

A Note on Gender Issues in the Provision of Improved Potable Water Supplies in Developing Countries

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Introduction

There is a renewed recognition in the international community of the importance of improved water and sanitation to people in both rural and urban areas of developing countries. The World Bank's recent World Development Report on the environment highlights water and sanitation issues as a priority environmental concern and as an area where increased investment can result in dramatic increases in human well-being. For those of us working in the sector, this new attention being paid to water and sanitation issues is welcome, but not a surprise. In locations where households are spending 5-10 percent of their income buying water from vendors, or spending 5 hours per day collecting water from traditional sources, it is clear to anyone that improved water supplies are a necessary condition for economic and human development. What is not clear is how improved water supplies affect the circumstances and behavior of individual household members.

What Happens When Improved Water Systems are Installed? Results of Evaluation Studies

Surprisingly, there are very few empirical studies of the effect of improved water supplies on the time allocation patterns of household members. There are no studies in the literature that use an *ex-ante/ex-post* experimental design (either with or without control groups) to determine the nonhealth-related effects of a water supply intervention. The few studies using cross-section research designs provide some clues. First, none of the existing studies indicates that the installation of improved water systems results in dramatic changes in economic activities (as traditionally defined) or production of goods and services. Second, the studies suggest that when water is collected from outside the home, water use is low in absolute terms and relatively unresponsive (i.e., inelastic) to changes in collection time. Third, time savings from the installation of improved water sources can be substantial in rural areas where people are fetching water from outside the home, and these time savings are very important to people. Some studies found that time savings are, however, allocated to rest and housework; none have shown convincingly that time savings are allocated to agricultural work or wage labor. Moreover, none of these studies examine intra-household changes in time allocation.

Estimates of Cost Savings

When improved water systems are installed, households often save money (because they do not have to purchase water from vendors), and/or calories and time (because they do not have to haul water over such long distances). Research on cost savings indicates that the

magnitude of such savings are often large. There is no information in the literature, however, on how such cost savings are shared among the members of a household.

In part because a few evaluation studies found that women's time savings were allocated to leisure and rest, it has been commonly assumed that the monetary value households assign to time savings of women is very low. There is only one study, however, that has attempted to impute a monetary value to women and children's time savings, and these results showed that households place a surprisingly high value on women's time savings: a value approximately equal to the wage rate for unskilled labor in the local economy.

How Much Are Households Willing to Pay for Improved Water Supplies?

When women bear the burden of collecting water, sociological observers of household water use often hypothesize that women would attach more importance to improved supplies than would men, and thus expect that women would be willing to pay more for such improvement. However, in many cultures women do not have equal control over or access to household's cash resources. Thus, when asked how much the household would be willing to pay for an improved water supply, a woman might feel reluctant or unable to commit the household to a substantial financial obligation, even though in her opinion the improved water supply would be "worth" the expense. There is thus no clear expectation as to how the gender of the respondent would affect a household's willingness to pay for improved supplies.

In a series of studies carried out by the World Bank and USAID, households were asked a series of structured questions (the so-called "contingent valuation method") designed to determine how much they were willing to pay for different types of improved water supplies. Four of these studies were designed to test how the gender of the respondent influenced the household unit's willingness to pay for improved water services. In these four studies either the senior male or senior female household member was interviewed.

In all four of the contingent valuation studies, the gender of the respondent was a statistically significant determinant of the respondent's indicated willingness to pay. In Tanzania and Haiti female respondents were willing to pay more for access to public taps in the village than were male respondents. However, in Nigeria and India female respondents were willing to pay less than male respondents. In Nigeria, women were only willing to pay about 50 percent as much as men for both public taps and private connections. These findings suggest that the gender of the respondent is likely to be an important factor in households' expressed willingness to pay for improved services, but that the direction of the effect will depend on the specific cultural context.

In contrast to the gender of the respondent, there was typically no statistically significant effect of family size or composition on households' willingness to pay. This was true for such variables as number of household members, number of children, age of the respondent, religion, and work experience outside the community.

A Simple Classification Scheme

People often think of improved water supplies as a women's issue because women are commonly perceived to be responsible for carrying water. However, it is important to recognize that men often carry water when it is sold and money transactions are involved. Women and children carry water "free" for their families when it must be collected from outside the home; men carry water to sell. The effects of water supply improvements on household units are likely to be quite different depending on the type of water service provided, the existing level of service, and the location.

For example, consider the three levels of service shown in Table 1. If water is collected from outside the house, women and children are almost universally responsible for carrying water--whether or not they must pay for it. Such situations occur in both urban and rural areas of developing countries. However, if water is delivered to the home by water vendors, men carry the water and a money transaction is always involved. Such situations

occur predominantly in urban areas. Finally, if the household is provided with a piped connection, a money transaction is involved (i.e., a tariff must be paid by the household).

Consider two situations. First, suppose a piped water system is installed in a location where women are fetching water from outside the home. In this case the improved water system will result in savings in time and possibly money, and the direct beneficiaries will be females (and children) because they will no longer have to carry water. (Although in a patriarchal society, it is conceivable that male heads of household will decide that women should use the time savings to carry out an equally or even more burdensome task).

Second, suppose a piped water system is installed in a situation where the household is purchasing water from vendors. Here the consequences for the household unit are likely to be quite different than in the first case. The new water system will free money resources for the household (and increase the quantity of water used by the household), and these money resources may be controlled by either male or female family members. There is little information on who will control such a release of financial resources or how it will be used by household members.

Concluding Remarks

Water sector professionals know little about how water supply improvements change intra-household resource allocations, yet *a priori* one would expect that such projects would have important consequences and that the consequences would be different depending on the circumstances of both the existing water situation and the characteristics of the improved level of service. In rural communities where women are spending several hours a day collecting water, it is quite conceivable that water supply interventions would be a more cost effective way of improving health, education, nutrition, women's status, and income than other more "direct" development projects. In urban areas where water vending is commonly, water supply projects may make more financial resources available to households than income generation or low-cost credit projects.

TABLE 1

Level of Service -----	Is Water Purchased? -----	Gender of Water Carrier -----	Setting (Urban/Rural) -----
1. Water collected from outside the home	Sometimes	Female	Both
2. Water delivered to the home by vendor	Yes	Male	Predominantly urban
3. Piped water service	Yes	N.A.	Predominantly urban