

THE WEIGHT OF WATER:
FEMALE EMPOWERMENT THROUGH GENDER MAINSTREAMING AND
INTEGRATED WATER RESOURCE MANAGEMENT

HONORS THESIS

Presented to the Honors Committee of
Texas State University-San Marcos
in Partial Fulfillment
of the Requirements

for Graduation in the Honors College

by

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San Marcos, Texas
May 2012

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ACKNOWLEDGMENTS

My ability to tackle such a challenge as an honors thesis was bolstered by many individuals. First, I would like to thank my parents, who gifted me with a passion for equality and sustainability issues. My whole family has been an incredible support for me during my college years and I am appreciative.

Dr. Audrey McKinney deserves a standing ovation for her patience, guidance, and incredible ability to never show irritation or lack of interest. She has been a critical yet compassionate eye during this sometimes bewildering and exhausting process. Dr. Brock Brown, my second-reader, has been a source of enthusiastic encouragement (that is in fact an understatement) who never ceases to confound me with his unrelenting support. He sincerely and passionately reinforced my efforts every time I saw him and was able to keep me working when I wanted to give up.

I would like to thank Diann McCabe for her helpful, entertaining, and creative thesis seminar class which really got the wheels turning in my head regarding what I would be comfortable spending a year-and-a-half of my life working on. She is an inspiration. The Honors College also deserves gratitude because I found friends there that have helped me get through college with an enormous bag full of smiles and laughs.

Last but not least, I would like to thank my partner Dan Cheshire who put up with my incessant interruptions of his math homework (and his own thesis!) to ask advice, guidance, support, and to rant my discontent. He is and will remain the most important person to me and I cannot begin to fully express my gratitude for his presence in my life.

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ABSTRACT

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Of the crises facing humanity in the 21st century, water scarcity and the status of women are of great importance. Due to increasingly polluted and depleted freshwater resources on our planet, management practices for the 21st century are in dire need of restructuring. Additionally, the rights of women, especially in the developing world, are not being actualized. Because it is generally the female's role to collect water for domestic purposes on a global scale, (and because it takes up much of her and her children's time), it is of significant importance to redesign a water management system that empowers women. The current approach of privatization will be analyzed and two case studies presented. Examinations of female-specific case studies will provide an outline of successful characteristics that can potentially be reformed to work in other locations and social/physical contexts. Small-scale, community propelled and gender-conscious programs can be more democratic with higher concern for the community's well-being, as well as more sustainable. It is the citizens who are invested in the betterment of their community, in future water supplies and whose concerns often go unheard when an international corporation takes control of a water source. Building a water management system that mainstreams gender and gives voice to the previously disenfranchised individuals directly involved and impacted by its application can result in sustaining local resources for the community, can empower women, and can avoid negatively effecting the environment.

Introduction

The global community faces many challenges in the 21st century, two of which are deeply intertwined. On a massive scale is the threat of water misuse, mismanagement, exploitation, and commodification, all of which, exacerbated by a changing climate, will impact billions of people. The second issue is the status of women. Worldwide trends illustrate a stark and disturbing condition of women and girls that calls for action. The correlation of women and water is hardly a coincidence, and this thesis will demonstrate the importance of recognizing and exploring the connection between women and water. Of particular importance is the argument that empowering women can be crucial to managing water resources and can have positive ripple effects throughout the whole of a society.

This study will first investigate the current standard water management model, privatization, by comparing two case studies, a “success” story for privatization, and a “success” story for local ownership and public control. Next the study will explore the proposed alternative, a gender mainstreaming and integrated water resource management approach, and outline the successes and possible pitfalls in two case studies wherein this approach has been utilized. Finally, possibilities for future research will be identified.

There is not a single approach that will work in all areas given the specific physical/climactic, political, or social factors at play. Understanding these influences, including gender expectations, religious affiliations, social norms, economics, and

traditions, is crucial to crafting a water management program that is sustainable, non-exploitative, economically viable, and empowering. No program or agenda can be successful without being meaningful to and respectful of the context it hopes to function.

The 1977 United Nations Water Conference at Mar del Plata was the first official international recognition of the importance of involving men and women in the water resource planning discussion (UN, 2006). This paradigm can allow gender concerns to come to the surface and, if gender mainstreaming is executed effectively, can begin equalizing the experiences of men and women (thereby abolishing gender discrimination and empowering women). The case studies of Samari-Nkwanta, Ghana, and Rakin, Jordan illustrate on the combination of this gender mainstreaming approach and an integrated water resource management perspective. When the role of gender is fully appreciated, approaches to water management can be developed that are equitable, context-aware and place-based, as well as environmentally nourishing and monetarily self-sustaining.

Chapter Two: Water in a Global Context

Water as a Basic Human Right

"Access to safe water is a fundamental human need and therefore a basic human right."
Kofi Annan, United Nations Secretary General

The primary goals of the past in terms of water development policy were economic in rhetoric, such as increasing monetary development, and figuring out how to get enough freshwater to meet consumer demands. Often incidental or excluded from these discussions altogether is the human and ecological need for water (Gleick, 1998). This perception and hierarchy of importance has begun to shift recently, partially because of efforts made by the United Nations.

On July 28th 2010, the United Nations declared that access to water and sanitation is a basic human right. Through Resolution 64/292, the UN General Assembly recognized the essential nature of clean water to the realization of all other human rights. The declaration stated "safe and clean drinking water and sanitation is a human right essential to the full enjoyment of life and all other human rights" (UN News Center, 2010).

The UN has made the commitment to reduce the 884 million individuals lacking access to clean, safe drinking water and adequate sanitation facilities. There are 2.6 billion people who do not have basic sanitation and 3.575 million people die each year from water-related disease (water.org, 2011). On average, women walk up to 10 kilometers (6.2 miles) a day to retrieve water for their households, much of which is

polluted. Every day, 4,400 children below the age of 5 die because of unclean water and lack of sanitation. There are 2.2 million people in developing countries who die each year from preventable disease associated with a lack of potable drinking water, inadequate sanitation and poor hygiene (UN, 2006). Additionally, one in every six people has no access to clean water within a kilometer of their homes. Millions of school days are lost every year because girls in some regions drop out of school to assist in the collection of water or because of inadequate sanitary facilities at schools (UN, 2010).

These realities are not the result of the Earth's physical limitations in terms of potable water. Although only 4.5% of our Earth's water is fresh and the majority of that water (around 69%) is locked in glaciers (USGS, 2012) and only 0.3% is available on the surface (UNDP, 2012), there are sufficient water resources available for human consumption. The current water crises are due to "the profound failures of water governance," (Houdret, Shabafrouz, 2006) such as policy and mismanagement, rather than physical constraints or lack of financing and appropriate technologies. Though these influence water availability, more blame can be placed on overexploitation as well as the increasing inequitable distribution of water. As this study will discovered later in this document, such patterns of disparity, mismanagement, or exhaustion of a water source can lead to social unrest and conflicts (Houdret, Shabafrouz, 2006).

Global Scarcity and Pollution Rates

The results of the water crisis are a substantial daily challenge for many individuals. One in eight people worldwide does not have access to clean water (The Water Project, 2011). By 2025, some 800 million people will be living in countries or

regions with absolute water scarcity and the situation will only be further stressed due to the rapid growth of urban areas (FAO, 2012). As much as 90% of European alpine glaciers are retreating thereby decreasing the availability of potable water for communities at lower elevations (Food and Water Watch, 2012). Additionally, an estimated 10 trillion gallons a year of untreated storm water runoff from impervious cover such as roads, parking lots, and roofs ends up in rivers and waterways that provide our municipal water supplies. The consequences of this untreated water can be seen in the degradation of watersheds (watercatchments), beaches, and other ecosystems and is damaging to tourist economies (NRDC, 2011).

Water carries pollutants and waste from the land and deposits them in rivers and oceans. With high amounts of impervious cover in urban landscapes, the amount of pollutants is increased as well as water's ability to pick them up. Close to 80% of rivers in China are so polluted they no longer support aquatic life (Food and Water Watch, 2012). In developing countries 90% of wastewater is discharged without any degree of treatment into rivers, streams, and coastal waters (Corcoran, et. al., 2010). Ninety-eight percent of Latin America's water goes untreated (Barlow, 2007). Pakistan, already an arid country, has surface water so contaminated that only 20-30% of its population has access to clean drinking water (The Stimson Center, 2009). Similarly, 75% of surface water in India and Russia surface water is unfit for human consumption or even bathing. In Indonesia, severe pollution of waterways results from only 3% of the population being connected to a sewer (Barlow, 2007). Some 130 million people in Latin America and the Caribbean lack access to clean drinking water due to high levels of pollution (Flood the

Nations, 2010). All of Africa's 677 major lakes and every one of its rivers have deteriorated in the past century (UNDP, 2005).

Chapter Three: Women in a Global Context

Manifestations of Gender Inequality

Women's roles are often limited by social, economic, and political structures in the majority of countries. These structures dictate the level of education available for women, the number of hours they must work, the level of income that they receive, the voice they are given in decision-making, and directly influence the staggering poverty levels of women. Since 1970, the number of rural women living on less than US\$1.25 a day has doubled (Green, 2010). Every six out of ten of the planet's poorest people are women (UNDP, 2004).

On average globally, women make 20% less than their male counterparts, despite working longer hours. The jobs available to women are more likely to be part-time or temporary, or part of the informal sector where wage gaps are often greater. In some situations, women may be both "time-poor" and "money-poor," and remain unable to break the poverty cycle at all (Floro, Meurs, 2009). In India, women and girls work an average of 35 hours on household tasks while the men and boys may only spend 4 hours on such domestic activities (UNICEF, 2007). According to the UN Food and Agriculture Organization (FAO), women are almost entirely responsible for growing and providing food for their households (2011). Incredibly, only ten to twenty out of every hundred landowners are women (IRIN, 2011).

There are also numerous threats to women's health and safety. Women are at least twice as likely as males to become infected with HIV/AIDS during intercourse (UNICEF, 2007). It is estimated that women born in South Africa, the country of highest reported rapes in the world, have a greater chance of being raped than learning how to read (Rape Survival Journey, 2011). The practice of female genital mutilation (FGM) in unsanitary environments threatens women's lives in many countries. Women and children are far more likely to be killed during times of war (estimates are around 80% of casualties) (UNICEF, 2007). Displacement camps established after the drought and famine on the Horn of Africa, which are meant to be a safe place for refugees, often have weak security resulting in a high risk of rape for women and girls (Trust, 2011).

The consequences of climate change are becoming more apparent and those most likely to be climate refugees are women and children. Climate change is marked by increased extremes and frequencies of weather patterns (higher precipitation in some regions, less in others) over long periods of time and increased global temperatures (UNFPA, 2009). The resulting rising sea level will displace roughly 634 million people who live along coastlines (Greenfieldboyce, 2007). Women and children are 14 times more likely to die if a disaster occurs (UNFPA, 2009). For instance, during the devastating flooding in Pakistan, 85% of those displaced from their homes were women and children (RHRC, 2010).

Women and Water

Water access and quality are particularly important to the livelihoods of women. Within rural households, women are in charge of making sure that adequate water for

washing, cooking, and farming is available (NLCAP, n.d.). In an effort to ascertain the direct benefits of local water access for women and children, the World Bank found that even a fifteen-minute reduction in water collection time increases the proportion of girls (ages 5-15 years old) attending school in Ghana by 8-12% (Nauges, Strand, 2011).

Education is one of the most integral components of poverty-reduction and female empowerment. For example, the Rural Water Supply and Sanitation Project of the World Bank in Morocco aims to reduce the “burden of girls who were traditionally involved in fetching water” and improve school attendance. Throughout the six provinces where the project was based, girls’ attendance in school increased by 20% in four years. Convenient access to safe water meant a reduction in water gathering activities for women and girls by 50-90% (World Bank, 2003).

Programs within schools that promote hygiene, when coupled with available water and latrines in the school, encourage girls to attend school, especially after they hit puberty. These practices can lessen the health risks for all. When considering ways of decreasing violence against women and girls, the location of latrines is extremely important. Placing latrines close to homes or schools may reduce the likelihoods of attacks if females have to relieve themselves after nightfall (UN, 2006).

Women and children spend up to six hours per day on average collecting water (usually unsafe and dirty) for domestic use, culminating in 200 million hours of women's time each day going towards efforts to simply survive (water.org, 2011). The limited access to water that forces women and children to travel such distances is often coupled with the limited access to land. Ownership of land can lead to secure water rights.

Through land ownership, women's livelihoods can potentially be improved by additional access to financial services and possibilities for investment in farms (IFAD, 2007).

Most of the world's poor are women who also live in water scarce regions such as Sub-Saharan Africa and South Asia. Many of these women are dependent on agriculture to survive. Water scarcity means increased difficulty in gaining access for domestic and agricultural purposes. There is growing pressure from other sectors for water, such as industry and power generation, which make it more difficult for the poor to attain water for productive, social, and consumptive needs (IFAD, 2007).

There are remedies for these deeply discouraging trends and of particular importance is the role of women in water gathering, which is the focus later in this thesis. Education, especially for girls, has been seen to positively influence society as a whole which UNICEF calls the "multiplier effect" (2009). Women who are educated see increased economic opportunities and have the self-confidence to engage more fully in public life. Additionally, education tends to correlate with fewer and healthier children, who are more likely to attend school, as well as increases the ability for females to guard themselves against contracting HIV. Increased employment opportunities are vital for women's living standards. Expanded access to affordable reproductive health options is beneficial for women's and men's health (UNFPA, 2009). The cycle of poverty has no hope of being eradicated without addressing all contributing factors, only some of which have been mentioned here each (UNFPA, 2005).

Policies that outline such remedies can "reduce vulnerability to climate change impacts and slow the growth of greenhouse gas emissions" (UNFPA, 2009). Women are in a great position to execute climate change mitigation and adaptation measures because

of their integral role in the management, conservation, and use of natural resources. For more information on how women can impact climate change, see Additional Resources at the end of this document. The beneficial effects of thoroughly integrating women in resource programs, especially water management, can be seen for the community as a whole and will be explored presently in this thesis.

Chapter Four: Our Current Approach

Privatization

Within the water management debate quantity is not of concern. In his book *The Scarcity of Water: Emerging Legal and Policy Responses*, Edward H. P. Brans states that humans only use 8% of global freshwater reserves (1997). The true distress regarding water is pollution and depletion of freshwater resources. As global populations are projected to hit 9 billion by 2050 (US Census Bureau, 2011) and the repercussions of climate change are expected to include increased severity, frequency and length of droughts (Hayes, 2006), the need for sustainable, equitable, reliable and contextually specific water management systems that cannot be overlooked.

Defining Privatization

Privatization is defined as the transfer of control of an enterprise from the government sector to the private sector. The purchase of a service by private interests may or may not be a complete ownership transfer. Privatization is marked by the government relinquishing all managerial control over the enterprise, even though the purchase may be less than 100% of the service. Leasing control of the designated utility to private investors, rather than full commitment of privatization, is another option for the public sector (Oyebanji, 2010).

Privatization has gained many supporters because of its potential to connect the estimated 1.1 billion people who currently lack access to the clean water they so desperately require (UNDP, 2006). It also has gained traction because it might fix the serious and growing problem of water resource mismanagement, exploitation, and inadequate allocation practices. Many propose privatization of water resources as an effective and efficient way of allowing market mechanisms to link people to the water needed for subsistence and agricultural activities.

Public utilities are currently the most dominant service provider in less developed countries (Anderson, Janssens, 2011). However, especially in developing countries, public utilities may suffer from corruption, improper management, disorganization, or insufficient funds. Such barriers to reliable supply (i.e. efficient infrastructure), equitable access, and sustainable practices of water management are all issues that privatization can in theory remedy.

The History of Privatization

The world's population hit 1 billion people in 1804, during the Industrial Revolution (Rosenberg, 2011). High concentrations of population in urban areas put stress on the infrastructure of cities like never before and in the United States specifically. Due to waterborne diseases like cholera and typhoid taking the lives of many Americans, concerns regarding the health and safety of the public arose (Corporate Accountability, 2011). New ways of providing water to the population as well as sanitation options were required. Though there is some evidence that private water companies were created in the Renaissance, it was not until the nineteenth century that private entrepreneurs stepped

forward to establish large-scale water provisions in both Europe and the United States. However, wastewater infrastructure, such as sewers, has remained the public's responsibility (Committee on Privatization of Water Services in the US, National Research Council, 2002).

During the 20th century, the prevalence of private water companies fell (due to their inability to expand access) then rose some time later. Privatization was given another push when international financial institutions such as the International Monetary Fund (IMF) and the World Bank made privatization of water a condition for lending to developing countries. They also required that any country seeking assistance execute a degree of deregulation, to abolish subsidies, and water infrastructure be sold to private investors (World Savvy Monitor, 2009). An additional boost to the popularity of water privatization was instigated by the British Prime Minister Margaret Thatcher, who between 1979 and 1990, carried out one of the most triumphant privatization programs during her terms. In 1989, she broke up the government monopoly of the water supply into eight large private entities in the UK (Rubenstein, 2000).

The Dublin International Conference on Water and Sustainable Development (the Dublin Principles) took place in Ireland, of January 1992 at the International Conference on Water and the Environment (ICWE). The ICWE was a gathering of 500 participants, including government-designated experts from 100 countries, as well as representatives of 80 international, intergovernmental and non-governmental organizations. Contributors called for new foundational approaches for the development, evaluation, and supervision of water resources. This conference emphasized political commitment and involvement from politicians to community members at all levels of the government. The Dublin

Statement emphasized the role of women and declared the commitment to back significant and urgent investments, public consciousness campaigns, changes to legislatures and institutions, technology advancement, and capacity building programs. According to the UNDP, capacity building is defined as “long-term continual process of development that involves all stakeholders” (n.d.). The declared principles that resulted from the Dublin Conference are:

1. Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment.
2. Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels.
3. Women play a central part in the provision, management and safeguarding of water.
4. Water has an economic value in all its competing uses and should be recognized as an economic good.

Source: UN Documents, 1992

Later that same year, the Dublin Statement was commended to the UN Conference on the Environment and Development in Rio de Janeiro. The Dublin Conference recommended specific areas in which a government could begin to tackle their water resource problems by applying the Dublin principles. These include alleviation of poverty and disease, protection of natural resources, water conservation and reuse, sustainable urban development, agricultural production and rural water supply, protection of aquatic ecosystems, and resolution of water conflicts (UN Documents, 1992). Some experts and nongovernmental organizations (NGOs) have concluded that the Dublin Statement tacitly endorsed the transfer of power from the government or

community to a private corporation would help countries develop urban facilities more efficiently and would escalate quality and access (Hall, Lobina, 2000).

Though the Dublin Statement did not directly state support of privatization, it did say in its follow-up that private institutions, regional and non-governmental organizations, in addition to all interested parties, should become involved in a water forum or council (UN, 1992). Since the 1992 decision, privatization of water services has become commonplace in much of the world. France, for instance, enjoys fully private water utilities and investments in privatization continue to increase (Rubenstein, 2000).

Proponents of Water Privatization

As discussed, much of the pressure to privatize a water source has come from the International Monetary Fund and the World Bank. The World Bank's About Us webpage explains that "the World Bank is one of the few institutions [which] provide integrated support nationally and regionally across the macroeconomic, financial, technical, social and environmental dimensions" (2011). The World Bank does this by assisting countries form water management programs which focus on establishing proper policies, building the capacity of governments, and provide technical assistance (2011).

The author of *Water for Sale: How Businesses and the Market Can Resolve the World's Water Crisis*, Fredrik Segerfeldt has written much on the benefits of water privatization. Segerfeldt holds the public sector accountable for water allocation and mismanagement because 97% of all water distribution in poor countries is managed by this sector (2005). Because of failed policy enactment and implementation, "even Cherrapunji, India, the wettest place on earth, suffers from recurrent water shortages"

(Segerfeldt, 2005). Private investments in the water sector allow more people to have access to water, Segerfeldt believes, and that when local businesses get involved, distribution can be improved. Segerfeldt also states that "millions of people who lacked water mains within reach are now getting clean and safe water delivered within a convenient distance" (2005).

One of the main arguments for privatization is that it results in more efficient system. The corporation's profit-driven nature can theoretically eliminate or diminish the inefficiencies or redundancies in construction, maintenance, upgrades and distribution. Additionally, because the management occurs outside of the government, there is an assumption that less corruption is likely to take place. Proponents such as Segerfeldt emphasize that less developed countries have been doing a poor job of stewarding their publicly financed (and often starved) water industries. On the other hand, Segerfeldt does address some issues of "troublesome" privatization practices. He says that proper supervision is necessary, that regulatory bodies have been "non-existent, incompetent or too weak" and that contracts have been ill-designed (2005).

According to Edwin S. Rubenstein, an economist, the US lags far behind the global trend to privatize. In his book, *The Untapped Potential of Water Privatization*, Rubenstein states that water utilities are the most capital intensive of public utilities in the US and "require up to three times more capital to generate a dollar of revenue than electric utilities" (2000). He claims that investor-owned water utilities are roughly 1/3 more efficient than their public counterparts. Rubenstein does include analysis of the anomaly that investor-owned water utilities often charge higher rates than public utilities, despite their efficiency. He says that water in the US is horrendously under-priced due to

subsidies. Rubenstein explores how some regulation of the water industry will always be necessary because of water's "natural monopoly" quality. It is bulky, heavy, and has a low per-unit value (Rubenstein, 2000).

There are additional advantages to privatization that warrant consideration. The World Bank explores the significance of ownership as a "determinant of enterprise performance" (1992). If one has ownership/control over a service, then there is strong incentive for maximum efficiency and productivity. In other words, privatization provides owners motivation to transform a failing public utility into a successful business. Further positive attributes include; raising money for government through taxing former public sector enterprises, depoliticizing public sector enterprises, diminishing loss-making public sector enterprises from adding to governmental debts, the rapid repayment of debts by the government because of relief from the financial burden, and removing the government's monopolistic status. Other benefits that follow the profit incentive are staff-downsizing for efficiency, and cheaper more competitive prices (Oyebanji, 2010).

Opponents of Water Privatization

Dr. Vandana Shiva is a physicist, activist, ecofeminist and author of numerous books on the subject of water privatization. Her book *Water Wars: Privatization, Pollution, and Profit* explores the direct and in her view inescapable effects of water privatization on rural and poor people. Shiva believes that water must be free to meet the sustenance needs of all people. She states that water is given free of cost, and that "buying and selling it for profit violates our inherent right to nature's gift and denies the

poor of their human rights," (Shiva, 2002). Shiva is a vocal advocate for water being treated as a commons which cannot be owned as private property or transformed into a commodity (2002). A commons is something that is shared by all wherein everyone has access and all have a responsibility for its upkeep and protection.

Of critical importance for this thesis discussion is the lack of gender awareness in water privatization programs. Though the World Bank and IMF do claim to recognize the integral and expansive role of women in water resource management, no evidence of this understanding translating to their structural adjustment programs was found during the research process of this thesis. The World Bank does have a Gender and Development Group which works on a scale that is excluded by privatization. There was no mention of mainstreaming gender or emphasizing the incorporation of women into the policy and application processes of privatization. Such a lack highlights the disempowering nature of past privatization efforts.

Critics often state that both the World Bank and IMF "are pushing privatization through stipulations in trade agreements and loan conditions to developing countries" (VanOverbeke, 2004). Such conditions include "drastic cuts in social expenditures, especially in health and education," as well as removals of subsidies to the poor regarding basic food and products (Budhoo, 1994). If a developing country is faced with a huge debt, the pressure to privatize municipalities and other programs can be compelling.

There are many who support the legal basis of the right to water. The 1999 London Protocol on Water and Health imposed a positive legal responsibility on countries to ensure access to clean water to citizens. Human rights organizations, such as the Convention on the Rights of the Child (CRC), the Convention on the Elimination of

All Forms of Discrimination against Women (CEDAW), and the regional African Charter on the Rights and Welfare of the Child, support the human right to water. Additionally, the International Covenant on Civil and Political Rights (adopted by the United Nations General Assembly in 1966), states “Every human being has the inherent right to life. This right shall be protected by law. No one shall be arbitrarily deprived of his life” (Williams, 2007). In 2002, The International Covenant on Economic, Social, and Cultural Rights (ICESCR), a multilateral treaty (also adopted by the UN General Assembly in 1966) also supported the right to water (Williams, 2007).

Public Citizen, a nonprofit organization that relies solely on grants from foundations, publication sales, and member support, compiled a list of ten reasons to oppose water privatization (2011). Some of these reasons include: increases in rate, quality of water being undermined, companies accountable to stakeholders as opposed to the public, reduction of local control and public rights, job losses, unequal distribution of water, and the possibilities of bulk water exports (Public Citizen, 2011). Bulk water exports, the transport of water from water-rich areas to water-poor countries, which includes virtual water (the trade of any products that utilized water in a specific region), can have terrible ecological conclusions. Enormous extraction from one area negatively sways the balance and resilience of that ecosystem and aquifer, which affects both the environment and the socioeconomics of a region. Aquifers are particularly difficult to restore and groundwater is increasingly over-extracted (Peter, 2006).

Public Citizen points out that the bottom line for private corporations is profit and water quality and customer service can stand in the way of profits; "Among the more unseemly aspects of handling water as a marketable commodity, rather than a basic

human need and a natural resource, is that the poor are often denied access” (Public Citizen, 2011). The poor may be forced to consume unsafe water of inadequate quality instead of choosing to go without food, education, or shelter. The privatization efforts in South Africa in the 1990s resulted in many poorer residents being denied access, a cholera outbreak, and “declaration of a lifeline of free water for all South Africans in October 2000” (Budds, McGranahan, 2003). Furthermore, the transfer of accountability from the public to the private shareholders comes at the price of quality, quantity and affordability. This happened in Cochabamba, Bolivia, one of the case studies that is explored in this document. There is a trend in privatization deals which government agencies give water companies exclusive distribution rights for several decades, effectively authorizing a monopoly (Public Citizen, 2011).

With higher emphasis placed on profits rather than "the public good" corporations will often ignore issues of environmental standards in addition to compromising the rights of lower-income individuals. For instance, the National Association of Water Companies (NAWC), which represents the private water industry in the U.S., spends much time lobbying Congress and the Environmental Protection Agency to refrain from strengthening water quality standards. Public Citizen explains that the NAWC persistently demands that all federal regulations be based on sound cost-benefit analysis, instead of concerns for public health (2011).

In contrast to one of Segerfeldt's main defenses of privatization, Public Citizen argues that there is a lack of checks and balances, as well as accountability and transparency in the entire privatization process. These contracts are usually worked out behind closed doors with the details often still kept secret after the contract is signed,

ignoring the fact that it is the public that will be directly impacted by the contract's conditions. Additional disregard for the local community may occur, despite whether or not the privatizing corporation is domestic or foreign/transnational. Moreover, if the community is dissatisfied with the company's performance, retrieving water rights can be extremely difficult and expensive (Public Citizen, 2011).

Large-scale layoffs may occur once the corporation assumes control in an effort to maximize efficiency (and some would contend profits). Due to possible understaffing the quality of the water and service can be impacted negatively. Such layoffs harm not only the workers and their families, but the consumers as well (Public Citizen, 2011). Many large-scale layoffs have occurred in Latin America. The International Development Bank analyzed privatized companies (including water, electricity, natural gas, airlines, railways and telecommunications) and estimated the job losses were around 23-25% in Argentina, Chile, and Peru (De Ferranti, 2004).

The IMF and World Bank's involvement in developing countries has often led to even less access to water for the poor than when the water source was public. Privatization is often a condition for "structural adjustments" which poor, politically unstable or weak countries often cannot reject lest they risk defaulting on their debts. "As a result, the World Bank and IMF are able to provide lucrative and virtually risk-free contracts for multinationals, due to guaranteed rates of return and investment protection clauses" (Public Citizen, 2011).

Because water resources are likely to be strained in the future, those who control what clean water remains stand to make an enormous profit. Water is already playing multitudinous rules, and that of a human right should take precedence over a possible

secondary status, that of a commodity or economic good. It would be nearly impossible to relieve water of its secondary role, and thus specific tactics must be adopted to minimize the negative ramifications of commodification. Regulation and transparency, empowerment of the local community, engagement of women, and an ethical as well as environmental perspective are all components of the proposed alternative to privatization, one of gender mainstreaming and integrated water resource management approach.

A Privatization Case Study: Manila, Philippines

To explore the nuances and complexities of water privatization, a case study from Metro Manila, the capital of the Philippines is presented. A general overview of the social, economic, and environmental characteristics will be briefly outlined for contextual orientation and understanding. Following this brief description, an account of the privatization efforts within that city will be offered.

The Republic of the Philippines, made up of 7,100 islands stretching about 1,100 miles, has a population of about 85.2 million people (Chia, et al, 2007). This archipelago is located north of Indonesia and Malaysia and shares the South China Sea with Southeast Asia. These islands are predominately made up of mountains with narrow to wide lowlands. Inhabitants experience a tropical marine climate with seasonal monsoonal periods. The highest elevation is Mount Apo at 2,954 meters. Nineteen-percent of this land is arable and the total freshwater withdrawal is 28.52 cubic meters per year; per capita that stands at about 343 cubic meters per year. The total renewable water resources are 479 cubic kilometers (CIA, 2011).

There are numerous ethnic groups inhabiting the islands. Tagalog, Cubuano, and Ilocano account for almost 50% of the population. There are roughly 87 languages spoken in the Philippines. Filipino, which is based on Tagalog, and English are the official languages. Evidence of nearly 400 years of Spanish and American rule can be

seen in terms of religious affiliation; nearly 83% of Filipinos are Catholic (Bureau of East Asian and Pacific Affairs, 2012).

The Philippines has a literacy rate of nearly 93% of people ten or older which is one of the highest in the developing world (Bureau of East Asian and Pacific Affairs, 2012). However, roughly 26.5% of the population (28 million people) lives below the poverty threshold. Additionally, 40% of residents in Manila reside in slums or squatter settlements. The disparity between the rich and the poor is ever increasing (Chia, et al, 2007).

Since gaining independence in 1946, the Philippines has experienced such economic instability that the World Bank as well as other international fund programs has given the country at least nine Structural Assistance Programs (Chia, et al, 2007). The estimated 2011 GDP is \$389.8 billion overall which per capita is estimated to be \$4,100. Of the overall GDP, 49.4% is public debt. Agriculture occupies 33% of the population, industry 15%, and services 52%. Unemployment resides at 7.2% (CIA, 2011).

The combination of Muslim, Chinese, and Catholic traditions resulted in strict gender role expectations. Islamic traditions still dominate in southern islands and include polygamy. Wives are expected to be submissive in the presence of men and are viewed as the husband's chattel. In established Chinese society, women are obedient to the father and elder brothers. Marriage is often seen as the only means of economic survival for women and arranged marriages are common. The colonial Filipina was expected to take care of domestic tasks, attend church, bear and educate children, and support her husband in all areas of the home and society. Since the 1960s, yet, there has been a shift away from traditional ideals regarding feminine behavior such as dependence, inferiority,

passivity, and obedience. Filipinas now occupy positions of importance in universities, medical schools, hospitals, large corporations, journalism, and the arts. Despite their prevalence and contributions, women at the national and local scales are still met with some discrimination and many privileges are awarded only to men (Leyson, 2000).

The year 1997 marked the transfer of water ownership from the public company, Metropolitan Waterworks and Sewerage Systems (MWSS) to private corporations. The MWSS was dealing with an US\$880 million debt. Since the public company was neither efficient nor effective, it was reasonable and necessary for the government to find a new way of getting clean, potable water to its citizens in Manila. At this time, only two-thirds of the households had piped water connections while the remaining individuals received their water from a vended source, private water suppliers, or their own deep wells (Chia, et al, 2007).

In short, the debt was crippling the company's ability to update and improve their water system. The Philippines was also attempting to prepare for what was "perceived to be a looming water crisis due to the events that follow the El Nino" in the 1990s (Chia, et al, 2007). The combination of this pressure on President Fidel Ramos to take "affirmative action" with the pro-privatization mentality (presumably ushered in by the Structural Assistance Programs, and reinforced by the President's previous privatization of the electricity services) paved the way for the water system to change hands (Chia, et al, 2007). The move to privatize developed in a very supportive environment, both publicly and politically, due to the tolerance for corruption and economic mismanagement being at a low with constituents (Rosenthal, 2001). The privatization came with the hope that

eradicating the inefficient public system would also correct the linked economic burdens (Chia, et al, 2007).

Manila was interested in relieving the government of water utilities as well as allowing the private companies to pay off the debt accumulated by MWSS. To avoid a full-fledged privately-owned monopoly from occurring and for a chance for comparison of performances, Manila was divided in two along the river line. It was decided that 80% of the MWSS' debt would go to the West, with the understanding that this region already had a fully developed pipeline infrastructure. The East was then responsible for the remaining 20% of the debt (Chia, et al, 2007).

For the bidding process, the government assumed transparent international rules that included the lowest tariff bidder winning, but limited any winning consortium to either the East or West zones. Maynilad Water Services Inc. was given operation rights of the West while Manila Water Company Inc. won the east concession. Both were charged with similar responsibilities: treating and distributing drinking water, bill collection and managing sanitation/sewerage services until the year 2022 (Chia, et al, 2007).

By 2001, the number of households connected to the network increased to an estimated 1.5 million people, an expansion of 15%, and the system had become more efficient and reliable (Rosenthal, 2001). The following year, Manila Water's coverage had expanded to 82% of residents, while Maynilad had grown to 78% (up from 67%). Availability of water rose from 17 hours under MWSS to 21 hours a day (Chia, et al, 2007). The agreements provided enough flexibility for the concessionaires to experiment with new approaches in the city's poorest neighborhoods (Rosenthal, 2001).

Expected increases in price were to be countered by a third party provider that would intensify competition. Local firms were allowed to sell bulk water as third party suppliers (Chia, et al, 2007). Such cooperation between the concessionaires and a third party service was encouraged for the benefit of the poorest residents (Rosenthal, 2001). Once the water system was privatized, the Philippine National Standards for Drinking Water were met, illustrating how the quality of water had been increased (Chia, et al, 2007). In eastern Metro Manila, after privatization, a chlorine residual of 0.72 has been maintained for ten years, thus eliminating major water contamination (WaterLinks, n.d.).

Both concessionaires increased efficiency in terms of the numbers of employees. The number of employees working for Manila Water and Maynilad was 49% less than MWSS. Additionally, the amount of reported leaks being repaired increased from 75% under MWSS to 93%. There were attempts to attend to the poorer neighborhoods by utilizing pipes that were of a smaller diameter, and thus, cheaper (Chia, et al, 2007).

At the 21st World Water Week in Stockholm in August of 2011, Metro Manila Waterworks and Sewerage System's Chairman Ramon Alikpala expounded that the "accessibility to potable water has increased from 60% to 85% providing the 15 million Metro Manila residents' regular supply of potable water" (Philippine News Agency, 2011). He declared that "water services and facilities in Metro Manila have never been more efficient" since privatization took place (Philippine News Agency, 2011). Alikpala stated that the new pipelines also cut down the volume of water lost due to pilfering and leakages from 68% to 11% (Philippine News Agency, 2011). This is extremely important in an increasingly water-restricted world. This privatization case study has been praised as the only positive example of "a partnership between the private sector and the

community,” and as a model that could be utilized in other regions of the world (Philippine News Agency, 2011).

Despite these positive contributions, a group of critics remain. Residents were being charged much higher prices for water. When considering the amount of capital that is required to establish efficient and encompassing infrastructure, purifying, employees, etc. price increases are to be expected. An additional point of interest is the discussion of conservation measures. In terms of water pricing in the US, there are many who argue that we pay too little for water and that an upturn in price would encourage conservation practices. These are important realities to think about when critiquing water hikes. Critics of privatization in Manila highlight that there is a point at which lower-income residents cannot afford the newly established water system and the fairness of this reality. The taxes for both companies rose roughly threefold. Furthermore, neither company met the target of lowering its non-revenue water (NRW) figures by 2002. NRW is defined as “water that is unbilled due to leakage or theft” (Chia, et al, 2007). This may be an inconsistency in the information available, or perhaps it implies that though waste was reduced, the target goals were still not reached.

Other issues are raised by Filipino residents. Those who lived in Magdalena, some 105 kilometers away from Metro Manila, saw higher prices and much lower quality than what was promised. These residents were required to pay for water from the new system, though many preferred the old system until the standards of the newer system were raised (Padilla, 2003). There was also a huge disparity between what people pay in Manila. One woman may only have running water for 30 minutes in the morning, while paying upwards of \$40 for a sufficient supply. Her sister may be paying only \$3.70 a month and

has uninterrupted flow throughout the day (Sison, 2003). The reason for this disparity is unclear in the available research. In fact, Marites Sison, a journalist from Canada who is a correspondent for Manila, believes that “Manila’s water crisis has only become worse” (2003). While prices had gone up, the concessionaires had not met the expectation to expand or the service targets that were outlined in the initial contracts. In 2002, the Maynilad customers found themselves paying for water at a rate that was 76% higher than the previously established privatization rate. Those on the other side of the river paid a cheaper rate but experienced “additional costs” that increased residents’ bills. The NGO Freedom from Debt Coalition found that “a fifth of the residents in the East and West Zones are still not connected to the water systems” (Sison, 2003).

The Manila Water website provides information regarding its adoption of the Code of Business Conduct and Ethics. Manila Water states its “commitment to the highest standards of ethics, good governance, competence and integrity in the relationship among its directors, officers and employees and with the Company’s customers, suppliers, business partners, government offices and the public” (2009). Additionally, the website explains the corporation’s sustainability framework, which outlines their commitment to helping the community, safeguarding health and safety, contributing to local and national economies, protecting the environment, and empowering employees which is described as a decentralization of power so that employees may cater to residents’ needs more directly (Manila Water, 2009).

Depending on to whom one is talking and how one defines “success,” the case study of Manila shifts. It can be presented as an extraordinary accomplishment or just another example of privatization failing put the residents’ well-being before the profit

incentive. Without a doubt, the number of inhabitants with access to water increased, but the lower income residents' reviews were less than positive.

A Privatization Case Study: Cochabamba, Bolivia

Cochabamba is perhaps the most famous privatization attempt that proved unsuccessful. Cochabamba is particularly interesting because it has been lauded an example of how people can rise up and reclaim their ignored or dissolved rights. Such grassroots activism can have many positive effects within the community and can illustrate to the government that legislative and economic agreements cannot be made without public support.

Estado Plurinacional de Bolivia (Plurinational State of Bolivia) has a population of just over ten million people and is bounded by Chile to the west, Argentina to the south, Uruguay to the southeast, and Brazil to the north and east. There are thirty-six official indigenous languages in addition to Spanish. A unitary multiparty republic, Bolivia has two legislative houses: the Chamber of Senators of which there are 36, and the Chamber of Deputies, of which there are 130 members. The president, Evo Morales, has been the head of state since 2006 (Encyclopedia Britannica, 2012).

This landlocked country has mountains, lakes, rainforests, a massive watershed, and highlands. La Paz, the capital of Bolivia, is located in the Andes Mountains and resides at just over 3,000 feet. Lake Titicaca, the largest lake in South America, is located on the border with Peru just west of La Paz. The climate varies across Bolivia's 1,098,581-square kilometers from humid and tropical to cold and semiarid. Only about 0.19% of the land is used for permanent agriculture, and roughly 2.8% of Bolivia is

arable land. Renewable water resources total 622.5 cubic kilometers and the per capita use of water stands at 157 cu meters per year (CIA, 2011).

The two most common religious affiliations are Roman Catholicism and Protestantism. However, the indigenous respect and appreciation for Mother Earth (*Pachamama*), which was the dominant spirituality before the Spanish invaded this continent, persists (Blair, 1990). Religious traditions and a generally misogynistic culture greatly influence the role of women in Bolivian society. Yet, there has been a shift recently. Feminist movements in the region have brought the responsibilities and expectations of women to the forefront despite economic instability and pressing political problems being the most common concerns. There are few economic opportunities for women who, as a result, are reliant on male partners. The limited job opportunities and the disequilibrium of labor and responsibility have created a difficult gender role expectation for women in the modern, market driven society (Paulson, 2005). In step with global trends, women constitute a greater proportion than men of Bolivia's illiterate and the maternal mortality rate is one of the highest in the world (UNICEF, 2005). Unemployment for women stands at 11.8% and 7.6% for men. Thirty-percent of the population exists below the poverty line (CIA, 2011).

Bolivia is one of the poorest and least developed countries in Latin America. The per capita GDP is US\$4,800. Most of the population is occupied by agriculture (40%), while services employ 43% and industry 17%. Bolivia's mining industry relies on tin, natural gas, petroleum, silver, lead, timber, and hydropower (CIA, 2011).

In 1985, the country began to deteriorate under the New Economic Policy (which imposed strict austerity measures to stabilize the economy), and the government was no longer able to afford maintaining services for the public (Hanratty, Hudson, 1989). In addition, leaders felt pressure from international lending companies to combat the economic crises in specific and prescribed ways. Politicians then moved to privatize services, industry, and, in the late 1990s, the country's water. There were three parties involved: the international corporations, the World Bank, and the government mafias (Olivera, 2004).

As described by Oscar Olivera in his 2004 book, *Cochabamba!: Water War in Bolivia*, upwards of a million people live in Cochabamba and the surrounding region and water scarcity has long been an issue. Though most families live on roughly \$40 per month, the World Bank said there should be no "public subsidies" to help keep the price of water down. Under the new privatization practices (Law 2029), water distribution was no longer required in rural areas even though only about half of the residents were connected to the central water system. The corporation was given control over private wells and autonomous water supplies. In addition, collecting rainwater was prohibited (Olivera, 2004).

According to Olivera, the 40-year contract with the water company Aguas del Tunari (owned by the U.S. transnational company Bechtel with Italy's Edison and Spain's Abengoa corporations) (Chavez, 2006) provided that "at the end of each year, rates would go up as measured against the consumer price index in the United States"

(Olivera, 2004). The cost of water in Cochabamba skyrocketed, by 200-300% in some cases. Believing that water is a natural gift, and distribution should be equal and fair, the people of Cochabamba were outraged. The perceived government-sanctioned monopoly of the water supply seemed intended to make the corporation rich off the citizens' backs (Olivera, 2004).

Many defend such agreements between governments and private corporations. They argue that a country with crumbling or non-existent infrastructure, poor sanitation services, lack of clean drinking water, weak agricultural system, etc., needs companies to help the developing/ transitioning government. The corporation, having had the proper management and insight to expand into such a global entity, is seen (and accepted) as a capable group to guide the underdeveloped country into the 21st century's definition of "civilized." When claiming they will make the water supply and distribution process (if there is any) more efficient, their confidence is palpable and the government is generally eager to believe them.

Over time, groups of individuals such as the Coalition in Defense of Water and Life began a series of protests to reestablish their rights within the community. The people who felt ignored by the government and controlled by the corporation began to find the voices they needed to enact change. Soon, demonstrations were drawing 10,000 people inspired by the power of the community (Olivera, 2004).

Government leaders agreed to meet with the public in January of 2000, but arrived hours after the designated appointment time. During the indoor discussion the

police began gassing the crowd outside. By February, the whole city was blockaded and citizens armed themselves with bricks and stones. Following days of citizens taking to the streets, the government agreed to freeze rate hikes (Olivera, 2004).

In March 2000, the first popular referendum in Bolivia's history garnered 50,000 votes on a purely voluntary basis, demanding Aguas del Tunari relinquish control of the water. However, the government seemed to have little intention of listening to protests. The April Days included widespread demonstrations and more blockades. Finally, due to the high level of civil unrest, the government conceded and the contract with Aguas del Tunari was terminated in April 2000. Control of the city's water system was given to the Olivera's organization "La Coordinadora de Defensa del Agua y Vida" (Coalition for the Defense of Water and Life) (Olivera, 2004).

This is just one example of the western-style top-down management approach failed to meet the needs of the community. Without the community's input and expertise, the system will not take into account the necessary components of sustainable practices. Though privatization has the potential to be instituted in a transparent and fair manner, in the next chapter this study will argue for a paradigm shift for water planners.

Chapter Five: The Proposed Approach

Gender Mainstreaming and Integrated Water Resource Management

Though privatization has extensive backing and support by the World Bank and International Monetary Fund, there is evidence that this approach fails to acknowledge the significance of gender and the contribution of women. Women's limited control over productive resources leaves them in a position of vulnerability and insecurity that is gender determined (Peter, 2006). The United Nations is just one organization which has adopted a gender mainstreaming perspective and other organizations are beginning to recognize that the traditional approach to water management is not sufficiently meeting people's needs. In this section, an alternative that has the potential to empower women and sustainably utilize a water resource is presented.

Defining Gender and Mainstreaming

Gender, which is the behavior deemed appropriate for men and women, is a socially constructed concept (Crane, Heasley, 2002). It is anything but static, fluctuating between countries and geographical and cultural circumstances (Peter, 2006). There is little about how men and women act within society that is intrinsic knowledge. In fact, as children, both men and women within their particular societal contexts observe how others perform their prescribed gender roles and compile this knowledge, eventually forming the idealized gender role which society deems appropriate. In other words, gender refers to the way men's and women's "qualities, behaviors, and identities are

determined through the process of socialization” (UNDP, 2006). This perspective, in sociological terms, is called social constructionism (Crane, Heasley, 2002) and is the framework within which this study’s argument will be crafted.

One’s treatment in life is tied to expectations regarding how one should perform gender. In fact, one’s entire existence is influenced by the reality of “gender.” While men are encouraged to perform “masculinity” correctly, women must also conform to the expectation of “femininity.” Those who do not live up to such societal expectations are punished. These reinforcements and discouragements shape one’s experiences in life as well as one’s subjective perspective. Put simply, to understand a person’s situation more fully, one must consider the social pressures and gender role contexts that shape his or her circumstances. Attempting to acknowledge men’s and women’s unique experiences, expertise, understandings, needs, and emotional responses is the very beginning of gender mainstreaming.

Mainstreaming is the process of bringing a topic into the mainstream. This process entails a level of acknowledgment and consideration of the topic among people, and influence within those individual’s lives. Something that is below the public’s radar, such as the plight of a minority, cannot begin to be addressed without first being considered valid by the majority. Integrally incorporating women's concerns and participation in the planning, implementation and monitoring of all development and environmental management programs can ensure that women benefit (UN, 1997).

Gender mainstreaming can occur at any level of interaction, decision-making or program. The core of gender mainstreaming is the acknowledgment and assessment of how something will impact both women and men differently and action to address these

distinctive needs (UNDP, 2006). Within the varied spheres of society (economic, political, social), there is a need to adapt “a strategy for making women’s as well as men’s concerns and experiences an integral dimension of the design, implementation, monitoring, and evaluation of policies and programs,” in an effort to abolish inequality (UNDP, 2006). Ultimately, the goal is to equally benefit women and men at all levels (DAW, 1997). Moreover, “allocation, distribution, utilization, and control of resources reflect gender relations embedded in both ideology and practice” (Peter, 2006).

It is important to acknowledge that gender mainstreaming seeks to create an equal society, which necessitates bettering the position of women in patriarchal structures. Women are the portion of the human population that has historically been undervalued and whose human rights are more often violated. Other power relations are extremely important to the way that a person or group is treated: “race, ethnicity, caste, class, age, ability/disability, religion, and a multiplicity of other factors including whether they are indigenous” play a role in the treatment of women (UNDP, 2006).

When a community has taken it upon themselves to establish, utilize, and maintain, a water source, simply pursuing these goals in a people-centered fashion is not enough (UNDP, 2006). Deliberate emphasis and special procedures need to be placed on the role, knowledge, and experience women provide (Peter, 2006). Validating women by integrating their knowledge and experience is extremely empowering. Efforts to remedy the historically disadvantaged position of women, a position is influenced by historical, religious, cultural and economic realities (which can fluctuate over time), may result in institutional and organizational change, thereby increasing the likelihood and continuing commitment to bring about gender equality (UNDP, 2006). A study by the International

Water and Sanitation Center (IRC) executed in 88 communities in 15 different countries concluded that projects that were designed and run with full participation of women are more sustainable and effective than those that do not (Peter, 2006). The findings of the study echoed those of the earlier World Bank study that found a strong association between women's cooperation and the effectiveness of a water or sanitation project (UN, 2006).

Social expectations regarding how women should perform their gender do change over time, especially during times of conflict. However, the domestic realm is still considered the female's domain. Water plays many roles in the household and females are expected to oversee all of them. Collection, maintenance, sanitation, irrigation, and human consumption of water are considered women's responsibility, despite having little say in the community (UNDP, 2006). Their daily roles provide them with a level of experience regarding water that is unparalleled in men. Such skill and proficiency should result in them having more authority over water resources than they are currently given within communities.

The United Nations Millennium Campaign, started in 2002, outlined the Development Goals that include a focus on poverty, female empowerment, and environment (UN, 2012). These goals cannot be met by the intended 2015 goal without a gender mainstreaming approach. Gender and water crop up simultaneously because empowerment of women and the establishment of a safe and reliable water supply go hand in hand (UNDP, n.d.). Critical issues include: equitable access to water, equitable access to land rights, access to sanitation, capacity development, participation and equity in decision making protection of the resource base from an indigenous perspective, and

resource mobilization (UN, 2011). Encouragingly, the 2012 World Water Day marked the achievement of target 7.c: halving the proportion of people without sustainable access to safe drinking water (UN, 2012). This bodes well for women because having a sustainable water source frees up time for other responsibilities, eliminates the often strenuous task of walking for water, and means that community health will improve.

Defining Integrated Water Resource Management

When considering how to combat water issues of the 21st century, an Integrated Water Resource Management (IWRM) approach has the most potential for success on all levels. This systematic process provides for “the sustainable development, allocation, and monitoring of water resources,” and was communicated at the International Conference on Water and Environment held in Dublin in 1992 (UNDP, 2006). This management tactic allows for the many roles of water, the human right, biological need, economic commodity, to be considered as well as the cultural values imbued in water (Gleick, 1998). IWRM programs are flexible and cross-sectoral (i.e., the public working with the private sector), therefore allowing for community adjustment of water resources and management. What results is a holistic approach more able to accommodate the pressures of competing water demands while synchronizing the development of land, water, and related resources (UNDP, 2006). This approach can also utilize a “backcasting” experiment, wherein stakeholders determine what kind of water future they desire, then backcast a way of achieving that vision (Gleick, 1998).

Integrated water resource management intends to be a mechanism of sustainable use. Sustainable water use can be defined as “ensuring that the needs of the present are

met without compromising the ability of future generations to meet their own needs” (Gleick, 1998). Some criteria for sustainable water planning are: a basic water requirement will be guaranteed to all humans to maintain human health, a basic water requirement will be guaranteed to restore and maintain the health of ecosystems, water quality will be maintained to meet certain minimum standards, human actions will not impair the long-term renewability of freshwater stocks and flows, water planning and decision making will be democratic (for more detail, see Gleick, 1998).

International organizations, policy makers, government and analysts have developed a list of principles to “guide the setting of priorities, policy making, and elaboration of specific initiatives in IWRM” (UNDP, 2006). They are:

1. Water should be treated as a social, environmental, and economic good (note, the author placed economic good last).

Water is necessary for existence as well as vital for the health of the planet. Freshwater, because of scarcity, is an extremely valuable economic good resulting in high levels of competition. Currently, water supply services as well as water and sanitation infrastructure are economic activities. Perhaps, at some future date, this will change. Until then, water use and sanitation within the household realm should become factors that are recognized when assessing economic values of water. These domestic responsibilities tend to fall into the category of women’s work despite women generally having no rights in terms of land or water. An additional key point is that development of a water source has the potential to negatively affect the livelihoods of women, and

eventually their children. Price, for example, may limit the number of individuals accessing the water. Women need to have a say in determining the price of water since it is often their responsibility to pay and they generally lack control over funds.

While considering pricing for human consumption and use, understanding the amount of water required locally to maintain the health of the ecosystem also needs to be established. While historically in many parts of the world a river reaching the sea was seen as a waste, humans are beginning to understand that they should not completely deplete a freshwater resource for their own gain. Recognizing the interconnectedness of all systems leads to the acknowledgment that over-taxing a river, for instance, will have deleterious long-term environmental consequences that far outweigh the short-term gain.

2. Water policies should focus on the management of water as a whole and not just on the provision of water.

Coordination between governmental leaders as well as local stakeholders is vital for water management. If both the government and local communities agree that the private sector is best suited for water management, then it is of great importance that oversight, regulation, and monitoring responsibilities be established at the highest and lowest levels. The government should be responsible for making sure that all citizens have access to clean, reliable water for in truth, “Companies solely interested in making a profit will not be concerned about low-income households, domestic water users, and those who use water sources and water catchments for their basic necessities of life” (UNDP, 2006). Women in underserved households would continue to bear the heavy and

time-consuming burden of providing water for their families. If a privatization route is taken then capacity-building of local communities needs to be expanded with special attention given to guaranteeing equal benefits for men and women.

3. Governments should facilitate and enable the sustainable development of water resources by the provision of integrated water policies and regulatory frameworks.

Despite technological advancements and scientific understandings concerning our planet's processes and systems, a holistic perspective regarding the interconnectedness of all systems is lacking in the mainstream. Integrated water policies are holistic and allow for the recognition that nothing can happen in a vacuum; extracting and utilizing water influences the availability, quantity, and quality in other water sectors. Changes can result in the social realm that are different for men, women, and between households, statuses and ages. Governments need to encourage this more sustainable approach

4. Water resources should be managed at the lowest appropriate level.

When all individuals with a vested interest in the management of a water resource are empowered to participate democratically, the management program is more likely to be sustainable, equitable, and successful overall. Evidence of this can be seen in Cochabamba where, six years after the protests and Olivera's group the Coordinadora took control of the water source, access has improved and the rates have only gone up a

small amount (Chavez, 2006). Women are especially capable of lending vital information and knowledge to the planning and practice of water management because of their traditional responsibilities. At this lower level, full support by members of society is necessary and this public investment can manifest in boards that have strong ties to the community. In particular, female-headed households generally have lower power levels than male-headed households and specific effort for their inclusion and empowerment should be implemented.

5. Women should be recognized as central to the provision, management, and safeguarding of water.

Because of their experience, women have an understanding of water that is generally unparalleled. Incorporating them into the more central role of decision-making aspects of water is extremely important. The skills acquired by women can be of particular effectiveness and their knowledge can be essential to efficient water management at higher levels as well. Additionally, pollution control and improvement of water quality should be of high importance for the benefit of women who are the domestic water collectors.

Source: UN Development Program, 2006

Extensive knowledge regarding the specific site is necessary to properly execute and maintain a water resources program aimed at promoting the health and welfare of individuals. These characteristics, such as religions practiced in the regions, governmental structures, gender expectations, poverty statistics, education access, etc. are

all integral components of IWRM's sustainable functioning. Furthermore, "cohesion among the different institutions, policy, and regulatory frameworks" (UNDP, 2006) must be established in order to properly mold the IWRM to the location. Much as a clock will not operate if a cog is misaligned with the rest of the system, so too will IWRM fail if it does not establish ties to the community and provide benefits for people as well as the ecosystem in which the society exists.

Gender Integrated & Integrated Water Resource Management Case Study
Samari-Nkwanta, Ghana

This case study is the first of two that illustrate the application of a gender mainstreaming and IWRM approach in a rural community. A brief and generalized explanation of Ghana will be given for context followed by the details of the case study. The information used mostly heavily in this section was compiled by individuals involved in the case study who are therefore equipped to lend vital details regarding this example.

The Republic of Ghana, on the western portion of the African continent, straddles the Prime Meridian and the Atlantic Ocean rests to the south. This country is bounded by Burkina Faso, Togo, and Cote d'Ivoire, and for comparison's sake, is slightly smaller than the state of Oregon. Generally tropical, the climate in the northern region of Ghana is hot and dry, the southwest is hot and humid, and the southeast along the coast is dry comparatively. Mount Afadjato is the highest elevation and stands at 885 meters. Ghana's physical terrain is mostly low plains with some dissecting plateaus in the south-central region. Their total renewable water resources are around 53 cubic kilometers. Ghanaians use 44 cubic meters per year of freshwater (CIA, 2011).

Ghana, formed in 1957, was the first country on the continent under colonial rule to gain its independence and is a constitutional democracy. Roughly 25 million people live in Ghana. They have a birthrate of 26.99 births/1,000 population, and an infant mortality rate of 47.26 deaths/ 1,000 live births. There are several different ethnic groups,

the most prevalent being Akan constituting 45.3% of residents. Asante is the most widely used language (14.8%), but English is also an official language. Christianity accounts for 68.8% of religious affiliation, followed by Islam (15.9%), and traditional (8.5%). Just over 6% of Ghanaians claim no religious ties. The literacy rate stands at 57.9% of the population, over 66% of men and just under 50% of women (CIA, 2011).

Fifty-six percent of the labor force is engaged in agriculture, 29% in services and 15% in industry. Twenty-eight percent of Ghanaians live below the poverty line. The country's GDP is \$74.77 billion, which per capita translates to \$3,100 (CIA, 2011). In traditional society, women had significant power and control over their own income and property without male supervision. Matrilineal in structure, women within the Akan tribe held positions of status within the kingdom and lineage affairs. However, these powers were limited to what were defined as women's affairs. With the influences of colonialism and modernization, women's roles were drastically transformed in multifaceted ways. Despite this, women have maintained and increased trading opportunities and through business opportunities may accumulate great wealth. Politically and in terms of education, men are still more extensively represented (Schwimmer, 2011). Mirroring the global tendency, Ghanaian women often have extensive responsibilities and have less access to income earning opportunities, education, and health care (Boadu, 1998).

The city of Samari-Nkwanta is located about 370 kilometers from the capital Accra and has about 650 inhabitants. Traditionally in this country, water gathering, using, and management of water resources fall into the domestic category, and are thus left up to the women and children. Women and children, who must travel far to find water when the water resources disappear in the dry season, can spend several hours on a single trip,

and may even be required to make the journey again the same day for their household needs (Sam, 2006).

Another important facet of the domestic realm is that of hygiene. Women play a central role when it comes to changes in the family's hygienic behavior. In general, rural women make sure children are clean as well as unsanitary products are disposed of properly. Mothers have the ability to teach their children better hygienic behavior and can encourage their households to have safer practices. The everyday dealings with these responsibilities result in women gaining a particular and important understanding of hygiene and water in their community. Tensions may arise because women, the primary collectors and users, are not given a chance to communicate their concerns regarding the overall management of water. Due to the patriarchal structure of their community, women are often neglected or under-employed in the drafting of crafting water and sanitation policies in spite of extensive knowledge and experience (Sam, 2006).

Located in a rural area, 60% of this community's workforce engages in farming. Men work roughly 12 hours per day while women work a daily average of 19 hours. Previously, when the dry season arrived in Samari-Nkwanta and the local water source became unusable, women and young girls were forced to travel three to four hours, perhaps multiple times a day, to gather firewood and water for their families, often through dangerous terrain. The location of their primary water source was referred to as "Aberwa nnko," which translates roughly to "old women cannot go there." For many girls, this travel also limits their school attendance (Sam, 2006).

For several decades, the members of the community had struggled with outbreaks of guinea worm infestations. Because there are few wells, the people rely on ponds and

water holes; as a result experiences with guinea worm are widespread in rural Ghana. Having to rely on ponds and water holes because wells are few, experiences with guinea worm are most widespread in rural Ghana. The infestation can be extremely painful and has the potential to cause permanent disability. Because of this, the Samari-Nkwanta Water and Sanitation Project (SWSP) was created in 1992 in efforts to respond to health concerns and the lack of clean, safe drinking water (Sam, 2006). See Appendix D for the lifecycle of the guinea worm.

The Ejura-Sekyedumasi District, where Samari-Nkwanta is located, is home to a World Vision Ghana (WVG) program. World Vision, an international Christian humanitarian organization focuses on building a better world for children in all countries (WV, 2012). Following a debilitating drought in 1983-83, the Ghana Water Company Limited and the Ghana Water Resource and Research Institute were charged to do a survey of the regions where WVG operated. The results, showing that the lack of potable water was an immense limitation to WVG's plans to develop rural areas, instigated the creation of the Ghana Rural Water Project (GRWP). Although the initial approach emphasized technology and a designated end-goal, the GRWP began to develop into more of a community-driven, citizen-centered, and demand-motivated perspective. An integral aspect of this program is the recognition of the interplay between gender, poverty, and water resource management (Sam, 2006).

Because of the GRWP initiative, SWSP was able to supply the village of Samari-Nkwanta with two boreholes fitted with hand-pumps, two public Ventilated Improved Pit latrines (VIP), and a urinal. These efforts met one main obstacle, the roots of which are traced to the religious traditions of this village. Islamic traditions dictated very specific

gender role expectations which discourage women becoming participants in these realms of society. Moreover, these expectations were self-perpetuating. The women, assuming the role of water facilitator was a male role and therefore inappropriate for women to perform, would discourage others from pursuing such activities. Working to change this, the WVG actively incorporated female community members in the decision making process and the physical act of drilling wells. These activities allowed for individuals to reevaluate their understandings of gender roles and adjust their perspectives regarding the valuable contributions women can make (Sam, 2006).

Gender sensitivity concerning the differences in men's and women's experience and awareness played an important role in the initial training because, for instance, consciousness of women's previous contributions were highlighted. Awareness within the broader community of men's and women's differing experiences and perspectives was fostered as well. Promotion of such perceptions is cited as one of the key factors for success. Another factor was the effort to represent and train both men and women equally in the Water and Sanitation (WATSAN) Committee. A final key success point relates to the equal division of responsibility regarding the system's maintenance and operation between men and women. Organizers ensured that the system's functionality relied on all who have a vested interest, and both men and women were important contributors (Sam, 2006).

Through gender mainstreaming, the community saw a shift from "male-dominance to a more equitable sharing of power and decision-making" (Sam, 2006). Five of the nineteen hours women had to work previously were suddenly freed up for more productive responsibilities, such as farming, household activities, etc. The community

consensus was extremely positive, emphasizing a high degree of community-wide participation. The citizens of Samari-Nkwanta noticed changes within the community and identified gender integration into the water management program as being responsible for the resulting significant gender integration (Sam, 2006).

The time girls spent retrieving water for their families over their education was suddenly greatly reduced. After the initiative, the number of girls in primary school rose to 53% of attendees, compared to 43% in 1995 (Sam, 2006). These educational prospects can provide access to opportunities that may be present otherwise. Further, studies find strong correlation between a higher degree of education for women and lower birth rates (Coleman, 2004).

There are additional ripples throughout the rest of the village. Farming practices have been much improved by the increased reliability of the water source. A man from this village stated that his marriage had improved in terms of becoming more cordial and there was additional time for other economic opportunities. The catalyzing issue, guinea worm, has been completely eradicated within this community. Consuming water that has been filtered as well as gaining access to water that is not infested like the open bodies of water contributed to the decline and disappearance. Greater efficiency of food production also entails higher wages and the potential to decrease the poverty rate in the area (Sam, 2006).

This participatory and gender sensitive approach resulted in the recognition of women's knowledge and experience, as well as increased visibility of women's roles equal to the men's roles in the WATSAN Committee. Additionally, construction of local latrine rose while pump maintenance volunteers (PMVs), once trained, were extremely

beneficial. Local artisans sprang up within the community. And, due to the widespread action and input, both men and women felt a deep sense of ownership over their water and sanitation resources (Sam, 2006).

This program is an efficient blend of community-involvement and Ghanaian governmental action. Instead of the top-down approach that privatization encourages, the Ghanaian government understood that a site-specific approach, one that acknowledges the cultural context, religious affiliations and traditions, as well as the unique environmental characteristics of this region, was vital to a successful integrated water resource management program. The WVG worked with the local community to create an atmosphere of cooperation and coordination, developing a more self-sustaining community that was healthier, more respectful, and has better opportunities for women and girls (Sam, 2006).

Gender Integrated & Integrated Water Resource Management Case Study
Rakin, Jordan

Rakin, Jordan provides us with another picture of how gender mainstreaming and IWRM affect a community once initiated. For context, a succinct illustration of Jordan is required which will be followed by the case study specifics. The majority of the case study information was compiled by individuals directly involved with the program in Jordan.

The Hashemite Kingdom of Jordan is bounded by Saudi Arabia to the east, Iraq to the northeast, Syria to the north, and Israel to the west. Most of Jordan is an arid desert with the western portion of this country experiencing a rainy season from November to April. The east is mostly desert plateau while in the west are predominately highlands. The banks of the Jordan River are separated by the Great Rift Valley. Jabal Umm ad Dami, the highest elevation in Jordan, is 1,854 meters. The Dead Sea is -408 meters below sea level (CIA, 2012).

Within this constitutional monarchy live 6.51 million people, 98% of whom are Arab. Ninety-two percent of Jordanians are Sunni Muslim, with 6% associated with Christianity. Arabic is the official language, but English is widely understood among the upper and middle classes. Eighty-nine percent of residents are literate, which breaks down into just over 95% of men and just below 85% of women. The overall unemployment rate is 12.3%. Total youth (15-24 years of age) unemployment stands at 27% (for male's this is 27% and 45.9% for women) (CIA, 2012).

Despite western misconceptions regarding the role of women in Muslim society, the Quran explicitly states that men and women are equal in the eyes of Allah. It also explains that daughters need to be educated just as sons, asserts that women have the right to refuse a husband, that women have the right to own and inherit property, forbids female infanticide, and gives divorced women rights. Though polygamy is permitted, it is practiced much less often than is imagined by westerners. The negative and oppressive traditions that we associate with Islam often come from local culture and norms that have developed in specific social contexts. The Prophet Muhammad's female relatives were of particular importance in early Muslim communities because they knew his practices. Women have also been religious leaders throughout Jordanian history. This political and cultural clout is beginning to become apparent in modern society. The number of women holding office in Jordanian parliament is rising, as well as in Turkey, Egypt, Morocco, and Lebanon (PBS, 2002). Queen Rania Al Abdullah's personal website emphasizes her dedication to equality and the right to education for all (Al Abdullah, 2011).

One of the world's ten most water-scarce countries (World Water Development Report, 2003) Jordan is in perpetual need of sustainable water management. The freshwater withdrawal in total is 1.01 cubic kilometers per year, 75% of that for agriculture alone. Per capita use is 177 cubic meters per year (CIA, 2012). This amount is considered to be acute water scarcity and means these "people are suffering from hydrological poverty" (Brown, 2008). And due to swells of refugee populations from this region's military conflicts and upheavals throughout the last century, this small amount of water has been strained even further (Wardam, 2011).

As in most of the world, those who suffer most from a lack of water are the poor and rural inhabitants. A huge component of Jordanian water policy is the effort to mobilize and energize a community-based water management approach. Such an approach is gaining traction, as experiences of successful projects spread across Jordan. These demonstrations illustrate this community-level approach is working out to be an optimal use of water resources. Emphasizing gender mainstreaming tactics, the example of Rakin Village was a joint activity between the local women's group with funding from the Small Grants Program of the Global Environment Facility (Wardam, 2011).

Rakin Village, located in the south of Jordan, is situated in the middle of a village cluster. The population of 5,500 is designated as poor. This village receives 250-300 mm of rainfall annually which intensifies pressures on the household. The people of Rakin rely heavily on employment offered by the army and government (Wardam, 2011). Agriculture in Jordan includes citrus, tomatoes, cucumbers, olives, and strawberries (Bureau of Near Eastern Affairs, 2011).

In 1991, the Rakin Women's Society was established. A charitable assembly, these women set out to improve the social, economic, cultural and health conditions of other rural women in this area of Jordan. This group was tasked with confronting the issue of lost productive lands. With a slope of up to 23-30% in some areas, there are high rates of erosion. Additional pressures, such as human stress and mismanagement of the land, also assisted in the degradation of the land. Due to overgrazing by the 15,000 sheep and goats, much of the rainfall is lost to run-off (Wardam, 2011). The numerous challenges that these female leaders accepted illustrates their passion and desire to become involved in the community's decision-making and planning processes.

Similarly to the other case studies, water collection and management falls into the domestic duties of women. The majority of the households depend on subsistence cultivation for their survival. Water is the key ingredient for the food security that women are responsible for establishing. Not only were there insufficient water resources for women to maintain their households, but the livestock and irrigation needs often went unfulfilled. Every two weeks, water was pumped to Rakin Village for only six hours. This water was purchased at a very high cost and individuals must pay for the entire amount of water brought to them by tankers, even though households have few options for storing this water (Wardam, 2011).

The first grant the Rakin Women's Society received was from the Global Environment Facility. This allowed for families to install water cisterns and water harvesting capabilities within households. Following this successful endeavor, a number of individuals applied for similar loans from the Society's board. Based on a 66% repayment system, this program was so successful that the first phase's financial resources were depleted (Wardam, 2011).

In 1998, phase two was implemented through the Global Environment Facility (GEF) Small Grants program through the UNDP with the additional technical support made by the Women's Society from the GTZ Watershed Management Project. This was different from phase one because the program required full repayment to establish a revolving fund. The new requirement allowed for the program to accommodate the 150 households who applied for the loans. A steering committee was given the responsibility of organizing, which included training activities, supervising the loans and repayments,

and selecting specific recipients in accordance with the established criteria (Wardam, 2011).

The key to this program's sustainability was the 100% repayment obligation. As a result, households had a more reliable and safe source of easily accessible clean water. For women, this meant a lessening of stresses in their daily lives. Involving women in the loan program gave these individuals leadership experience as well as financial skills which they lacked previously and assisted in executing decision-making skills on a higher level. The Rakin Women's Society benefited women in the village by giving them more power within the household and in the community. Furthermore, poorer families paid much lower costs than water from the tankers, even when consumption rates rose within these households (Wardam, 2011).

The gender mainstreaming tactics utilized here are translatable. Women having roles in the organization means a louder voice and more power in drafting policy when previously they had immense responsibilities but lacked any influence. In addition, the projected successfully demonstrated how sustainable 100% repayment loan programs are within rural or poorer regions. This capital could then be distributed throughout a wide community. Furthermore, the high payback rate can be understood by the role women play in managing the household economy. A high degree of efficiency was exemplified in this program regarding implementation and management executed by the rural Rakin Women's Society, provided that basic support was given (Wardam, 2011).

An important aspect of this program is its immediacy. Households were able to benefit without delay and the positive results were felt throughout the community. Within this water-scarce region, securing access to a clean, reliable, and reasonably priced water

source resonates positively throughout the rest of the society. This program went beyond supplying water within the Rakin Village. Bee-keeping activities as well as solar cell installations became possible as the community became more productive and economically viable. Such diversification of income-generation opportunities can assist in sustaining the loan system's results (Wardam, 2011).

As climate change increases the prevalence of water-scarce regions in the world, such community-based projects will become more and more essential. Conservation of a water resource must be widespread, yet site specific. Efforts by the community need to be inventive and must encourage further participation and empowerment.

Conclusion

Proposing a gender mainstreaming and integrated water resource management approach necessitates consideration of scale. Both Rakin Village and Samari-Nkwanta have relatively small populations. For this approach to function on a larger scale there must be adaptations to create a sustainable gender mainstreaming and IWRM that provides for many more individuals. Cohesion of policies and regulations, as well as cooperation between the government, institutions, and local organizations, are vital to the success of this approach working for a larger population. Some of these difficulties might include: maintaining a gender sensitizing perspective, effectively continuing a fully participatory approach, and establishing a sense of ownership for all members of a larger community.

Public-Private Partnerships

A possibility that may confront issues of scale is that of hybridization. Mixing privatization and local/private control is a logical next step. One such approach is known as Public-Private Partnerships (PPP). PPP are defined as, “the combination of a public need with private capability and resources to create a market opportunity through which the public need is met and a profit is made” (Heilman, Johnston, 1992). Public utilities remain the principal service provider in developing countries. However, the private sector has the potential to provide incentive for public utilities to reform their services and more

“efficiently deliver services that are financially sustainable, transparent in terms of associated delivery costs, and linked to appropriate accountability mechanisms” (Anderson, Janssens, 2011).

An example of a successful PPP is the Central American Hand-washing Initiative that took place between 1996 and 1999. This program was started by the United States Agency for International Development (USAID) through two of its own projects in an effort to reduce morbidity and mortality among children less than five years of age. The Initiative was a partnership between ministries of health and education, media companies, UNICEF, and nongovernmental organizations (World Bank, 2001). This program resulted in improvements of hand-washing behavior and decreases in diarrheal instances (Bateman, et. al., 2001). Many of the more recent water PPP, such as ones in Ghana, Algeria, South Africa, and Armenia, are 3-5 year contracts wherein ownership and asset management remains in public hands and the private sector contributes expertise regarding efficiency, and capacity building (Anderson, Janssens, 2011).

This technique has seen a decline in the last decade for several reasons. Probably the most influential reason for the decrease in the number of PPP projects was the results from the riskier contracts that were signed in Latin America and Africa in particular during the 1990s. Many contracts were terminated which meant significant investment losses for the private sector. Consequently, stakeholders perceive PPP as only one option and if they decide to move forward with this choice, they do so extremely cautiously. Despite this, PPPs are still being used widely but the characteristics of these plans are changing. The number of PPPs is generally increasing worldwide and the number of

people being served by PPPs is rising. However, the amount of money invested by stakeholders is decreasing (Anderson, Janssens, 2011).

The two most apparent weaknesses of PPP in the research encountered for this thesis are the general lack of context-specific considerations and an absence of regard for the role of women in water development and management. More recently, PPP have adopted more innovative and contextually based programs. For example, a PPP contract in Senegal included a more sophisticated approach to adapting to the local political context (Anderson, Janssens, 2011). However, there is still much to do.

If the program is more suited for the location, taking into consideration demographics, religion, gender expectations, etc. then the likelihood of success would increase as would private involvement. Recognition of the significant connection between women and water as well as the copious benefits of a gender mainstreaming approach has benefits that resonate throughout the community. Ignoring the integral role of women in resource management can deflate the sails of a program looking to provide for and engage a population because the female section of the population's extensive experience, knowledge, and investment is being disregarded.

Despite the failings of PPP thus far, there is still potential for improvement of this technique. Heightened regulation and oversight may be vital for the avoidance of exploitation of citizens by a private company. There is a rising need to institute regulatory mechanisms to examine compliance. The criteria for successful regulation include: clarity in the distribution of roles, autonomy, accountability, participation, transparency, and predictability (Anderson, Janssens, 2011). Though none of these specify context or women, such components could easily be incorporated into the

regulatory criteria. Engaging women in the participatory component, for instance, would assist in shifting to a gender mainstreaming PPP.

Efficient and on-going communication at the local level is also extremely important for the functioning of a PPP. A gender mainstreaming perspective in coordination with a PPP would integrate women's voices and expertise quite seamlessly. The importance of involving local private sector communities to create longer-term sustainability is becoming clearer. Build-Operate-Transfer (BOT) have been established recently in Canada. These contracts offer a new form of the PPP wherein the private sector is given "less of a management and decision-making role but contribute technical and operational expertise on a performance-based basis." Another type of PPP, the Performance-Based contract, according to Anderson and Janssens in their document *Emerging PPP Trends in the Water and Sanitation Sector*, has the potential of ensuring that the poorer and marginalized communities also benefit from improved services (2011).

Female-Led Water Cooperatives

The need to integrate women into discussions and applications of sustainable development is one that the International Fund for Agricultural Development explores. This organization focuses on enabling rural individuals to overcome poverty and places special emphasis on women. IFAD states that "gender equality and women's empowerment are both objectives of, and instruments for, poverty reduction" (2007). One way of bringing women into the discussion is the creation of female-led cooperatives.

Jake Karlyle, in his paper *A Cooperative Economy- What Might It Look Like?* (2005), argues that it is possible to provide for a larger number of people through a cooperative system. Using some of the examples he shares as a springboard, it seems possible to establish a female-led co-op that maintains a metropolitan or densely populated area's water needs. Karlyle explains that a cooperative economy that is well-developed could pave the way for a new direction for humankind; "the challenge of integrating communities, economies, and natural environments into a sustainable system could well be mastered, if we choose to develop [this model]" (2005).

According to the International Co-operative Alliance (ICA), a cooperative is "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise" (2007). The ICA states that a cooperative method is a viable chance for rural women to become key participants in production, and thus increase their bargaining power and beginning to work themselves out of poverty (2010). Integrated water resource management programs that highlight the importance of women's contributions bring women into the social sphere, and thus, can be a crucial part of these larger cooperative endeavors.

Giving women the power to come together in a cooperative form can continue to empower them and assist in raising themselves out of poverty. In Bishnu Mohan Dash's paper *Entrepreneurship through Co-operatives: An Ideal Vehicle for Women's Sustainable Development* (2008), he explains that women play a significant role in genuinely long-term development. Dash also explores how entrepreneurship through the mechanism of a cooperative leads to economic emancipation and a reality in which

women are as important economically to the family as men. The cooperative structure has enabled many women to become agents of change and, by attaining economic status, to gain leadership experience (Khaire, 2012).

Green co-ops also hold great potential for alleviating poverty and establishing rural sustainability programs. Adopting environmentally sensitive techniques in one area, such as agriculture or textile production, can pave the way for recognizing that water too needs to be managed sustainably if such an understanding is lacking. The Korean Womenlink Consumers' Cooperative is a democratically managed council that is composed of 200 delegates elected by members of women-link (Sanyang, 2008). Womenlink actively participates in gender equality in the Republic of Korea and establishes a green consumers' cooperative to link women's entrepreneurship with demand for environmentally friendly foods being augmented. Co-Op Africa, in coordination with the International Labour Organization, investigates examples of successful cooperatives in rural settings. Women organized agricultural co-ops in particular deal with water resources and there is evidence that co-operative membership improves productivity, income, and quality of life for members and the community (Co-Op Africa, 2010). Once one begins to analyze and develop ways of producing food that are more environmentally sound and sustainable, water resource management practices are an inevitable and a necessary component.

The Women's Water Cooperative is a neighborhood project in Dar es Salaam in Tanzania that works to give women financial independence while also improving the community. This program is funded by the World Bank and seeks to provide freshwater at low cost to the impoverished district. Empowering women to become entrepreneurs

with a new outlook on life is an additional goal of this program (Schafer, 2008). There is an all-woman cooperative in the Angelo Goveya Community of Malawi that is working on a loan system to establish safe and accessible sanitation resources for the community as well as houses for families (Cooper, 2008). Better sanitary and hygienic behavior, as previously explored, is beneficial for the health of the community and also cuts down on regional water pollution. The evidence is mounting that once women have the opportunity and ability, they will pursue their goals in socially and economically constructive ways.

Challenges to Participatory Programs

A gender mainstreaming and IWRM approach, in coordination with a co-op structure, has the potential of meeting the subsistence requirements of individuals while avoiding negative environmental consequences. However, there needs to be a level of democracy in the government, or some other form of participatory, local empowerment. If both men and women feel they have no way of influencing their government, then this approach will not be a viable option. According to Freedom House's *Freedom in the World* (2011), an assessment that measures political rights and civil liberties around the world, "Global freedom suffered its fifth consecutive year of decline in 2010." This means the number of "Free" countries "fell from 89 to 87, and the number of electoral democracies dropped to 115, far below the 2005 figure of 123" (Freedom House, 2011).

The erosion of civil liberties and freedoms globally is more than just a setback for the possibility of a gender mainstreaming and IWRM approach. It has direct and potentially horrifying results for people's daily lives and may influence women's rights

and citizen's abilities to speak out against their governments (as Bolivian's did in the Cochabamba case study). An example of women's rights being infringed upon is female migrant workers in UAE, Qatar, and Kuwait are often extremely vulnerable to abuse. Because of language barriers, lack of education regarding their rights, and inadequate protection under national labor laws, these migrant workers may face slavery-like conditions under private employers (Kelly, 2008). These issues connect to the power and input individuals have in their local and national governments. A gender mainstreaming and IWRM approach is intrinsically more democratic and participatory and may come up against these barriers on a national level. However, when a system relating to the everyday existence of constituents is disempowering, both men and women are entitled to stand up for their rights. The case study of Cochabamba, Bolivia, provides us with an example of community members doing just that: when the private water companies did not provide adequate services, people in Cochabamba asserted their right to water and "took back" the control over the distribution of this critical resource.

There are further impediments to the participatory process essential to the gender mainstreaming and IWRM approach. These five challenges are outlined in the UN Development Program's 2006 *Resource Guide: Mainstreaming Gender in Water Management*. The first of these hurdles is the need for the organization to develop gender-sensitizing skills that would help to identify and overcome any hurdles to full participation based on gender. This entails experience in regards to water resource management and an ability to handle conflict if it should emerge between men and women, or within the community.

A second challenge to the participatory process is that of time. These approaches

can take a long period of time to come to fruition. A gender-sensitizing program within a community that has very strict traditional gender norms and expectations will have to calmly respond to tensions and reactions. It will have to delicately assert the positive characteristics of gender equality without appearing offensively presumptive about what is best for that specific community. The third challenge is that of providing support during the establishing time. The organization will need to anticipate and provide for issues regarding expansion and maintenance of improved water infrastructure (UNDP, 2006).

The fourth challenge is maintaining a level of flexibility and adaptability. A participatory process requires context-specific tools to achieve a level of flexibility that can easily and efficiently accommodate changes within the community. While exploring gender issues, both women and men need a level of support by the organization that is encouraging the gender-sensitizing program. It would be irresponsible for this group to not remain available and accessible when questions and responses arise. The fifth and final challenge is that of follow-up. An organization that hopes to instigate a participatory process must be prepared to respond to the issues that may arise over time. Analysis of the initiation process, the tactics that proved successful, and the overall results within the community should be included in the follow-up. Such investigation can show the organization how effective that program was as well as provide information regarding how to make a similar program work in a different location.

Though these barriers remain, the benefits often make the difficulties worth the effort. Two examples of “success stories” have been presented in this thesis. Samari-Nkwanta experienced an increase in access to water, an improvement of health and

hygiene, a more equitable sharing of power within the community, an increase in the number of hours women were able to spend on other duties and activities, and a higher level of girls attending school (Sam, 2006). In Rakin Village, a sustainable source of clean water was secured, the amount of money households had to spend on attaining water was reduced, women in this community were empowered, through leadership activities and the boosted capacity development and knowledge acquisition by women (i.e. women's ability to achieve goals on their own) (Wardam, 2011). Though neither of these case studies fall into the category of public-private partnerships, there is potential to infuse the gender mainstreaming and IWRM tactics with involvement of private investors. Further research is necessary to shape a model for such hybridization.

Future Research

Additional research is required to analyze the longer-term changes of the Jordanian and Ghanaian case studies. Because the both programs were instituted in small villages, resources available at this time are limited. It is necessary to acknowledge the inadequacies of such limited research and be aware of the constraints when drawing conclusions. As additional communities adopt these practices, further information regarding the initiation, application, and follow-up will become available.

Comparison of other available case studies would be helpful in establishing criteria for gender mainstreaming and integrated water resource management. Specific components of importance are the gender sensitizing training, familiarity with local traditions and gender expectations, setting aside half of seats for women only, and validating women's expertise by giving them a sense of ownership, with men, over a

water source. These tactics can then be used in the realm of privatization, since that will most likely remain the mainstream approach to water resource management. This fusion could empower women and establish a sustainable water source for communities while maintaining the possible efficiencies of privatization programs. Moreover, it is important to do a follow-up analysis of Cochabamba and Manila to see how these urban areas are coping after their respective privatization efforts. It is also prudent to further investigate the potentials of female-led cooperatives and ascertain how such organizations can bring about positive changes in a variety of situations and countries. Further research for this author will also include developing effective and sustainable IWRM through the possible avenue of PPP that include context analysis and adaptation, as well as gender mainstreaming. The topic of this thesis could blossom into an entire dissertation and while the wealth of information regarding women and water is already expansive it continues to grow and evolve.

Observations

The values of integrated water resource management allow for it to instigate a paradigm shift regarding the role of women in society and how water is managed. The crux of IWRM is balancing the goal of economic gain with social welfare and environmental safeguarding. Though water is becoming more of an economic good, concern and interest for its commodified position should not take precedence over its role as a human need and right. Additionally, seeing water solely in economic terms marginalizes women who traditionally use water in the domestic realm (IFAD, 2009).

Privatization's two main faults for the argument of this thesis are that gender

difference and women's roles are ignored, and that the social and physical context of an area goes un-acknowledged. As with any entity that has some level of experience, the corporation may assume it knows what is best for a country because of its understanding and expertise regarding industrialized societies. The corporation will often follow the traditional formula, despite the unique characteristics of an area, and may ignore criticisms and suggestions from other organizations or groups. Of course, not every "uncivilized" country is the same and formulas do not work in all circumstances. Consequently, to view a country solely as an opportunity to exploit, as Aguas del Tunari saw Cochabamba, is to ignore the people's rights and diminish their individual humanity.

Too often in our industrial world does such a necessity for all humans, animals, and ecosystems take a back seat to profit-driven practices and programs. Too often are the needs of humans or preservation of the environment deemed detriments to profits and economic growth. The UN does conclude that water is an economic good, but categorizing it that way does not give license to disregard or compromise the sustainability of environmental systems or the livelihoods of people (Global Water Partnership, 2000).

Gender equality is essential for the healthy functioning of society, for it alters the socio-economic well-being of all individuals (ICA, 2010). If women account for the majority of the world's poorest people, equality is a key factor for their recovery and empowerment. Equality would result in opportunities for societies as a whole to begin recovering from globalization's negative effects and other examples of large-scale economic disenfranchisement (ICA, 2010). Clean freshwater is a vital component of a healthy functioning Planet Earth for both humans and other life forms.

The discipline of geography teaches individuals to seek out the links and connections of all issues, for nothing occurs disparate from anything else. As we venture into the 21st century, we the global community need to highlight and investigate these connections if we intend for our children to exist healthily, contentedly, and with the ability for both men and women to quench their thirst. Though the actual weight of water will remain the same, the number of women bearing that weight over a great distance can be diminished, and in doing so, we can pursue a resource management approach that bolsters the human and environmental need for water.

Additional Resources

Women for Water Partnership (WfWP) is a multi-stakeholder partnership and platform officially launched in 2004. They focus on water supply, sanitation, and hygiene.

www.womenforwater.org

The Gender, Science, and Technology Gateway provides information for policy makers, researchers, and NGOs. They focus on gender equality to promote sustainable and equitable science and technology for development.

<http://gstgateway.wigsat.org/TA/NOSnrmcases.shtml>

The United Nations Population Fund is an international development agency interested in the rights of women, men, and children. They promote equal opportunity and a healthy life. The PDF of their publication *Climate Connections, Women at the Forefront* is located at:

http://www.unfpa.org/webdav/site/global/shared/documents/publications/2009/climateconnections_1_overview.pdf

The website Gender and Water is a tremendous resource if you are interested in reading other case studies. Their website is:

<http://www.genderandwater.org/>

The Women's Environment and Development Organization (WEDO) promotes and protects human rights, gender equality, and the integrity of the environment. For further information explore their website:

<http://www.wedo.org/>

The Fifth World's Women's Conference is a pretty inspiring group of women from around the world. Their website has fascinating videos and relevant information.

<http://5wcw.org/>

The Women's Network for a Sustainable Future is an organization that coordinates summits in different countries. This website also has some pretty engrossing material.

<http://www.wnsf.org/>

Water for People is an organization that aims to maximize people's potential to meet their own development challenges. Explore their website at:

<http://www.waterforpeople.org/>

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APPENDIX A: MAP OF THE PHILIPPINES



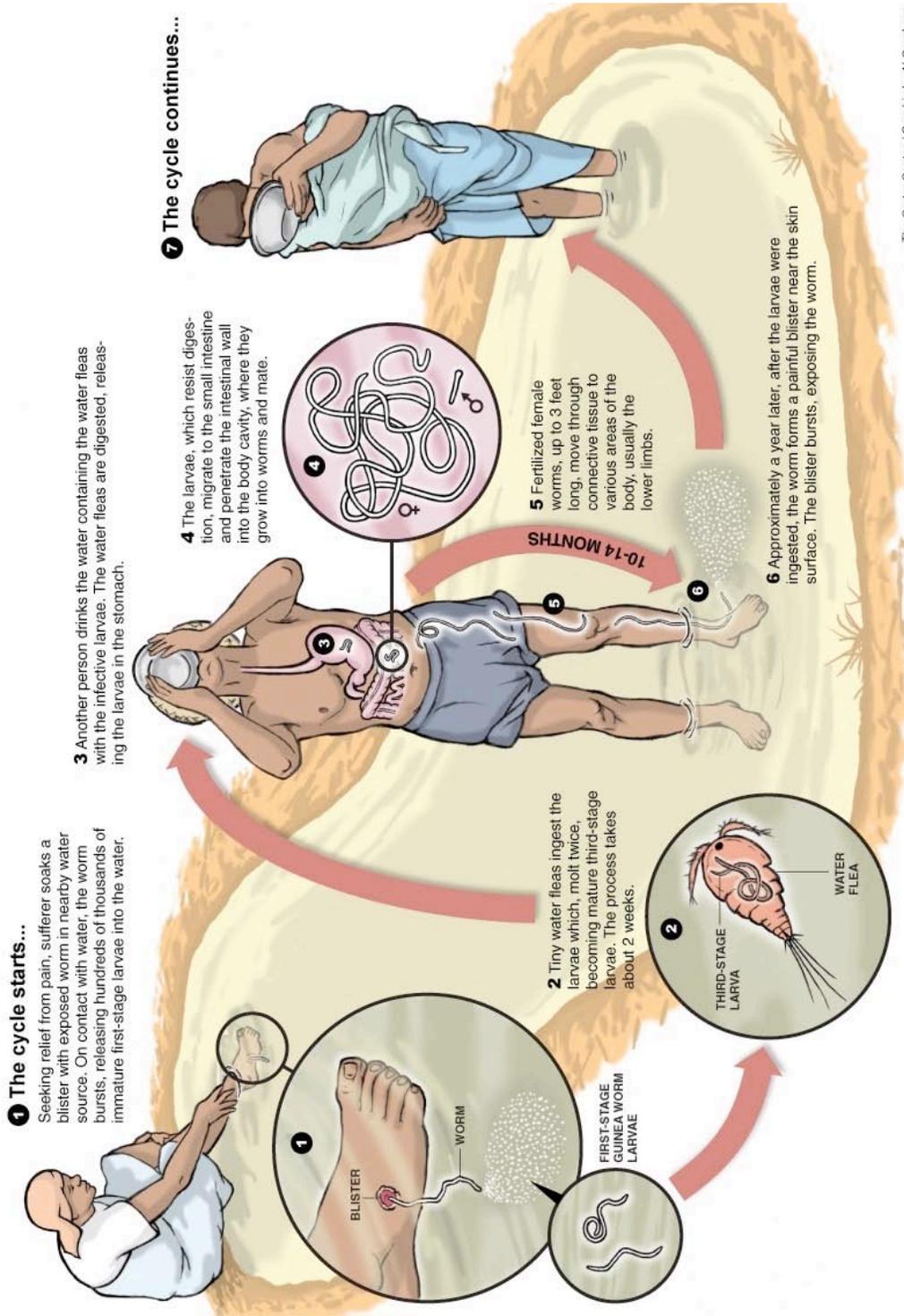
APPENDIX C: MAP OF GHANA



APPENDIX D: LIFECYCLE OF GUINEA WORM DISEASE

Source: The Carter Center

The Life Cycle of Guinea Worm Disease



The Carter Center / Graphic by AI Granberg

APPENDIX E: MAP OF JORDAN

