine in every house. The WHO definition of access to water varies according to location, but averages 20 litres per person per day within one kilometre walking distance from the household. Today, African women may walk over six kilometres per day in search of water, spending as much as eight hours collecting water (UNFPA, 2002). The carrying of water over long distances is, moreover, a health hazard, especially during development and pregnancy periods. During daily water collection, women face the risk of drowning (from floods) and of injuries from attacks. In most countries, it is often girls who are given the task of collecting water, carrying 15 to 20 litres of water from the water point back home. Insufficient access to water and sanitation can, thus, be the reason why girls are kept out of school. In many developing countries, girls are furthermore often not permitted to attend schools that do not have latrines, because their privacy and modesty might be violated (World Bank, 2004).

Access to freshwater and sanitation, therefore, not only improves the health of a family, but it also often enables girls to go to school. Having water points nearer the homestead frees up time from fetching water and allows women to use their time more productively – for professional training, childcare, growing food and income generation.

Examples

In *Morocco*, the Rural Water Supply and Sanitation Project of the World Bank aimed at reducing the burden of girls “who were traditionally involved in fetching water” in order to improve their school attendance. In the six provinces where the project is based, it was found that girls’ school attendance increased by 20% in four years, attributed in part to the fact that girls spent less time fetching water. It was also found that convenient access to safe water reduced the time spent fetching water by women and young girls by 50 to 90% (World Bank, 2003).

In the Est-Mono region of *Togo*, where only 10% of the population have access to potable water, a project aimed at improving access to water and sanitation facilities in schools did not adequately take a gender perspective into account. Thus, the toilets did not meet everyone's needs and fell into disuse. Given these problems, a new project design encouraged the participation of all villagers, boy and girl students, men and women teachers and administrators. Following the diagnosis of the problem in schools, an action plan for hygiene promotion was approved by the schools and the villages. The project provided water and sanitation facilities, as well as educational resources, to each village school. Addressing gender imbalances among students and ensuring the participation of the entire community has led to impacts far beyond the immediate results. Girls have taken a leadership role and increased their self-esteem. Gender-balanced School Health Committees are responsible for the equipment and oversee hygiene (Alouka, forthcoming).

Leaving women out of the project design may result in inadvertently increasing the women's burden. For example, in eastern *Nepal* the tap-stands and tube-wells of the improved water services in Hiel Village were "...located along the roadside where women cannot bathe freely and wash their clothes comfortably for fear of being seen by men." In order to avoid this, women in Hiel village carry water all the way to their homes several times each day, spending significant amounts of time and energy to do this. In three villages women reported waiting until dark to undertake these activities. All these women complained that the surveyors had not involved them in designing the tapstands or wells (Regmi & Fawcett, 1999).

B. Equitable access to land rights and water for productive use

Equitable access to water for productive use can empower women and address the root causes of poverty and gender inequality. Lack of access (ownership) to land may be the underlying cause of women's limited access to water and a key reason for the greater poverty of female-headed households, as has been shown in research studies carried out by the World Bank (Blackden & Bhanu, 1999). Women hold title to less than 2% of the world's private land (Deda & Rubian, 2004), and in many countries (e.g., most of Latin America), land ownership is a precondition for access to water. Land reforms that allocated legal land tenure to the heads of households or permanent agricultural workers (who are generally male) resulted in women losing any legal claim to water (Gender and Water Alliance, 2003). Moreover, even where women do have a legal right to land, customs often prevent them from taking *de facto* control of land and natural resources, for instance, in Zimbabwe, Burkina Faso and Cameroon (Sass, 2002).

In poor regions, however, food security is often dependent on women's subsistence production to feed the population. Evidence has shown that women are responsible for half of the world's food production (as opposed to cash crops) and rural women produce between 60 - 80% of the food in most developing countries (FAO, 1995). Women also have an important role in establishing sustainable use of resources in small-scale fishing communities, and their knowledge is valuable for managing and protecting watersheds.

The Food and Agriculture Organization of the United Nations (FAO) reports an increasing “feminization of agriculture” due to wars, pandemics and the exodus of men seeking paid work in urban areas (FAO, 2003). Similarly, the International Fund for Agricultural Development highlighted the rise in the number of women being heads of rural households in the developing world; these women are put in the position of farming the land and providing for their families alone, without legal rights to water and land (Gender and Water Alliance, 2003).

Women's role in agricultural production, however, is also undervalued. Women's access to water is generally seen in domestic terms, i.e., time spent on water collection or the availability of adequate water and sanitation services. This article argues that access might better be linked to productive activities, or the opportunity cost of time and energy spent in fetching water that detracts from the overall productivity and efficiency of women. The real problem faced by many female farmers, however, is that they have very little or no access to irrigation water for agricultural purposes and are entirely dependent on rainfall. Therefore, it is crucial to accord to women recognition as land holders and contributors to the development process. They need to have secure access to land and its water resources for productive use in agriculture and livestock rearing. Water is also needed for a range of small enterprises, including: home gardens in peri-urban areas (which are often overlooked in agricultural statistics); growing fruit trees; raising poultry; preparing food, etc. Responding to the needs of poor farmers requires a detailed understanding of men's and women's local knowledge systems, resource utilization and income generating opportunities.

Examples

The Self-Employed Women's Association in *India* (SEWA) focussed on gaining access to water for productive enterprises, which are often part of the so-called self-employed workers segment. Today more than 93% of all workers in India are considered self-employed workers, more than half of whom are women (Makiko, 2004). SEWA has helped selected areas in India to develop plastic-lined ponds for water conservation, with technical support and training provided by the Foundation for Public Interest (FPI). Local women are now managing their own village ponds, including all book-keeping and accounts. In eight villages of Banaskantha district of Gujarat, women have formed their own water committees. Through these they undertake contour binding, building checkdams, repair of village ponds and other water conservation related construction (SEWA Website).

In *Nigeria*, the construction of a tourist resort on the Obudu plateau led to deforestation and exacerbated pre-existing pressures on water resources and the environment, such as overgrazing and unsustainable agricultural practices. The local Becheve women complained about wasted time in collecting water, poor quality and quantity of water and poor family health. Consequently, the Nigerian Conservation Foundation (NCF) started a Watershed Management Project on the Obudu plateau in 1999, and encouraged women to get involved in the project's decision-making process. Women leaders were elected on the management committee, a source of pride for women in the community, and became

involved in the construction and maintenance of a water reservoir. The time for collecting water was considerably reduced and allowed women to spend more time on income generating activities like farming and marketing. A conflict between the Becheve women and the Fulani men over access to water was resolved through negotiation, and the women were ensured timely access to water. Moreover the women's healthcare burden was reduced, with a 45% reduction in cases of diarrhoea in 2004 (Majekodunmi, forthcoming).

C. Access to sanitation

Lack of sanitation and poor hygiene cause water-borne diseases, such as diarrhoea, cholera, typhoid and several parasitic infections. Moreover, the incidence of these diseases and others linked to poor sanitation – e.g., round worm, whip worm, guinea worm, and schistosomiasis – is highest among the poor, especially school-aged children (WHO, 1997). These diseases have a strong negative impact on the children's state of health, their nutrition and their learning capacities, and contribute to significant absences from school (Nokes & Bundy, 1993; Miguel & Kremer, 2003). More than 2.2 million people in developing countries, most of them children, die each year from diseases related to lack of access to safe drinking water, inadequate sanitation and poor hygiene. The social and environmental health costs caused by ignoring the need to address sanitation are, thus, far too great.

A focus on gender differences is of particular importance with regard to sanitation facilities. As the examples below show, the availability of latrines in schools can, by providing privacy and dignity, enable girls to get an education, particularly after they reach puberty. Moreover, the design and the location of latrines close to home may reduce violence against women, which may occur when women have to relieve themselves in the open after nightfall. They may also suffer gastric disorders from waiting until dark to defecate in the open. Particular concerns include ensuring privacy and security, notably for girls and women (especially in common facilities), and designs that take account of specific needs, such as of small children or menstruating girls. It is important that the public institutions with the most extensive and sustained public outreach – schools and health centres – should become learning and demonstration centres for improved hygiene practices. Women play a crucial role in influencing the hygiene behaviours of young children, and men can – and should – also serve as role models in sustaining changes in habits. The success and effective use of water and sanitation facilities will depend on the involvement of both women and men in selecting the location and technology of such facilities, and taking responsibility for operation and maintenance.

Examples

In eight slums in the Tiruchirapalli district of Tamil Nadu State, *India*, latrines constructed by the municipal corporation had all become unserviceable due to poor maintenance. The women reported that “the non-maintenance of the latrines caused faecal worms to generate and reproduce, and they could be found nearby the water taps, and even inside the walls of their houses.” Poor sanitation and contaminated water

affected all families with disease, increasing their medical expenses. Male community leaders did not take any steps to provide improved facilities. Requests to the government for better services were of no avail until the people joined forces with Gramalaya, an NGO working on water and sanitation projects. The project design called for the installation of drinking water facilities and individual toilets, as well as community mobilization with a focus on gender mainstreaming. WaterAid covered the equipment and installation costs, while Gramalaya covered the capacity building and community mobilization components. The government provided the land sites, electricity, water supply, and loans to community members. The community is not only benefiting from improved water and sanitation facilities, better health and increased resources for community development initiatives, but the women have also gained self-confidence. Women who were once treated poorly by officials are now given respect when they visit government offices (Berna, forthcoming).

The School Sanitation and Hygiene Education (SSHE) campaign, a joint project of UNICEF and the IRC International Water and Sanitation Centre, the Water Supply and Sanitation Collaborative Council (WSSCC) and others, aims to provide water and sanitary facilities in schools to improve health of all pupils and encourage girls to attend school. Research and surveys suggest that separate facilities need to be provided for girls and boys, if girls are not to be discouraged from attending school. The project began in February 2000 in *Burkina Faso, Colombia, Nepal, Nicaragua, Viet Nam* and *Zambia*. With an emphasis on local participation, SSHE provides low-cost teaching aids, inexpensive, community developed technology and life-skills hygiene education to primary schools (See http://www.unicef.org/wes/index_schools.html).

In *Mozambique*, a similar project supported the construction of latrines for boys, girls and teachers, and hand-washing facilities for hygiene practice. Not only have these initiatives provided safer, healthier learning environments, they have also encouraged girls to complete their basic schooling. The improved hygienic conditions have given girls back their books and their dignity (UNICEF, 2003a). In *Bangladesh*, a school sanitation project with separate facilities for boys and girls helped boost girls' school attendance 11 % per year, on average, from 1992 to 1999 (UNICEF, 2003b).

D. Capacity building

Building capacity means bringing together more resources, more people (both women and men) and more skills. Yet, when looking closely at capacity building in water supply and sanitation in developing countries, it becomes clear that most of the training is aimed at water resources and water supply specialists, with very few programmes aimed at expertise in social development, sanitation or hygiene education.

To ensure sustainability, capacity building has to continue beyond project implementation, with a gradual scaling down to those responsible for operation and maintenance of water supply and sanitation, who are primarily women. Consequently, targeting women for training and capacity building is critical to the sustainability of water and sanitation initiatives, particularly in technical and managerial roles, to ensure their

presence in the decision-making process. Moreover, targeting women for training as the main role models and ‘teachers’ within the household is a cost-effective way of raising awareness and skills.

Examples

In *Uganda*, a school sanitation and hygiene programme was shared between the ministries of water and education, both of which were headed by women. Working together, the ministers are devising affirmative action programmes to encourage girls to get a better technical education and professional background.

Supporting training of female technicians and other staff facilitates the achievement of the targets for improving access to safe water and sanitation. For example, in the Mantsonyane district in *Lesotho*, the village water committee elects a ‘Water Minder’, who is given the tools for the maintenance of the water system and the latrines. A maintenance fund is collected from villagers and administered by the water committee. Up to 90% of the water minders are women. Villagers tend to elect women because they have wide experience with water and sanitation, are more often available on the spot, and are most directly involved in matters of family health and hygiene.

In the Ejura-Sekyedumasi District of *Ghana*, the Ghana Rural Water Project (GRWP) was initiated by World Vision Ghana (WVG) to address a serious infestation of guinea worm and poor access to potable drinking water. The project has shifted from a strictly technology-driven approach to a community-based, people-oriented, demand-driven focus, including gender mainstreaming, poverty alleviation and the well-being of children. Through the GRWP initiative, WVG supplied the village with two boreholes fitted with hand pumps, two public Ventilated Improved Pit (VIP) latrines and a urinal. The community has since identified this water and sanitation project as having had a high level of community participation and gender integration. It has improved the education of girls, who accounted for 53 per cent of primary school students in 2005, compared to 43 per cent in 1995 (Poku Sam, forthcoming).

The watershed of the El Naranjo River in *Guatemala* used to have clean water, but the upper watershed now has a scarce and polluted water supply. The communities that depend on its water have a variety of different water needs that vary between men and women and urban and rural communities. These various needs have generated conflicts which go beyond local institutional capacity as well as traditional dispute-settling mechanisms. They have raised many questions for local authorities and leaders regarding current legal regulations, and their application to the administration of water. In 2002, the Solar Foundation started a three-year project with the support of NOVIB (the Dutch affiliate of Oxfam) to promote social peace through the construction of a more sustainable resource-community relationship. The project focuses on the rights and obligations of users, service providers and local public authorities, and monitors trends in water use. Through training in social planning and organization processes, local leaders and authorities are learning about sustainable management of resources to meet the communities’ needs (van den Hooven, forthcoming).

E. Participation and equity

Women are under-represented in the ‘water world’, with careers and training in water management dominated by men. If water management is to be democratic and transparent – and to represent the needs of the people – both men and women must have an equal say. In order to participate effectively in water management, women may have to overcome specific social barriers that restrict their participation in community-based forums or public consultations that can influence policies on water. While it may be hard to imagine a change in orientation of water policy in many countries in the near future, affirmative action policies such as ‘women in water’ awards and a bursary for young women to take up careers in the water sector in South Africa have proved to be a successful means of empowering women. Furthermore, the principle of non-sexism was enshrined in South Africa’s 1996 constitution, and a quota system for women’s participation cuts across all sectors. South African laws are ‘gender-biased’, i.e., the government can only procure materials and services from companies where at least 30% of the jobs are held by women. Such ‘enforced’ participation gave women confidence to emancipate themselves. The empowerment of women has proved to be essential for alleviating poverty and delivering basic services in South Africa. A start has been made through the increase of women serving as ministers for water and environment (now numbering about 40 world wide), but the empowerment of women as water managers must also be felt at the grassroots level.

Examples

Uganda has had an affirmative action programme since 1997. This mandates that all administrative levels from cabinet down to village should include at least 30% women. As a result, women raised their voices and have been trained to locate water sources in the village, to decide on the location of facilities and to repair pumps. The incidence of breakdown has decreased considerably. Women have also participated in businesses: in rural areas, setting up shops to store spare parts for boreholes and in urban areas, managing water systems. In water user associations, women are often responsible for the finances.

The *WASH campaign*, organized by the Water Supply and Sanitation Collaborative Council (WSSCC), is bringing its message of ‘Water, Sanitation and Hygiene for all’ to women and men in over 40 countries. The Council includes UN organizations, NGOs, bilateral donors, institutions and the private sector. A recent initiative called “African Ministerial Initiative on WASH” (AMIWASH) aims to assist African countries to achieve the MDGs in water and sanitation. Leading this effort is the Chair of the African Ministerial Council on Water (AMCOW), Maria Mutagamba, Minister of State for Water of Uganda. The initiative includes the formation of a Group of Women Leaders (Women Leaders for WASH) to champion the role of women in decision-making, capacity building, educating children on sanitation and hygiene, and mobilizing political will around other priorities such as the linkages between water, sanitation, hygiene and HIV/AIDS (WSSCC & AMCOW, 2004).

In *Ukraine*, the cleaning of railway oil tanks combined with an inadequate sewerage system caused overflows of sewage into houses and onto the streets. When women approached the local authority, they were denied funds to solve the problem. With the help of an environmental NGO, women met with residents, launched a political campaign and filed a legal suit against the local authority. As a result, the government allocated resources to finish construction of a sewage pump, financed environmental works, and closed the hazardous oil-tank cleaning facility (Khosla, 2002).

Other examples demonstrate that projects are more effective when women play a pivotal role. For instance, women in the town of La Sirena in *Colombia* wanted to improve the quality of water in the Canaveralejo River, which was highly contaminated. In 1995 the women struggled to secure leadership positions on the action board. The board was run by men, and the women had to impose themselves to participate. Once the women proved themselves capable and were in a leadership position, a treatment plant was constructed. Since then there have been many improvements. For example, diarrhoea and other children's skin diseases have been reduced, and the town was spared in a cholera epidemic (IRC, undated-a).

But men often have to be encouraged to enable the women to participate. In Hoto village, *Baluchistan* (Pakistan), where women follow a strict form of purdah, a participatory action research team went to help the village improve its water management in 1994. For a year the men would not give permission to the action team to meet the women of the village. Eventually, the women were able to participate in a joint meeting, and put up a proposal to build a new water tank on unused land, which would provide water to the non-functioning public standpipes. The women's solution, which was far more cost-effective, was adopted over a male proposal. Moreover, after this initial success, women became active participants in decision-making, and significant changes have been made in their lives through hygiene education. Most significant has been the demand for education for their daughters. In 1998, a new girls' school was opened in Hoto. Traditional leaders have been impressed by the result of the project. The same approach is now taken in other villages (IRC, undated-b).

F. Protection of the resource base: indigenous perspective

Indigenous people possess traditional knowledge and skills concerning the sensing/locating of water and protection of the source. Water sources on indigenous lands are often considered a sacred element, and indigenous women may be the holders of "water knowledge". Their traditional land management skills often provide the most effective method of water resource management in their settlement areas. However, due to their lack of sovereignty over natural resources, indigenous people are seriously affected by their uncompensated and unsustainable loss of water to farming and other industries introduced from outside their communities. In the worst cases, governments have closed water sources in an effort to forcibly relocate indigenous people from their traditional territories. In other instances, indigenous peoples are not provided with clean safe drinking water to the same level as other nationals in a given country.

Agenda 21 (para 26.5) calls for international and national organizations to draw on the active participation of indigenous people and their communities and "...to incorporate their values, views and knowledge, including the unique contribution of indigenous women, in resource management..." In para 26.9 international development agencies and Governments were requested to "...commit financial and other resources to education and training for indigenous communities to develop their capacities to achieve sustainable self-development, and to contribute to and participate in sustainable and equitable development at the national level." Particular attention is to be given to strengthening the role of indigenous women.

Examples

In the Witjira National Park in *Australia*, pastoralists had caused serious deterioration of the 'mound springs' (referred to as the Tjurkurpa sites) in the Great Artesian Basin. Due to the fencing for livestock and damage to many water sources, Aboriginal people were not able to travel and were denied access to sites that were of high cultural significance. When p pastoralists started to move away from the mound springs to seek new water sources for their stock, the Aboriginal people who stayed at the springs were then able to return to their traditional land management practices. Indigenous peoples combined traditional land management skills and western scientific methods to restore the mound springs. They negotiated a cooperative management structure with National Parks; they have a Board of Management with a majority of Irrwanyere people on it, who also hold a 99-year lease over the park. The park remains the property of the South Australian Government but the lease allows the Irrwanyere people to live on, use and manage the park in accordance with the plan of management. Through the process of cooperative management, some of the sites have been restored (Dean Ah Chee, 1995).

In some cases, women are taking the lead in their communities to protect water resources. In the community of São João D'Aliança in central *Brazil*, the local Union of Rural Workers in collaboration with University of Brasília (UnB) designed a community water project to stop pollution of the das Brancas River and to rehabilitate original vegetation along the river banks. In the women-led initiative, called the 'Water Women' project, each group of women adapted environmentally-friendly practices to their every day activities. The Water Women NGO was launched in April 2002 to support social and environmental development of the region, with a focus on improving women's situations, generating new jobs and income, providing education to youth and adults and preserving the existing culture and traditions. Community education taught local people not to dump their sewage into the river, and how to plant native species of trees along the river banks. As a result, there is a visible absence of waste in the river, a considerable growth of new vegetation of native species on the river banks and decreased soil erosion. Women's political participation was strengthened, and public perceptions regarding their leadership capabilities were changed (Souza, forthcoming).

G. Resource Mobilization

The volume of external financial assistance is not likely to grow fast enough to meet water and sanitation needs around the world. Governments will have to continue to be primarily responsible for raising and using public funds (from general revenue, cross subsidization, user fees, and borrowing) for water resources and sanitation infrastructure needs. Formal and informal women's organizations and networks can play important and stimulating roles in mobilizing resources for sustainable and equitable water and land management projects. Moreover, the role of women in managing and maintaining water and sanitation facilities varies from fundraising to active work on construction, preventive maintenance and repairs to paying for water with labour. While their potential contributions are considerable, women in developing countries often lack access to tools such as computers and Internet to disseminate their ideas and apply for funds. Therefore, instructing women in project management and fund raising may be a means to empower them to launch new projects and to contribute to poverty alleviation independently.

Funding may also be provided by local private companies or entrepreneurs who could be encouraged through government incentive programmes. However, such incentive programmes should be available to both women and men, perhaps in the form of micro-credit. Able-bodied members of households can make a contribution in kind in the form of digging the toilet pit or construction of rainwater catchments. More attention could be given to better intra-household sharing between women and men of cash and labour contributions for constructing household-level water and sanitation facilities. Payment of fees to cover recurrent costs for operation and maintenance should be adapted to local circumstances, for instance, clustered around harvest time, taking into account competing demands for money at certain times of year.

Examples

In Mabule village in *South Africa*, an unhygienic environment and lack of suitable sanitation facilities resulted in a high prevalence of diseases such as cholera. For many women and girls, visiting the sanitation facilities had become very difficult because of the poor construction and hygiene. The Mabule Sanitation Project was developed to respond to these problems through a joint initiative of the Department of Water Affairs and Forestry (DWAF) and the community, with funding from Mvula Trust. The DWAF agreed to provide funding for sanitation projects in communities where there was gender-balanced decision-making. The project promoted hygiene education for women, and established a brick-making project for latrine construction and to generate cash. Because of these, the community now has safe, hygienic and attractive toilets and improved health and hygiene. There is increased acceptance of women's leadership roles by community members, local government and NGOs, as well as an increased collaboration between women and men. The brick-making project employs up to 10 people, six of whom are women, and the community has access to affordable bricks (Jabu, forthcoming).

The Swayam Shikshan Prayog in *India* has facilitated the formation of over 1,000 women's savings and credit groups that have mobilized their own savings to provide loans for one another. Women started organizing to address development issues such as

water supply in their communities (Swayam Shikshan Prayog Project Website, <http://www.sspindia.org/index.htm>).

Women in rural areas in *Lesotho* have a tradition of saving small amounts of money each month for important purposes like traditional funerals. Such traditional sources of investment could be used for water and sanitation facilities if supplemented by seed money from NGOs or other sources.

H. Privatisation, pricing and the right to water

A very controversial issue at the international level is privatisation of water services. Those who are opposed to privatising water services argue that water is a fundamental human right and not a commodity that can be bought and sold for profit. This is in line with the November 2002 ruling (General Comment No. 15) of the United Nations Committee on Economic, Social and Cultural Rights that states that access to adequate amounts of clean water for personal and domestic use is a fundamental human right. The Committee also stressed the role of states in providing sufficient, affordable, physically accessible and safe water to all. While this decision was not legally binding, it does carry the weight and influence of a “soft law”. Furthermore, it represented a shift in the international arena, from the 1990s view that water in all its competing uses should be recognized as an economic good (Dublin Principle No. 4, Report of the International Conference on Water and the Environment, 1992), to a new understanding that water should also be treated as a social and cultural good. The opponents of water privatisation further point to recent empirical evidence which shows that privatisation in developing countries can have negative consequences in terms of water distribution for the poor, who are unable to pay for adequate supplies (Bayliss, 2001).

At the same time, those in favour of private sector involvement point out that water pricing is required to improve water allocation and efficiency and encourage the resource’s conservation. When water has a price, people have a strong motivation to use it more efficiently. Nonetheless, whether or not water has a price is not directly related to private sector involvement in water services. Partnerships involving both public and private providers can be very effective in expanding services to a wider network of customers. As long as government retains oversight over water quality and ownership of the resource, private sector involvement can provide positive benefits.

Essentially, two key requirements need to be ensured by governments: first, access to adequate amounts of clean water and sanitation as a basic human right; and second, sufficient water to maintain ecosystem integrity. Beyond these needs, it is generally accepted that users should pay a price for their water. Otherwise, supply systems will not be sustainable and water services cannot be expanded to meet the needs of a growing population. Sustainable cost recovery could include targeted subsidies for the poor and demand management to discourage waste. Increasing block rates, which charge consumers more per unit as their consumption increases, would encourage conservation of the resource. Large profits for private companies and denying access to poor people who cannot afford to pay are inappropriate. There has been a general call that water

should not be included under the rules of the World Trade Organization (WTO) and the General Agreement on Trade in Services (GATS).

As a majority of the world's poor, women are significantly affected by the privatisation of water services. When the price of water rises, the already existing burden on women as caregivers and household and economic providers increases even more. Even though poor women may place a high priority on accessible, clean water, they may be forced to use contaminated water that they get for free rather than clean water, which they cannot afford. The contaminated water affects the health of the community and may result in much higher costs in health care. It is therefore essential that potential privatisation of water services involves consultation with both women and men users and that the needs of the poor are taken into account adequately.

Examples

A bottled water plant was opened in 2002 in the Klaten district of Java, *Indonesia*. The company extracted a huge quantity of spring water just 20 metres away from the Sigidang spring, which is the area's primary water source. Every month, the plant was producing 15-18 million litres of bottled water. This has caused a drastically decreased water supply in the district and the community has found its access to irrigation water decreasing and its wells starting to run dry. In response to these water-related problems community members came together in 2003 to establish KRAKED (Klaten People's Coalition for Justice) to advocate on their behalf. Despite prevailing cultural values, this also gave Klaten's women the opportunity to participate in the advocacy activities. KRAKED's main objective was to close down the bottling plant; its short-term objective was to reduce its extraction rate and establish a community monitoring system. Although women have traditionally little decision-making power, they were able to participate in the KRAKED programme, and set up a research project to monitor the impact of the bottling plant on the community's water. Eight women and two men volunteered to conduct the research. The project also targeted local government and members of local parliament, journalists and company personnel. Women's participation in this process facilitated KRAKED reaching a wider audience. Better insight was gained in the way women and men share information and how these differences can be useful in raising awareness (Ardhianie, forthcoming).

In Orange Farm, *South Africa*, a township of 500,000 people, the local water supplier told residents that it would provide sewer and sanitation systems for every household that paid a fixed fee in 2002. The company began to install pre-paid water meters. In protest residents, mainly women, took to the streets. A massive campaign was launched and the Orange Farm Water Crisis Committee was born, which advocates that the state should provide basic services. The women feared a cholera outbreak, similar to what happened in Alexandra and KwaZulu Natal in 2000 and 2001, when higher user fees caused people unable to pay to consume contaminated water.

The consequences of privatization of water services in Chochabamba, *Bolivia* and Conakry, *Guinea*, were particularly difficult for the local populations, where increasing water prices had a serious negative

impact on their lives. In *Colombia* and the *Philippines* communities started to use contaminated water again when water service was suspended due to non-payment. Such water put them at risk of serious illness (Rivera-Santander, cited in Obando, 2003).

In *Argentina*, rapidly increasing water prices following privatization of services in Buenos Aires – and the cost of service extensions – had to be borne disproportionately by the urban poor. Non-payment for water and sanitation is as high as 30 % and service cut-offs are common, with women and children bearing the brunt of health and safety consequences (Loftus & McDonald, 2001). In late 2005 the private company ended the Buenos Aires contract prematurely.

I. Water conflicts, hazards and emergencies

Water is the source of life, but as such it can also be a source of competing demand, leading to conflict. During the 20th Century, world population tripled, while world demand for water increased six-fold. Upstream and downstream users have argued over their share of water since time immemorial (Pacific Institute for Studies in Development, Environment, and Security, 2004). At the international level, transboundary water issues have always caused heated debate, and in fact a number of prominent people have said that the wars of the 21st Century will be fought over water.

Due to its fundamental importance, water can become a target during armed conflicts and wars. Flood-control dikes may be destroyed in order to flood areas threatened by an adversary and water supplies and wells may be deliberately contaminated. In addition, water scarcity and insufficient sanitation frequently accelerate in armed conflicts. The civilian population – above all women and children – is the first to suffer from the disruption of water supply, and often thirst has proved to be more deadly than guns. People affected by natural and man-made disasters are more likely to become ill and die from diseases related to inadequate sanitation and water supplies than from any other single cause. Minimum standards are urgently needed for post-disaster and emergency sanitation services.

When water is scarce, women and girls may have to travel longer distances to obtain water, and conditions are more dangerous. Conflicts and emergencies that exacerbate water scarcity hence lead to a double hardship for women: lack of water compounded by the well-documented abuses against women's fundamental human rights that occur during wartime or emergency.

Women are also disproportionately affected by natural disasters, such as floods and earthquakes, as a result of gender inequalities regarding political and economic status, human rights, education and health. Women have high death rates in disasters, as they often do not receive warnings or other information about hazards and risks. Their mobility in disasters may be restricted or affected due to cultural and social constraints. Gender inequality can complicate and extend the time for women's recovery, for example, if women do not receive timely care for trauma experienced in disasters. During floods in *Mozambique* in 2000, for example, when clean water was in short supply, many

women were forced to resort to using floodwater for cooking, thereby increasing the risk of disease outbreak.

Water remains therefore a security concern for many countries. Although water may give rise to conflict, freshwater can also be, due to its essential nature, a powerful incentive for co-operation. Research has shown historical evidence of water as a catalyst for cooperation, rather than conflict. A number of examples of workable treaties on water can be cited, even between states such as India and Pakistan, and Israel and Jordan, which may be in conflict over other matters. The link between conflict prevention, peace building and natural resources management therefore deserves closer attention. Women, who know best about the vital nature of clean water and safe sanitation, play a crucial role in peace building actions through water resources management and cooperation.

Example

In *Bangladesh*, household and community responses to emergency events such as floods are an indicator of the extent of their vulnerability, their level of capacity to cope with the event and the intensity of the hazard. The better informed people are in advance, the better they can prepare for the hazard and reduce the risk of damage in their community. Rural women in Bangladesh, who are mainly engaged in a variety of domestic activities, are usually affected in negative ways by floods. In early 2004, the Centre for Environmental and Geographic Information Services (CEGIS), together with other national agencies, initiated a project on flood vulnerability, risk reduction and better preparedness through a community-based information system in a flood-prone zone. It included an analysis of the impact of gender mainstreaming in the flood-risk programme on vulnerability and risk. The objective was to identify best practices regarding flood preparedness, information dissemination, especially to women at home, and vulnerability and risk reduction. It was found that floods have less of an impact on men than on women, as men control resources and can leave their homes and communities to look for work. As a result of the study, new forms of communicating flood information to women at home were tested. Flood warnings in the local language were prepared using different media, as well as posters, flag systems, drums and broadcasts from mosques. These enabled illiterate women to access information regarding such activities as evacuating cattle, storing crops and food supplies and organizing boats for evacuation. The warning systems provided considerably improved preparedness during floods in 2004 (Fakhruddin, forthcoming).

III. Concluding remarks: Recommendations for strategies to mainstream gender perspectives in the field of water resources management and sanitation

As the analysis and examples provided in this article show, governmental and non-governmental organizations, institutions and civil society need to have a clear commitment to incorporate water and especially sanitation programmes explicitly into

their development strategies and to ensure that a gender perspective is mainstreamed into this policy. Some suggested actions are outlined below.

A. National Governments

1. Strengthen legislation and mobilise resources for increasing access to safe water and adequate sanitation

For effectively improving access to safe drinking water supply, adequate sanitation and water for productive uses, the authors strongly advocate changes in discriminatory laws that prohibit women and indigenous groups from getting loans or opening bank accounts. Innovative low-cost and sustainable technological options and service levels in water supply and sanitation can enable wider access to services that benefit both women and men. Governments can facilitate access to grants or credit on concessionary terms to women and women's groups, as well as to civil society organizations and small-scale providers of water and sanitation services, particularly those that include women as full partners. In this regard, actions should also be taken to provide micro-credit and creative alternative financing mechanisms to gender-sensitive organizations for improving or building community-based water and sanitation services.

2. Facilitate access to land and water for productive purposes

Recognizing women's key roles in agriculture, livestock rearing, fisheries and watershed protection, it is past time for women to have equal rights to land inheritance and tenure so that they can become effective producers and decision-makers. By actively providing training and access to markets and information for women, governments can improve women's productivity in using water in agriculture and small businesses.

3. Promote access to sanitation

This article highlights the absolute necessity for national governments to ensure that overall sanitation programmes are implemented and are gender-sensitive. To succeed, governments should support research to identify social or economic groups that are excluded from access to sanitation; and to open up the discussion of traditional rules and beliefs that tend to inhibit women from using available latrines. To be sustainable and truly effective, funds must earmarked for hygiene education in school curricula and for separate school facilities for boys and girls.

4. Develop capacity and encourage participation

Capacity development of women and girls is essential. Affirmative action programmes for training women in technical and managerial careers in the water and sanitation sector can be effective in getting women involved in management of water resources and sanitation schemes. On-the-job training of women in operation and maintenance has also proved effective in improving the reliability of the water/sanitation facilities and generating income. At the same time, it is important to engage women in decision making processes from cabinet down to water committees at the village level. In addition, assistance is needed to facilitate research into looking for solutions to gender concerns in water resources management.

5. Recognition of indigenous knowledge

National agencies should support the active participation of indigenous people, especially women, in managing water resources and protecting watersheds. The unique contribution of indigenous women as the holders of water knowledge is crucial in protection of water sources in indigenous areas. Education and training for indigenous communities can develop their capacities to achieve sustainable self-development, and to contribute to and participate in sustainable and equitable development at the national level.

B. Regional/Local Governments

Regional and local governments can encourage gender mainstreaming through: the promotion of sanitation and hygiene education in women's organizations, schools and health clinics; and capacity building programmes to enable women to actively take part in such education programmes. Internal gender biases and discrimination in public sector organizations, including public utilities, must be removed. Where gender-sensitive budgets are implemented, local governments can assess the economic value of involving both women and men in water management.

C. Communities and Civil Society

Communities and civil society must voice their concern for better water and sanitation services appropriate for women, men and children. They could in particular assist in collecting information on men and women's roles, access, needs, priorities and perspective on water and sanitation related issues, in order to have gender issues taken seriously in designing plans and facilities. Of equal importance is the provision of support for equality of women in decision-making processes at the local level. Enabling women and girls to acquire access to information, training and resources related to water and sanitation initiatives, should be another area of engagement for communities and civil society. Finally, building partnerships between professional/university women and rural women can facilitate change in water and natural resource institutions.

D. Donors and international organizations

Of particular relevance here is to engage women leaders, especially environment and water ministers, to serve as role models in the effort to mainstream gender in water management at all levels. Equally, the donor community could actively promote the linkage of the Millennium Development Goals in water and sanitation to MDG 3: 'Promote gender and empower women'. Relevant actions should also include compiling and disseminating examples of good practices as well as developing norms and guidelines for gender mainstreaming. At the same time, donors could provide content to encourage the media, in both developed and developing countries, to provide more coverage on gender and water issues. A priority need is to invest in the capacity building in water and sanitation management, with emphasis on empowering disadvantaged women and men, gender focal staff and organizations. Within the donor sector itself, it is crucial to promote equal opportunities for men and women. Last but not least, donors and international organizations should have an interest to develop partnerships among water

and gender experts from a variety of organizations. Donor support would be most useful in developing and implementing a gender-sensitive water policy framework on national and international levels during the International Decade for Action, 'Water for Life,' 2005-2015.

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