

MEMORANDUM

To: Isaac Kilanzii
Minister of Natural Resources

From: Amber M. Franz, Analyst

Date: 3 March 2005

RE: Water and Sanitation Improvements in the Secondary Town of Mityana

Introduction

The secondary town of Mityana would benefit from water and sanitation improvements. The infrastructure necessary to complete improvements should include a central water authority that supervises water user groups specific to each resistance council, level 1 (RC1). These water user groups will act by prompting households to contribute money and labor to water and sanitation projects. Specifically, the central water authority should supervise the installation and maintenance of public taps that draw water from the nearby groundwater source. Members of the water user groups will collect monthly fees for usage of this water from each participating household. Ventilated improved latrines should be an option for those RC1s that choose to install them. The water user groups will be responsible for collecting fees and for building, or hiring laborers to build, desired latrines. Maintenance of latrines will be supervised by the water user groups, or by any technical staff that they choose to employ.

Background: Current Trends in Water and Sanitation

The town of Mityana is located 73 km from Nairobi and has a population of 27,000. The town is separated into Parishes 2A and 2B. For the purposes of this recommendation, only the approximate 18,000 residents of Parish 2A will be considered, as little information is available on Parish 2B. Parish 2A is subdivided into regions called RC1s, which consist of 1200 to 4000 residents. These RC1s will play a significant role in the implementation of this memo's recommendations.

The people of Parish 2A obtain their water from one of three sources: unprotected springs, vendors, and rainwater (during rainy season). Children are the main collectors of water from the springs. Vendors also collect their water from the springs. A significant percentage of the population purchases their water from vendors for about 100 shillings per 20-L jerrican, mainly because the queues at the springs are long and unpredictable and because visits to the springs often entail conflicts with vendors. Considering that the average household that purchases water from vendors uses approximately four jerricans per day, each of these individual households spends approximately 146,000 Sh. on water each year. Nonetheless, people appear to be satisfied with the spring water; nine out of ten people consider the quality of spring water to be either "good" or "fair."

Despite this apparent satisfaction, almost two-thirds of people questioned stated that they would be willing to use public taps over their current water sources if the price was 4000 Sh. per month. The willingness to use public taps is explained by the fact that the vendors are unreliable in delivering water, and by the belief that water emanating from public taps would be of better quality than existing water sources. If utilizing public taps, most people would prefer to pay monthly versus paying by the jerrican.

With regard to sanitation, the majority of people in Mityana (Parish 2A) utilize some form of pit latrine. Most of the population uses either a shared (between a group of households) or private conventional pit latrine, which consists of a cement floor, brick walls, a metal roof, and a vent pipe. Most of the remaining population utilizes a private or shared traditional pit latrine; each of these is composed of a dirt floor and walls made of wood or thatch. There is no roof and the hand-dug hole is typically covered with planks. Public latrines exist in Mityana, but they do not serve as the primary disposal system for excreta.

Most people appear to be satisfied with their current sanitation system. The most satisfied groups are those utilizing a conventional pit latrine, be it private or shared. The most unsatisfied group is the one sharing a traditional pit latrine. Many people have plans for improving their current sanitation system. People possessing their own (private) latrine are more likely to have improvement plans than people sharing latrines. The major improvement plan held by users of traditional pit latrines is to build another latrine. Despite these plans for improvement, a significant portion of Mityana residents would not utilize a public ventilated improved pit (VIP) latrine were it available for 10 or 25 Sh. per visit. Nor would many residents be willing to pay for the construction of a private VIP latrine.

Recommended Approach to Water and Sanitation Improvements

Organizational Infrastructure

The best strategy for improving service delivery in Mityana involves the establishment of a central water authority (CWA) that will oversee water user groups specific to each RC1. The CWA should consist of knowledgeable technical staff and town political figures. The director of the CWA should be appointed by Kenya's Ministry of Water. Members of the Town Council could also serve on the CWA. The CWA will be directly responsible for monitoring water quality; supervising the formation of small RC1 water user groups; hiring technicians to build and maintain a water distribution system that will supply the population with groundwater via public taps; and monitoring the public taps so as to ensure that they are not monopolized by any one party (such as the vendors).

It is suggested that water user groups be comprised of a few community members in addition to current vendors, who will lose business upon implementation of the new system. Water user groups will be responsible for collecting monthly fees from households utilizing the newly installed public taps; and for supervising the installation of VIP latrines. Construction of VIP latrines will occur only for households expressing an ability and willingness to pay for the facility. Water user groups will either build the latrines themselves or hire staff for the project.

Determination of Water Source

Ample groundwater is available near Mityana to service the new distribution and public tap system. However, before utilizing this source, it must be tested for quality. Groundwater should be tested for bacteria, viruses, and different chemicals, such as arsenic and fluoride. Groundwater in Kenya is oftentimes contaminated with fluoride; the deleterious health effects caused by this chemical become apparent after long-term consumption. The spring water should also be tested and compared to the groundwater. The spring water will likely have more microbiological contamination. Either way, water quality testing should be the first step in the process of determining which source of water to utilize for the people of Mityana. If the groundwater is contaminated, then the spring water should continue to serve as the source of water for Mityana residents. An improved vending system could be implemented if this is the case. However, assuming that the groundwater is safe for consumption, an underground piped distribution system should be built to transport the water to newly built public taps located in each RC1.

System Design

The new water supply system will consist of underground pipes directing groundwater to multiple public taps. The public taps will be built based on population estimates of each RC1. There are approximately twelve RC1s in Parish 2A of Mityana, each with a population of 1200 to 4000 residents. Each public tap will be built with the aim of serving 50 households. Based on the fact that the average household consists of 6 people, and given the populations of the RC1s, the number of public taps installed in each RC1 will range from four to thirteen taps. There will thus be a total of 60 taps built in Parish 2A (18000 people / 6 people/household / 50 households/tap). The taps will be able to support more than 50 households; in this way population growth can be accounted for.

It should be noted that some of the RC1s will be more receptive to the new water supply system than others. The RC1s located near existing springs (Upper Nkoko and Kikawula) will be less likely to use the public taps. Thus the number of households that are willing to pay for public taps in these regions must be determined before constructing public taps.

The taps should be located in areas that are convenient for access by participating households. It is expected that many households will not become involved until they see the satisfaction their neighbors are experiencing from using the new taps. Thus taps should be built with these households in mind; a centralized location and even distribution of taps over the specified areas will be the best bet for serving the community.

In addition to constructing the new water distribution system, the CWA and water user groups will be responsible for building VIP latrines. However, the CWA's role in this project will not be an active one. Other than training the water user groups in the proper construction of this facility, the CWA will be removed from this project. The water user groups will be responsible for constructing the latrine or hiring staff to build it for them. Households may also opt to build the VIP latrines themselves, under the supervision of the water user group.

Unlike the water supply system, the VIP latrines will not be a town-wide initiative. Data obtained from surveys reveal that most people are unwilling to pay for VIP latrines. Because the demand for VIP latrines is not significant, only those households that demonstrate a willingness and ability to pay will receive these facilities.

Costs and Methods of Payment

The major source of funding for the development of the water distribution system and sanitation facilities will come from the residents of Mityana. Water user groups will need to go door to door to elicit funds from the people. The CWA should also contact the businesses of Mityana and request donations. It is unlikely that sufficient funds will be obtained in this manner, however; people will not shell out money before receiving the product. Thus the initial capital required for water quality testing and construction of the distribution system will have to be in the form of a loan. This loan will be taken out at an interest rate of 10% per month, although surely some deal could be made for a reduced interest rate. Considering the complexity of the task at hand, the water supply project is likely to take about a year to complete. During this time, costs will accrue. However, the money lost will eventually be returned via payments made by households utilizing the completed system.

Research indicates that approximately two-thirds of Mityana residents would be willing to pay 4000 Sh. per month for unlimited use of public taps. This price is relatively close to the actual improved water source price of 4750 Sh. per household per month. It is expected that the same proportion of people will be willing to pay for the service at this slightly increased price. The resulting cost per year for this service will amount to 57,000 Sh., a mere 40% of the yearly cost (~146,000 Sh.) spent on water obtained from vendors. Once people realize the deal that they are getting for access to unlimited water, it is likely that the amount of people interested in using public taps will increase. For this reason, it is suggested that water user groups in each RC1 go door to door and educate the people about these savings.

It should be noted that the monthly cost of 4750 Sh. does not include staff costs. It was suggested earlier that water user groups consist of some vendors, who will be looking for work once this system is implemented. To cover water user group salaries, it is recommended that the monthly cost of access to public taps be raised to 5000 Sh. This cost increase will result in a net 250 Sh. profit per household. Despite the price increase, the annual cost of the public tap (60,000 Sh.) will still be a mere 41% of the annual vended water cost (146,000 Sh). Assuming that educating people about this fact will sway them towards using public taps, enough profit can be generated to pay water user group members a part-time salary comparable to vendor revenues. If 66% of Mityana's 3,000 households utilize the public taps and pay the 5000 Sh. monthly fee, there will be a total profit of 495,000 Sh. per month. Assuming a water group size of five members, and a total of twelve RC1s, this results in a profit of 8250 Sh. per water group member per month. Since the main job of water user group members is to collect fees once a month (part-time work), this 8250 Sh. profit is considerable, and is equivalent to the profit obtained in four days of vending.

Water user groups will also be responsible for overseeing the construction of VIP latrines. This situation differs somewhat from the water supply system; latrines will only be constructed for

households that are able and willing to pay the set fee of 200,000-400,000 Sh. (contingent on household participation in construction) or a monthly fee of 4750 Sh. The reason for different levels of service when it comes to water and sanitation is demand; more people are willing to pay for an improved water supply system than for improved sanitation facilities.

Effects on Stakeholders

The new and improved water distribution system will have positive effects on almost all parties involved. Aside from improved health, access to public taps will reduce annual water fees, thus providing participating households with extra money for investment. Women and children in particular will not have to wait in long queues for water. Instead they can devote their time to educational or revenue-generating activities. All social classes participating have the opportunity to benefit from the improved water supply system. The only people that may not be happy about the improvements are the vendors. Installation of public taps will reduce demand for vended spring water. However, in an attempt to satisfy all parties, willing vendors should be offered positions in the water user groups. Although these groups only perform intermittent duties such as collecting fees, the attempt to include the vendors in the process will likely be well received.

Benefits of the new VIP latrines will not be as evenly distributed as those of the water distribution system. Because these latrines will only be built by those possessing the necessary funds, wealthier parties will have a significant advantage over low-income households.

Monitoring Activities

The CWA will be responsible for monitoring activities of water user groups and vendors. In particular they should keep an eye on ex-vendors collecting monthly fees. They should also monitor public taps to make sure that vendors are not monopolizing these sources. Additionally, the CWA should do regular tests of groundwater quality. While the CWA has the right to monitor its public taps, it has no right to prevent vendors from collecting water from the springs. The springs are naturally occurring water sources that should be available for use by all people.

Design Points

The major points critical to the success of the water distribution system in Mityana are:

- The presence of a safe and sufficient groundwater source
- The formation of a central water authority
- The formation of water user groups that will act in each RC1
- The apparent demand and/or preference of public taps as sources of water
- The willingness of Mityana residents to pay for public taps at a monthly rate

The major points critical for the success of the VIP latrines are:

- Household demand for the facility
- Willingness and ability of the households to pay for construction of the VIP latrine
- Supervision and/or participation of water user groups (or employed staff) in the construction of the VIP latrines