

**To: Minster of Natural Resources, Government of Kenya**

**From: Gabrielle Kruks-Wisner, Consultant<sup>1</sup>**

**Date: March 2, 2005**

**Re: Water and Sanitation Upgrading in Mityana, Kenya**

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## **I. INTRODUCTION**

As a first step towards improving Mityana's water and sanitation (W&S) services, I propose the establishment of an elected W&S board that will represent the needs of different groups of water users in the town. The recommendations that follow ought to be considered by the W&S board and, if accepted, implemented with oversight from the board.

To improve residents' access to safe water, I recommend a two-pronged approach designed to meet the needs of Mityana's residents of different income levels: 1) water source protection and piping of water to neighborhoods with effective demand for public taps; 2) an improved rainwater collection system, designed to meet the needs of Mityana's poorest households. While public taps and rainwater collection are low cost options, the financial burden on consumers and on the town will be substantial given Mityana's limited resources. I therefore advise against system-wide efforts to upgrade sanitation at this time. Rather, the town should support individual efforts to improve sanitation, helping households to access loans and technical assistance.

My recommendations concentrate on the needs of Mityana's Parish 2A (herein referred to as "Mityana"), which is home to approximately 18,000 people. Parish 2B, where most residents live in labor camps, faces a different set of W&S needs and is therefore excluded from this discussion.

## **II. ESTABLISHING A TOWN W&S BOARD**

As an important first step, I propose that the residents of Mityana form a representative water and sanitation board. The board will be comprised of elected representatives from all districts (RC1s), and must include women, men, home owners, renters, and individuals from each of the five income categories established in the consultant's report. Board members will serve on a voluntary basis. They will be charged with site selection for water source improvement and public taps, choice of technologies, and hiring project staff. As a representative body, the board will grapple with difficult decisions, balancing the needs of different interest groups in the town. The board will also be responsible for soliciting community feedback, and responding to consumer complaints.

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### III. PROTECTED SPRINGS AND PUBLIC TAPS

Mityana has no piped water system. The majority of residents consume water from unimproved sources where water quality and safety cannot be ensured. To begin to address these problems, I propose the implementation of a pilot project of public taps in selected neighborhoods. I recommend public taps over other alternatives because public taps are relatively low cost, require simple technology, and have the support of the majority of residents. At 75 Shillings/jerrican (US\$0.08)<sup>2</sup>, approximately 63% of households across all RC1s will be willing to pay for public taps.<sup>3</sup>

**TABLE 1: WILLINGNESS TO PAY: PUBLIC TAPS**

	All RC1s	Geregere	Nakazadde	Central
50 Sh./jerrican	78%	95%	93%	85%
100 Sh./jerrican	49%	63%	33%	40%
75 Sh./jerrican	63%	79%	63%	62%

Together, Geregere, Nakazadde and Central Mityana, are home to approximately 3,500 households.<sup>4</sup> These three RC1s demonstrate the highest effective demand for public taps in Mityana. I recommend that the W&S board build upon these pockets of existing demand by establishing public taps in the communities most willing to pay for them.

► **Selecting sites for water source improvement.** Spring site selection will depend on the quality and seasonal flow of water at each site. The W&S board will also have to consider the water collecting habits of those households who will not participate in the public tap scheme. The ability to opt out—that is, to continue to collect water at no cost—is important, as not all households are willing or able to pay the required public tap fee. However, in the interests of cost recovery, the consumers of improved-source water must pay for it. Public access to protected springs will therefore be restricted. The W&S board must decide which springs to restrict, balancing as best they are able the needs of different stakeholders. This is not a decision that should be imposed by an outside authority, but must be addressed through a local participatory process. However, it is worth noting that several of Mityana’s springs are currently underutilized. For example, residents draw only 240 jerricans per day from the spring at Bulyantete, where there is enough water to capture as much as 5,849 jerricans per day. If technically feasible, such a spring might be a good candidate, since it has high flows of water but little human traffic.

► **Selecting appropriate technologies.** The W&S board, in collaboration with water engineers and technicians, will be charged with selecting appropriate technologies and design for spring protection. Several central requirements must be met: 1) the spring must have a retaining wall, and a barrier to prevent surface water from contaminating the source; 2) the collection area should be covered with concrete, and a lined drain should

<sup>2</sup> Conversion: US\$1.00 = 950.00 Sh.; 1997 figures provided in consultant’s report.

<sup>3</sup> Willingness to pay 75 Sh./jerrican is extrapolated from contingent valuation data for 50 Sh. and 100 Sh.

<sup>4</sup> Population size of Mityana’s RC1s ranges from 1200 to 4000 residents. Lacking further information, I estimate an average of 2,600 residents per RC1, or 450 households. (Average household size in Mityana is 5.8 people.)

carry spilled water away from the site; and 3) simple, low cost filtration systems, such as adding sand or stone, can help to purify the water at the source. The W&S board will employ two, part-time water technicians to address problems of design, operation and maintenance.

► **Creating and staffing public taps.** The W&S board will also take decisions regarding the location of public taps, based on input from community members. Taps will be open to residents of the RC1 in which it is located from 7 am to 7 pm each day. Each tap will be staffed by an attendant, employed by the W&S board. Attendants will collect payments for water, and monitor the site for maintenance problems. The W&S board will also hire project administrators to oversee the tap attendants and act as liaisons between the community and the W&S board. Each RC1 must have one full time administrator. Two additional administrators will assist with general project management, and oversee activities related to rainwater collection and household sanitation (see below).

► **Improved jerricans.** In order to encourage safe water storage in homes, water will be sold in improved jerricans. The jerricans will be of a standard, 20-liter size, and must be easily portable, stackable, and shaped to discourage “dipping” into the water by hand. I recommend that the town buy improved jerricans collectively. The price of water will include a small deposit, helping to ensure that consumers return the containers. The jerricans must have a recognizable insignia that consumers will come to associate with protected-source water, contributing to a “branding effect” that in time will increase awareness of water quality. The cost of improved jerricans is included in the project’s capital cost estimates.

► **Costs and revenues of public tap operation**

**TABLE 2: ENSURING COST RECOVERY \***

<b>Capital Costs</b>	Rate/household/month		# of households		<b>Total</b>	
Capital, O&M, Interest Payments	\$5.00		1350		\$6,750	
<b>Staff Costs</b>						
	wage/hr	hr/day	days/wk	monthly cost	# of staff	<b>Total</b>
pipe attendant	\$0.30	12	3.5	\$50	18	\$907
administrator	\$0.60	9	5	\$108	5	\$540
water technician	\$0.70	9	3.5	\$88	2	\$176
<b>Total Costs :</b>						<b>\$8,374</b>
<b>Revenue</b>						
	Price/Jerrican	cans/month	# of households		<b>Total</b>	
User payment	\$0.08	120 <sup>‡</sup>	1350		<b>\$12,960</b>	
<b>Net Revenue :</b>						<b>\$4,586</b>

\* Figures rounded to nearest US Dollar.

‡<sup>1</sup> estimate that each household will collect an average of 4 jerricans per day from public taps, in addition to gathering water from other sources. These figures will vary in the wet and dry seasons.

At 75 Sh./jerrican, the public taps will generate US\$4,586.00 net revenue each month. These funds should be used to strengthen the project, and to meet the water supply needs

of those who do not benefit from the public taps. First, funds should be applied to training and public education costs, including consultant fees, public meetings, workshops, and public awareness campaigns. Efforts at public education are intended to increase public demand for improved-source water, laying the groundwork for future project expansion when levels of effective demand and/or funding permit. Second, remaining funds should be used to subsidize the costs of an improved rainwater collection system to benefit Mityana's poorest households.

► ***The role of water vendors.*** Currently, vendors collect water free of charge from unimproved sources and sell water by foot, bicycle or cart. I propose to regulate, but not discourage, small-scale, private water vendors. Licensed vendors will be permitted to collect from public taps at full cost during restricted hours (to be determined by the W&S board). The vendors will be able to sell this protected-source water where taps are not located, passing on the cost to consumers. As demand for improved water spreads, vendors will play a role in reaching households outside of the pilot project area.

#### **IV. IMPROVED RAINWATER COLLECTION**

Fiscal constraints require that Mityana's water upgrading project be self-financing. Despite these demands, the Mityana W&S board must grapple with how to improve water supply for those *unable to pay* for public taps. An improved rainwater collection system is a low technology option that begins to meet the needs of Mityana's poorest households.

Eighty-three percent of households in Mityana currently report collecting some amount of rainwater. The W&S board ought to capitalize on this practice. A system of improved rainwater collection should be implemented at the household level. An improved system can increase the efficiency with which water is collected from rooftops, as well as ensure the safety and quality of this water. Key components include: collection tanks on rooftops; "first flush" devices eliminating rooftop dirt collected during the dry season; testing for water quality; and containers for safe household water storage.

Revenue from public tap sales will be used to subsidize improvements to rainwater collection. The W&S board will provide building materials at low, subsidized cost, as well as technical assistance and, where needed, access to micro-credit loans for households that wish to invest in upgraded rainwater collection systems. Mityana's poorest households, defined in the consultant's report as those "who rent their homes, own up to two assets, and have no electricity or land" will qualify for these services. A full time administrator, hired by the board, will oversee the project.

#### **V. ADDRESSING SANITATION NEEDS**

There is no sewage system in Mityana, and almost all residents rely on pit latrines or defecate in the open. Yet despite this situation, I do not recommend plans to upgrade sanitation facilities town-wide at this time. I warn against trying to do too much, too fast, with too little in Mityana. Residents demonstrate low willingness to pay for public

ventilated improved pit (VIP) latrines; as high as 69% of respondents state they would not be willing to pay 25 Sh. to use a public VIP latrine. Existing public latrines are also underutilized, highlighting a consistent lack of demand for public facilities in Mityana.

Homeowners in all RC1s demonstrated higher willingness to pay for *private* VIP latrines. Many households also indicated that they already have plans to improve their current sanitation facilities, although it is not clear what such plans entail. Overall, the consultant's report remarked that Mityana households were undergoing a gradual, self-financed sanitation upgrading. The town W&S board can play a positive role in facilitating household sanitation improvements, without investing community funds. One important way in which the board can support sanitation upgrading is to facilitate access to micro-loans for households willing to invest in VIP latrines. Non-profit micro-finance institutions, such as MicroSave-Africa (which has a strong track record in Kenya) might make a good partner in such endeavors. However, I advise *against* using the proceeds of public tap water sales to finance sanitation micro-loans. To divert funds from rainwater collection to household sanitation improvements would eliminate an important element of equity in the water project design.

## **VI. LOOKING FORWARD**

The recommendations in this paper are stop-gap measures, and do not represent ideal solutions to Mityana's pressing W&S needs. Options for improving service delivery in Mityana are limited by the financial constraints of the community and, significantly, by the lack of government subsidies. Given these constraints, the "next best" proposals represent incremental steps towards improving services to those households willing and able to pay. Cross-subsidization of improved rainwater collection is an attempt--albeit inadequate--to address questions of equity by making sure that the water project begins, at least at some level, to meet the needs of the poorest households. Such a piecemeal approach, however, provides only minimum, basic service (or less, in the case of sanitation), and does little to support the growth of Kenya's secondary cities. If the GOK is serious about development in small and medium towns, greater public investments in the W&S sector will be necessary in the form of subsidies, grants and other assistance.

That said, we can learn from Mityana some lessons regarding how to best garner resources in a fiscally strained community. These are:

- ▶ Do not try to do too much, too fast, with too little.
- ▶ Keep an eye to the future; make sure stop-gap measures today do not inhibit future improvements.
- ▶ Consider project implications for equity; the distribution of services matters, not only as a goal in and of itself, but as a prerequisite for stability and governability in cities.
- ▶ Create mechanisms for public participation in project design and implementation; a community's preferences and demands matter to the success of a project.