The Kumbharwadi Project Phase I Evaluation Report

Summary

Kumbharwadi is a village in the Indian state of Maharashtra with a population of 840. Climate change has resulted in land degradation and water scarcity in this area. Agricultural conditions are becoming more and more challenging each season, and farmers have struggled to adapt. If they do not adapt to climate change, they will lack the water they need for their families, farmlands, households and livestock - resulting in starvation.

In 2011, American Friends of WOTR (AFoW) awarded the Watershed Organization Trust (WOTR) a grant for a project in Kumbharwadi funded by a US Family Foundation. The goal of the activities to be carried out during this period - April 2012 through September 2013 – is to assist the villagers of Kumbharwadi to achieve sustainability by being better equipped to handle climate change. The project combines three general strategies: capacity building and social mobilization, agricultural and horticultural development, and land treatment. The project targets the 840 individuals and approximately 140 households in Kumbharwadi over an 18-month period. Through this project, WOTR anticipates that the villagers of Kumbharwadi will have increased their awareness of climate change and adopt new farming practices to help cope with environmental change.

Phase I Process Evaluation In December 2012, a team of DePaul University graduate students and professors visited WOTR's headquarters in Pune, its training center in Darewadi and the village of Kumbharwadi. A process evaluation of this project was conducted through a series of interviews with Kumbharwadi villagers and WOTR's staff. The team also reviewed documentation of some of the activities that had already taken place and toured Kumbharwadi and the surrounding area. This report is a summary of the findings of that process evaluation and makes recommendations for future evaluation of the project upon completion.

WOTR -- Overview

WOTR designs and manages watershed development programs in five Indian states: Maharashtra, Andhra, Pradesh, Madhya Pradesh, Rajasthan, and Jharkhand. Its mission is "to provide committed development support that motivates, energizes and empowers individuals, groups, communities and other organizations and to undertake integrated ecosystems development for the enhancement of well being on a sustainable basis."

WOTR has six goals for its work:

1) Mobilize individuals and communities to regenerate the watersheds they live in;
2) Track climate change patterns and develop interventions for farmers;
3) Improve drinking water and sanitary conditions;
4) Improve health and nutrition;
5) Organize and empower women's groups to participate in watershed development; and

6) Conduct and disseminate research around best practices to inform public policy.

Why Kumbharwadi for the AFoW Climate Change Program? WOTR successfully implemented a watershed development program during the years 1999 -- 2003, in Kumbharwadi. Although completed nearly a decade ago, developments such as contour bunds, check dams, farm bunds, and contour trenches can be seen throughout the surrounding countryside. They continue to slow water run-off during monsoon season.

Unfortunately, in recent years, Kumbharwadi has experienced very light monsoon seasons, resulting in a water scarcity. Limited resources and lack of sufficient water have put Kumbharwadi in a desperate situation. Fortunately, India's Department of Agriculture has selected Kumbharwadi to participate in the Integrated Watershed Management Program (IWMP) – a government funded program aimed at developing degraded natural resources. Because Kumbharwadi has been selected to receive land improvement funding through the IWMP, WOTR saw this project as a way to supplement the watershed work that was done in the Kumbharwadi watershed a decade prior as well as the current work being done through the IWMP.

Because Kumbharwadi has a long familiarity with the concepts of watershed development, the village was receptive to the new project as well.

Project Design

WOTR believes that to produce sustainable growth, five capitals – human, physical, natural, financial and social – must be mobilized. Applying the theory of the five capitals, WOTR and the Indian government are collaborating to create a holistic approach in Kumbharwadi. The IWMP will make significant improvements to the land, including digging contour bunds and treating drainage lines, while WOTR intends to make strides to affect social aspects of the village. While the Indian government invests in infrastructural improvements, which affect physical and natural capitals, they do not invest in social and human capitals. With funding from AFoW, WOTR is working alongside the Indian government to build awareness to the water scarcity issue and increase capacity among farmers to adapt their agricultural practices to climate change. This includes the use of horticulture methods that require less water. WOTR is also providing supplemental funding for equipment needs and training for various groups of villagers.

Early Stages of the Project As with all of WOTR's programs, the cornerstone of the work they do centers on the participation of the community. They refer to this concept as participatory watershed development. WOTR's engagement with Kumbharwadi began with local authorities – the Gram Panchayat (the local village governing body) and the Village Development Committee (a subcommittee of the Gram Panchayat). Both WOTR and government representatives met with the villagers and Gram Panchayat members at the Gram Sabha. The Gram Sabha is comprised of all of the eligible voters in a village; they hold at least two meetings each year. In these meetings, they discussed the goals of the project, its design and its implementation.

After gaining approval from local government organizations and buy-in from the villagers, WOTR began organizing grant activities in April 2012. The first task was the selection of a Jalsevak – a local farmer who acts as an organizer within the village and a liaison with WOTR staff.

Capacity Building and Social Mobilization

At the core of the Kumbharwadi project is capacity building. To build capacity, WOTR selected a community organizer, known as a Jalsevak. Next, men and women's microfinance societies were formed; and finally, the village received training on how to manage its water resources.

The Jalsevak As the community organizer and liaison with WOTR, the Jalsevak needed to be an individual who already had an interest in the water scarcity issue and good rapport with his fellow villagers. Once this individual was identified and voted into the position at the Gram Sabha, he quickly went to work with guidance from WOTR. He performed an analysis of the water resources in Kumbharwadi for 2012 through 2013. For this analysis, he surveyed each farmer in the village to find out the amount of water being used for various crops as well as how many wells the village has, how much water is currently being used, what types of crops are being grown, and how much water each crop requires. He concluded that a reduction of one hectare of summer crop could provide sufficient water to meet the village's needs for the next year.

The Jalsevak has also conducted water budgeting training for many of the villagers and organized exposure visits – visits to nearby villages that are already implementing the changes proposed by WOTR for this project. While the Jalsevak position is unpaid (except for small stipend to cover his travel expenses), Kumbharwadi's Jalsevak has been very active and engaged in this project. He sits on the Village Development Committee (a subcommittee of the Gram Panchayat) and the Water Development Committee.

Farmers Mandals and Exposure Visits Farmers' mandals are microfinance societies made up of no more than 20 farmers that are recognized by the government. They can access benefits from the government, such as bulk rates on seeds and fertilizer. The groups also offer an opportunity for information sharing, training and organization of exposure visits. While the concept was not new to Kumbharwadi (these groups had been formed during prior watershed development work), they had not been active for several years.

Villagers traveled to other places for "exposure visits." The purpose of these visits is to show farmers new methods of horticulture development being used in other villages and to motivate them to implement these methods in Kumbharwadi. The first trip to nearby KrishiVigyan Kendra, Jalna and Kadwanchi watershed projects began with a classroom session before proceeding out to the field. In the field, the farmers reported that they were impressed with the use of farm ponds (structures that collect water during monsoon season and stores it for agricultural use throughout the year), the variety of horticulture crops, and the drip irrigation

systems used for those crops. Drip irrigation systems provide water directly to the plant at a low flow rate for an extended period of time.

WOTR reported that the group was very engaged in the visit and eager to get back to their farms and begin planning for drip irrigation. The visit, which was conducted in June 2012, was a success. Individual accounts of the visit show that the farmers gained a significant amount of knowledge and motivation from the experience.

Beside the commitment to drip irrigation, another significant outcome of the exposure visit was the decision to plant pomegranates, which require little water with drip irrigation and not to plant crops for the winter season. Effective implementation of these steps should result in sufficient drinking water for the hot summer months.

Women's Self Help Groups An SHG is a microfinance society - offering a source of credit to the women in the village. As a group, they decide how much they will contribute each month and make loans to individual members. As of December 2012, two women's Self Help Groups (SHGs) had been formed. The SHG interviewed in December 2012 had set up their "thrift and credit" system, and one member had taken a loan for a drip irrigation system. They had also elected their officers and received training from WOTR on how to manage the group's finances.

The next step for the SHGs of Kumbharwadi will be to set up a SanyuktaMahilaSamitee (SMS) once a third SHG forms in the village. The SMS is comprised of two members from each SHG who meet regularly with WOTR. This structure allows them to take a larger role in the community and to apply for outside funding.

While these microfinance organizations bring women out of their homes, empower them to take more control of their finances and offer loans to their households, the underlying goal is to educate members on the most pervasive problem facing their community: water scarcity. Because it is traditionally the women's responsibility to get water in small villages like Kumbharwadi and it is the women's responsibility to cook and clean for the household, it is essential that they understand water scarcity issues facing the community. As part of the project, the Jalsevak is conducting water budgeting training with the SHGs.

Agriculture and Horticulture Development

Two significant developments came out of the water budgeting exercise, the exposure visits and the organization of farmers mandals: horticulture development – particularly the decision to grow pomegranates and not to plant crops for the winter season – and the implementation of drip irrigation systems. Pomegranates require little water; therefore successful implementation of this plan should result in adequate drinking water throughout the summer.

Horticulture One of the villages visited had received much less rainfall in the last year than Kumbharwadi, yet crops were thriving. This was primarily the result of drip irrigation systems.

The Kumbharwadi farmers were also impressed with the ease with which drip irrigation systems could be used. They felt that drip irrigation would reduce the drudgery that they endured with flood irrigation because drip irrigation saves time and labor. At the first exposure visit, the farmers learned that villages with less water than Kumbharwadi could still yield significant results. After the exposure visit, the farmers were convinced of the benefits of drip irrigation. As a group, they identified 25 farmers who would install drip systems and determined that those who are installing drip irrigation systems would grow pomegranates. Prior to the exposure visits, farmers had focused almost exclusively on cash crops such as onions and tomatoes.

Drip Irrigation Drip irrigation is a system of watering that controls the amount of water being delivered to a plant. It is a targeted system, as opposed to sprinklers or flood irrigation where a lot of water is wasted on areas without plants. A goal of the Kumbharwadi project was to implement drip irrigation systems on at least 25 farms. With water being scarce, it was essential to develop crop irrigation systems that conserved water rather than wasted it. By December 2012, 25 farmers had implemented drip irrigation systems – meeting WOTR's goal. Those that had implemented drip systems were convinced of their relevance and usefulness. In fact, the drip irrigation systems were at the forefront of many of the interviews with the farmers. They were eager to share their results – albeit early in the growth process – with the evaluation team.

It remains to be seen whether more farmers will implement drip irrigation systems. There are currently 105 farmers using flood irrigation or sprinklers in Kumbharwadi. According to the Jalsevak, many of these farmers believe that drip irrigation is only for large farms. Also, many farmers find it difficult to make the upfront investment. Despite these challenges, the Jalsevak's personal goal is to convert at least 90% of farmers (who have their own wells) to drip irrigation systems within the next four years. Though this goal is outside the purview of this project, it shows a dedication to the desired long-term outcomes the project hopes to achieve. WOTR's challenge after the end of this project will be to continue communication with Kumbharwadi and the Jalsevak to ensure that he and his fellow villagers carry on this work.

Vermicompost Vermicompost is the use of worms to break down food waste and turn it into rich organic fertilizer. For the Kumbharwadi project, several farmers were given funding to purchase the necessary container for this process and several others had plans to purchase them through a group discount program with the government.

Unfortunately, because worms require hydration, it was not possible to get this process started in 2012 due to the light monsoon season. Plans are underway to develop vermicompost pits after the next monsoon.

Rhizobium Rhizobium is an addition to the soil that helps naturally maintain the nitrogen and aid in crop rotation. Its use on sorghum crops had begun, but, again, the lack of rainfall had caused all of the sorghum to dry up. The village will attempt this again next year in the hopes of more rain.

Land Treatment

Farm Ponds Farm ponds represent one of the only financial collaborations between the government and WOTR on this project. Farm ponds collect and store large quantities of water during monsoon season. Nine applications altogether were submitted to India's Department of Agriculture for the construction of the farm ponds, and the government has subsequently sanctioned all nine – exceeding the six originally proposed by WOTR. Several of these farm ponds had already been constructed by December 2012. The farm ponds are on average 100 meters in length, 50 to 100 meters in width and 30 meters in depth. As of December 2012, the government had paid for the construction of the farm ponds; however, each farmer must buy a plastic lining so that rainwater does not percolate into the soil. None of the farmers had yet purchased the plastic lining, but they understand that this must be done prior to the rainy season beginning in June. WOTR will subsidize the cost of these linings.

Drainage Line Treatment Drainage line treatment – part of the comprehensive plan outlined by WOTR yet funded by the Indian government - had not been started as of December 2012. Unfortunately, the government has been reluctant to release funds for this project because - according to the government representative who serves on the Gram Panchayat - other similar projects in the past have failed to have a significant impact. However, the Gram Panchayat is monitoring the situation and will keep the village apprised of any status changes.

Land Treatment Land treatment, which involves digging contour bunds on a 360-hectare area and the construction of four dams, began in May 2012. The purpose of this land treatment is to slow the flow of water down the hills. This is an extension and update of the contour bunding work that was completed in the first watershed development project in this area a decade ago. Approximately one-half of the contour bunding was completed by December 2012, and the remainder is to be completed prior to the start of the monsoon season.

Challenges

The lack of a significant monsoon season was a problem for Kumbharwadi in 2012. This meant that they had little water to implement two of the agricultural strategies: rhizobium treatment of sorghum plants and vermicomposting. Although these activities were hampered by the lack of rain, plans are underway to implement these interventions after the next monsoon. Because this will occur after the end of this project, this indicates success; farmers are now committed to implementing new agricultural strategies in the hopes that it will help them better contend with climate change in the future.

It remains to be seen whether the government will invest in drainage line treatment as originally proposed. However, given its success in other areas of this project, Kumbharwadi is a good candidate for this investment.

Process Evaluation Conclusions

WOTR and Kumbharwadi are on target to meet nearly all of the objectives identified by WOTR in its proposal to AFoW. The challenges and delays that they have faced are either a result of government bureaucracy or poor weather. While both can be equally fickle, Kumbharwadi should be able to achieve its desired outcomes.

All of the men and women interviewed in December 2012 were enthusiastic about drip irrigation and water budgeting. They demonstrated an understanding of the need for climate change adaptation and gratitude for the services provided by WOTR and AFoW. The full impact of this project may not be felt until long after WOTR has moved on to other villages, but clearly the seeds have been planted in Kumbharwadi.

Phase II -- Outcome Evaluation Design

Besides conducting a process evaluation, graduate students from DePaul University were tasked with determining whether the project could be evaluated in the future and if so, what would be the best way to conduct that evaluation so that a future group of graduate students could conduct such a final evaluation. There are three main goals to be evaluated for this project – soil and water conservation, agriculture and horticulture development, and awareness and capacity building. With a project like this one, where the primary focus is on changing the knowledge and habits of the people, the answer to this question is complicated. Activities and outputs can be measured, but long-term outcomes are more difficult to ascertain. The techniques likely to be most useful for an evaluation of this project will be interviews and observation, though some infrastructural changes will also indicate improvement.

Available Documentation WOTR produces reports on active projects. Thomas Palghadmal – WOTR's lead for the project – provided narrative accounts of some of the project's activities. These tools were helpful in the process evaluation for gaining a better understanding of the activities that have taken place. Each report also includes the program manager's assessment of the outcomes of the activity and any problems that arose. It will be beneficial to a final evaluation to try to acquire any reports from December 2012 through the completion of the project.

As part of water budgeting and in conjunction with WOTR, the Jalsevak has also documented total water availability in the village in 2012. This is excellent baseline data. As part of a future evaluation, the evaluation team can request the 2013 report for comparison to the previous year. The team should request that the new report include the water that was retained in farm ponds and any changes to population size and number of livestock in the village.

Finally, the evaluation team should request a report from WOTR on how the funds were spent. This financial statement can be compared to the proposed budget; the evaluation team can then analyze the differences in the two and determine: 1.) Were the funds spent according to

the budget; 2.) If there were differences between the proposed budget and the final financial statement, how does WOTR account for those differences; and 3.) Was the grant award sufficient to achieve the goals of the proposal?

Evaluation Elements As previously stated, an evaluation conducted after the end of the program should focus on the three areas targeted by the project: capacity building and social mobilization, agriculture and horticulture development, and land treatment. The most difficult to measure – but perhaps the most important – is capacity building. The key to evaluating the success or failure of the program will be in carefully crafted interview sessions. The process evaluation team has created a draft interview guide, which is included in the Appendix of this report. This is not an exhaustive list of interview questions, but rather it is meant as a starting point for the evaluation team to build from.

Interviews with farmers will need to focus on desired outputs – knowledge of water budgeting and water usage problems. It will be important to determine why they are choosing specific plants and how they fit with the water budgeting exercise and drip irrigation systems.

Because land treatment is much more tangible than social improvements, it will be easy to verify that this work is complete. However, because land treatment, such as contour bunds, may take many years to have a noticeable impact, this may be difficult to evaluate the long-term outcome of this work. For the farm ponds, it will be beneficial if the farmers are able to quantify the amount of water collected. However, if this is not feasible, it will be important to interview the farmers who have constructed the ponds to find out what happened after the monsoon season. For example, how did the farm pond hold up? Was it easy to access the water in the pond? How does the amount of water available this year compare to last year?

The primary way to evaluate the success or failure of the agricultural and horticultural development will also be through interviews with WOTR staff, the Jalsevak, the farmers and the SHGs and observations of farms, drip irrigation systems, and vermicomposting pits. In examining the agricultural and horticultural development, the easiest objective to quantify has already been achieved – 25 drip irrigation systems have been installed, thus making this part of the proposal a success. However, it is possible to further explore this output for possible signs of project success. If other farmers also install drip systems on their farms, this will indicate that these new agricultural practices were gaining a foothold and that the long-term outcome of converting the entire village to more sustainable practices is being achieved. For the agricultural and horticultural development piece of the project to be deemed fully successful, there will also need to be progress in both the vermicomposting and the rhizobium treatments. All in all, a final evaluation of this project will be no small or easy task – but it is feasible.