



Water, women, waste, wisdom and wealth – harvesting the confluences and opportunities



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ABSTRACT

This special volume offers a collection of papers that examine challenges and solutions where water meets complex, intersections with women, waste, wisdom or wealth. This unique array of articles offer readers of the Journal of Cleaner Production multidisciplinary views of water issues involving physical and structural perspectives, as well as political, social, cultural and increasingly serious environmental challenges. By building upon extensive literature reviews along with data collected through empirical study and real world observations, the authors effectively present valuable insights into the depth and nature of many of the problems but also present a well-developed array of recommendations, based upon successful projects and programs, world-wide. Among the recommendations are proposals for policies, approaches and regulations that provide system enhancements to prevent pollution and contamination and ideas to monitor and regulate water consumption. This international collection includes studies from 15 countries, documented and written by an equal number of female and male authors.

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1. Introduction

Water, the nectar of life, is the subject of many forums and while the societal issues that must be faced in seeking to achieve sustainable water management are widely known the solutions to them are under intense dispute. Having access to water supplies is a fundamental component of life, health and well-being. Humanity and fragile ecosystems are being placed in increasingly precarious states due in part to human population and domestic animal population growth. Also, of course, increasing extraction of resources from the earth, forests and the sea add additional challenges. But perhaps, the even more important cause of water management problems is and will increasingly be due to global warming due to climate changes.

Although, women have drawn water from the earth since the earliest times of civilization, more and more of such wells and other surface impoundments are becoming contaminated with

toxic substances or are going dry. However, the voice of women in water management is often ignored. Several international fora have drawn attention to partnerships for development, gender equity and women's empowerment and women's equal participation and leadership as ways to empower women to more effectively manage their/our valuable water resources, globally (International Fund for Agricultural Development, 2007; Gender and Water Alliance, 2006).

This introductory paper is designed to provide an overview of this special volume and to frame the connections between water, women, waste, wisdom and wealth. Water, being a very effective solvent often becomes contaminate with numerous airborne, waterborne and soil borne contaminants such as: synthetic chemicals, pathogens, nutrient imbalances, organic compounds, and heavy metals and other elements such as arsenic that adversely impact human health. The multi-dimensional issues involve the protection and cleaning of surface, ground water, as well as aquifers, planning for water storage and purification, preventing water misuse and contamination, protecting rights to water and decision-making around water issues. Complex problems associated with the rapid commercialization of water and equitable distribution of water, are illustrative of challenges that require multidisciplinary,

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multi-cultural inputs to envision and to implement ethically sound and ecologically sustainable solutions.

Innovations and collaborations as well as preventive strategies are emerging through building upon work in diverse fields. An example is the evolution of industrial symbiosis (IS), which is described by [Aviso et al. \(2011\)](#). They devised an input–output model for optimizing eco-industrial supply chains under water footprint constraints. “[W]aste materials of one industry are utilized as inputs for another industry can lead to synergies which yield greater benefits than can be achieved by companies acting independently” ([Aviso et al., 2011](#)). Since about 90 percent of global freshwater use is associated with the life cycles of products and services, creative, sustainable solutions depend overwhelmingly on shifting the patterns and practices of production, consumption and investment ([Ridoutt and Pfister, 2010](#)). Agricultural education, production and innovation, is one area that is increasingly addressing sustainable water use. An orientation on creative problem definition, intervention, societal commitment and life-long learning are becoming urgently needed for diagnosing, preventing, and mitigating water related contamination, disease, poisoning. “The concepts of profit, health, justice and peace need to be re-evaluated on the basis of improving living conditions on the entire planet, and for reconciling global environmental harmony and just economic growth. The development and dissemination of cleaner production programs cannot be successful without a bio-centric orientation in society” ([Vlavianos-Arvanitis, 1998](#)).

The structure to this introductory article is: in Section 1, the authors provided an overview of issues involving women and water. While several community initiatives of water stewardship and accessibility involve women’s leadership, we included papers that examine the essential role of women in design and decision-making in water initiatives. For greater sustainability and viability, we recommended more integration of women’s leadership. Then in Section 2 there is, a discussion of papers on water and waste, many of which consider water purification and pollution prevention strategies included. While wisdom and wealth are not frequently named in this collection, various authors underscore the importance of protecting the natural assets by thinking prudently and acting ethically and sustainably in management of water and eco-system resources for all communities, not just for an elite few. Thus, Section 3 integrates wisdom to responsible and sustainable water management policies and strategies. Section 4 addresses discussions of theories and practices of water management that pertain to water and wealth based upon storied evidence of successful businesses involving women and water.

2. Water and women

Women’s ability to access and provide sufficient quantity and quality of water affected relationships around and outcomes from water. It is known that in some civilizations, men do not visit the well since it was seen as being within the domain of women. As well, widows and divorced women, as [Gabrielsson and Ramasar \(2013\)](#) documented, worked “together in formalized groups of collective action that capitalize on the pooling of natural and human resources and planned financial management during hardship periods.” The absence of male members in these groups became a defining factor and a drive for more social and collective procedures. The process of collective action achieved what singular or family actions could not achieve alone.

There were differential impacts of and diverse experiences with water quality and water security issues, particularly in developing countries and Aboriginal communities ([Anderson et al., 2013](#)). The impacts of water scarcity were also experienced differentially by men and women in rural semiarid regions ([D’Souza, 1998](#); [Raha](#)

[et al., 2013](#); [Shonsey and Gierke, 2013](#)). Historically Aboriginal women have been excluded from discussions and decisions about water management, through the development of protocols and practices. Integrating Aboriginal women’s views about water quality and security foster greater identification and appreciation of spiritual, social, and cultural meanings as well as the economic and political importance. These perspectives, in turn, are essential for the formulation of appropriate and sustainable water management ([Anderson et al., 2013](#)).

Including Aboriginal women’s perspectives in this collection was central in that the authors documented that women’s insights helped to identify and to implement new ways of managing water and in “ensuring the ecological health of watersheds for future generations” ([Blackstock, 2001](#) as cited by [Anderson et al., 2013](#)). This is of vital importance in Aboriginal communities in Canada because they are disproportionately affected by poor water quality, substandard housing and are subjected to high health risks due to severe air pollution ([Anderson et al., 2013](#)). Such mounting concerns about water quality in Aboriginal communities led to the formation of an Expert Panel on Safe Drinking Water for First Nations in 2006, but it was established without the voice of Aboriginal women at the table. The distinct cultural and spiritual relationship between Aboriginal women and water needs to be embedded into legislation and water management ([Anderson et al., 2013](#)). Unsafe water threatens the whole community’s well-being, including vitality and prosperity. For Aboriginal women and women of many rural communities, contaminated water supplies also threatens to contaminate their cultural and spiritual well-being ([Anderson et al., 2013](#); [Shonsey and Gierke, 2013](#); [Kevany and Huisingsh, 2013](#)). [Figueiredo and Perkins \(2013\)](#) highlighted how women’s livelihoods were affected by water scarcity that results from poor water management, yet women found it difficult to participate effectively in the governance bodies for water management because of the ‘male’s only’ mentality and traditions.

“This is not to suggest that Aboriginal women have been paralyzed by this kind of exclusion. They have not,” [Anderson et al. \(2013\)](#) provided practical insights based upon several successful interventions. Women who were facing HIV-Aids and being widows and overworked because they were managing their household’s livelihoods they did not despair but became innovative, tenacious, and resilient ([Gabrielsson and Ramasar, 2013](#)). Now we focus upon some of those creative designs and interventions.

In [Shonsey and Gierke’s](#) study, local women were active and informed contributors to the hydrogeological study to calculate and appreciate shallow ground water resources. Women, aged 15–50, extracted well water mainly for domestic and small-scale agricultural activities, such as gardening and raising livestock. The precise role of village women in the scientific and engineering processes and decision-making, the interpretation of well logs and yield, engagement in the opportunities for learning and feedback from the village women were central areas of inquiry. As was true in many of the case studies in this collection, women played central roles in gathering data and maintaining systems ([Shonsey and Gierke, 2013](#); [Anderson et al., 2013](#); [Raha et al., 2013](#)).

Gender differentiated rights and responsibilities brought impediments and opportunities for women to cope with and to innovate around. [Gabrielsson and Ramasar](#) focused specifically on understanding how widows in Onjiko, Kenya have adopted innovative livelihood strategies to respond to climatic and water insecurity in restrictive political, ecological, cultural and economic circumstances, through increased empowerment and collective action. [Kevany and Huisingsh \(2013\)](#) provided a review of progress on rural women’s decision-making roles related to water and the importance of women’s voices in multi-sectoral, collaborative solutions. [Raha et al. \(2013\)](#) revealed the low levels of equity achieved

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