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ACCESS TO SANITATION AND SAFE WATER:  
GLOBAL PARTNERSHIPS AND LOCAL ACTIONS

## Water supply systems in selected urban poor areas of Addis Ababa, Ethiopia

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*Water supply systems in three urban poor areas of Addis Ababa namely Teklehaimanot, Merkato and Biheretsige were evaluated based on a field survey of 105 randomly selected households and interviews with other major stakeholders. Private taps, yard taps, public taps, water kiosks and water vendors are the primary sources of water in these areas. The average water consumption of more than 75% of the sampled households was less than 20 litres per person per day. Most of the households pay a relatively high price for drinking water with the average cost of ETB 6.2/m<sup>3</sup> (US\$ 0.74/m<sup>3</sup>). Although many households are willing to have private or yard taps, they can not afford the one time connection fee payment of about ETB 412. An innovative financing and cost recovery mechanism is required, specifically for the initial connection fees, in order to increase the coverage of safe water supply at an affordable price in these areas to meet the Millennium Development Goals.*

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### Introduction

Providing a safe water supply to the urban poor in the cities of developing countries is one of the major challenges in meeting the UN Millennium Development Goals (MDGs) with respect to water supply. Very often the urban poor are not the direct users of urban water supply systems and are paid little attention or neglected by the urban water utilities who struggle to meet increasing water demands.

Addis Ababa, the capital city of Ethiopia, with a population of about 3 million (in 2005), is one of the developing country cities suffering from a shortage of water supply, which is especially acute in the urban poor areas of the city. Addis Ababa Water and Sewerage Authority (AAWSA) is responsible for the water supply and sewerage services in the city. The city water supply covers 56% of the city area (300 km<sup>2</sup>). According to AAWSA (2004) about 4% of the population in its service area have in-house connections and use on average 80 to 100 litres per capita per day (lpcd), while the remaining population (94%) are served by yard taps, and public taps and use between 15 to 30 lpcd. Furthermore, the existing water supply system is sufficient only to meet about 65% of the total water demand of the city. In spite of considerable investments in water supply in the city at different times, majority of the people living in urban poor areas do not have access to a reliable and safe water supply. Therefore, the aim of this study was to evaluate the water supply situations in selected urban poor areas of Addis Ababa in order to develop strategies to improve the existing situation and to meet UN MDGs with respect to water.

### Methodology

The evaluation of water supply situations in selected urban poor areas of Addis Ababa was carried out by conducting a field survey of households, interviews and discussions with other major stakeholders.

### Questionnaire development and field study

Three sets of questionnaires were developed to collect data on different aspects of water supply in the survey area from three main stakeholders namely (i) households, (ii) NGOs and (iii) AAWSA. During the field study, information was collected from 105 randomly selected households from three urban poor areas on water sources, water uses, costs, availability, accessibility, reliability of the system and willingness to pay for improved water supply systems. Additionally, questionnaire-guided interviews and discussions were held with officials of AAWAA and three local NGOs, namely Christian Children's Fund, Community Based Integrated Social Development Organization, and WaterAid Ethiopia. Details of the questionnaires, checklist and field data collected from each area are presented in Bereket (2006).

### ***Characteristics of the study area***

Selection of the study areas was based on standard of living and income levels, and the authors' knowledge of the areas. The study was carried out in three selected urban poor areas of Addis Ababa namely (i) Lideta sub city of Teklehaimanot area, (ii) Addis Ketema sub city of Merkato area, and (iii) Nifas Silk Lafto sub city of Biheretsige area. The number of respondent households from Teklehaimanot, Merkato and Biheretsige were 42, 32, and 31 respectively. The mean household size was 4.8 and the number of rooms in current residences ranged from 1 to 3. The age range of the respondents was 25 to 60 of which 65% of the respondents were women. Furthermore, 88% of the respondents were below the poverty line of ETB 244 (US\$ 29.28) per month for a family of five (UNCHS, 2000).

### **Main results**

Detailed house-to-house surveys were conducted using the questionnaires developed. This provided information on water sources, collection and water usage data for each household selected in the study. Furthermore, during the field survey different water sources in each area were visited and several direct observations of water collection activities were made.

#### **Water sources, collection and use**

##### ***Water sources***

Of the total respondents, 35% used public taps (community tap in public area), 30% used private taps (tap in compound of single household, but not house connection), 17% got water from vendors, 13% from yard taps (tap in compound shared by more than two households), and 5% from water kiosks as their primary source (Fig. 1). Therefore it can be inferred that 70% of the households depend on primary water sources of public taps, yard taps, vendors or kiosks while 30% of the households use private taps as their primary water source. All these water sources are supplied by AAWSA municipal system. In case of interruption of municipal water supply, water vendors and water kiosks are main sources of supply.

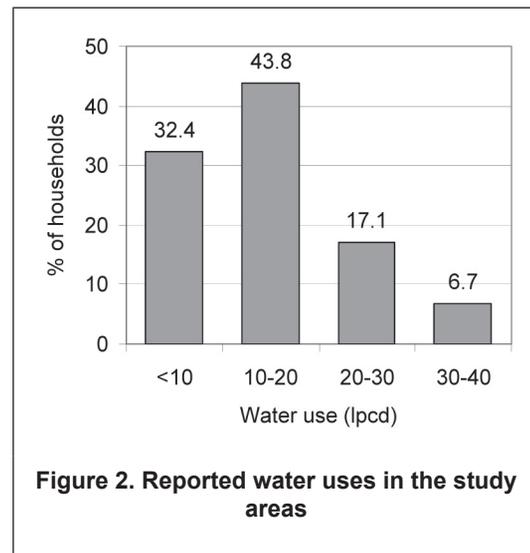
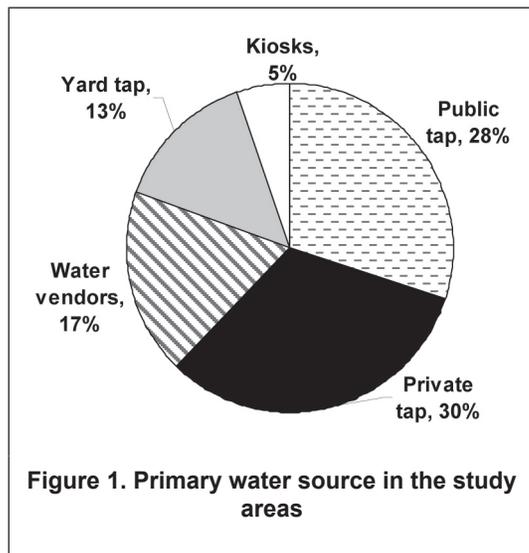
##### ***Reported water use***

On average 32% of households were found to use water  $\leq 10$  lpcd, 44% of households 10-20 lpcd, 17% of households 20-30 lpcd while the rest, 7% of the households, use 30-40 lpcd of water (Fig. 2). The mean value of the per capita water use for the total 105 households is 17.1 lpcd. The average per capita water consumption of more than 75% of the sample households is less than 20 lpcd. This is low compared to WHO recommendation of 20 lpcd for basic access, hence it can be concluded that most of the respondent households do not have access to improved water supply. These figures are comparable to AAWSA reported water consumption of 15 to 30 lpcd for households using public taps and yard taps.

##### ***Availability of water and reliability***

About 80% of the people get their water from a primary source at a distance of less than 0.5 km of which 52% get water at a distance less than 100 m. Only 20% of the households have to travel 0.5 to 2 km to get their water. In the dry season when the nearby public taps are closed because of the lack of water, they have to travel longer distances to collect water. Furthermore, the opening hours of public taps is not clearly known; it is usually a few hours in the morning and sometimes also in the afternoon. Regarding the duration of supply, 39% of the sample households get water for less than 8 hours per day, 48% get water 8 to 16 hours per day and the remaining 13% get water more than 16 hours per day.

Regarding interruption of supply, in the Merkato area the reported frequency of interruption is 4 to 6 days per month and in the Taklehaimanot area interruptions occasionally occur. In Biheretsige, water supply interruption is less frequent (1 to 2 days per month). Therefore, it is common in the households within the study area to store water for a few days to meet the demand in case of interruptions.



### Cost of water

The number of households served by different sources and average cost of water is summarised in Table 1. Households are spending on average approximately ETB 6.2/m<sup>3</sup> (US\$ 0.74/m<sup>3</sup>) for water. It was observed that people who collect water from vendors pay about 3 times more than the people using public or private taps. Domestic water tariffs for piped water supply from the AAWSA system, at the time of survey, were ETB 1.60 /m<sup>3</sup> for 0 to 7 m<sup>3</sup> and 2.35/m<sup>3</sup> for above 7 to 20 m<sup>3</sup>. Therefore, water from vendors cost about 8.5 times the AAWSA rates. On average, the households in the survey areas spend about 9% of their monthly income on water supply.

**Table 1. Household served by different mode of service and average water costs**

| Mode of service | Number of households using different sources |           |              |            | Average cost (ETB/m <sup>3</sup> ) |
|-----------------|--|-----------|--------------|------------|------------------------------------|
|                 | Teklehaimanot                                | Merkato   | Bihereitsige | Total      |                                    |
| Private tap     |  |           |              |            |                                    |
| Yard tap        | 0  | 4         | 10           | 14         | 4.25                               |
| Public tap      | 12   | 16        | 8            | 36         | 4.80                               |
| Water kiosk     | 5  | 0         | 0            | 5          | 7.50                               |
| Water vendor    | 9  | 4         | 5            | 18         | 13.57                              |
| <b>Total</b>    | <b>42</b>                                    | <b>32</b> | <b>31</b>    | <b>105</b> | <b>6.2</b>                         |

Note1 ETB= 0.12 US \$

### Willingness to pay for improved water supply and constraints

It was found that 60% of the respondents prefer to have private taps, the other 25% yard taps and the rest, 15%, would like to get their water from public taps. About 40% of the respondents would prefer yard taps or public taps because of the high initial cost of private tap connection (ETB 412). This is consistent with the observation of Collignon and Vezina (2000) that low-income households fetch water from public stand-posts and neighbours and pay for it because of the high initial cost of private connection. However, most of the households (90%) are willing to get private taps if they could pay the initial connection fee in small instalments. Therefore, an innovative financing and cost recovery mechanism should be put in place with the joint effort of AAWSA, local NGOs, municipality and the government in order to provide safe water supply to these unserved or poorly served areas.

### Views of other stakeholders

According to AAWSA there is a shortage of water in the city and even if the people are willing to pay for improved systems, it would not be feasible to provide private taps to all interested households unless the

capacity of the municipal water supply system is increased by augmentation of new water sources. Three NGOs consulted opined that water supply in these urban poor areas could be improved considerably if they could work in close collaboration with AAWSA. According to them, considerable water savings could be achieved if the existing high water losses in the distribution system (about 35%) could be reduced.

### Conclusions

- The analysis of the survey data on water collection, water use and related aspects about the water supply system in urban poor areas indicated that the urban poor are getting below standard water services in terms of both quantity and service level and paying a relatively high price for water.
- The average per capita water consumption of more than 75% of the sample households is less than 20 lpcd, therefore the majority of the residents can be considered to have no basic access to water supply.
- Most of the urban poor households in the study area are dependent on public taps, water vendors and water kiosks as a primary water source. Only 30% of the respondent households have private taps.
- The average water price ranges from 4.25 to 13.57 ETB/m<sup>3</sup>, depending upon the type of water sources. Most households pay a relatively high price for drinking water supply.
- 70% of the unconnected households reported that water vendors and kiosks are not the preferred options for them because of the high costs of water.
- An innovative financing and cost recovery mechanism should be put in place with the joint effort of AAWSA, municipality and the government in order to cover these unserved or poorly served areas with safe water supply.

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### References

- AAWSA (2004) Addis Ababa Water and Sewerage Authority, Draft Sectoral Development Program.
- Bereket, B.W. (2006) Evaluation of Water Supply Systems in Selected Urban Poor Areas of Addis Ababa, Ethiopia. MSc Thesis MWI 2006-12, UNESCO-IHE, Delft, The Netherlands.
- Collignon, B. and Vezina, M. (2000) Independent Water and Sanitation Service Providers in African Cities: Full Report of a Ten Country Study. Washington: UNDP – World Bank WSP.
- UNCHS(2000) An Overview of Urban Poverty in Addis Ababa. Capacity building for sustainable urban development in Ethiopia. ETH/98/006/B/08/56.

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### Keywords

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