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Gender and Economic Benefits from Domestic Water Supply in Semiarid Areas: A Case Study in Banaskantha District, Gujarat, Western India

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Summary

Combining improved water supply with microenterprise development has much potential to reduce poverty in semiarid areas. This case study, implemented by the Self-Employed Women's Association (SEWA) in Banaskantha district (Gujarat, India), combines the revival of the piped water supply and traditional water sources with a microenterprise development program for female entrepreneurs.

Joint research by the International Water and Sanitation Centre (IRC), SEWA, and the Foundation of Public Interest (FPI) revealed that the time released by an improved water supply enables women enterprise members to make a substantial contribution to the household income, especially at times when other income-generating opportunities are absent, for instance, during drought. In addition, gender relations have changed in favor of these women. Policy-wise, the study suggests the need for

- an integrated, holistic approach to rural development in which women influence the design and operation of the service so that it meets their domestic and economic requirements;
- involving CBOs, NGOs, and other institutions with experience in improving water supply and supporting microenterprise development in reformulating current policies;
- using the development of women's enterprises combined with the improvement of domestic water supply as a major entry point for rural poverty reduction programs;
- delinking water and poverty by providing income-generating opportunities that depend less, or not at all, on water and are demand-driven;

- the Government, SEWA, and other institutions to provide drought relief work in the form of craftwork at times when other economic opportunities are at their lowest; and
- gender programs to start addressing women's immediate gender needs and link them with the improvement of gender equality between, and also among, the sexes (e.g., for women of different ages and positions in the family).

The final recommendation is to find ways to scale up SEWA's efforts and implement similar programs elsewhere.

Introduction

Every day, innumerable women still spend substantial amounts of time carrying domestic water for the family. Water collection reduces the time left for income-generating work and is a drain on household labor resources (Kamminga 1991). Domestic water projects are generally designed with only such domestic uses in mind. Common objectives are improving welfare and health. This places domestic water projects firmly in the social or health sector and not in the sector of economic development. Yet if women's water collection were valued at paid labor, it would have high economic costs (McPherson and Jackson 1975). Women themselves see domestic water services also as an opportunity for economic development. Especially where gains are substantial, "Poor women ... feel [that] time spent ... should contribute primarily to the family income" (van Wijk 1998: 118).

SEWA is a trade union registered in 1972. It is an organization of poor, self-employed women workers, who earn a living through their own labor or small businesses. SEWA organizes women laborers for full employment and self-reliance so they have a regular income, food security, and access to health and child care for themselves and their families. As self-reliant, autonomous actors, these women make their own decisions and control their economic activities independently.

SEWA initiated activities in Banaskantha¹ to, among other objectives, improve the domestic water supply through better management of the piped water supply as well as the revival of traditional water sources such as ponds. However, improving only the water supply is not enough to reduce poverty. Commenting on the goal of the Santalpur Rural Water Supply Scheme (SRWSS) implemented earlier, SEWA commented that the goal "was not simply the supply of water for its own sake. The availability of water was meant to unlock the human potential that had dried up with the decrease of water supply. However, the scheme had assumed that with the provision of water, the rest would take care of itself" (SEWA 1999: 15). In a wider review of improved rural water schemes, Kamminga had come to a similar conclusion: "Considering [the] widespread constraints for women in most rural areas, additional measures will be indispensable in many cases to create the right conditions for women to increase their incomes" (1991: 11). SEWA therefore directed its efforts not only toward improving and reviving the existing water supply, piped water supply, and traditional water sources, but also toward helping poor women get organized, build their capacity, as well as

¹ The Banaskantha district has recently been split into two. This research was carried out in the newly created district of Patan, but for consistency's sake the old name of Banaskantha is used here.

start and run microenterprises. SEWA also aimed to empower the women by making them self-reliant in decision making.

A more reliable domestic water supply combined with increased economic opportunities and a supportive environment not only has a direct impact on the income of the poor, but also reduces their vulnerability during difficult times. This case study illuminates this potential, and to serve as a model for others, it will attempt to

- showcase the impact of effective water management on poverty reduction and thereby highlight important policy recommendations;
- assess the relevance of an accessible and reliable water supply for the productive uses of time and water by women in semiarid regions; and
- examine the impact of income-generating activities by women on gender relations within their households and communities.

Given the success of the SEWA approach, there is a need to scale up SEWA's efforts. Therefore, preconditions for scaling up need to be identified and to be introduced in the design of similar projects and programs.

Research Objectives and Methodology

This case study is based on the findings of a study conducted by IRC, Delft; SEWA, Ahmedabad; and FPI, Ahmedabad. That study had economic and gender objectives.² Overall, it aimed to look at how domestic water projects may be adjusted to maximize benefits from productive uses of water and time, thus maximizing the poverty reduction impact. Specifically, it sought to assess the economic value of improved water supply (especially for women), and study the impact on gender relations in households and communities. Besides census data and enterprise accounts, the study mainly used participatory rural appraisal (PRA) methods to collect data on time use, gender, and enterprise economics.

Participants were women from 11 SEWA-supported microenterprise groups in nine villages and from five control villages (with comparable socioeconomic conditions, according to the 1991 census) where SEWA was not active.³ The five different types of enterprises covered are crafts, dairying, salt farming, gum collection, and tree and fruit plantations. Women from these enterprises took part in designing the tools, analyzing the data, and discussing the findings and conclusions. SEWA and FPI field staff implemented the present study, funded by the Swedish International Development Cooperation Agency (Sida).

The Setting and Problems in the Context

Banaskantha

While the state of Gujarat, located on the western coast of India, has a relatively high per capita income, its economic future is threatened by an ever-growing water shortage. In 1999, a large part of the state suffered from the worst drought in 50 years. On

² Additional data were collected on the impacts of the earthquake in Banaskantha (Verhagen, Joep, and SEWA. March 2001); economic impacts of improved water supply (Verhagen, Joep, and SEWA. November 2000 and August 2001).

³ In 10 other villages, women enterprise leaders were interviewed.

average, droughts occur in the area every 3 years. Low-income families are usually the hardest hit by droughts and other natural disasters that erode interim development gains, leaving many trapped in an interminable cycle of poverty.

Banaskantha is one of the most underdeveloped districts in the state. Over 90% of the population live in villages, many of which lack even the most basic infrastructure. Rain-fed agriculture and dairy production are the main economic

I was married when I was still a child and I have two sons and two daughters. I work in the salt pans from November 'til April and earn rupees (Rs) 40.00 (\$0.80) per day. Half of this I have to spend on transportation to the salt pan and back. It is very hard work especially when it gets hot. The remaining part of the year I work on our own land, but when there is drought we migrate to find work elsewhere.

Before we got piped water supply, I fetched water from the well and the pond. It took me about 1 hour to fetch a pot (5 liters) of water. The standpost is much nearer, but there is water only once a week. When the government tanker comes, there is always a huge crowd and often there are quarrels about water. Some days it takes me so much time to get water that I cannot go to the salt pan, so I lose the income of that entire day.

About 8 years ago, I became a SEWA member. There are many SEWA members in our villages and together we are strong. Alone, I will not go to the government, but together we can go to demand for more water tankers, for example. I take part in many SEWA activities and give health and cleanliness training to our girls.

Kokuben Ramabhai Ahir (woman, age 40)
member of a salt enterprise in Madhutra



Table 1. Impacts of the Earthquake and Drought on Livelihoods

	Activities	Embroidery	Salt	Dairy	Gum	Planting	Agriculture
	% of Villages	52	52	60	35	29	100
Earthquake	Not Affected	0	8	48	6	43	15
	Temporarily Halted	40	32	28	47	14	42
	Halted	60	56	21	47	43	39
Drought in Previous Year ^a	Not Affected	Na	Na	24	24	14	3
	Affected	Na	Na	72	71	86	85

Na = not available.

Note: Figures do not add up to 100%, as missing values are not shown.

^a The data were collected in the month of March, before the start of the summer. Hence it was decided to collect data on the drought of previous year.

activities in this desert region. Consequently, when monsoon rains fail, entire communities are forced to migrate in search of employment and fodder for their livestock. Furthermore, excessive groundwater harvesting by a small group of rich farmers and a haphazard government water policy in the region has led to the rapid decline of the groundwater table. Overextraction and poor maintenance makes the water in many wells saline and unsafe for drinking.

Natural and Man-made Disasters⁴

Natural and man-made disasters form an integral part of the life of the poor and in many cases keep them trapped in the vicious circle of poverty. Banaskantha is no exception to this.⁵ On 26 January 2000, the state of Gujarat and a large part of India experienced the most violent earthquake of the last 50 years. The epicenter of this quake was located 20 km northeast of Bhuj. Kutch and the neighboring districts of Surendranagar, Rajkot, and the research area, Patan, were badly affected by this earthquake.

The earthquake and the drought had a detrimental impact on the livelihoods of the local communities in Patan (Table 1). Prior to the earthquake, most of the people's livelihoods—especially agricultural activities—were already in a precarious

⁴ The section on the impacts of the earthquake and the drought are based on an impact assessment in 48 villages in Banaskantha carried out by Joep Verhagen and SEWA in March 2001.

⁵ During the 5-year period 1997–2001 Banaskantha witnessed the following disasters: floods (1997), malaria epidemic (1997), cyclones (1998 and 1999), droughts (2000 and 2001), and an earthquake (2001).

Table 2. Impacts of the Earthquake and Drought on Domestic Water Supply (%)

		Wells	Ponds	Standposts	Bore Wells
% of Villages with Water Sources		60	100	88	40
Earthquake	Not Affected	7	31	33	32
	Temporarily Affected	21	13	38	16
	Affected	66	52	24	47
	Missing Values ^a	7	4	5	5
Drought	Not Affected	0	0	31	68
	Temporarily Affected	0	2	62	16
	Affected	90	90		5
	Missing Values	10	8	7	11

^a The high percentage of missing values is explained by the difficult circumstances in which the data had to be collected that were prevalent during the period shortly after the earthquake.

situation because of the two consecutive droughts that hit large parts of Gujarat. The earthquake all but stopped the remaining economic activities in the villages.

A more detailed analysis reveals that the earthquake has caused permanent damage to people's livelihoods. Many households have not only lost their standing crops and the seeds for the upcoming agricultural season, but also their tools and the few irrigation facilities available have been damaged. Crafts women lost their working and storage place.

The water supply was badly affected by the drought and the earthquake (Table 2). Almost all traditional water sources had already dried up before the earthquake, which caused structural damage to many wells and ponds. Although piped water supply was restored in some villages, water tankers remained the sole sources of drinking water in many villages.

Additional data reveal that 60% and 78% of the respondents consider that their water supply and livelihood, respectively, are have deteriorated compared with conditions prior to the earthquake.⁶

Findings

Time Activity Profiles

Time activity profiles of women from enterprise and control villages were used to derive insights into women's use of time. They distinguished domestic,

⁶ As the data were collected during a drought period, it is probable that these figures reflect the combined impacts of the ongoing drought and the earthquake.

economic, personal, and developmental activities, and water collection for reproductive and productive use was assessed separately.

Even with the pipeline, water collection was time-consuming. On average, women from both types of groups spent 3 hours of their 15–16-hour working day to fetch water. Daughters spent nearly 1.5 hours, sons, 12 minutes, and husbands, 15 minutes per day. In other words, on average a household spent nearly 5 hours a day on collecting water. This is high since, at least on paper, all households have year-round access to piped water, provided to reduce the drudgery of water collection. In reality, the piped water supply is of a substandard quality and often breaks down for longer periods.

When the piped water supply breaks down, women need to spend substantially more time on fetching water: 2.54 hours and 2.30 hours in summer and monsoon, respectively. Most of this time comes at the cost of time spent on income-generating activities, 1.56 and 1.48 hours in summer and monsoon, respectively. The extra time spent is in spite of the fact that people have to buy water and do not bathe.

Women contribute to household income through

- expenditure-saving activities—including working on own agricultural land, and
- income generating activities—either by hiring themselves out as daily wage laborers, or by doing microenterprise work (e.g., handicrafts, dairying, collecting gum, or making salt).

The data showed that women from enterprise villages spend more time on income-generating work than women in control villages. (Table 3). It is particularly relevant that microenterprise activities provide family income at crucial times—during summers (and droughts)—when other income sources are absent.

Table 3. Women's Activity Profiles in Enterprise Households and Control Villages (N = 16 villages)

Type of Activity		Summer		Monsoon	
		Enterprise Villages	Control Villages	Enterprise Villages	Control Villages
Reproductive Activities	Others	4.3 ^a	5.1 ^a	5.2	5.0
	Water Collection	2.8	3.5	2.8	2.5
Total Productive Activities	Income Generating	7.5 ^a	5.4 ^a	3.4 ^a	0.1 ^a
	Expenditure Saving	1.1	1.9	3.6 ^a	7.2 ^a
	Water for Productive Activities	0.4	0	0.3	0
Total Personal Activities		7.5	8.2	8.6	9.8

^a The time taken by women in enterprise villages and in control villages was statistically significantly different at the 5% level.

I was desperate when I became a widow: my livestock died, I had to sell my jewelry, I lost all my land to a moneylender, and I was not earning more than about Rs100 (\$2) per month. About 10 years ago, SEWA started working in our village and helped us set up a fruit plantation. Around that time, we also got piped water supply. The time I saved from fetching water, I would spend on the plantation. My income increased to around Rs450 (\$9) a month, so I was able to send my children to school. Also my status in the village improved—the moneylender will give me a loan whenever I ask for it and I am no longer scared to speak during village meetings.

After the earthquake, things became very bad. We have water for only 2–3 hours every 14 days. There are a lot of quarrels about water. One day, a man even attacked the women to get more water. Our plantation still works, but I do not know what will happen if it does not rain this year again.

Neemuben Amardan Gadhvi (woman, age 39)
Leader of fruit plantation in Zandala village

Economic Impacts

Two calculations were made: the costs of reduced water collection time and the potential benefit of reduced water collection time.

Costs of Breakdowns

For women already employed in economic activity, the indirect costs of water collection time when the piped water supply broke down were calculated. This cost (either as potential income lost or as cash costs incurred to collect water) was calculated at an average of Rs50 (\$1) per woman per month, during the 3 summer months. Extrapolating the loss to all SEWA micro-enterprise members in the two blocks, the inadequate O&M of the water service constitutes a total loss of Rs6 million (\$120,000) annually for 40,000 SEWA members in Patan.

Each woman also lost, on average, 7 hours of time per month in summer, for reproductive and/or personal activities.

Benefits of Reduced Collection Time

If water supply is improved, so that women spend only 1 hour per day collecting water, women could use this time saved either for income-generating activities or for domestic, social, and developmental activities. The subsequent time gains, calculated on the basis of the time-activity profile, can be allocated either to *productive activities* or a combination of *reproductive and personal activities*.

Consequently, two alternative upper bounds have been calculated:

- The maximum additional income a woman can earn assuming time saved is devoted to *economic activities*; and
- The maximum time that is freed for *personal and reproductive activities*. Calculations showed that additional annual income could be between Rs750 (\$15) and Rs5,520 (\$1,104) per woman (depending on the economic options available). Alternatively, each woman might gain between 45 and 152 8-hour days annually for domestic, social, and developmental activities.

To further substantiate these findings, data were collected on how women would allocate time savings from an improved water supply. It was found that the women would allocate 72% of these time savings to income-generating activities, provided that sufficient economic opportunities are available. This underlines the need for integrated approaches toward poverty reduction in semiarid areas, which address water supply as well as microenterprise development.

Women were asked to estimate economic gains from past improvements of the water supply. It was found that the average economic gains of past improvements of the water supply are over Rs150 (\$3) per month per household. These improvements include the revival of traditional water sources⁸ as well as piped water supply.

Gender Impacts

Changes in Gender Relations

In all villages, gender relations have changed in favor of women. But for members of women's enterprises, progress has been significantly greater, in terms of possession of assets and participation in decision making and community management activities. Also, these women received significantly more help from husbands, sons, and daughters during a breakdown of the water supply in summer than the women in the control villages. Part of these changes can be attributed to the ongoing changes in society as a whole that are taking place. However, part of these changes can be traced back to SEWA's continuous efforts as well as to the increased economic activities of the women, especially at times of income stress.

Because gender relations concern women and men, male team members interviewed the men. The responses were used for a content analysis. At first, they were surprised to be asked and had problems discussing gender, but they soon warmed to the issue and gave many and very specific reactions. Only two reactions were negative, e.g., women could visit places that men could not. In the control villages, the men mentioned a few more negative changes, but almost all were still positive. A few men referred to improvements in women's traditional gender roles, such as better management of the house and greater cleanliness of children.

The majority mentioned economic benefits for the family as a whole, greater equality between the sexes (better communication between spouses, husbands helping more), and women's empowerment. Interestingly, quite a few poor males mentioned how the empowerment of poor women had also empowered them: they were undertaking new activities and also received more respect in the village.

Control Over Time and Income

A certain degree of control over time and income is essential for the women to use time savings for income generation. If the husband controls the entire household income and spends additional income on personal things, such as alcohol, there is no incentive for the women to generate more income even when time is available.

⁷ These include roof rainwater harvesting, construction of plastic lined ponds, desilting of wells, and so on.

The study assessed three levels of control over time: women alone decide; they decide together with someone else in the household, and someone else decides. In both groups, 90% of the women had some control over their time use, either solely or together with another household member (husband, mother-in-law, etc.). Approximately 10% had no say still. They are probably unmarried and/or recently married young women who, according to local custom, still have a subordinated position in the household.

Control over income from women's work has been analyzed using a similar method as for time use. Three income categories were analyzed: enterprise income, income from other sources (such as agricultural labor and government relief work), and overall household income. Since women in the control villages had not started any independent entrepreneurial activities, it emerged that women's enterprise members had significantly more control over their own income and over the household income than the control group. However, some 9% of women entrepreneurs had no say in the spending of the income that they had generated. This is probably the same group that does not have any control over their time.

Before we got a standpost in our village, I had to walk 4 kilometers to fetch water at the pond in the next village. I would go in the night to fetch water, come back, take a short rest, and then start cooking breakfast for my family. Water from that pond would often make us sick as well.

Now it takes me just 1 hour a day to fetch water. I don't get tired and I have much more time to collect gum. SEWA negotiated with the Forest Department to get higher prices for our gum and I earn around Rs300–400 (\$6–8) per month. Nowadays, I also travel to other places and my husband no longer stops me from doing so.

Our drinking water situation is much better. But we still do not have enough water for our livestock. So maybe this year my husband has to migrate with our cattle to find water and fodder.

Ratanben Marfabhai Thakor (woman, age 35)
member of gum collection enterprise in Parsund village

Conclusions and Policy Recommendations

Water Supply

The study found that improving domestic water supply is not just a *welfare issue* provided out of pity for women's drudgery in water collection, or for "soft" concerns like improving health, hygiene, and sanitation, but it also yields *economic* returns. Conditions are

- that the water supply provides the time savings, quantity, and reliability of water required for economic use; and
- that the water project is linked with a microenterprise program that provides the right enabling conditions, such as organization and training of women, market research, marketing, quality control, and microcredit facilities.

Policy recommendations include a strong need for the following:

- *an integrated, holistic approach* to rural development, which is in contrast to the *sectoral approach* that is currently adopted by the central and state governments; and

- CBOs, NGOs, and other institutions with experience in improving water supply and supporting micro-enterprise development to be involved in the reformulating current policies. These institutions should also be used as *pathfinders in pilot exercises* before scaling up holistic rural development to a larger scale.

Poverty Reduction

From the findings, the following became clear.

- Women provide income to the family *in four ways*: by doing agricultural work on the land of the household, by engaging in expenditure-saving activities (e.g., fodder collection and vegetable gardening), by working as daily wage laborers, and doing microenterprise work);
- Work in microenterprises provides family income at times when this is *especially essential* (e.g., in the dry season when income from other sources is absent). The production is a valuable source of income for poor families and a means for women to meet their practical and strategic gender needs.

Conditions are

- a reliable improved water supply with amounts of water and predictability of delivery adjusted to women's needs; and
- a micro-enterprises support program that goes beyond training, but covers the whole range of requirements and assists the microenterprises in pooling their resources for crucial higher level services, such as training, quality control, marketing, market research, and market capital.

Unfortunately, water services are at their worst during the dry season and women, as primary stakeholders, have currently *no influence* on the reliability and distribution of water in comprehensive water supply schemes.

Policy recommendations include a need for

- improving the water supply as part of a holistic, rural development approach in which women have influence on the design and operation of the service so that it meets their *domestic and economic* requirements;
- the development of women's enterprises combined with the improvement of domestic water supply—and not just improvements in the resource base (e.g., soils, irrigation water, crops, and forests—should become *major entry points* for rural poverty reduction programs); and
- delinking *water and poverty* by providing income-generating opportunities that depend less, or not at all on water, and are based on market demand especially as the total amount of water in semiarid areas is limited.

Drought Management

The project found also that money spent on *drought relief work* in the form of craftwork can be economically viable. Craftwork does not need water, and women appreciate that it can be done at home in combination with their other tasks and at flexible hours. In this sense, it compares favorably with the current type of government relief work, which is inflexible, physically demanding, and has lower returns.

Policy recommendations include that the Government, SEWA, and other institutions should provide drought relief work in the form of craftwork *at times when other economic opportunities are at their lowest*.

Gender Relations

Overall, and in all study villages, gender relations have changed in favor of women during the last 10 years. On many essential indicators—such as possession of assets, participation in decision making, and community management activities—progress has been greater for members of women enterprises than for women in the control villages, reflecting the impact of the work of SEWA and BDMSA.

During a breakdown of the water supply in summer, women, who are members of an enterprise, receive significantly more help from other household members (husbands, sons, and daughters) than the women in the control villages. SEWA women also have a significantly greater say over the use of their time and over their own and the family's income.

The research showed that a combination of *antipoverty* and *women's empowerment* strategy for rural development also leads to greater *gender equality*. In the semi-structured interviews, only a few husbands stressed the *welfare* benefits of women's income-generating projects (e.g., the value of these projects for women's traditional gender roles such as better management of the house and greater cleanliness of the children).

Almost invariably the men in the study villages saw these changes as positive. The groups in the women's enterprise villages saw more changes than those in the other villages. Asked about the kind of changes, all groups described specific improvements in women's domestic roles and gave instances of greater equality between women and men within households. In addition, the groups in the women's enterprise villages also always gave examples of poverty reduction from women's work and more often gave instances of women's empowerment as a group.

Policy-wise it is recommended that gender programs should start addressing women's immediate gender needs and link these with the improvement of gender equality not only between the sexes, but also among them (e.g., for women of different *ages and positions* in the family).

Scaling Up

This case study demonstrates that the integrated approach followed by SEWA does lead to an improvement of the quality of life for both men and women in semiarid areas such as Banaskantha. However, there is a need to initiate similar programs on a larger scale.

For this purpose, NGOs and other institutions with experience in such effective poverty reduction efforts have to be involved in reformulating current policies to incorporate these major changes. The reformulation of policies should be based on identified preconditions for success. These institutions should also be used as pathfinders in pilot exercises before scaling up the operation.

Second, many NGOs do have the capacity to mobilize local communities and collaborate with them in an effective manner. However, often they lack the technical and managerial capacity to implement projects at a much larger scale.

Finally, part of the government drought relief funds should be spent on providing *craftwork for poor women*, as long as this can be based on and adjusted to real market demands and with an efficient plan for managing and marketing their output.

Policy recommendations include:

- Concrete programs could be upscaled by increasing the responsiveness of local government agencies toward demands from CBOs and NGOs. Presently, too much time and managerial resources are required to attain the much-needed collaboration from local government institutions;
- Resources should be made available to build the capacity of NGOs in technical fields and if necessary they should have easy access to tailor-made technical and managerial assistance;
- Institutions experienced in organizing such drought relief work in the form of craftwork for poor women should be involved in reformulating policy.

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