PART 2 THE MAHARASHTRA, INDIA EXPERIENCE

INTRODUCTION

Maharashtra is a large state in India, containing 35 districts. For implementation of the CP-MUS project in Maharashtra, three districts were chosen—Nasik, Aurangabad, and Ahmednagar (see Plate 15)—partly for their proximity to the district headquarter city of Nasik where the IDE office is located, but also because they are water-scarce districts with a recent history of drought and intensive participation in Jalswarajya/Aple Pani projects.

Due to the small number of IDE staff in Maharashtra, it was realized early on that combining MUS work with another project would be the best approach for implementation. The MUS effort in Maharashtra was different from the Nepal experience in that it began with the Learning Alliance approach instead of project implementation. Through the Learning Alliance IDE sought partners for implementation. At the first Learning Alliance workshop (see chapter 13) IDE staff became aware of the state drinking water projects called *Jalswarajya* (meaning "water independence") and *Aple Pani* (meaning "own water") and decided to approach the project administrators to determine if they were a good match with MUS.

Jalswarajya and Aple Pani are two statewide drinking water projects with virtually the same structure and a community-driven, demand-led approach. Jalswarajya is funded by the World Bank, while Aple Pani is funded by K f W Bankengruppe. As identified in the Project Implementation Plan for Jalswarajya and Aple Pani, the overall aim was not simply to complete water supply schemes, but to make the communities self-reliant and to build the capacity of the communities to be able to link different water supply projects from various sources—Department of Irrigation, Department of Water Supply and Sanitation, etc.[1] Thus, more money was spent in the project on training and community organizing than on the materials to build the infrastructure. There was also a strong component of water source strengthening (largely groundwater recharge) to increase available water to the communities. IDE felt that the stated purpose of the project matched MUS. Staff also understood that the substantial project resources and government/NGO mechanism would provide a vehicle for testing implementation of MUS projects in the state. Therefore, IDE opted to use the state-level program as a vehicle for MUS propagation throughout Maharashtra.

STRUCTURE OF PART 2

Chapter 8 provides an overview of the state setting, including a history of the water-scarcity situation and the process by which water resource development takes place in the state. Chapter 9 delves more deeply into the Jalswarajya/Aple Pani Project operation to give context for how MUS functioned with the state-run project. Chapter 10 covers the case of the village of Kikwari, a highly motivated community that has worked together to integrate water-development schemes to overcome their water-scarcity problems. Chapter 11 describes the story of the village of Samundi, a lower-caste community whose women were determined to shape their village development, including improved access to water resources. Chapter 12 draws out the village-level lessons from the two case studies as well as other partner MUS work. In chapter 13 the experience of the MUS Learning Alliance in Maharashtra is discussed with conclusions applicable to MUS scaleup globally.

SELECTION OF CASE STUDIES

MUS work in Maharashtra largely occurred through IDE partner organizations (described in Chapter 13). IDE was directly involved in implementation work in just a small handful of communities in Nasik District. Of the villages interested in MUS, Kikwari and Samundi were those that had a firm grasp of the concepts of multiple uses of water and integrated water resource management. These communities were chosen for case studies because of their extraordinary motivation and insight. Samundi is a tribal village with very few resources, and yet the women in their community have shown incredible energy in developing their village. Kikwari was chosen to represent a community with significant ingenuity in water resource management; the Jalswarajya Project only represents the most recent in their history of integrated water resource management activities. Through these two cases, lessons can be drawn from the MUS experience in Maharashtra: working with communities participating in a state-run water resource development project to incorporate multiple uses.

CHAPTER 8

THE MAHARASHTRA SETTING

Photograph by Monique Mikhail.

WATER SITUATION IN RURAL MAHARASHTRA

According to the Government of Maharashtra Water Supply and Sanitation Department, most of the rural residents in the state have access to drinking water . The breakdown in levels of access is displayed in Table 8.1: "Full coverage" means there is one hand pump or stand post per 250 people, providing 40 liters/capita/day. The pump must be within 1.6 km of the village in the plains or, in the hilly areas, at a maximum elevation of 100 m. If the system only provides 10–40 liters/capita/day, it is considered "partial coverage." "Not covered" means people are receiving less than 10 liters/capita/day. According to the most recent habitation survey, posted in 1999, 78 percent of habitations[1] had full coverage (Government of Maharashtra 2008).

Table 8.1: Rural domestic water coverage in Maharashtra in 1999

Category	Number of Habitations	Percentage of Total Rural Habitations in the State
Fully covered	1,116,103	78%
Partially covered	268,496	19%
Not covered	38,065	3%
Total	1,422,664	100%

Source: (Government of Maharashtra, 2008).

Supply of rural drinking water in Maharashtra is largely dependent on groundwater, about 85 percent (Government of Maharashtra 2008). Yet, groundwater resources are severely constrained and depleting, suffering from swings between extreme monsoon rain and drought. There have been large increases in abstraction of groundwater in recent years due to unregulated groundwater abstraction for irrigation and industry and poor management of drinking water systems (Dhawale 2004). Often groundwater is depleted by the dry season. Exacerbated by low and variable rainfall, this overabstraction of ground-

water has created acute drought conditions in certain years. The result is often the failure of both private irrigation and public drinking water wells. And problems with pollution have risen as well (Pathak et al. 1999) A lack of monsoon rain or delayed rains result in critical shortages in drinking water , decreased food security, and failed agricultural activities. For example, the decrease in food security led to over 1,000 malnutrition-related deaths of tribal children in a three-month period in 2004 in the state. And more than 50 debt-ridden farmers committed suicide over the same period (Dhawale 2004)

The government has responded in the short-term through immediate relief of food, fodder, and employment and in the long term through dam construction and canal systems running hundreds of miles. And although urban residents are fairly well off in India, rural areas are much more impoverished. In these rural areas agriculture constitutes 80 percent of employment, making access to water essential. Yet of all agricultural land in India, 60 percent is in drought-prone areas, and most remains rain fed (Phadke 2002).

Rainfall patterns operate in a five-year cycle in Maharashtra, with three years of drought followed by two years of heavier rainfall. But some drought periods are worse than others. During 2001–2004 Maharashtra experienced a severe drought, and for a minimum of 3–4 months per year during that time drinking water for 10,000 villages (24 percent of villages in the state) had to be brought in with tankers (D'Souza and Lobo 2004). Cattle camps were opened in some of the worst affected districts to ensure livestock survival. And the government spent huge sums spraying clouds with chemicals to induce rain (Dhawale 2004).

High demand on the available water resources is part of the problem. As the second largest state in India, the estimated population of Maharashtra in March 2006 was about 104 million. The population continues to grow rapidly in both the urban and rural areas: the overall growth rate of the state from 1991 to 2001 was 22.7 percent, and the rural growth rate for the same time period was 15.29 percent (Government of Maharashtra 2006). This high rate of population growth is leading to ever-more-stressed water resources.

Water availability in Maharashtra is also heavily influenced by the choice of crop production, which is predominantly sugarcane. During the colonial period in India, dams and canal systems were built for the production of export crops including sugarcane, indigo, cotton, and wheat. Colonial administrators also created infrastructure to protect against drought and famine, but it was largely used for sugarcane production instead. Sugarcane is heavily subsidized through the inputs of water, fertilizers, and power (Bavadam 2006) And Maharashtra is now the largest sugarcane producer in all of India. After rice and wheat, sugarcane is the most important crop in the country (Phadke 2002).

Sugarcane cultivation is largely done under the cooperative model in the state. Farmers contract directly with sugarcane factories. Although this has

directly increased the amount farmers receive for their crops, it has made them beholden to bank credit, chemical fertilizers, and hybrid seeds. This often leads to debt in poor-harvest years. Growing too much sugarcane has also been responsible for waterlogging and soil salinization (Phadke 2002).

The sugarcane needs about 2,500 mm of water over a 12-month period, and yet Maharashtra averages only 300–500 mm of rainfall per year (Bavadam 2006). During drought years farmers often lose part or all of their crops, severely constraining their resources and perpetuating their debt. Sugarcane cultivation was hard hit during the 2001–2004 severe drought. Due to reduced water availability and a virulent pest problem called Lokri Mava, cultivation of sugarcane halved over the four years (Dhawale 2004).

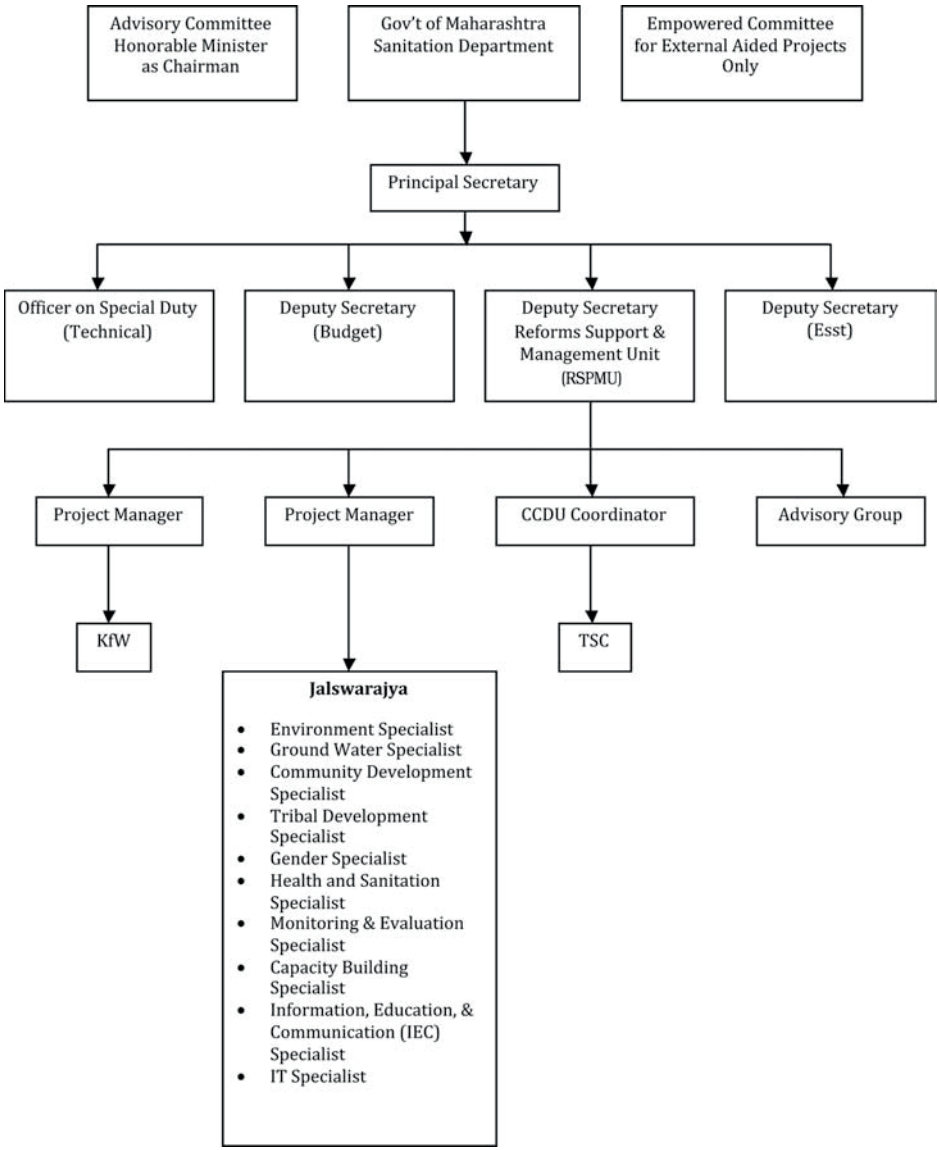
However, when viewing sugarcane cultivation over the past fifty years, it has actually increased considerably. In fact, just after the 2001–2004 severe drought, the area of sugarcane harvested in 2005–2006 increased by 61 percent (Government of Maharashtra 2006). This indicates that despite the chance of drought, agricultural factors are heavily weighted toward sugarcane production. And despite the cooperative model, most of the profits from the commodity in the state go to only 2 percent of landowners (Bavadam 2006).

WATER RESOURCE DEVELOPMENT IN RURAL MAHARASHTRA

There are three organizations set up by the government of Maharashtra for implementing drinking water schemes in rural areas. The first is the Rural Water Supply and Sanitation Program (RWSS), which mainly works through the *Zilla Parishad* (District Council) to provide small water supply schemes to individual villages/*Gram Panchayats* (see the bullet point below for an explanation of Gram Panchayat). Under the Maharashtra Water Supply and Sewerage Board Act of 1976, the *Maharashtra Jeevan Pradhikaran* was set up to work for villages and small rural towns, but it builds larger water supply schemes and can work independently of the Zilla Parishad. The most recent is the Jalswarajya Project with funding from the World Bank and staff from the RWSS, meant to institutionalize the decentralization of the RWSS delivery to rural local governments and communities.

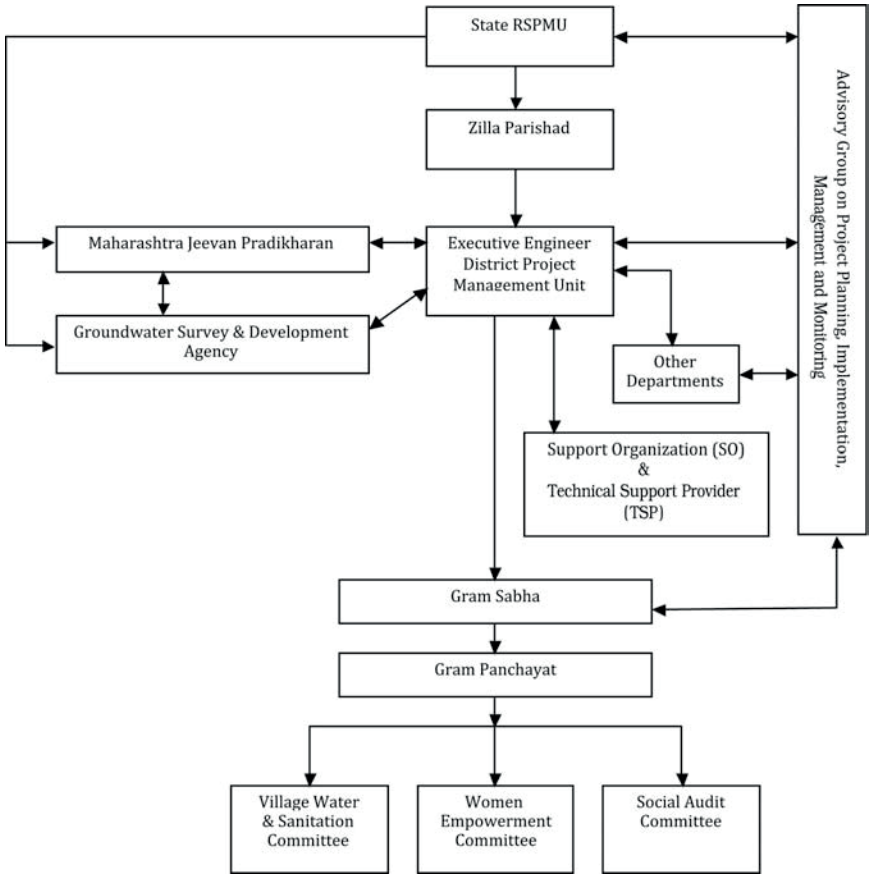
The state government has historically been responsible for implementing irrigation and drinking water schemes. The irrigation systems are predominantly large-scale irrigation canals and dams, while drinking water systems are high-cost schemes that are built by contractors and handed over to the Gram Panchayat. For the most part, NGOs have not been involved in scheme design or implementation until these recent state projects. However, NGOs have been involved in watershed work for the past few decades, focusing on

Figure 8.1 Government structure relevant to Jalswarajya



Renjit, 2003

Figure 8.2 Interactions between various participants in Jalswarajya



Renjit, 2003

water budgeting, water source strengthening, and conservation education as the groundwater supply in the state diminishes.

The government structure as it relates to drinking water schemes and specifically the Jalswarajya Project can be seen in Table 8.2 and Figures 8.1 and 8.2. The panchayat system in India includes government bodies at the village, *Tehsil*,[2] and district levels as follows:

- Gram Panchayat (GP)—A local government bodies at the village level in India with 10–15 members serving five-year terms. A Gram Panchayat can be set up in villages with a population of more than 500. There is a common Gram Panchayat for two or more villages if the population of these villages is less than 500. The Sarpanch is elected by the village community as the chair of the Gram Panchayat and receives a monthly payment of $10.
- Panchayat Samiti—a local government body at the Tehsil or Taluka level in India. It works for the villages of the Tehsil or Taluka that together are called a Development Block. The Panchayat Samiti is the link between the Gram Panchayat and the district administration.
- Zilla Parishad—a local government body at the district level in India. It looks after the administration of the rural area of the district, and its office is located at the district headquarters.

The functional head at the district level is the Chief Executive Officer (CEO) of the Zilla Parishad. The CEO reports directly to the state-level Panchayat Raj Ministry. However, the District Collector is responsible for coordinating all government departments at the district level. The District Collector can intervene and encourage the CEO to fund certain projects.

The block level is headed by a Block Development Officer (BDO) who is selected through an examination process and receives a monthly salary. Once an individual becomes a BDO, that person maintains the position until retirement at age 60 or earlier if promoted or demoted to some other department. The Block Development Office has eight committees:

- Minor Irrigation (below 100 ha)
- drinking water and Sanitation
- Health
- Animal Husbandry
- Agriculture
- Public Works
- Education
- Integrated Child Development Scheme

At the central level, ministers are elected as members of the legislative assembly for five-year terms, and the ministry is formed with members of the majority party. The ministries are headed by the Chief Minister.

Although MUS-by-design has not happened in Maharashtra in the past, de facto MUS do occur to some level within the block-level structure. For example, if a community requests the BDO to recharge its well or build a well for a water supply scheme, the Water and Sanitation Committee (WSC) will conduct a survey within the community. If the survey reveals that there is an opportunity to build a dam across a stream or nearby river, the WSC will tell the BDO, who will ask the Minor Irrigation Committee to construct the dam. There are also many dams that were originally built for irrigation but, due to water scarcity, are being used for domestic water storage as well. Although these are both technically MUS, they are certainly not MUS-by-design.

Table 8.2: Different tiers within the water sector in Maharashtra

Level	Government Departments	Elected Positions	Government Personnel
State/Policy Level	• Irrigation Department • Water Supply and Sanitation • Ground Water Survey and Development Agency • Maharashtra Jeevan Pradhikaran (MJP) • Reform Support and Project Management Unit (RSPMU) for • Jalswarajya, • Aple Pani, • Total Sanitation Campaign (TSC), • Sant Gadge Baba Campaign	• Minister of Water Resources • Deputy Minister of Water Resources • Members from Legislative Assembly	• Secretary • Deputy Secretary • Principal Secretary • Project Director • Project Manager • Advisors

Level	Government Departments	Elected Positions	Government Personnel
District/ Intermediate Level	• Zilla Parishad (District Council) • Water Supply and Sanitation • Ground Water Survey and Development Agency • Maharashtra Jeevan Pradhikaran (MJP) • Project Management Set-up (PMS) for • Jalswarajya, • Aple Pani, • Total Sanitation Campaign (TSC), & • Sant Gadge Baba Campaign	• President of District Council • Vice President of District Council • Chairman of Minor Irrigation and Water Supply and District Council Members	• Chief Executive Officer (CEO) of District Council • Deputy CEO for Minor Irrigation and Water Supply • Project Manger/ Coordinator for PMS • Technical and Financial Staff for Water Supply, Health, Agriculture, Public Works, Minor Irrigation, Ground Water
Taluka/ Intermediate Level	• Panchayat Samiti (Taluka Committee)	• Chairman of Panchayat Samiti • Committee Members	• Block • Development • Officer • Technical and Financial Staff for Water Supply, Health, Agriculture, Public Works, Minor Irrigation

Level	Government Departments	Elected Positions	Government Personnel
Village/ Community Level	• Gram Panchayat (Village Committee)	• Sarpanc(Village Committee Head) • Members of Village Committee • Chairman and Members of Village Water and Sanitation Committee • Chairman and Members of Women Empowerment Committee • Chairman and Members of Audit Committee	• Village Development Officer (VDO)

Source: Government of Maharashtra [1] and [2] 2007.

CHAPTER 9

PROJECT OVERVIEW

Photograph by Sudarshan Suryawanshi.

As mentioned above, the two state projects that IDE chose to work a MUS component into were Jalswarajya and Aple Pani. At the state level, the same people are responsible for administering both Jalswarajya and Aple Pani. Both projects have the same structure, with the major difference being the calculation of water requirement per capita. Jalswarajya uses a standard 40 liters/capita/day for domestic use, excluding livestock. In Aple Pani, livestock water requirements are considered in the calculation of domestic water need.[1] The difference is reflected in the calculation of water requirement per capita. Nasik District is implementing Jalswarajya projects; Ahmednagar and Aurangabad are implementing Aple Pani projects.

The community-led approach of these projects was a new method for the state and a way to decentralize project management. Ultimately, all decisions for scheme construction and long-term management, including operation and maintenance, go through the *Gram Sabha*.[2] The project focuses on building the self-reliance of the community with other groups providing facilitation and support.

When IDE approached the state-level officials of Jalswarajya/Aple Pani, it realized that there was little flexibility in the Project. Jalswarajya/Aple Pani had a predefined menu of technology options and a set quantity of water that could be delivered to the community through the project. However, since the projects were designed to provide domestic water for the projected population in the year 2021, there would be excess water available in the system for the next several years, and its use was as yet unaccounted for. The state-level bureaucrats were not averse to having MUS incorporated into the project using this water, but they requested that IDE work directly with the support organizations (SOs) at the community level for implementation. Consequently, IDE began approaching various villages embarking on Jalswarajya schemes to assess their interest in incorporating a MUS component. Since IDE's scope was limited to Nasik, the Learning Alliance approach was used in Aurangabad and Ahmadnagar to strengthen NGO partnerships in those districts. IDE then encouraged partner NGOs to incorporate a MUS component in the communities they were working with on Aple Pani projects.

THE JALSWARAJYA PROJECT

Since the direct MUS work IDE conducted in Maharashtra was in Nasik, and Jalswarajya was the Project for that district, the function of the Project is described here. As mentioned above, Aple Pani implementation was almost identical.

The Jalswarajya Project supports the government of Maharashtra in building the capacity of institutions and communities throughout the state and has the two following objectives:

- Increase the access of the rural communities to improved and sustainable drinking water and sanitation services; and

- Decentralize rural-water supply and sanitation-service delivery through three-tier Panchayati Raj institutions in the State. (Renjit 2003)

While the capacity support under the Project covers the entire state, the investment activities in the infrastructure were initially focused toward 3,730 Gram Panchayats in 26 districts, those that were not already covered under previously existing projects. The Project has three main components as shown in Table 9.1.

Table 9.1: Three main components of Jalswarajya projects

Component 1 Community Capacity Building	Component 2 Community Infrastructure	Component 3 Women Empowerment
• Community identifies their training needs (i.e. water budgeting, pump repairs,conflict resolution, etc.) • Exposure tour to ideal villages (model projects) • Actual training programs • Gram Panchayat strengthening fund	• Implementation hardware • Technical Service Provider (TSP) • Contractors	• Needy women are identified by the participatory rural appraisal activities (only the needy women are brought into self-help groups [SHGs]) • Seed money and skilled trainings given for income-generating enterprises • One gender specialist posted at district level to facilitate

Source: (Renjit 2003)

CONTRIBUTORS

The major contributors to the Jalswarajya projects are as follows:

- District Facilitation Team (DFT)
- Technical Support Provider (TSP)
- Capacity Building Consortium (CBC)
- Support Organization (SO)

Although the District Rural Development Agency, Department of Agriculture, District Water Supply and Sanitation Committee, and Ground Water Development Authority were meant to provide a supportive role for villages undertaking Jalswarajya projects, the majority of the support truly came from the local level—the GP and the SOs.

THE PROCESS

To initiate the process of village selection for schemes, the Jalswarajya Project staff sends a letter to every GP in the selected Project areas, including the requirements for acceptance and how to apply. It also puts advertisements in the newspaper so that communities can approach independently. Communities, through their GP, apply to be shortlisted for inclusion in the Project. All villages willing to accept the Project rules receive a scheme unless the number applying in that particular area is greater than the number the Project can support. If this is the case, the villages are selected based on the following criteria:

- Quantity and quality of available water and state of existing water supply and sanitation facilities
- Proportion of families below poverty line and tribal families
- Level of dues-collection efficiency
- Agreement to adhere to the Project rules
  (Renjit 2003)

Villages are much more likely to be selected if they have already participated in two other state programs—the Soil and Water Conservation Program and the *Sant Gadge Baba* Village Sanitation Campaign. These two projects were initiated by the state as ways to create incentives for community watershed and sanitation work without direct project intervention by the state. In these programs, the communities were encouraged to undertake their own water- and soil-conservation measures with their own resources and then to convey their work to the state to potentially win prize money for their accomplishments. See Table 9.2 for the criteria used to judge community efforts for receipt of prize money.

Table 9.2: Criteria for winning awards through the two programs

Soil and Water Conservation Program	Sant Gadge Baba Village Sanitation Campaign
• Community participation • Water conservation and resolution of drinking water problem • No water tanker truck required in summer • Waste land development • Number of Self-Help Groups formed • Excavation/Desilting of ponds • Forest development • Preventing labor migration • Water recharge	• The village appearance—does it look clean • The village households all have latrines • No open space defecation • No trash thrown on the roads • Drainage system good • Village walls and households look nice and well-maintained • There is some roadside planting for village beautification

Source: (Renjit 2003)

In fact, any community receiving a Jalswarajya project is required to commit to being 100 percent open-defecation free by the end of the first year of the project. Most have already begun this work through the Sant Gadge Baba Village Sanitation Campaign.

Once the potential villages are selected, Jalswarajya sends a letter of acceptance and then visits the community to explain project conditions and to draw up a formal contract to be signed by the GP chair. Project staff also provide training for the GP on how to select the organizations and contractors from the predetermined Project list. The community is required to choose a technical service provider (TSP) to design the system, either a private or government consultant. Once the GP of the village chooses a TSP, the Project sends their District Facilitation Team (DFT) to the village along with the TSP to conduct a survey on the existing water supply system. The DFT and TSP jointly compile a report and give it to Jalswarajya staff. If the report is approved, then the village is approved for a scheme.

Once the project is approved, the GP is responsible for selecting a local NGO to be their support organization (SO). Jalswarajya puts an advertisement in the newspaper announcing which villages are receiving projects, and the NGOs previously selected by Jalswarajya to be SOs in that area can approach the village to work with them. The SOs first approach the *Sarpanch*[3] who decides along with the rest of the GP which NGO they wish to work with. After the SO is selected, a Gram Sabha meeting is held, and the process of the project is explained. The SO helps them create the three required committees for the project—Village Water and Sanitation Committee (VWSC), Women Empowerment Committee (WEC), and Social Audit Committee (SAC). The Gram Sabha elects leaders for the three committees and makes a list of the members. The SO then gives this formal list of members and leadership to the DFT. Projects are meant to last a maximum of 18 months, although extensions may be granted. However, the SO's presence diminishes after 18 months.

Immediately after the formation of the three committees, Jalswarajya gives the VWSC money to visit "model" villages. The SO then conducts a participatory rural appraisal in the village and gives the information to the TSP and DFT. The TSP makes the Village Action Plan, which includes the water supply and drainage-system design and the projected system costs. The SO helps the VWSC establish a bank account, and the community is given the first installment of 40 percent of projected scheme costs. There is no set ceiling for what Jalswarajya will spend on a scheme, but the budget must be approved by the DFT. Communities are required to contribute 10 percent of total scheme costs in cash, labor, or both. Tribal communities are only required to contribute 5 percent.

The SO then begins organizing women Self-Help Groups (SHGs), on average 5–6 groups with 10–12 women each. These groups also establish bank accounts for their savings. The reasoning behind the formation of SHGs is education of women about income-generating options. SHG members

often overlap with members of the Women's Empowerment Committee (WEC). However, while the SHGs do not receive any direct funding from Jalswarajya for development activities, the WEC does.

Each DFT has a Capacity Building Consortium (CBC) assigned to act as a "mother NGO" to the SOs in the district. The CBC is responsible for trainings, monitoring, and facilitation of social, technical, and financial matters. If the CBC is capable of providing training on a subject the community is interested in, then it will do so. Otherwise, it acts as a coordinator to find expert NGOs on the subject of interest to train the local community and SO. Well-functioning CBCs also work with the Block Development Officers to assist them in monitoring the villagers' progress. They provide input to the DFT and SO for resolving village-level conflicts and community-contribution collection. Unfortunately, the CBC that was selected for Nasik District (where the two cases of Kikwari and Samundi are located) was removed from their role a year into the Project. Therefore, SOs were forced to become more involved than in other districts, helping communities select other local NGOs for training activities.

In Nasik (and other districts where the CBC was removed) the WEC invites 2–3 training NGOs who have different training specialties to give presentations about their trainings. The WEC then selects the training they are interested in and makes an agreement with that NGO for a 3-day training workshop. At the end of the training, the NGO is supposed to help the WEC write a project report, get a bank loan, and start the business activity of their choice.

At the same time, the VWSC is working with the TSP to hire contractors for the various components of scheme construction. The project engineer designs the project according to preestablished parameters. Originally, each project calculated the projected population for 15 years from the start of the project. The storage capacity required for the water tank was then calculated as:

- Daily water requirement = Design population x rate of water supply (40–45 liters/capita/day)
- Storage capacity = Daily water requirement/2 (assuming the tank fills twice/day)

However, the state-level officials of the Jalswarajya Project recently amended the requirements by increasing the daily per capita water requirement from 40 to 55 liters due to increased community demand. They also will be planning future projects for a 30-year projected population growth. The schemes were only supposed to take 18 months to complete but are actually taking anywhere from three to five years, often leaving only ten years of project operation upon completion until full capacity is reached.

Once the project design is completed, the contractor often hires community members for unskilled labor and skilled labor from outside the villages. The VWSC is responsible for purchasing the materials and paying the contractors. Payment to each service provider is done on a monthly basis depending

on the number of days worked in the village that month. A portion of funds is given only upon completion of the work and subsequent report.

Jalswarajya also encourages the continuation of the Soil and Water Conservation Program through a component of the project called "source strengthening activities." These are undertaken at the same time as scheme construction and largely consist of groundwater recharge measures. Once the system is constructed, the VWSC is required to collect a water tax to ensure proper operation and maintenance of the completed system.

Water quality is also an issue of concern to Jalswarajya projects. When the GPs are selected, the first step is to collect and test the water quality. The results are shown to the health-and-hygiene specialist at the district level. The community is then trained on chlorination, and small testing kits are given to the GP to regularly monitor the water quality. However, once these trainings are performed, it is up to the GP and SO to ensure water quality. The Jalswarajya Project provides the chlorine during the project period, but post project it is the VWSC's responsibility to fund chlorination through the water tax. In a few cases there is community-level filtration using a gravel filter, but Jalswarajya does not pay for point-of-use treatment of water.

COMMITTEE RESPONSIBILITIES

To promote total participation in the project, the Jalswarajya project encourages all villagers to participate in at least one committee. Descriptions of committee roles are as follows:

- **Village Water Supply and Sanitation Committee (VWSC)**
  The VWSC is the key organization in the village responsible for planning, implementing, and managing the water supply and sanitation services of the Project. VWSC is required to have adequate representation of all stakeholders including women, Scheduled Castes, Scheduled Tribes[4] and community-based organizations. Fifty percent of the members of the VWSC must be women. The VWSC is a committee of the GP and remains accountable to the Gram Sabha; it is therefore a formal part of the government structure. The VWSC is monitored by the Social Audit Committee.

- **Women Empowerment Committee (WEC)**
  The committee of 16 persons is meant to empower women to play an active role in water and sanitation issues as well as other forms of village development. Separate funds and training activities are provided for the WEC. The committee must have a composition of at least 75 percent women. The GP and SO provide technical support for the WEC to start income-generating enterprises.

- **Social Audit Committee (SAC)**
  The Social Audit Committee, appointed by the Gram Sabha, monitors the financial activities of the VWSC for project transparency. They are responsible for maintaining a record of expenditures.

SYSTEM COSTS

The cost of each Jalswarajya project depended on the static lift[5] of water and distance from the water source. The general cost guidelines for infrastructure are:

- Hilly region—INR 2,120 ($53) per capita
- Project with more than 30 m lift—INR 1,790 ($45) per capita
- Project with less than 30 m lift—INR 1,390 ($35) per capita

INCORPORATION OF MUS

After IDE discussed MUS with the state-level Jalswarajya staff, the concept of kitchen gardens was meant to be incorporated into the trainings provided by CBCs. However, depending on the CBC in the district, this information may or may not have actually been transferred. Jalswarajya did not encourage the use of any water from the scheme but did encourage households to dig channels for wastewater conveyance from the house to the kitchen garden.

As mentioned above, the first systems (including Kikwari and Samundi) calculated the domestic water requirement for 2015. Therefore, once the schemes are completed, there will currently be excess water in the system that can be used for productive use. In order to encourage MUS within Jalswarajya, IDE visited the communities and met with the VWSC and other villagers. The concept of MUS was explained and IDE encouraged villagers to use some of the surplus water for productive use to increase income. The specific productive use suggested was drip irrigation of kitchen gardens using IDE's "family nutrition" drip irrigation kit (see Appendix 5). These kits include all components necessary to irrigate a 20-m^2 plot. IDE gave demonstrations of the kits and explained the benefits of using drip for kitchen gardening, the care and maintenance requirements of the kits, and cost. Considering that Jalswarajya encouraged reuse of wastewater, IDE also encouraged the use of wastewater for irrigation of kitchen gardens to augment the productive use water from the scheme. Although the kitchen garden microirrigation kits have a filter to remove particulates that can clog the drip system, the use of wastewater increases the possibility of clogging. Therefore, IDE recommended that farmers filter the water first through a cloth into the storage bucket or bag and clean the filter assembly of the kit frequently. IDE continued to meet a few times per month with the various communities, participating in VWSC meetings and discussing MUS with villagers. The number of families with space for kitchen gardens was determined, and any community land that could be irrigated was explored.

CURRENT STATUS

The Jalswarajya projects that IDE is working with were completed in early 2008. The initiation of the remaining MUS activities (largely installation of kitchen gardens) is now occurring, and the SOs are training villagers on how to use microirrigation.