

# Water Crisis and Food Sovereignty from a Gender Perspective

## Introduction

Over the past two generations, irrigation-intensive agriculture has been widely promoted as the solution to food security challenges faced by the developing world. While irrigation-intensive agriculture has helped in some contexts, it looks less feasible as a solution when examined from the perspective of the growing water crisis. In fact, such intensive agriculture, with its close link to the global trade regime, aggravates the water crisis. Poor women bear the brunt of the water crisis, particularly in the context of rural agriculture. A gender analytic approach to the water crisis demonstrates the importance of rain-fed agriculture to sustaining food sovereignty.<sup>1</sup>

## Background

The world population is expected to grow by almost 2.9 billion by 2050. Over 90 percent of population growth is expected to occur in poor regions in developing countries, and particularly among rural communities that depend on subsistence agriculture for meeting their livelihood needs. According to international water policy experts, unless drastic changes are made in how we use and manage our water, there will not be enough water to meet the food, fiber and fuel needs of the world's population.<sup>2</sup>

Today, more than 1.2 billion people do not have access to safe drinking water, and almost 40 percent do not have access to water to meet their daily sanitation needs. To a significant degree, this water access deficit is a consequence of current water-related policies and practices, particularly those resulting in dammed or diverted rivers as well as polluted and over-used surface water. Worldwide, most aquifers are depleted, and in many areas, the land has become saline or water logged.

Both in rural and urban areas, women are most directly involved in coping with and responding to the water crisis. A recent United Nations survey carried out in 177 countries reported that women spend an estimated 40 billion hours collecting water.<sup>3</sup> The time spent "collecting water from distant points has incapacitated women's efforts to engage in more relevant activities including child care and productive work."<sup>4</sup>

Social and cultural norms influence the gender division of labor in households. In almost all cultures, tasks such as looking after children, caring for the sick and elderly, and preparing food are carried out by women. In developing countries they have two additional tasks—those of collecting water and firewood. Rural women collect and carry water from long distances to meet their most basic needs and to care for life. "In Africa, women do 90 percent of the work gathering water and wood, for the household and for food preparation."<sup>5</sup>

Women are not only careful users of water in domestic and farm-based production but also care-takers of water sources, custodi-

ans of water-related knowledge, and well versed in techniques for storage and reuse.

A gendered analysis of the water crisis must extend not only to domestic water supply and sanitation but also to agriculture and food production and processing, which use more than three quarters of all the water withdrawn in the world. As a recent study of women and agriculture notes:

"Women are responsible for over half the world's food production and are involved in home farm production as well as waged workers in commercial agriculture. In developing countries, rural women produce between 60-80 percent of the food and are also the main producers of the world's staple crops (such as rice, wheat, maize), which provide up to 90 percent of the rural poor's intake. Women are even more dominant in the production of legumes and vegetables in small plots, and they also raise poultry and small animals and provide most of the labor for post-harvest activities such as storage, handling and processing of grains. The FAO provides figures indicating that women provide up to 90 percent of labor for rice cultivation in Southeast Asia and produce as much as 80 percent of basic foodstuffs for household consumption and for sale in sub-Saharan Africa."<sup>6</sup>

## Irrigation-intensive agriculture, trade and food sovereignty

Most developing country policies promote export-oriented agriculture and cultivation of high-yielding varieties that require extensive use of chemical fertilizers and pesticides. To enable better absorption of fertilizer nutrients, such agriculture requires intensive irrigation, often using water volume beyond the carrying capacity of the watershed. Such water is often brought from outside the watershed, through the construction of mega-dams, displacing several thousand people in the submergence area (as in Three Gorges project in China). At other times, it is obtained through tubewells that mine aquifers, drying up traditionally dug wells, and threatening the livelihoods of small irrigators and subsistence farmers, who often have to resort to seasonal migration to make ends meet. Intensive water extraction negatively affects potters, weavers, fishers, and herders who depend on lo-

cal water sources as well as on local weeds and reeds for meeting their livelihood needs. Many of them migrate in search of employment opportunities and become part of the urban poor. Intensive-irrigation agriculture also increases the workload of women and girls who have the primary responsibility for collecting water for domestic use.

Several studies have recorded the direct negative impact of intensive-irrigation practices (which need to be distinguished from limited and well-managed irrigation) on water quality. These degradations include salinity ingress (seepage of sea water inland through underground water flows) in coastal aquifers caused by over extraction of groundwater, higher field erosion rates and thus higher sediment levels in receiving waters, and excessive water application leading to greater drainage flows and faster runoff, often carrying high chemical residues. Water quantity declines because of over-use of water resources leads to reduced flows in rivers and lakes and decreased water availability for other water users, including the maintenance of aquatic ecosystems. Withdrawals exceeding natural recharge rates of aquifers are leading to the lowering of water tables and depletion of water resources.<sup>7</sup>

Worldwide, irrigated agriculture uses 70 percent of all water withdrawn, applied on about 20 percent of cropland.<sup>8</sup> *And yet, irrigated agriculture contributes only 40 percent of total food production. Much of the irrigation is used for the production of cash crops, including non-food crops.* Also, in the past few decades, crop productivity growth in irrigated areas has either slowed or stagnated, due to factors such as land degradation.

Where water is becoming a scarce resource, basic staple crops or food crops now compete with fiber and fuel crops, as well as other cash crops, for access to water. The export agriculture sector appropriates water to the detriment of water use by subsistence farmers and family farmers or at the cost of local drinking water needs. For example, one out of two flowers bought in the United States is produced in Colombia, causing tremendous water stress among the local populations in the Bogotá Savanna where those flowers are grown.<sup>9</sup>

Irrigation itself competes with other sectors such as industry, the domestic water supply and the thermo-electric power sector, to meet current and future agricultural water needs. For example, “to feed the voracious global consumer market, China has transformed its entire economy, massively diverting water use from communities and local farming to its burgeoning industrial sector... millions of Chinese farmers have found their local wells pumped dry.”<sup>10</sup>

Given China’s centrality to the world economy, Chinese water use is an especially appropriate example. For while this water may be extracted and used in production processes locally, the end products are often consumed far away. Taking into account the end product consumption of water use, a mere 12 percent of the world’s population uses 85 percent of its water.<sup>11</sup> Today’s water crisis is exacerbated by the resource-intensive lifestyles supported by a globalized economy.

## Commercialization of water

In urban contexts, the predominant response to the global water crisis has been an increasing transnational-led privatization of water supply systems, with the claim that this will produce greater “efficiency.” However, in the rural context it may be more appropriate to talk about the *commercialization* of water that has been initiated under pressure from international financial institutions (IFIs). IFIs, along with policy think tanks, have identified water pricing as the main mechanism through which to address the rural water crisis. IFI-led water sector reforms in the past decade have included “user fees” levied on farmers for irrigation waters, for which farmers had formerly been nominally charged.

The rationale for such water pricing is to help users understand the real value of water and force them to start conserving it from sheer economic necessity. This argument particularly resonates with those who want to increase irrigation water use efficiency (currently estimated to be as low as 50 percent).

But this strategy seems likely to worsen both the water and food sovereignty crisis. This is especially so since the price that farmers receive for their agricultural commodities has not changed significantly since the global farm crisis of the 1980s, and the cost of other inputs (such as seeds and fertilizers) have also increased dramatically during the period.<sup>12</sup> Small and medium farmers who adopt commercial agricultural practices are unable to make ends meet and are pushed into a debt trap. One of the most tragic examples is from India, where according to some estimates around 25,000 farmers, overwhelmed from the “prosperous” areas that practice intensive irrigation, committed suicide between 1997 and 2005.<sup>13</sup> With a steep price being put on water, small- and even medium-sized farms in developing countries will be under greater pressure to move toward cash crops and even further away from crops that help local food sovereignty or self-sufficiency. This will also exacerbate the negative impact on both water quality and quantity.

Whether because of suicide or male migration, the crisis in agriculture, exacerbated by the water crisis, further increases the number of women-headed households and the work burden of these women. A recent UN report describes the situation of female-headed households: “Time-poverty may further increase as a result of having to shoulder the burden of running the family in addition to carrying out the gender-specific tasks... Time-poverty also reduces the time available for participation in income generation.”<sup>14</sup> When combined with resource-poverty, women’s vulnerabilities increase exponentially.

## Rain-fed agriculture, food sovereignty and water security

A larger proportion of women are involved in rain-fed agriculture than in irrigated agriculture. Nearly 75 percent of the poor in South Asia, and about 80 percent of the population in East Africa, depend on rain-fed agriculture for food sovereignty, employment and cash income, and women account for two-thirds of the economically active population there.<sup>15</sup> Currently, rain-fed systems account for more than 58 percent of the world food production; in addition, 69 percent of all the cereal area is rain-fed.<sup>16</sup>

As these figures suggest, *rain-fed agriculture is much more crucial to the realization of food sovereignty than is usually realized*. Furthermore, traditional water conservation practices such as in-situ (where it falls) rainwater harvesting, in combination with other sustainable agricultural practices, have been known to improve yields from rain-fed systems further.

While rain-fed farming systems have the potential to address the water-related agricultural crisis, resource constraints limit the productive capacity of rain-fed agriculture. Of the world's 1.1 billion farmers, 70 percent are resource-poor peasants. A large number have operational holdings in arid or semi-arid regions and practice rain-fed agriculture, and many of them are female-headed households. Second, there is the disproportionately high ratio of people to arable land in these regions. In 2002, almost 1.4 billion people were living on fragile lands (more than three-fourths of them in Africa and Asia), far beyond the carrying capacity of the region.<sup>17</sup>

Unless appropriate measures are taken, when a semi-arid, resource-poor region is faced with increased population pressure, agriculture can give rise to further environmental stress. Environmental stress, especially water stress, reduces local food production and food security in these regions (such as Sub-Saharan Africa, where food production barely keeps up with population growth) and results in increased vulnerability to its populations.

As a result, many of these communities resort to partial/seasonal or full-fledged migration to urban areas and form part of the urban poor. It is estimated that by 2008, for the first time in the history of the world, more than half of the world's population will be urban based. This migration will increase the number of urban water poor, even as rural water poverty continues.

### A way forward

Sustainable water use begins with the recognition that water is our common heritage—every person has a right to water to meet her basic needs, and that water belongs to all species. The carrying capacity of the region and limits of the watershed become important parameters to guide water-use-related decisions, including those for meeting the water, food, fiber and fuel needs of the local populations.

Gender-related concerns need to be given centrality while developing the water supply infrastructure, not only by recognizing women as important water users but also by consulting local women about their concerns. Also, water efficiency needs to be defined not only in terms of absolute crop water use but also in terms of optimizing the economic, environmental and socio-cultural benefits for each gallon of water used. A gender-based water efficiency assessment, for example, will recognize that in many contexts women ensure multiple uses from same gallon of water. It will formulate policies that provide incentives for such practices.

In irrigated areas, agricultural policies need to move away from intensive irrigation to forms of irrigation that will promote sustainable water use practices, including:

1. Extracting only the amount of water that can be replenished through natural recharge
2. Promoting on-farm water storage.
3. Applying water efficiently
4. Minimizing downstream environmental damage
5. Practicing low-input organic agriculture

If not by cultural practices, then by the sheer nature of the resource constraints, practitioners of subsistence farming are forced to honor some of the above. However, they need support to help practice farming in a viable and sustainable manner, to live more than a life of subsistence. Agricultural and water policies should recognize the important role played by subsistence farmers, especially women, in meeting basic food needs. Policies should be designed to support them in these practices.

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