

# Ethiopia: The use of a microgrant for water and sanitation

*Aileen Y. Chang, MD; Theodore Svoronos, MPH; Neal Lesh*

---

## Abstract

A US \$3,000 microgrant was effectively coordinated in Mekelle, Ethiopia to supply sustainable clean water to 6,000 people through the partnership of the Millennium Cities Initiative, Community Lab, Spark MicroGrants, Mekelle Water Supply and Sewerage Service, the local government of Nebar Ketema, and community leaders from Nebar Ketema. This article discusses the methods used and ways to improve these methods.

## Introduction

Improving access to safe water and basic sanitation decreases the incidence of water-related illness and plays a role in reducing poverty, hunger, and child and maternal mortality.<sup>1</sup> The United Nations has recognized the importance of improved access to safe drinking water and basic sanitation. As a part of their Millennium Development Goals (MDGs), the United Nations has set the target to “*halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation*

*[[from 1990 levels].”*<sup>2</sup> In 2003, spending on new water infrastructure in developing and emerging countries was approximately US \$80 billion a year. Experts have predicted that spending would need to more than double, to US \$180 billion per year, in order to finance household sanitation, wastewater treatment, irrigation, and other water schemes.<sup>3</sup> Increased financing is greatly needed in order to achieve the MDG target.

In 2006, the Ethiopian government developed an ambitious strategy to surpass the MDGs and achieve 100% water coverage and 98% sanitation coverage, called the Universal Access Plan. Substantial gaps existed in terms of funding to increase coverage. The public investment required was estimated at US \$297 million per year for ten years (2006-2015). However, the funding secured was insufficient, leaving a financing gap of US \$197 million per year.<sup>4</sup>

While government officials at all levels report that the primary obstacle to supplying adequate water and sanitation coverage is insufficient funding,<sup>5-11</sup> other major problems are government weaknesses in terms of budget utilization and the capacity of local water desks to implement water policy efficiently. For example, during the 2005-2006 budget year, it is estimated that only 61% of the available budget was utilized. Factors contributing to underutilization include lack of personnel, delay in release of funds, absence of effective mechanisms to manage finances, local contractors with poor technical skills for construction, and lack of materials.<sup>12</sup> In 2009, 73% of the planned budget was utilized.<sup>13</sup> Poor utilization of budget resources can be improved by administrative and technical capacity building.

---

## Aileen Y. Chang, MD

Columbia University, Millennium Cities Initiative

Correspondence:

100 East Indian Spring Dr.

Silver Spring, MD 20901, USA

E-mail: [Ayc2113@columbia.edu](mailto:Ayc2113@columbia.edu)

## Theodore Svoronos, MPH

Community Lab, Spark MicroGrants

## Neal Lesh

Community Lab

**Sources of Support:** Travel grants from the Harold Brown Fellowship for Global Study at the College of Physicians and Surgeons at Columbia University and the Rosenbluth Foundation.

**Conflicts of Interest:** None declared.



Figure 1: May Bandera Spring water flows through this pipe.

In addition, limited administrative and technical capacity at the lowest level of government is an obstacle in the efficient implementation of water projects. The importance of the role of the lowest level of local government has increased over the last fifteen years due to decentralization of power. In 1995, the Ethiopian constitution identified nine regional states. In 2001, each state developed its own regional constitution and the Ministry of Water decentralized the water sector.<sup>14</sup> In 2002, the states were further divided into woredas, with elected councils that were assigned portions of the national budget.<sup>12</sup> While national and regional water offices are responsible for the formulation of policy and provision of technical support, the task of actual implementation is the responsibility of the woredas. At the woreda level, there is a lack of personnel and expertise for successful implementation of water projects. The regional offices report that there is not enough regional staff to handle all of the woreda training needs.<sup>9</sup>

A microgrant is a small sum of money donated for the purpose of improving the standard of living

of impoverished communities. Microgrants to fund water and sanitation projects can be useful tools to fund small projects that cannot be financed due to budget shortfalls and to build administrative and technical capacity at local water desks.

## Methods

This water project was made possible through a partnership between Community Lab, Spark MicroGrants, the Millennium Cities Initiative, Mekelle Water Supply and Sewerage Service, the local government of Nebar Ketema, and community leaders from Nebar Ketema. Community Lab is a non-profit that seeks to promote community-driven development in low-resource settings. Spark MicroGrants was started in collaboration with Community Lab to facilitate microgrants to fuel community-led innovation in a systematic and scalable way. Spark MicroGrants and Community Lab worked intimately with the Millennium Cities Initiative in East Africa to assist the countries of this region to attain the Millennium Development Goals.

Spark MicroGrants raised US \$3,000 in online donations from multiple donors, with donations ranging from approximately US \$10 to US \$200. The funding was to be applied to a community-directed water and sanitation project. During the fundraising period, the sector specialist for Mekelle, Ethiopia at the Millennium Cities Initiative identified different community groups that would be interested in the applying for the funding.



Figure 2: Mid way through the project, the May Bandera Spring went dry.

The goal of the microgrant project was to fund a community group to identify a water and sanitation problem in their community, propose a sustainable intervention to improve the situation, and implement the intervention. The ideology behind this project was that if communities are empowered with small-scale financing and capacity building, they would be able to implement and sustain health interventions in a cost-effective manner.

The people of Nebar Ketema had proposed the construction of a water point for their community to the local government water supply service. However, they were turned down due to insufficient government budget allocation. When the people of Nebar Ketema heard about the microgrant opportunity, a group of community leaders came together to apply for the grant. The proposal was discussed by eleven community members (eight men and three women) from different parts of Nebar Ketema and two local water specialists. Guidelines for the proposal, set by Community Lab, required a description of the proposed intervention, the rationale for the intervention, a plan for implementation of the intervention, a plan for assessing impact, a budget, and a plan for sustainable management after the grant period. The proposal was dictated to the Millennium Cities Initiative sector specialist and recorded in Tigrinya and English. A summary of the proposal follows.

The community of Nebar Ketema, approximately five miles from the Mekelle city center, is located in the Tigray region of Ethiopia and is home to 6,000 people. Nebar Ketema was once an area known for lush vegetation, but has suffered significant decreases in ground water.

Nebar Ketema had two springs from which people fetched their water: May Bandera and Zban Zala. Water quality analysis was performed at both sites. At May Bandera Spring, water quality analysis indicated the presence of human and animal waste. At Zban Zala Spring, water quality analysis indicated that the water was cloudy with poor odor, poor taste, elevated nitrate levels, and fecal contamination. As their only water supply is unprotected, the community is affected by high incidences of giardiasis, schistosomiasis, and *E. coli* infections.



Figure 3: Zban Zala Spring

In Ethiopian culture, fetching water for the family is the responsibility of mothers and female children. In Nebar Ketema, with only two springs with minimal water flow, villagers spend, on average, 3-5 hours per day fetching water. Due to water carrying responsibilities, female students are often forced to be absent from school and sometimes drop out.

The proposed intervention was to install 1000 meters of pipeline to connect Nebar Ketema to a protected water reservoir and to construct two six-fauceted water points in order to decrease waiting times. The new water points would be located so that no person would have to walk more than 200-300 meters to collect water.

Piping, fittings, water meter, cement, and other aggregates, totaling US \$2,703, would be purchased from the local Bruh Tesfa manufacturing company in Mekelle, with costs covered by the microgrant. The water supply service would contribute technical services, valued at US \$1,757. Community members would contribute labor for the construction of the pipeline and the collection of stones for the water point, valued at US \$1,107. These cost estimates were based on what the water supply service



Figure 4: Water quality testing

charged to employ technical experts and construction workers.

The impact of the intervention was to be assessed by two markers: the time it took to collect water and water quality before and after water point construction. Villagers from different parts of Nebar Ketema would be asked how much time it took them to collect water. Water quality analysis would be conducted by specialists at the water supply service at the two water points after construction and compared to water quality at the springs prior to water point construction.

The plan for sustainability relied on the development of a water committee organized by the community. A usage meter was placed at the water points and a member of the water committee would collect 0.20 birr (13 birr = 1 US dollar) per jerrycan of water, each approximately 20 liters. This fee would be sufficient to pay for the water and maintenance of the water point. In this way, the community would take ownership of the condition of the water source and its management.

## Results

A thirty-day timeline had been constructed for the completion of the project. However, administrative delays occurred and the water point construction and follow-up water analysis was completed in four months. The community was so eager to have the water point that, within seven days of the project proposal acceptance, villagers had dug 1000 meters of 4-foot trenches through rocky terrain for piping

and collected stones for the water point. Unfortunately, these trenches had to be re-dug with the guidance of the technical expert because they were zigzagged and were not ideal for piping. About three weeks after acceptance of the proposal, the May Bandera Spring went dry, causing extreme anxiety in the community about access to water.

After four months of partnership between the Mekelle Water Supply Service and the villagers of Nebar Ketema, two water points were constructed within Nebar Ketema, named Nebar Ketema Water Point and Zban Zala Water Point.

The community met and elected members for the water committee. They designated two women to be fee collectors at the two water points. The final agreed-upon price was 0.20 birr for 20 liters and 0.30 birr for 30 liters.

The time it took to collect water was significantly reduced by the construction of the new water points. The centralized locations of the new water points, decided upon by the community, reduced the time to walk to the water point, on average, from 30 minutes to 5-10 minutes. The rapid flow of water and having six faucets at each water point reduced waiting time at the water point from 3-5 hours to 5 minutes.

Water quality analysis at Nebar Ketema Water Point and Zban Zala Water Point two weeks after completion of the construction indicated that the water was potable under all parameters. This was significant improvement from the water previously available from the May Bandera and Zban Zala Springs.



Figure 5: The new Nebar Ketema Waterpoint with adjacent jerrycans.



Figure 6: Zban Zala Waterpoint.

### Discussion

The US \$3,000 microgrant for water and sanitation to Mekelle, Ethiopia was managed through a partnership of Millennium Cities Initiative, Community Lab, Mekelle Water Supply and Sewerage Service, the local government of Nebar Ketema, and the community of Nebar Ketema. Two water points were constructed, bringing safe water access to 6,000 people. The average aid efficiency ratio was high, with each grant dollar supplying two people with sustainable access to clean water. The grant also leveraged an additional US \$2,865 of services contributed by the Mekelle Water Supply budget and the community.

Access to potable water in Nebar Ketema has brought about multiple benefits. Community members surveyed report that given the central construction locations of the two water points, walking times to reach water have decreased from an average of 30 minutes to 5-10 minutes. In addition, given multiple faucets and fast flowing water from the water points, waiting times at the water site have de-

creased from 3-5 hours to 5 minutes. Community members explained that the decreased water collection time gave women more time to clean their homes, bathe their children, cook, be involved in social activities, and participate in the education of their children.<sup>15</sup>

Community members now pay 0.20 birr for 20 liters and 0.25 birr for 30 liters. They were pleased with this price as it was much lower than what they would have paid to get water from the homes of people with wells.

Most importantly, access to potable water has multiple health benefits. Although these were not measured in this study, it is expected that they will include a decrease in both bacterial and parasitic infections as well as malnutrition. Improved health can result in better scholastic performance in children and greater productivity that propel economic development.

Members of the Nebar Ketema community are now empowered to propose future interventions. The water committee allows the community to as-

sume responsibility for the maintenance of their water source. The local government of Nebar Ketema and the Mekelle Water Supply Service now have further administrative experience with budget development, timeline development, international wiring of funds, and project implementation.

Future considerations include incorporating microgrant funds into the national budget, with a tagged donation to a specific water office at the woreda level. Benefits of this approach are strengthened local government administrative capacity and long-term monitoring of the projects. Drawbacks are the increased time for project completion and the possibility for disappearance of portions of the funds. In this model, non-governmental organizations can play the role of consultant, lending technical expertise and aid in building administrative capacity.

Spark MicroGrants has continued their work in microgranting and used this early experience to build further projects.<sup>16</sup>

#### **Acknowledgements:**

Microgrant donors; from the Millennium Cities Initiative and Community Lab: Aberash Abay, Krishna Swamy, Susan Blaustein, Julia Frydman, Mounie Maoulidi, and Scott Andrews; from the Millennium Village Project: Sonia Sachs; from the Rosenbluth Foundation: Michael Rosenbluth; from Columbia University: Lisa Mellman, Kbrom Tekle, Kahsu Testay, Gebere Bezagh, Hafte Kasa, Gebru Banki, Tesfay Reda, Hagos Sebat, Haile Mamo, Letebrhan Adane, Aberash Hailu, Wayzuero Mhret; from the woreda level: Solomon Hailu, Girmaz Testay, Kahsu Bayreu, Atsbeha Abruha; from the regional level: Gidena Abebe, Micheal Tsehaye, Haile Kidane, Dagnew Hagos, Berhe Glkidan, Ato Abreham, Hadush Gebremeskel; from the national level: Daniel Dangiso, Gilebo Sengogo, Micheal Negash, Gossa Wolde, Nasser Ferez.

#### **References:**

1. Asian Development Bank. Water for All - The 2nd Five Years: ADB's Water Financing Program 2006-

2010. Summary Directions by ADB's Water Committee and the Energy, Transport, and Water Division of the Regional and Sustainable Development Department. 20 March 2006.
2. Castro, Andrea. Millennium Development Goals for water and sanitation from baseline needs assessment in water and sanitation for households, health facilities, and schools within Mekelle. New York: Millennium Cities Initiative; 2009.
3. Winpenny, James. Report of the World Panel on Financing Water Infrastructure: Financing water for all. Executive Summary. March 2003.
4. African Ministers' Council on Water, Water and Sanitation Program-Africa, World Bank, African Development Bank, European Union Water Initiative, United Nations Development Programme. Getting Africa on track to meet the MDGs on water and sanitation: A status overview of sixteen African countries. December 2006.
5. Dangiso, Daniel. Policy and Planning Director, Ministry of Water. Personal interview. 4 April 2010.
6. Abebe, Gidena. Director of Mekelle Water Supply and Sewerage Service. Personal interview. 24 March 2010.
7. Girmaz, Testay. Head of Nebar Ketema Woreda. Personal interview. 16 April 2010.
8. Hailu, Solomon. Vice-Head of Water Resources, Mines, and Energy Office. Personal interview. 9 April 2010.
9. Tsehaye, Micheal. Director of Tigray Bureau of Water Resources. Personal interview. 1 April 2010.
10. Kidane, Haile. Head of Planning of Tigray Bureau of Water Resources. Personal interview. 6 April 2010.
11. Sengogo, Gilebo. National WASH Coordinator, Ministry of Water Resources. Personal interview. 13 April 2010.
12. Aboma, Girma. Ethiopia: Effective financing of local governments to provide water and sanitation services. Addis Ababa: WaterAid; 2008.
13. Ministry of Water Resources. Review of rural water supply UAP implementation and reformulation of plans and strategies for accelerated implementation. (Summarized version). Addis Ababa: Ministry of Water Resources; February 2009.
14. Federal Democratic Republic of Ethiopia, Ministry of Water Resources website. <http://www.mowr.gov.et>
15. Abay, Aberash. Providing potable water to Zban Zala and Nebar Ketema. New York: Millennium Cities Initiative; June 18, 2010.
16. Spark MicroGrants website. <http://www.sparkmicrogrants.org>